IBM Z and LinuxONE

Service Guide for 2461 Support Element (Base Service)

GC28-7022-01

Note:

Before using this information and the product it supports, read the information in "Safety" on page v, Appendix D, "Notices," on page 279, and *Environmental Notices and User Guide*, Z125–5823.

This edition, GC28-7022-01, applies to IBM z Systems (IBM Z) and LinuxONE and the 2461 Support Element.

There might be a newer version of this document in a **PDF** file available on **IBM Documentation**. Go to https://www.ibm.com/docs/en/systems-hardware, select **IBM Z** or **IBM LinuxONE**, then select your configuration, and click **Library Overview** on the navigation bar.

Contents

Safety

Safety notices

Safety notices may be printed throughout this guide. **DANGER** notices warn you of conditions or procedures that can result in death or severe personal injury. **CAUTION** notices warn you of conditions or procedures that can cause personal injury that is neither lethal nor extremely hazardous. **Attention** notices warn you of conditions or procedures that can cause damage to machines, equipment, or programs.

Danger notices

DANGER: Heavy equipment — personal injury or equipment damage might result if mishandled. (D006)

World trade safety information

Several countries require the safety information contained in product publications to be provided in their local language(s). If this requirement applies to your country, a safety information booklet is included in the publications package shipped with the product. The booklet contains the translated safety information with references to the US English source. Before using a US English publication to install, operate, or service this product, you must first become familiar with the related safety information in the *Systems Safety Notices*, G229-9054. You should also refer to the booklet any time you do not clearly understand any safety information in the US English publications.

Laser safety information

All IBM Z and IBM LinuxONE (LinuxONE) models can use I/O cards such as FICON®, Open Systems Adapter (OSA), RoCE Express, Integrated Coupling Adapter (ICA SR, ICA SR1.1), zHyperLink Express, or other I/O features which are fiber optic based and utilize lasers (short wavelength or long wavelength lasers).

Laser compliance

All lasers are certified in the US to conform to the requirements of DHHS 21 CFR Subchapter J for Class 1 or Class 1M laser products. Outside the US, they are certified to be in compliance with IEC 60825 as a Class 1 or Class 1M laser product. Consult the label on each part for laser certification numbers and approval information.

Laser Notice: U.S. FDA CDRH NOTICE if low power lasers are utilized, integrated, or offered with end product systems as applicable. Complies with 21 CFR 1040.10 and 1040.11 except for conformance with IEC 60825-1 Ed. 3., as described in Laser Notice No. 56, dated May 8, 2019.

CAUTION: Data processing environments can contain equipment transmitting on system links with laser modules that operate at greater than Class 1 power levels. For this reason, never look into the end of an optical fiber cable or open receptacle. (C027)

CAUTION: This product contains a Class 1M laser. Do not view directly with optical instruments. (C028)

About this publication

This guide is for service representatives who perform isolation and repair actions associated with the 2461 Support Element. It also contains information about exchanging display components and bypassing the KVM component.

- Chapter 1, “Introduction,” on page 1 provides a brief description of the 2461 Support Element and shows the components that are located in the front and rear of the 2461 Support Element.
- Chapter 2, “Parts list,” on page 11 provides a list of the components that can be exchanged and the location of the component in the 2461 Support Element.
- Chapter 3, “Troubleshooting,” on page 19 provides information on helping to determine what needs to be removed and replaced. It also contains information on bypassing the KVM component.
- Chapter 4, “Exchanging the components,” on page 89 provides information about how to remove a defective display unit from, and install a replacement display unit into, the 8561 machine.
- The Appendices provide information about reloading the hard disk drive, 2461 configuration, operating the compact keyboard/monitor/mouse (compact KMM) console unit, and trademark information.

Related publications

Related publications that you will find helpful and that you should use along with this publication are in the following list. Related publications can be found on **IBM® Documentation**. Go to https://www.ibm.com/docs/en/systems-hardware, select **IBM zSystems** or **IBM LinuxONE**, then select your configuration, and click **Library Overview** on the navigation bar.

- z13 Service Guide, GC28-6937
- z13s Service Guide, GC28-6955
- 3906 Service Guide, GC28-6966
- 3907 Service Guide, GC28-6975
- 8561 Service Guide, GC28-6998
- 8562 Service Guide, GC28-7010
- 3931 Service Guide, GC28-7018
- 3932 Single Frame Service Guide, GC28-7042
- 3932 Rack Mount Bundle Service Guide, GC28-7037

Related HMC and SE console information

Hardware Management Console (HMC) and Support Element (SE) information can be found on the console help system.

How to provide feedback to IBM

We welcome any feedback that you have, including comments on the clarity, accuracy, or completeness of the information.

For additional information use the following link that corresponds to your configuration:

Configuration	Link
IBM z16™ Model A02	How to send feedback to IBM
IBM z16 Rack Mount Bundle	How to send feedback to IBM
IBM LinuxONE Rockhopper 4 Model LA2	How to send feedback to IBM

Configuration	Link
IBM LinuxONE Rockhopper 4 Rack Mount Bundle	How to send feedback to IBM

Field service personnel can make suggestions for serviceability improvements or report serviceability problems at *Field Feedback* (https://w3.ibm.com/w3publisher/ibm-z-hardware-support/contact/field-feedback) or by using the QR code, below.

Accessibility features

Accessibility features help users who have physical disabilities such as restricted mobility or limited vision use software products successfully. The accessibility features can help users do the following tasks:

- Run assistive technology such as screen readers and screen magnifier software.
- Operate specific or equivalent features by using the keyboard.
- Customize display attributes such as color, contrast, and font size.

Consult assistive technologies

Assistive technology products, such as screen readers, function with the user interfaces found in this product. Consult the product information for the specific assistive technology product that is used to access our product information.

Keyboard navigation

This product uses standard Microsoft Windows navigation keys.

IBM and accessibility

See http://www.ibm.com/able for more information about the commitment that IBM has to accessibility.

Revisions

A technical change from the previous edition of this document is indicated by a thick vertical line to the left of the change.

Summary of changes

Summary of changes for the 2461 Support Element (Base) Service Guide, GA28-7022.

Table 1. Summary of changes

Release Date	Changes in Level
January, 2024	This revision contains editorial changes and the following technical changes: • Added a list of related publications that provides references in hyperlink format. See “Related publications” on page vii. • Updated FRU part numbers in “Replaceable parts (Support Element 2461-SE3, 2461-SE4, and Hardware Management Appliance 2461-VA3 (FC 0129)/2461-SE4)” on page 15.

Chapter 1. Introduction

The 2461 Support Elements are 1U-high units (machine type and model 2461-SE1, 2461-SE2, 2461-SE3, or 2461-SE4).

- The 2461-SE4 Support Element in the IBM z16 (Factory Frame and rack mount) machine supports AC power.
- The 2461-SE4 Support Element in the 3931 machine supports AC power.
- The 2461-SE3 Support Element in the 8562 machine supports AC power.
- The 2461-SE3 Support Element in the 8561 machine supports AC and DC power.
- The 2461-SE2 Support Element in the 3907 machine supports AC power.
- The 2461-SE2 Support Element in the 3906 machine supports DC power.
- The 2461-SE1 Support Element in the z13s® machine supports DC power.
- The 2461-SE1 Support Element in the z13® machine supports DC power.

The Support Element is a dedicated workstation used for monitoring and operating the system and is located inside the same frame that the system is located.

Support Element components (2461-SE1 and 2461-SE2)

Figure 1 on page 2 shows the components located in the front and rear of the 2461 Support Element.

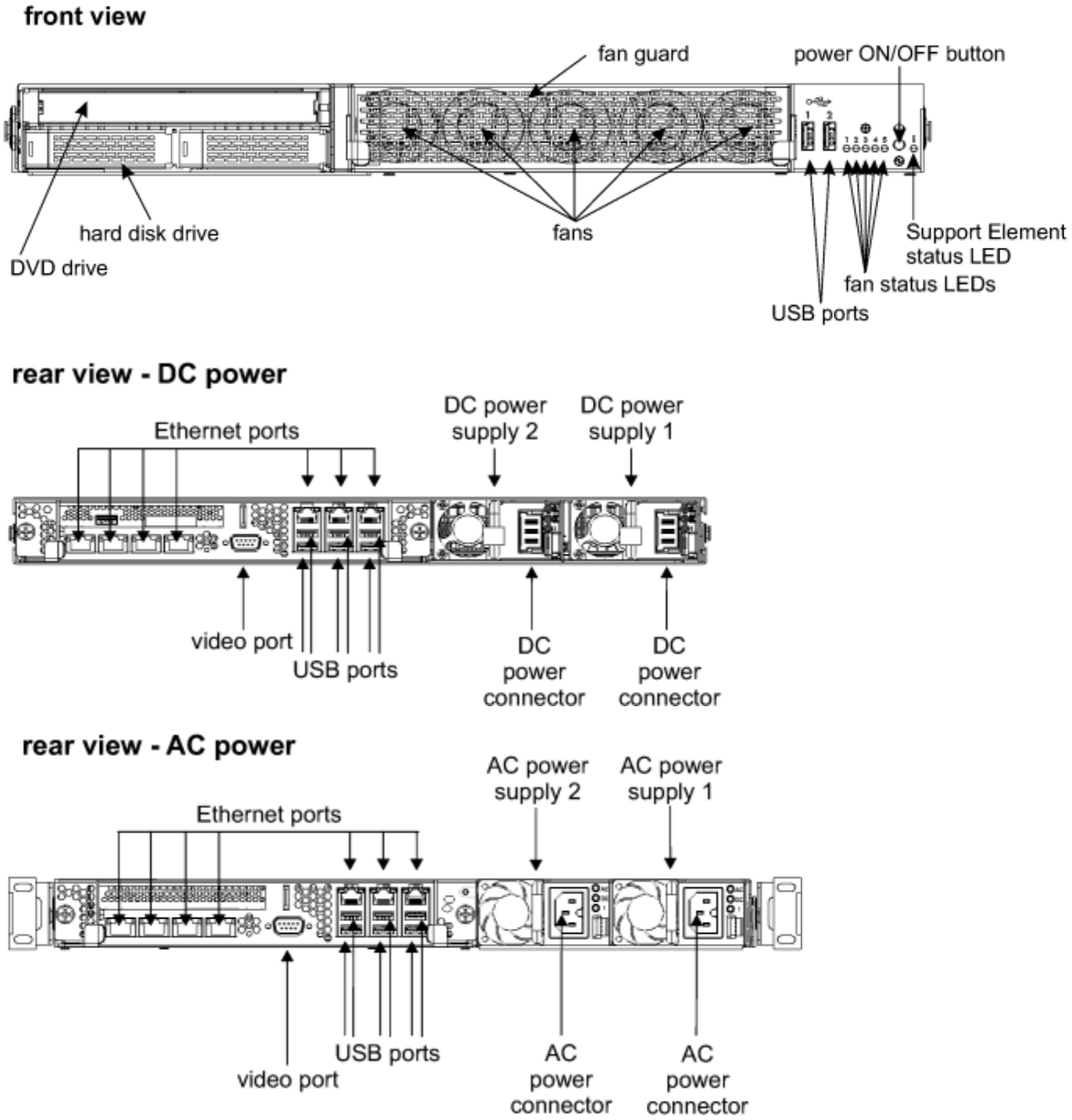


Figure 1. 2461-SE1 and 2461-SE2 Support Element - front and rear views

Support Element components (2461-SE3)

Figure 2 on page 3 shows the components located in the front and rear of the 2461 Support Element.

Note: You may encounter two different 2461 hard disk drives in the field with two different door styles. The most common is the original, 3.5-inch hard disk drive (found on 2461-SE3 and some 2461-SE4 Support Elements), with a rectangular latch for opening the hard disk drive door. The other is a 2.5-inch hard disk drive (found on some 2461-SE4 Support Elements) that provides a round slide mechanism for opening the hard disk drive door. For more information, refer to "What you should know before exchanging any component (2461-SE3 and 2461-SE4)" on page 7.

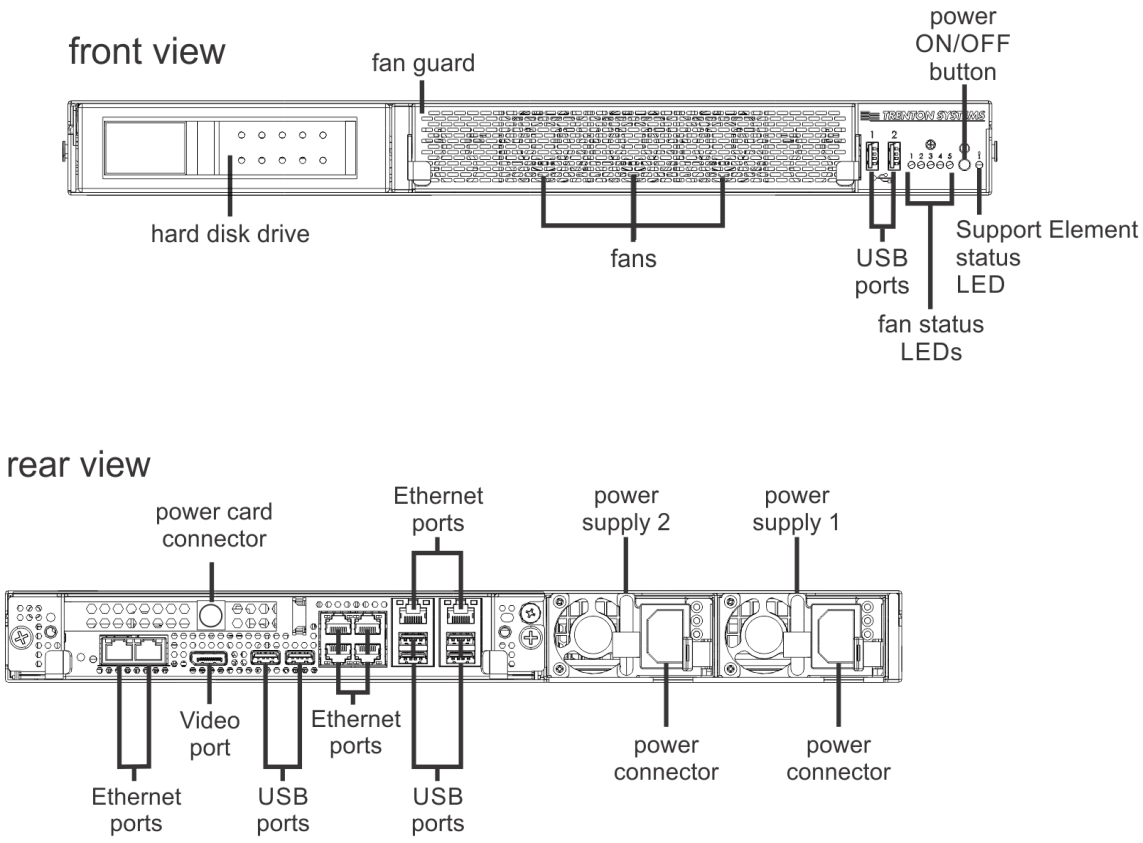


Figure 2. 2461-SE3 Support Element - front and rear views

2461 Support Element features and specifications

2461-SE1 and 2461-SE2

Table 2. 2461 Support Element (2461-SE1 and 2461 SE2) features and specifications

CPU:	Environment:	Electrical input:
• 3.2 GHz Intel Xeon E3-1225 v3 **Memory:** • RAM: 32 GB • Type: DDR3, ECC • Slots: 4 • Supports: 32 GB **Optical drive:** • Slim-line DVD drive **Hard drive:** • 1 TB SATA hard drive **Video:** • AST2400 **Fans:** • Five front-removable hot-swap fans **Power supply:** • Two 900-watt AC (on the 3907 machine) Two 750-watt DC (on the 3906 machine) Two 750-watt DC (on the z13s machine) Two 750-watt DC (on the z13 machine) **Integrated function:** • Six Intel l350 Ethernet ports • One Intel l210 management Ethernet port • Eight USB ports	**Operating:** • Temperature: 5°C - 50°C (41°F - 122°F) • Altitude: 3050 m (~10,000 ft) • Humidity: – Non-condensing: -12°C (10.4°F) dew point – Relative humidity: 8% - 93% **Storage (non-operating):** • Temperature: -40°C - 60°C (-40°F - 140°F) • Relative humidity: 5% - 100% **Air flow:** • 350LFM continuous airflow **Size:** • Height: 4.45 cm (1.75 in) • Depth: 71.12 cm (28.00 in) • Width: 48.26 cm (19 in) • Weight: approximately 15.97 kg (35.2 lb)	• Sine-wave input (47-63 Hz) required • Input voltage low range: – Minimum: 90 Vrms – Maximum: 137 Vrms • Input voltage high range: – Minimum: 180 Vrms – Maximum: 265 Vrms • Input kilovolt-amperes (kVA), approximately: – Minimum: 0.134 kVA – Maximum: 0.988 kVA

Support Element 2461-SE3/2461-SE4 and Hardware Management Appliance 2461-VA3 (FC 0129)/2461-SE4

Table 3. 2461 Support Element (2461-SE3 and 2461-SE4) and Hardware Management Appliance (2461-VA3 (FC 0129) and 2461-SE4) features and specifications

CPU:	Environment:	Electrical input:
• 3.3 GHz Intel Xeon E3-1225 v5 (2461-SE3) • 3.4 GHz Intel Xeon E-2226GE (2461-SE4) • 3.8 GHz Intel Xeon E3-1275 v6 (Hardware Management Appliance only - 2461-VA3) **Memory:** • RAM: – 32 GB (2461-SE3) – 64 GB (2461-SE4), Hardware Management Appliance (2461-VA3) • Type: DDR4, ECC • Slots: 4 • Supports: – 32 GB (2461-SE3) – 64 GB (2461-SE4), Hardware Management Appliance (2461-VA3) **Hard drive:** • 2 TB SATA hard drive **Video:** • AST2500 (2461-SE3, 2461-VA3) • AST2600 (2461-SE4) **Fans:** • Three front-removable hot-swap fans **Power supply:** • Two 900-watt AC (on the 8561, 3931, and 3932 machines) **Integrated functions:** • Six Intel l350 Ethernet ports • Two Intel l210 management Ethernet ports • Eight USB ports (USB 2.0 and USB 3.0)	**Operating:** • Temperature: 5°C - 50°C (41°F - 122°F) • Altitude: 3050 m (~10,000 ft) • Humidity: – Non-condensing: -12°C (10.4°F) dew point – Relative humidity: 8% - 93% **Storage (non-operating):** • Temperature: -40°C - 60°C (-40°F - 140°F) • Relative humidity: 5% - 100% **Air flow:** • 350LFM continuous airflow **Size:** • Height: 4.45 cm (1.75 in) • Depth: 71.12 cm (28.00 in) • Width: 48.26 cm (19 in) • Weight: approximately 15.97 kg (35.2 lb)	• Sine-wave input (47-63 Hz) required • Input voltage low range: – Minimum: 90 Vrms – Maximum: 137 Vrms • Input voltage high range: – Minimum: 180 Vrms – Maximum: 265 Vrms • Input kilovolt-amperes (kVA), approximately: – Minimum: 0.134 kVA – Maximum: 0.988 kVA

What you should know before exchanging any component (2461-SE1 and 2461-SE2)

Before exchanging any component, you should be aware of the following:

- The **SERVMODE** default password is no longer supported. You must obtain the current password from the customer to continue logging in.
- When moving the 2461 1U hardware or the customer frame in which it is installed, you must uninstall the 2461 1U hardware from the frame and package/ship the 2461 server separately. If the original packaging for the 2461 server is unavailable, you must remove the PSUs from the 2461 server and package/ship the PSUs separately.
- When replacing the entire 2461 Support Element, you must remove the power supplies and the rails from the defective 2461 Support Element and install them on the replacement 2461 Support Element.

  Also, before removing the entire 2461 Support Element from the frame, remove the system board power supplies, and hard disk drive to reduce its weight.
- The 2461 Support Element on the 3907 machine (IBM z14® Model ZR1) supports AC power. The 2461 Support Element on the 3906 machine (z14 Models M01, M02, M03, M04, or M05) supports DC power. The 2461 Support Element on the z13s machine and z13 machine support DC power.
- The field stock for the system board will be only the system board and battery. The repair action for the system board will require the service representative to swap the DIMMs and the Smart Card Reader.
- Ensure that service is being performed on the alternate 2461 Support Element. If the suspect 2461 Support Element is the primary 2461 Support Element, review the "Switching Support Elements" information in the *z13s Service Guide*, the *z13 Service Guide*, the *3906 Service Guide*, or the *3907 Service Guide* to perform a concurrent switch that makes the suspect 2461 Support Element the logical alternate 2461 Support Element.
- Before starting the repair, ensure that "Service Status" is enabled. This prevents the primary 2461 Support Element, if available, from performing recovery actions to power cycle the alternate 2461 Support Element. Service Status prevents the primary 2461 Support Element from reporting any errors due to the alternate being unavailable.
- Before replacing any parts on the 2461 Support Element, you must start the R&V **Perform a Repair Action** task on the primary Support Element using the location of the defective part. This task guides you through the proper preparation before exchanging the part. The R&V information then directs you to return to the instructions in this document to remove and replace the part.
- When replacing the system board (on a 2461-SE1) or when replacing the system battery or whole server (on a 2461-SE1 or 2461-SE2), the service representative must review, and possibly change, some of the configuration settings.

  If you are replacing the system board on a 2461-SE2 or 2461-TW2, no configuration changes are needed.

  The remove and repair steps provide information on how to review or change the necessary configuration settings. A complete list of configuration settings is available in Appendix B, “2461 configuration,” on page 151.
- When replacing the system board or system battery on the 2461-SE2 or when replacing the hard disk drive or whole server on the 2461-SE1 or 2461-SE2, the service representative must review the hard disk reload information.

  This information is available in Appendix A, “Reloading the hard disk drive,” on page 139. You will be directed to the information in the remove and repair steps.

  Note: When replacing the system board or system battery on the 2461-SE1, you do not have to reload the hard disk drive.
- Before removing any component, make sure a replacement component is available.

What you should know before exchanging any component (2461-SE3 and 2461-SE4)

Before exchanging any component, you should be aware of the following:

- After replacing a Whole Unit SE (2461-SE4) that will be used as a Hardware Management Appliance, the SSR must apply one of the labels (PN 03FM722), provided in the FRU kit, to identify the HMC and SE ports. The label must be applied to the front and right side of the 2461-SE4, immediately above the USB ports.
- After replacing a Whole Unit SE (2461-SE4) that will be used as a Support Element only, do not apply a label (PN 03FM722). Instead, leave the labels in the FRU kit and return them with the defective unit.
- The hard disk drive door of the 2461 Support Element includes a release latch for opening it. This latch is made of plastic and can break easily if excessive force is applied. For more information, and instructions on opening the disk drive door correctly, see "Opening the 3.5-inch disk drive door properly (2461-SE3 and 2461-SE4)" on page 8. If the release latch is broken, contact your next level of support to get a repair kit. For repair instructions, see "Hard disk drive: Replace the hard disk drive door release latch" on page 138 .

  Note: A broken release latch has no impact on the operation of the hard disk drive. Until the repair is made, close the door and continue using the hard disk drive.
- You may encounter two different 2461-SE4 hard disk drives in the field with two different door styles. The most common is the original, 3.5-inch hard disk drive (found on 2461-SE3 and some 2461-SE4 Support Elements), with a rectangular latch for opening the hard disk drive door. The other is a 2.5-inch hard disk drive (found on some 2461-SE4 Support Elements) that provides a round slide mechanism for opening the hard disk drive door. For more information about how to distinguish the 3.5-inch and 2.5-inch hard disk drive doors from each other, and how to open the 2.5-inch hard disk drive, refer to "Opening the 2.5-inch hard disk drive (2461-SE4)" on page 8.
- The default **SERVICE** user ID no longer uses a default password. It is now the responsibility of the customer to set and maintain a unique password for the default **SERVICE** user ID and to provide the password to the SSR upon their arrival for a service call. Before the service call, the SSR must contact the customer to arrange how they will receive the password. Note that the customer can also create a different user ID for servicing, using the **SERVICE** user role. In that case, the customer must provide the SSR with the new user ID as well as the password.
- When moving the 2461 1U hardware or the customer frame in which it is installed, you must uninstall the 2461 1U hardware from the frame and package/ship the 2461 server separately. If the original packaging for the 2461 server is unavailable, you must remove the PSUs from the 2461 server and package/ship the PSUs separately.
- The compact keyboard/monitor/mouse (compact KMM) is used by service representatives to perform problem isolation and repair actions on the 2461-SE3 and 2461-SE4 Support Element. The compact KMM is shipped inside the server's KMM storage box and must be installed before servicing can begin.

  If the compact KMM is not installed on the system that you are servicing, see *Preparing the KMM unit* in the *3932 Single Frame Service Guide* (GC28-7042) or the *z16 Rack Mount Bundle Service Guide* (GC28-7037) for installation instructions. This includes information about temporarily removing the optional Earthquake Kit feature hardware, if installed on the system, to allow the compact KMM hardware to be installed.
- Before removing the entire 2461 Support Element from the frame, remove the system board and power supplies to reduce its weight.
- The 2461 Support Element on the IBM z16 machine supports AC power.
- The field stock for the system board will be only the system board and battery. The repair action for the system board will require the service representative to swap the DIMMs and the Smart Card Reader.
- Ensure that service is being performed on the alternate 2461 Support Element. If the suspect 2461 Support Element is the primary 2461 Support Element, review the **Switching Support Elements**

information in the *3932 Single Frame Service Guide* (GC28-7042) or the *Rack Mount Bundle Service Guide* (GC28-7037) to perform a concurrent switch that makes the suspect 2461 Support Element the logical alternate 2461 Support Element.

- Before starting the repair, ensure that **Service Status** is enabled. This prevents the primary 2461 Support Element, if available, from performing recovery actions to power cycle the alternate 2461 Support Element. Service Status prevents the primary 2461 Support Element from reporting any errors due to the alternate being unavailable.
- Before replacing any parts on the 2461 Support Element, you must start the R&V **Perform a Repair Action** task on the primary Support Element using the location of the defective part. This task guides you through the proper preparation before exchanging the part. The R&V information then directs you to return to the instructions in this document to remove and replace the part.
- When replacing the system board, hard drive, or whole server on the 2461-SE3 or 2461-SE4, the service representative must review the hard disk reload information, which is available in Appendix A, "Reloading the hard disk drive," on page 139. You will be directed to the information in the remove and repair steps.
- Before removing any component, make sure a replacement component is available.

Locking USB cables

Some of the USB cables that are provided with the UPG FRU kits in this document use *positive retention* to prevent them from becoming accidentally dislodged from their connectors during operation. However, this also prevents you from simply pulling the USB cable out when you want to intentionally remove it. To remove a locking USB cable, press and hold the buttons on both sides of the USB cable plug as you pull it out of the connector.

Opening the 3.5-inch disk drive door properly (2461-SE3 and 2461-SE4)

You may encounter two different 2461 hard disk drives in the field with two different door styles. The most common is the original, 3.5-inch hard disk drive (found on 2461-SE3 and some 2461-SE4 Support Elements), with a rectangular latch for opening the hard disk drive door. The other is a 2.5-inch hard disk drive (found on some 2461-SE4 Support Elements) that provides a round slide mechanism for opening the hard disk drive door. This section addresses how to open the 2461-SE3 and 2461-SE4 **3.5-inch** hard disk drive door properly. For an illustration that shows both hard disk drive door styles, see "Opening the 2.5-inch hard disk drive (2461-SE4)" on page 8.

The door of the 3.5-inch disk drive of the 2461-SE3 and 2461-SE4 Support Elements includes a release latch for opening it. This latch is made of plastic and can break easily if excessive force is applied. To open the hard disk drive door properly, follow the steps below.

1. Use the index finger of your right hand to release the disk drive door latch.
2. Open the door to approximately 15 degrees, then **STOP**.
3. Use two fingers of your left hand to gently push the disk drive door open to 90 degrees.
4. When the door is open 90 degrees, the disk drive opens.

Note that a replacement for the 3.5-inch hard disk drive door latch is now available. For information on replacing a broken door latch, see "Hard disk drive: Replace the hard disk drive door release latch" on page 138.

Opening the 2.5-inch hard disk drive (2461-SE4)

This section describes how to open and close the 2.5-inch hard disk drive. For information about servicing the 2.5-inch hard disk drive, refer to the **Repair & Verify** online instructions.

The 3.5-inch hard disk drive has been replaced on some 2461-SE4 Support Elements by an updated, 2.5-inch hard disk drive. The 3.5-inch and 2.5-inch hard disk drives have different style doors and door latches. You can identify the 3.5-inch hard disk drive by the rectangular latch release on its door, as opposed to the round slide button latch release on the 2.5-inch hard drive door.

Opening the 2.5-inch hard disk drive door:

Note: For instructions on opening the 3.5-inch hard disk drive door, see "Opening the 3.5-inch disk drive door properly (2461-SE3 and 2461-SE4)" on page 8.

To open or close the 2.5-inch hard disk drive door, follow the steps below.

Note: The metal faceplate should remain in place (over the hard disk drive door) at all times, except for servicing.

1. Remove the metal faceplate that covers the hard disk drive, as follows:
   a. Using your fingers, turn both captive screws on the faceplate to the left to loosen them.
   b. Grasp the two captive screws and pull the faceplate away from the Support Element chassis (toward you).
2. Place the hard disk drive door lock in the *open* position by pushing the sliding lock button downward.
3. Using your index finger, push the round slide latch to the left. The door slightly opens when the hard disk drive door latch releases it.
4. Gently swing the door to the right to open it and to release the drive. Carefully pull the drive out.

Closing the 2.5-inch hard disk drive door:

1. Gently slide the disk into the hard drive until you feel some resistance. **Do not** force the hard disk drive into the SE.
2. Carefully swing the door to the left to seat the drive and close the door. Make sure you hear an audible click and feel the door latch engage. If necessary, push the round slide button to the right.
3. Place the hard disk drive door lock in the *lock* position by pushing the sliding lock button upward.
4. Place the metal faceplate over the hard disk drive bezel and push it inward until it sits securely in place and is flush with the outside of the SE's chassis.
5. Using your fingers, tighten the captive screws by turning them to the right.

Chapter 2. Parts list

This chapter lists the replaceable components and power cords that are available for the 2461 Support Element. Refer to the appropriate section:

Replaceable parts (Support Element 2461-SE1 and 2461-SE2)

The following figures and tables (Table 4 on page 12, Table 5 on page 13, and Table 10 on page 18) identify the replaceable parts on the 2461 Support Element ((SE1 and SE2).

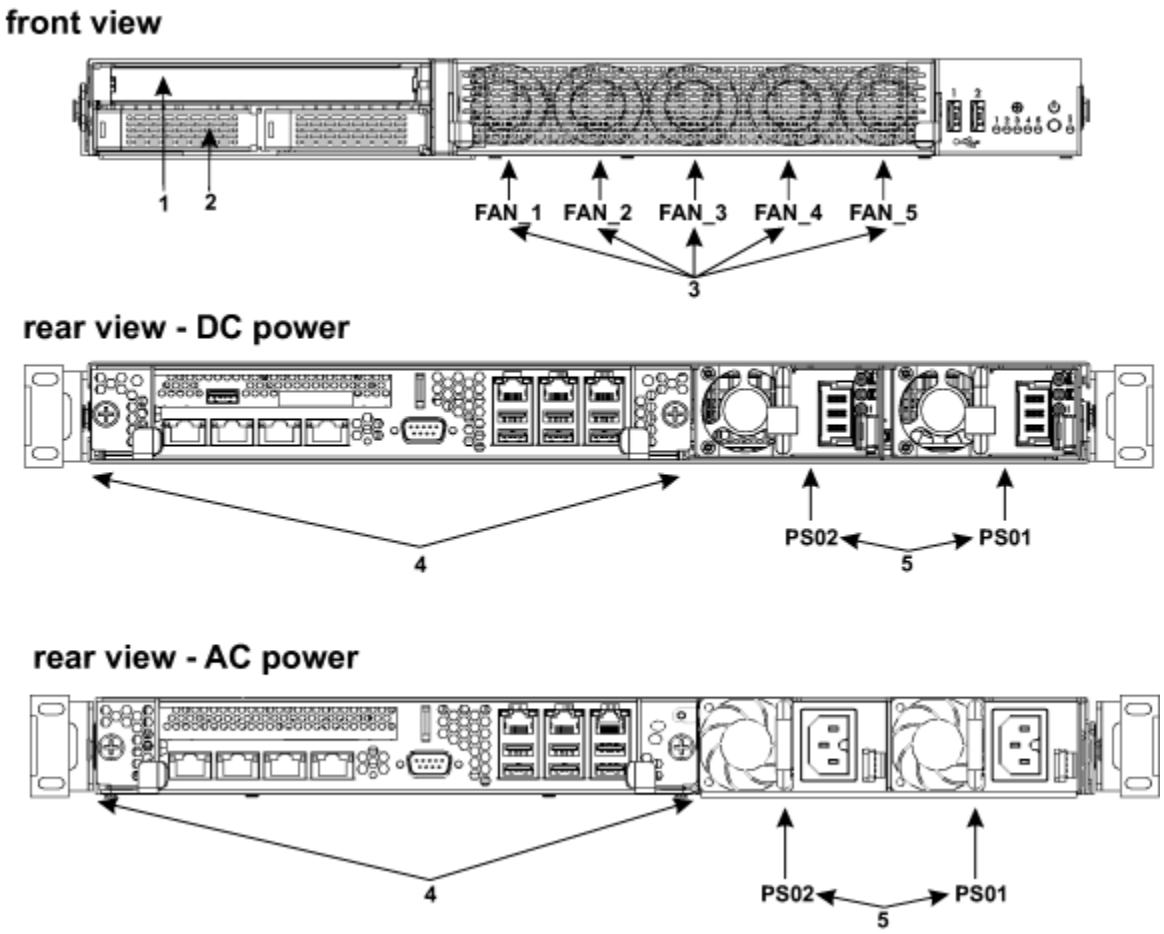


Figure 3. 2461 Support Element - replaceable FRUs and FRU locations

Table 4. Front and rear replaceable FRUs

Index	Description	FRU location
1	DVD (1)	A41_OPTICAL_DRIVE A42_OPTICAL_DRIVE
2	hard disk drive (1)	A41C_FIXED_DISK A42C_FIXED_DISK
3	individual fans (5)	A41C_FAN_1 A42C_FAN_1 A41C_FAN_2 A42C_FAN_2 A41C_FAN_3 A42C_FAN_3 A41C_FAN_4 A42C_FAN_4 A41C_FAN_5 A42C_FAN_5

Table 4. Front and rear replaceable FRUs (continued)		
Index	**Description**	**FRU location**
4	system board (1)	A41CSBC1 A42CSBC1
5	AC power supply (2) - for the 3907 machine or DC power supply (2) - for the 3906, z13s, and z13 machines	A41CPS01 A42CPS01 A41CPS02 A42CPS02

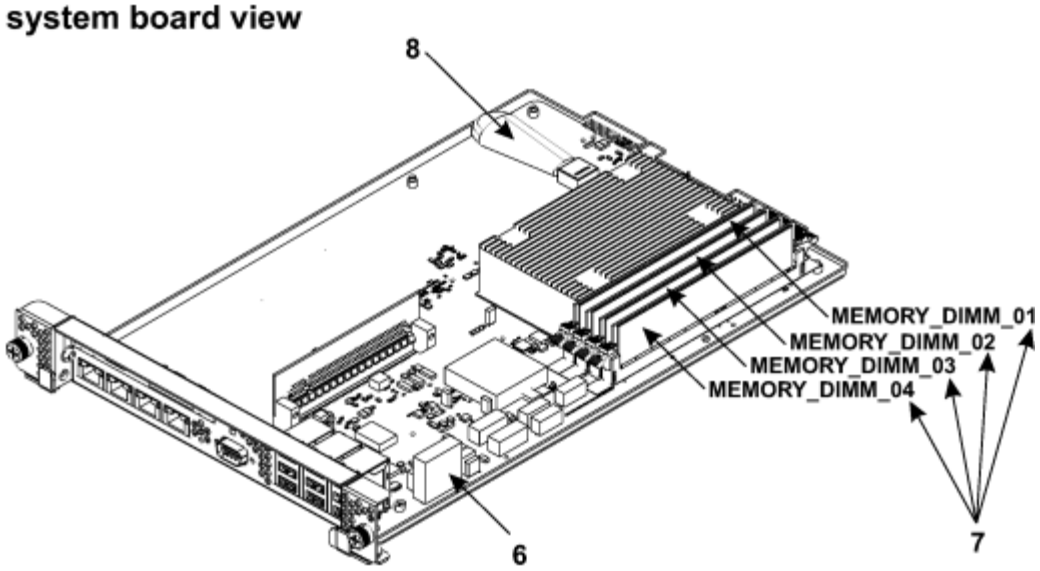


Figure 4. System board - replaceable FRU and FRU locations

Table 5. System board replaceable FRUs		
Index	**Description**	**FRU location**
6	battery (1)	A41C_BATTERY A42C_BATTERY
7	DIMMs (4)	A41C_MEMORY_DIMM_01 A42C_MEMORY_DIMM_01 A41C_MEMORY_DIMM_02 A42C_MEMORY_DIMM_02 A41C_MEMORY_DIMM_03 A42C_MEMORY_DIMM_03 A41C_MEMORY_DIMM_04 A42C_MEMORY_DIMM_04
8	Smart Card Reader (1)	A41C_SMART_CARD_RDR A42C_SMART_CARD_RDR

front view

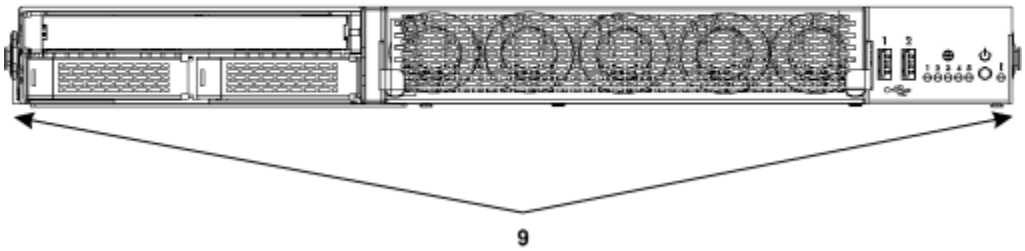


Table 6. 2461 Support - full-replacement FRU		
Index	**Description**	**FRU location**
9	2461 Support Element (2) - whole unit chassis	A41CWHU1 A42CWHU1

Replaceable parts (Support Element 2461-SE3, 2461-SE4, and Hardware Management Appliance 2461-VA3 (FC 0129)/2461-SE4)

The figures and tables in this section identify the replaceable parts on the Support Element (2461-SE3 and 2461-SE4), as well as the Hardware Management Appliance (2461-VA3 (FC 0129) with the Support Element 2461-SE4).

Note: You may encounter two different 2461 hard disk drives in the field with two different door styles. The most common is the original, 3.5-inch hard disk drive (found on 2461-SE3, 2461-VA3, and some 2461-SE4 Support Elements), with a rectangular latch for opening the hard disk drive door. The other is a 2.5-inch hard disk drive (found on some 2461-SE4 Support Elements) that provides a round slide mechanism for opening the hard disk drive door. For more information, refer to "What you should know before exchanging any component (2461-SE3 and 2461-SE4)" on page 7.

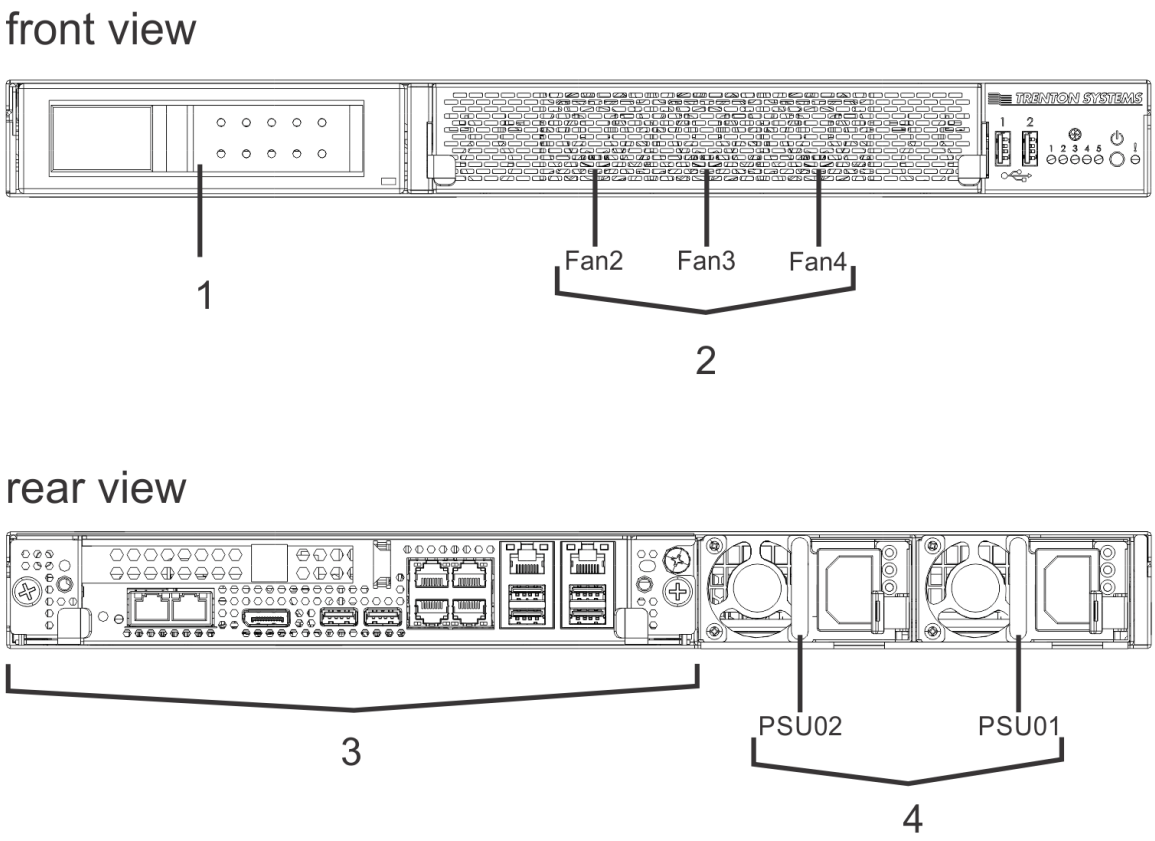


Figure 5. 2461 Support Element and Hardware Management Appliance - replaceable FRUs and FRU locations

Table 7. Front and rear replaceable FRUs

Index	Description	FRU location	FRU PN (2461-SE3)	FRU PN (2461-SE4)
1	hard disk drive (1)	A41C_FIXED_DISK A42C_FIXED_DISK	00RY859	02RA048

Table 7. Front and rear replaceable FRUs (continued)				
Index	**Description**	**FRU location**	**FRU PN (2461-SE3)**	**FRU PN (2461-SE4)**
2	individual fans (3)	A41C_FAN_2 A42C_FAN_2 A41C_FAN_3 A42C_FAN_3 A41C_FAN_4 A42C_FAN_4	00RY463	00RY463
3	system board (1)	A41CSBC1 A42CSBC1	02RA224	03GN362
4	AC power supply (2)	A41CPS01 A42CPS01 A41CPS02 A42CPS02	02CL822	03FP372

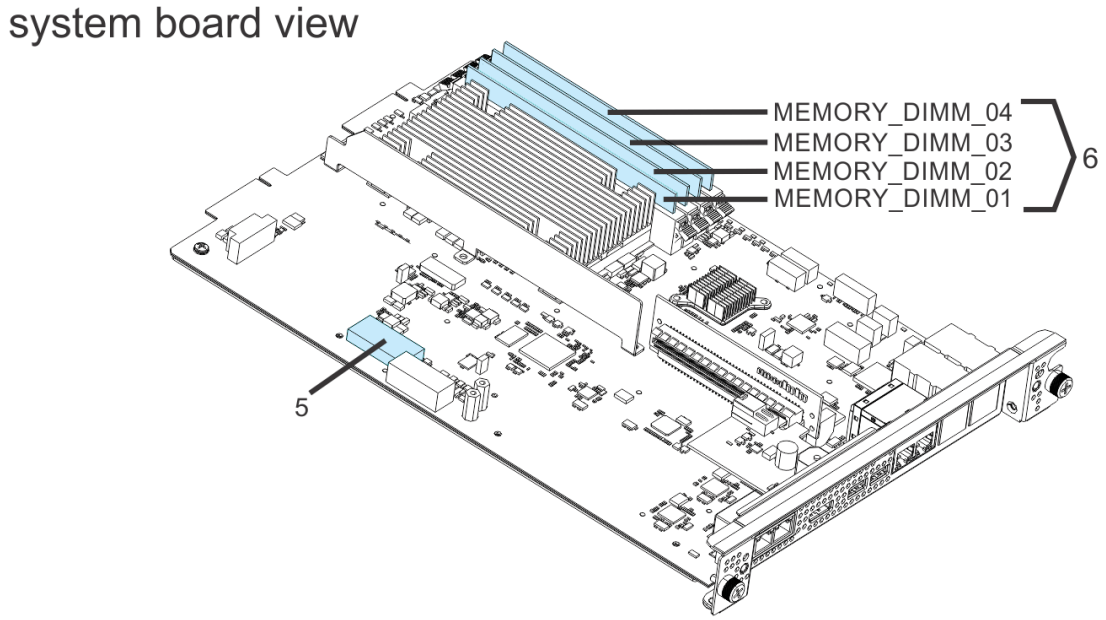


Figure 6. System board - replaceable FRUs and FRU locations (battery and DIMMs)

Note: The preceding graphic shows the system board for the 2461-SE4. The system board for the 2461-SE3 is slightly different.

Table 8. System board replaceable FRUs (battery and DIMMs)				
Index	**Description**	**FRU location**	**FRU PN (2461-SE3)**	**FRU PN (2461-SE4)**
5	battery (1)	A41C_BATTERY A42C_BATTERY	00RY543	00RY543

Table 8. System board replaceable FRUs (battery and DIMMs) (continued)				
Index	**Description**	**FRU location**	**FRU PN (2461-SE3)**	**FRU PN (2461-SE4)**
6	DIMMs (4)	A41C_MEMORY_DIMM_01 A42C_MEMORY_DIMM_01 A41C_MEMORY_DIMM_02 A42C_MEMORY_DIMM_02 A41C_MEMORY_DIMM_03 A42C_MEMORY_DIMM_03 A41C_MEMORY_DIMM_04 A42C_MEMORY_DIMM_04	00RY857	03FM804

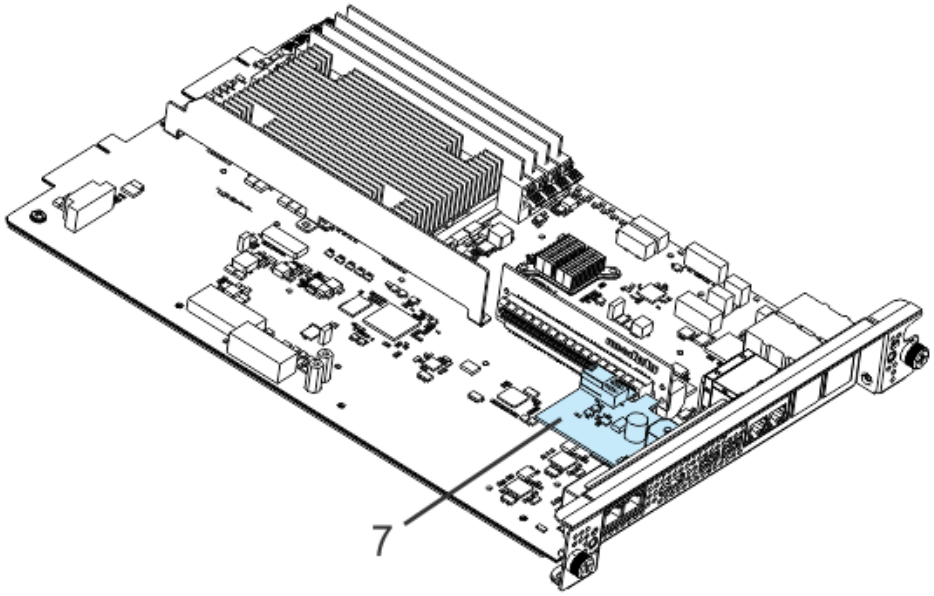


Figure 7. System board - replaceable power card FRU

Table 9. System board replaceable power card FRU				
Index	**Description**	**FRU location**	**FRU PN (2461-SE3)**	**FRU PN (2461-SE4)**
7	Power card (1) - 1U only	A41C_POWER_CARD A42C_POWER_CARD	00RY858	00RY858

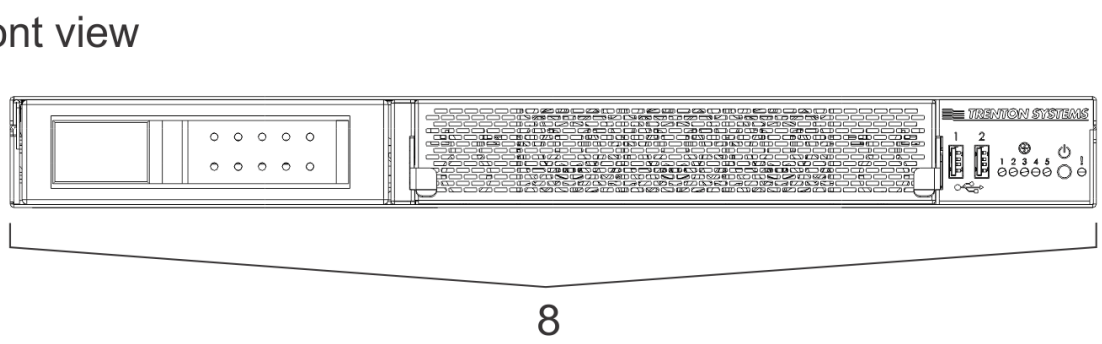


Figure 8. 2461 chassis - front view

Table 10. 2461 Support Element - full-replacement FRU				
Index	**Description**	**FRU location**	**FRU PN (2461-SE3)**	**FRU PN (2461-SE4**
8	2461 Support Element (2) - whole unit chassis	A41CWHU1 A42CWHU1	02RA223	03GN364

Chapter 3. Troubleshooting

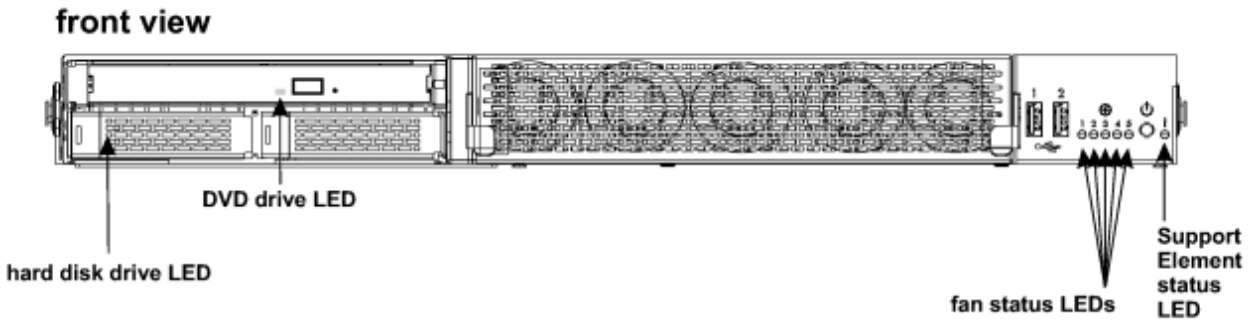
This chapter describes troubleshooting information to help you solve problems that might occur in the 2461 Support Element.

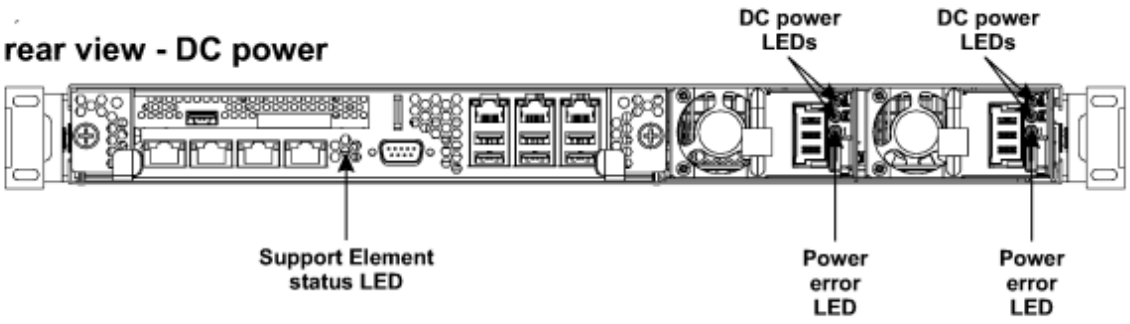
Symptoms and corrective actions (2461-SE1 and 2461-SE2)

This section contains troubleshooting information for the 2461-SE1 and 2461-SE2. For troubleshooting information for the 2461-SE3, 2461-VA3, and 2461-SE4 (on non-rack mount configurations), see “Symptoms and corrective actions (2461-SE3, 2461-VA3, and 2461-SE4)” on page 47. For troubleshooting information for the 2461-SE4 on rack mount configurations, see “Symptoms and corrective actions (2461-VA3 and 2461-SE4 on rack mount configurations)” on page 65.

Notes:

- The term *reseat* in the following tables means to follow the procedure as if you were going to replace the part, but you are just reinstalling the same part.
- As you go through the troubleshooting steps in this section, for each step that requires you to replace a FRU, proceed with either of the following:
  - Continue the repair with a different FRU if you have one by continuing to the appropriate step.
  - Delay the repair until this FRU is available.





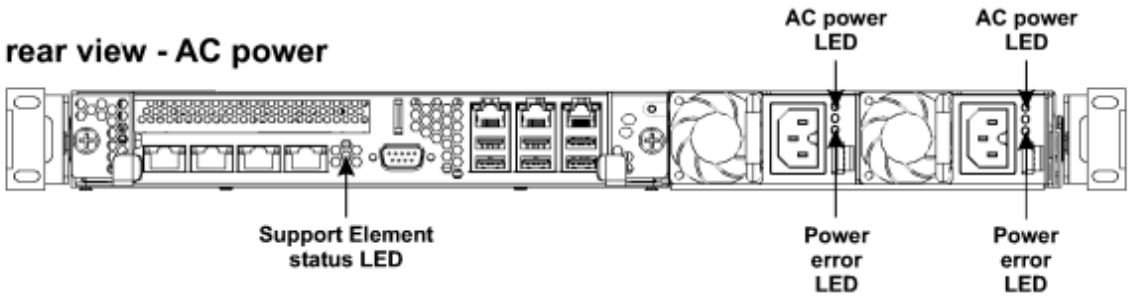


Table 11. Symptoms and corrective actions (2461-SE1 and 2461-SE2)	
Symptoms	**Corrective actions**
A - The 2461 Support Element does not power up	**Step 1 --** Using the information in “DC and AC power LEDs (2461-SE1 and 2461-SE2)” on page 81, check the LEDs on one of the power supplies on the rear of the 2461 Support Element. **a --** If the power input LED is not lit (indicating no power), go to Step 2. **b --** If the power supply error LED is lit (indicating power supply is defective), go to Step 5. **c --** If the power LED is lit and the power supply error LED is not lit (indicating normal operation) and you have only checked one power supply, repeat Step 1a - Step 1c for the other power supply. Otherwise, go to Step 6.
	Step 2 -- Verify with the customer that there is power at the source. Is there power at the source? • Yes ... Go to Step 3. • No ... Have the customer correct the power at the source. Did the 2461 Support Element power up? – Yes ... done – No ... Go to Step 3.
	Step 3 -- Check the power cords. Are the power cords connected at both ends? • Yes ... Disconnect the power cords and check both ends of the power cords to ensure they are not damaged. Are any power cord ends damaged? – Yes ... Go to Step 4. – No ... Connect the power cords, and go to Step 5. • No ... Check both ends of the power cords to ensure they are not damaged. Are any power cord ends damaged? – Yes ... Go to Step 4. – No ... Connect the power cords. Did the 2461 Support Element power up? - Yes ... done - No ... Go to Step 5.
	Step 4 -- Replace the damaged power cord. Did the 2461 Support Element power up? • Yes ... done • No ... Go to Step 5.
	Step 5 -- Reseat the power supplies. Did the 2461 Support Element power up? • Yes ... done • No ... Go to Step 6.

Table 11. Symptoms and corrective actions (2461-SE1 and 2461-SE2) (continued)	
Symptoms	**Corrective actions**
A - The 2461 Support Element does not power up (... continued)	**Step 6 --** If new power supplies are available, replace the existing power supplies with the new power supplies using the information in the online **Repair & Verify** panels. Did the 2461 Support Element power up? • Yes ... done • No ... Reinstall the original power supplies using the information in the online **Repair & Verify** panels, then go to Step 7. If new power supplies are not available, proceed with one of the following: • Continue the repair with a different FRU if you have one. Go to Step 7. • Delay the repair until this FRU is available. When available, replace the power supplies using the information in the online **Repair & Verify** panels. Did the 2461 Support Element power up? – Yes ... done – No ... Reinstall the original power supplies using the information in the online **Repair & Verify** panels, then go to Step 7.
	Step 7 -- If a new system board is available, replace the existing system board with the new system board using the information in the online **Repair & Verify** panels. Did the 2461 Support Element power up? • Yes ... done • No ... Reinstall the original system board using the information in the online **Repair & Verify** panels, then go to Step 8. If a new system board is not available, proceed with one of the following: • Continue the repair with a different FRU if you have one. Go to Step 8. • Delay the repair until this FRU is available. When available, replace the system board using the information in the online **Repair & Verify** panels. Did the 2461 Support Element power up? – Yes ... done – No ... Reinstall the original system board using the information in the online **Repair & Verify** panels, then go to Step 8.
	Step 8 -- Order a replacement 2461 Support Element and replace the entire 2461 Support Element using the information in the online **Repair & Verify** panels.

Table 11. Symptoms and corrective actions (2461-SE1 and 2461-SE2) (continued)

Symptoms	Corrective actions
B - The 2461 Support Element will not boot up	**Step 1 --** Check the hard disk drive LED. Is the hard disk drive LED blinking? • Yes ... Do you see hard disk errors during the boot sequence? – Yes ... Go to section C, then return here. – No ... Go to Step 3. • No ... Go to Step 2.
	Step 2 -- Reseat the hard disk drive. Did the 2461 Support Element boot up? • Yes ... done • No ... Go to Step 3.
	Step 3 -- If a new hard disk drive is available, replace the existing hard disk drive with the new hard disk drive using the information in the online **Repair & Verify** panels. Did the 2461 Support Element boot up? • Yes ... done • No ... Reinstall the original hard disk drive using the information in the online **Repair & Verify** panels., then go to Step 4. If a new hard disk drive is not available, proceed with one of the following • Continue the repair with a different FRU if you have one. Go to Step 4. • Delay the repair until this FRU is available. When available, replace the hard disk drive using the information in the online **Repair & Verify** panels. Did the 2461 Support Element boot up? – Yes ... done – No ... Reinstall the original hard disk drive using the information in the online **Repair & Verify** panels., then go to Step 4.
	Step 4 -- Ensure each memory DIMM is seated properly using the information in the online **Repair & Verify** panels. Did the 2461 Support Element boot up? • Yes ... done • No ... Go to Step 5.

Table 11. Symptoms and corrective actions (2461-SE1 and 2461-SE2) (continued)	
Symptoms	**Corrective actions**
B - The 2461 Support Element will not boot up (... continued)	**Step 5 --** If a new memory DIMM is available, starting with memory DIMM_01, replace the original memory DIMM using the information in the online **Repair & Verify** panels. Did the 2461 Support Element boot up? • Yes ... done • No ... Reinstall the original memory DIMM back into its original connector using the information in the online **Repair & Verify** panels. If you have not replaced all of the original memory DIMMs yet, repeat Step 2 to replace one of the other original memory DIMMs. Otherwise, go to Step 6. If a new memory DIMM is not available, proceed with one of the following: • Continue the repair with a different FRU if you have one. Go to Step 6. • Delay the repair until this FRU is available. When available, replace the memory DIMM using the information in the online **Repair & Verify** panels. Did the 2461 Support Element boot up? – Yes ... done – No ... Reinstall the original memory DIMM back into its original connector using the information in the online **Repair & Verify** panels.. If you have not replaced all of the original memory DIMMs yet, repeat Step 2 to replace one of the other original memory DIMMs. Otherwise, go to Step 6.
	Step 6 -- If a new system board is available, replace the existing system board with the new system board using the information in the online **Repair & Verify** panels. Did the 2461 Support Element boot up? • Yes ... done • No ... Reinstall the original system board using the information in the online **Repair & Verify** panels, then go to Step 7. If a new system board is not available, proceed with one of the following: • Continue the repair with a different FRU if you have one. Go to Step 7. • Delay the repair until this FRU is available. When available, replace the system board using the information in the online **Repair & Verify** panels. Did the 2461 Support Element boot up? – Yes ... done – No ... Reinstall the original system board using the information in the online **Repair & Verify** panels, then go to Step 7.
	Step 7 -- Order a replacement 2461 Support Element and replace the entire 2461 Support Element using the information in the online **Repair & Verify** panels.

Table 11. Symptoms and corrective actions (2461-SE1 and 2461-SE2) (continued)

Symptoms	Corrective actions
C - You are receiving hard drive errors	**Step 1 --** If a new hard disk drive is available, replace the existing hard disk drive with the new hard disk drive using the information in the online **Repair & Verify** panels. Are you still receiving hard drive errors? • Yes ... Reinstall the original hard disk drive using the information in the online **Repair & Verify** panels, then go to Step 2. • No ... done If a new hard disk drive is not available, proceed with one of the following: • Continue the repair with a different FRU if you have one. Go to Step 2. • Delay the repair until this FRU is available. When available, replace the hard disk drive using the information in the online **Repair & Verify** panels. Are you still receiving hard drive errors? – Yes ... Reinstall the original hard disk drive using the information in the online **Repair & Verify** panels, then go to Step 2. – No ... done
	Step 2 -- If a new system board is available, replace the existing system board with the new system board using the information in the online **Repair & Verify** panels. Are you still receiving hard drive errors? • Yes ... Reinstall the original system board using the information in the online **Repair & Verify** panels, then go to Step 3. • No ... done If a new system board is not available, proceed with one of the following: • Continue the repair with a different FRU if you have one. Go to Step 3. • Delay the repair until this FRU is available. When available, replace the system board using the information in the online **Repair & Verify** panels. Are you still receiving hard drive errors? – Yes ... Reinstall the original system board using the information in the online **Repair & Verify** panels, then go to Step 3. – No ... done
	Step 3 -- Replace the entire 2461 Support Element using the information in the online **Repair & Verify** panels.

Table 11. Symptoms and corrective actions (2461-SE1 and 2461-SE2) (continued)

Symptoms	Corrective actions
D - DVD tray will not eject	**Step 1 --** Check the DVD light. Is the DVD light on? • Yes ... Go to Step 2. • No ... Go to Step 3.
	Step 2 -- Log onto the console to check if there is a running task still accessing the DVD or if a task has failed. Does the task appear to be hung? • Yes ... Shutdown and then restart the 2461 Support Element. Will the DVD tray eject now? – Yes ... done – No ... Go to Step 3. • No ... Go to Step 3.
	Step 3 -- Insert the end of a straightened paper clip into the manual tray-release opening (a hole located to the right of the eject button on the DVD drive). Will the DVD tray eject now? • Yes ... done • No ... Go to Step 4.
	Step 4 -- Reseat the DVD drive. Will the DVD tray eject now? • Yes ... done • No ... Go to Step 5.
	Step 5 -- If a new DVD drive is available, replace the existing DVD drive with the new DVD drive using the information in the online **Repair & Verify** panels. Will the DVD tray eject now? • Yes ... done • No ... Reinstall the original DVD drive using the information in the online **Repair & Verify** panels, then go to Step 6. If a new DVD drive is not available, proceed with one of the following: • Continue the repair with a different FRU if you have one. Go to Step 6. • Delay the repair until this FRU is available. When available, replace the DVD drive using the information in the online **Repair & Verify** panels. Will the DVD tray eject now? – Yes ... done – No ... Reinstall the original DVD drive using the information in the online **Repair & Verify** panels, then go to Step 6.

Table 11. Symptoms and corrective actions (2461-SE1 and 2461-SE2) (continued)	
Symptoms	**Corrective actions**
D - DVD tray will not eject (... continued)	**Step 6 --** If a new system board is available, replace the existing system board with the new system board using the information in the online **Repair & Verify** panels. Will the DVD tray eject now? • Yes ... done • No ... Reinstall the original system board using the information in the online **Repair & Verify** panels, then go to Step 7. If a new system board is not available, proceed with one of the following: • Continue the repair with a different FRU if you have one. Go to Step 7. • Delay the repair until this FRU is available. When available, replace the system board using the information in the online **Repair & Verify** panels. Will the DVD tray eject now? – Yes ... done – No ... Reinstall the original system board using the information in the online **Repair & Verify** panels, then go to Step 7.
	Step 7 -- Replace the entire 2461 Support Element using the information in the online **Repair & Verify** panels.

Table 11. Symptoms and corrective actions (2461-SE1 and 2461-SE2) (continued)

Symptoms	Corrective actions
E - You are receiving DVD mount or read errors	**Step 1 --** Check the DVD media. Is it scratched or smudged on the underside? • Yes ... Clean the media or obtain a new one. Are you still receiving DVD mount or read errors? – Yes ... Go to Step 2. – No ... done • No ... Go to Step 2.
	Step 2 -- Reseat the DVD drive. Are you still receiving DVD mount or read errors? • Yes ... Go to Step 3. • No ... done
	Step 3 -- If a new DVD drive is available, replace the existing DVD drive with the new DVD drive using the information in the online **Repair & Verify** panels. Are you still receiving DVD mount or read errors? • Yes ... Reinstall the original DVD drive using the information in the online **Repair & Verify** panels, then go to Step 4. • No ... done If a new DVD drive is not available, proceed with one of the following: • Continue the repair with a different FRU if you have one. Go to Step 4. • Delay the repair until this FRU is available. When available, replace the DVD drive using the information in the online **Repair & Verify** panels. Are you still receiving DVD mount or read errors? – Yes ... Reinstall the original DVD drive using the information in the online **Repair & Verify** panels, then go to Step 4. – No ... done
	Step 4 -- If a new system board is available, replace the existing system board with the new system board using the information in the online **Repair & Verify** panels. Are you still receiving DVD mount or read errors? • Yes ... Reinstall the original system board using the information in the online **Repair & Verify** panels, then go to Step 5. • No ... done If a new system board is not available, proceed with one of the following: • Continue the repair with a different FRU if you have one. Go to Step 5. • Delay the repair until this FRU is available. When available, replace the system board using the information in the online **Repair & Verify** panels. Are you still receiving DVD mount or read errors? – Yes ... Reinstall the original system board using the information in the online **Repair & Verify** panels, then go to Step 5. – No ... done

Table 11. Symptoms and corrective actions (2461-SE1 and 2461-SE2) (continued)	
Symptoms	**Corrective actions**
E - You are receiving DVD mount or read errors (... continued)	**Step 5 --** Replace the entire 2461 Support Element using the information in the online **Repair & Verify** panels.
F - A fan LED is lit	**Step 1 --** Reseat the appropriate fan. Is the fan LED off? • Yes ... done • No ... Go to Step 2.
	Step 2 -- If a new fan is available, replace the existing fan with the new fan using the information in the online **Repair & Verify** panels. Is the fan LED off? • Yes ... done • No ... Reinstall the original fan using the information in the online **Repair & Verify** panels, then go to Step 3. If a new fan is not available, proceed with one of the following: • Continue the repair with a different FRU if you have one. Go to Step 3. • Delay the repair until this FRU is available. When available, replace the fan using the information in the online **Repair & Verify** panels. Is the fan LED off? – Yes ... done – No ... Reinstall the original fan using the information in the online **Repair & Verify** panels, then go to Step 3.
	Step 3 -- If a new system board is available, replace the existing system board with the new system board using the information in the online **Repair & Verify** panels. Is the fan LED off? • Yes ... done • No ... Reinstall the original system board using the information in the online **Repair & Verify** panels, then go to Step 4. If a new system board is not available, proceed with one of the following: • Continue the repair with a different FRU if you have one. Go to Step 4. • Delay the repair until this FRU is available. When available, replace the system board using the information in the online **Repair & Verify** panels. Is the fan LED off? – Yes ... done – No ... Reinstall the original system board using the information in the online **Repair & Verify** panels, then go to Step 4.
	Step 4 -- Replace the entire 2461 Support Element using the information in the online **Repair & Verify** panels.

Table 11. Symptoms and corrective actions (2461-SE1 and 2461-SE2) (continued)	
Symptoms	**Corrective actions**
G - On the 3906, the display is blank	**Step 1 --** Ensure the display power cable is connected properly. Is the display power cable connected? • Yes ... Go to Step 2. • No ... Connect the display power cable. Is the display working? – Yes ... done – No ... Go to Step 2.
	Step 2 -- Ensure the display VGA cable is connected properly to the display. Is the display VGA cable connected? • Yes ... Go to Step 3. • No ... Connect the display VGA cable to the display. Is the display working? – Yes ... done – No ... Go to Step 3.
	Step 3 -- Ensure the display VGA cable is connected properly to the Support Element. Is the display VGA cable connected? • Yes ... Go to Step 4. • No ... Connect the display VGA cable to the KVM. Is the display working? – Yes ... done – No ... Go to Step 4.
	Step 4 -- Replace and connect the display VGA cable. Is the display working? • Yes ... done • No ... Go to Step 5.
	Step 5 -- Replace and connect the display power cable. Is the display working? • Yes ... done • No ... Go to Step 6.
	Step 6 -- Replace the display and connect the display VGA cable and the display power cable. Is the display working? • Yes ... done • No ... Contact your next level of support.

Table 11. Symptoms and corrective actions (2461-SE1 and 2461-SE2) (continued)

Symptoms	Corrective actions
H - On the 3907, the display is blank	**Step 1 --** Ensure the display is not asleep (in power-saving mode). Press the Shift key or touch the touch pad. Is the display working? • Yes ... done. • No ... Go to Step 2.
	Step 2 -- Ensure the KMM power cable is properly connected to the KMM power supply and to the PDU. Is the KMM power cable connected properly? • Yes ... Go to Step 3. • No ... Connect the KMM power cable properly. Is the display working? – Yes ... done. – No ... Use the Shift key or the touch pad to ensure that the display is not asleep. Is the display working? - Yes ... done - No ... Go to Step 3.
	Step 3 -- Ensure that the display is getting power. Do either of the following, depending on the type of KMM that is installed in your system: • If you have a Vertiv KMM, press the power On/Off button on the display unit. Does the green, blue, or yellow LED illuminate? – Yes ... Input power is present. Go to Step 5. – No ... Go to Step 4. • If you have a UPG KMM, press the on-screen display button. Do you see the on-screen menu? – Yes ... Input power is present. Go to Step 5. – No ... Go to Step 4.
	Step 4 -- Move the KMM power cable from A21NPDU1.J04 to A21ZPDU2.J04. Is the display working? • Yes ... The KMM is OK. However, PDU1 is defective. Contact your next level of support to determine how to exchange PDU1. • No ... Use the Shift key or the touch pad to ensure that the display is not asleep. Is the display working? – Yes ... PDU1 is defective. Contact your next level of support to determine how to exchange PDU1. – No ... Move the KMM power cable back to A21NPDU1.J04 and go to Step 5.

Table 11. Symptoms and corrective actions (2461-SE1 and 2461-SE2) (continued)	
Symptoms	**Corrective actions**
H - On the 3907, the display is blank (... continued)	**Step 5 --** Do the following for both Support Elements. Ensure the three ends (the VGA cable end and the two USB cable ends) of the Support Element cable are connected properly to the Support Element. Are the three ends of each Support Element cable connected to its corresponding Support Element? • Yes ... Go to Step 6. • No ... Connect the three ends of the Support Element cable to the Support Element. Is the display working? – Yes ... done – No ... Go to Step 6.
	Step 6 -- Verify that a KVM is installed in your system. Do this by looking at the KMM. If a keystroke label is present on the KMM, the system includes a KVM. Is a keystroke label present on the KMM? • Yes ... The system includes a KVM. Go to Step 7. • No ... The system does not include a KVM. Go to Step 11.
	Step 7 -- Ensure the VGA cable is properly connected to the KVM. Is the VGA cable connected to the KVM? • Yes ... Go to Step 8. • No ... Connect the VGA cable to the KVM. Is the display working? – Yes ... done – No ... Go to Step 8.
	Step 8 -- Ensure the KVM end of the Support Element cables are properly connected to the KVM. Are the Support Element cables connected to the KVM? • Yes ... Go to Step 9. • No ... Connect the Support Element cables to the KVM. Is the display working? – Yes ... done – No ... Go to Step 9.

Table 11. Symptoms and corrective actions (2461-SE1 and 2461-SE2) (continued)

Symptoms	Corrective actions
H - On the 3907, the display is blank (... continued)	**Step 9 --** Bypass the KVM to determine if the KVM is defective. (Refer to "Bypass the KVM switch (2461-SE1 and 2461-SE2)" on page 84, then return here.) Is the display working? • Yes ... Do one of the following: – Replace the KVM. Contact your next level of support. – Remove the KVM. Due to import restrictions, a replacement KVM switch might not be available in your country. In this case, it is recommended that you remove the KVM switch. After that, you can switch between the two Support Elements by moving the video and USB cables manually. Refer to "Remove the KVM switch (2461-SE1 and 2461-SE2)" on page 86 for instructions on removing the KVM switch permanently. • No ... Go to Step 10.
	Step 10 -- Move the KVM power cable from A21ZPDU2.J05 to A21NPDU1.J05. Is the display working? • Yes ... The display unit is OK, however, PDU2 is defective. Contact your next level of support. • No ... Move the KVM power cable back to A21ZPDU2.J05, then go to Step 11.
	Step 11 -- Verify that the first (currently-selected) SE is working. To do this, first ensure that the second SE is powered on, then move the Support Element cable to the second SE. Is the display working? • Yes ... The first SE is defective. Contact your next level of support. • No ... Use the Shift key or the touch pad to ensure that the display is not asleep. Is the display working? – Yes ... The first SE is defective. Contact your next level of support. – No ... The KMM is defective. Go to Step 12 to determine how to exchange the KMM.
	Step 12 -- Order and replace the KMM. For instructions on replacing the KMM, refer to one of the following sections in this document, depending on whether you have the Vertiv or the UPG KMM: • "Display unit: Replace Vertiv KMM with UPG KMM (2461-SE2)" on page 95 • "Display unit: Replace UPG KMM with UPG KMM (2461-SE2)" on page 102 Is the display working? • Yes ... done • No ... Contact the your next level of support.

Table 11. Symptoms and corrective actions (2461-SE1 and 2461-SE2) (continued)	
Symptoms	**Corrective actions**
I - On the 3906, keyboard is not responding	**Step 1 --** Check that the keyboard cable is connected to the 2461 Support Element. Is the keyboard cable connected? • Yes ... Go to Step 2. • No ... Connect the cable. Is the keyboard working? – Yes ... done – No ... Go to Step 2.
	Step 2 -- Plug the keyboard cable into a different USB port on the 2461 Support Element. Is the keyboard working? • Yes ... done • No ... Go to Step 3.
	Step 3 -- If applicable, check the connectors on the extensions Are the connectors damaged? • Yes ... Replace the extension cable. Is the keyboard working? – Yes ... done – No ... Go to Step 4. • No ... Go to Step 4.
	Step 4 -- Replace the keyboard. Is the keyboard working? • Yes ... done • No ... Contact the your next level of support.

Table 11. Symptoms and corrective actions (2461-SE1 and 2461-SE2) (continued)

Symptoms	Corrective actions
J - On the 3907, keyboard is not responding	**Step 1 --** Ensure the KMM power cable is connected properly. Is the KMM power cable connected? • Yes ... Go to Step 2. • No ... Connect the KMM power cable. Is the keyboard working? – Yes ... done – No ... Go to Step 2.
	Step 2 -- Ensure the USB cable is connected properly to the KMM. Is the USB cable connected to the KMM? • Yes ... Go to Step 3. • No ... Connect the USB cable to the KMM. Is the keyboard working? – Yes ... done – No ... Go to Step 3.
	Step 3 -- Ensure the USB cable is connected properly to the KVM. Is the USB cable connected to the KVM? • Yes ... Go to Step 4. • No ... Connect the USB cable to the KVM. Is the keyboard working? – Yes ... done – No ... Go to Step 4.
	Step 4 -- Ensure the KVM end of the Support Element cables are connected properly to the KVM. Are the Support Element cables connected to the KVM? • Yes ... Go to Step 5. • No ... Connect the Support Element cables to the KVM. Is the keyboard working? – Yes ... done – No ... Go to Step 5.
	Step 5 -- Do the following for both Support Elements. Ensure the three ends (the VGA cable end and the two USB cable ends) of the Support Element cable are connected properly to the Support Element. Are the three ends of each Support Element cable connected to their corresponding Support Element? • Yes ... Go to Step 6. • No ... Connect the three ends of the Support Element cable to the Support Element. Is the keyboard working? – Yes ... done – No ... Go to Step 6.

Table 11. Symptoms and corrective actions (2461-SE1 and 2461-SE2) (continued)	
Symptoms	**Corrective actions**
J - On the 3907, keyboard is not responding (... continued)	**Step 6 --** Bypass the KVM to determine if the KVM is defective. (Refer to "Bypass the KVM switch (2461-SE1 and 2461-SE2)" on page 84.) Is the keyboard working? • Yes ... done • No ... Go to Step 7.
	Step 7-- Replace the KMM. Is the keyboard working? • Yes ... done • No ... Contact your service representative.

Table 11. Symptoms and corrective actions (2461-SE1 and 2461-SE2) (continued)

Symptoms	Corrective actions
K - The console is reporting memory problems	**Step 1 --** Starting with DIMM_01, ensure the memory DIMMs are seated properly using the information in the online **Repair & Verify** panels. Is the console still reporting memory problems? • Yes ... Go to Step 2. • No ... done
	Step 2 -- If a new memory DIMM is available, starting with memory DIMM_01, replace the original memory DIMM using the information in the online **Repair & Verify** panels. Is the console still reporting memory problems? • Yes ... Reinstall the original memory DIMM back into its original connector using the information in the online **Repair & Verify** panels. If you have not replaced all of the original memory DIMMs yet, repeat Step 2 to replace one of the other original memory DIMMs. Otherwise, go to Step 3. • No ... done If a new memory DIMM is not available, proceed with one of the following: • Continue the repair with a different FRU if you have one. Go to Step 3. • Delay the repair until this FRU is available. When available, replace the memory DIMM using the information in the online **Repair & Verify** panels. Is the console still reporting memory problems? – Yes ... Reinstall the original memory DIMM back into its original connector using the information in the online **Repair & Verify** panels. If you have not replaced all of the original memory DIMMs yet, repeat Step 2 to replace one of the other original memory DIMMs. Otherwise, go to Step 3. – No ... done
	Step 3 -- If a new system board is available, replace the existing system board with the new system board using the information in the online **Repair & Verify** panels. Is the console still reporting memory problems? • Yes ... Reinstall the original system board using the information in the online **Repair & Verify** panels, then go to Step 4. • No ... done If a new system board is not available, proceed with one of the following: • Continue the repair with a different FRU if you have one. Go to Step 4. • Delay the repair until this FRU is available. When available, replace the system board using the information in the online **Repair & Verify** panels. Is the console still reporting memory problems? – Yes ... Reinstall the original system board using the information in the online **Repair & Verify** panels, then go to Step 4. – No ... done
	Step 4 -- Replace the entire 2461 Support Element using the information in the online **Repair & Verify** panels.

Table 11. Symptoms and corrective actions (2461-SE1 and 2461-SE2) (continued)

Symptoms	Corrective actions
L - Configuration settings are not saved across reboots	**Step 1 --** Using the information in the online **Repair & Verify** panels, check that the battery retaining clip is making contact with the battery. Is the retaining clip making contact with the battery? • Yes ... Go to Step 2. • No ... Using the information in the online **Repair & Verify** panels, remove the battery. Gently bend the clip back towards where the battery sits. Then, reinstall the battery. Is the retaining clip making contact with the battery? – Yes ... Were the configuration settings saved across reboots? - Yes ... done - No ... Go to Step 2. – No ... Go to Step 3.
	Step 2 -- If a new battery is available, replace the existing battery with the new battery using the information in the online **Repair & Verify** panels. Were the configuration settings saved across reboots? • Yes ... done • No ... Reinstall the original battery using the information in the online **Repair & Verify** panels, then go to Step 3. If a new battery is not available, proceed with one of the following: • Continue the repair with a different FRU if you have one. Go to Step 3. • Delay the repair until this FRU is available. When available, replace the battery using the information in the online **Repair & Verify** panels. Were the configuration settings saved across reboots? – Yes ... done – No ... Reinstall the original battery using the information in the online **Repair & Verify** panels, then go to Step 3.
	Step 3 -- If a new system board is available, replace the existing system board with the new system board using the information in the online **Repair & Verify** panels. Were the configuration settings saved across reboots? • Yes ... done • No ... Reinstall the original system board using the information in the online **Repair & Verify** panels, then go to Step 4. If a new system board is not available, proceed with one of the following: • Continue the repair with a different FRU if you have one. Go to Step 4. • Delay the repair until this FRU is available. When available, replace the system board using the information in the online **Repair & Verify** panels. Were the configuration settings saved across reboots? – Yes ... done – No ... Reinstall the original system board using the information in the online **Repair & Verify** panels, then go to Step 4.

Table 11. Symptoms and corrective actions (2461-SE1 and 2461-SE2) (continued)	
Symptoms	**Corrective actions**
L - Configuration settings are not saved across reboots (... continued)	**Step 4 --** Replace the entire 2461 Support Element using the information in the online **Repair & Verify** panels.
M - The console is reporting problems reading/writing to the Smart Card	**Step 1 --** Reseat the Smart Card Reader. Are there still problems reading/writing to the Smart Card? • Yes ... Go to Step 2. • No ... done
	Step 2 -- If a new Smart Card Reader is available, replace the existing Smart Card Reader with the new Smart Card Reader using the information in the online **Repair & Verify** panels. Are there still problems reading/writing to the Smart Card? • Yes ... Reinstall the original Smart Card Reader using the information in the online **Repair & Verify** panels, then go to Step 3. • No ... done If a new Smart Card Reader is not available, proceed with one of the following: • Continue the repair with a different FRU if you have one. Go to Step 3. • Delay the repair until this FRU is available. When available, replace the Smart Card Reader using the information in the online **Repair & Verify** panels. Are there still problems reading/writing to the Smart Card? – Yes ... Reinstall the original Smart Card Reader using the information in the online **Repair & Verify** panels, then go to Step 3. – No ... done
	Step 3 -- If a new system board is available, replace the existing system board with the new system board using the information in the online **Repair & Verify** panels. Are there still problems reading/writing to the Smart Card? • Yes ... Reinstall the original system board using the information in the online **Repair & Verify** panels, then go to Step 4. • No ... done If a new system board is not available, proceed with one of the following: • Continue the repair with a different FRU if you have one. Go to Step 4. • Delay the repair until this FRU is available. When available, replace the system board using the information in the online **Repair & Verify** panels. Are there still problems reading/writing to the Smart Card? – Yes ... Reinstall the original system board using the information in the online **Repair & Verify** panels, then go to Step 4. – No ... done
	Step 4 -- Replace the entire 2461 Support Element using the information in the online **Repair & Verify** panels.

Table 11. Symptoms and corrective actions (2461-SE1 and 2461-SE2) (continued)

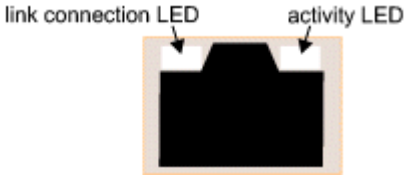
Symptoms	Corrective actions
N - The console is reporting communication errors or the console cannot be contacted remotely.	**Step 1 --** At the rear of the console, check that all the Ethernet cables are properly seated at both ends. Are the Ethernet cables properly seated? • Yes ... Go to Step 2. • No ... Reseat the Ethernet cables. Is the console still reporting errors or is the console still unable to be contacted remotely? – Yes ... Go to Step 2. – No ... done
	Step 2 -- Check the cables to ensure they are not damaged or bent. Are the Ethernet cables bent or damaged? • Yes ... Replace the Ethernet cable. Is the console still reporting errors or is the console still unable to be contacted remotely? – Yes ... Go to Step 3. – No ... done • No ... Go to Step 3.
	Step 3 -- Check the 2461 Support Element Ethernet port. Is the left link light on?  • Yes ... Go to Step 4. • No ... Replace the Ethernet cable. Is the console still reporting errors or is the console still unable to be contacted remotely? – Yes ... Go to Step 4. – No ... done
	Step 4 -- Verify with the customer that the customer port is OK. Is the customer port OK? • Yes ... Go to Step 5. • No ... Have the customer fix their port. Is the console still reporting errors or is the console still unable to be contacted remotely? – Yes ... Go to Step 5. – No ... done

Table 11. Symptoms and corrective actions (2461-SE1 and 2461-SE2) (continued)

Symptoms	Corrective actions
N - The console is reporting communication errors or the console cannot be contacted remotely (... continued)	**Step 5 --** If a new system board is available, replace the existing system board with the new system board using the information in the online **Repair & Verify** panels. Are there still problems reading/writing to the Smart Card? • Yes ... Reinstall the original system board using the information in the online **Repair & Verify** panels, then go to Step 6. • No ... done If a new system board is not available, proceed with one of the following: • Continue the repair with a different FRU if you have one. Go to Step 6. • Delay the repair until this FRU is available. When available, replace the system board using the information in the online **Repair & Verify** panels. Are there still problems reading/writing to the Smart Card? – Yes ... Reinstall the original system board using the information in the online **Repair & Verify** panels, then go to Step 6. – No ... done
	Step 6 -- Replace the entire 2461 Support Element using the information in the online **Repair & Verify** panels.

Table 11. Symptoms and corrective actions (2461-SE1 and 2461-SE2) (continued)	
Symptoms	**Corrective actions**
O - The compact keyboard/monitor/mouse (compact KMM) display is blank.	**Step 1 --** With the compact KMM screen blank, note which SE is currently selected (this is called the "original SE" in this procedure). Switch to the other SE ("second SE") by pressing the arrow button on the front of the interface adapter. Does the compact KMM now display video output? • Yes ... The compact KMM (PN 03FM329) and the white USB-C cable are not the problem. Go to Step 2. • No ... Go to step 2.
	Step 2 -- Select the "original SE" on the interface adapter. Also on the interface adapter, swap the SE1 and SE2 DisplayPort cables (PN 02WN619). Does the compact KMM now display video output? • Yes ... The interface adapter is not the problem. Return the DisplayPort cables to their original positions, then go to Step 3. • No ... Done. The problem is the interface adapter. Do the following: 1. Return the DisplayPort cables to their original positions. 2. Order a replacement interface adapter (PN 02WN619). 3. When the replacement interface adapter is available, use the instructions in “Exchanging the interface adapter (z13, z13s, or z14 only)” on page 137 to remove the defective interface adapter and replace it with the new interface adapter.
	Step 3 -- At the rear of the frame, locate the VGADP adapter (PN 03GN005) for SE1 and the VGADP adapter (PN 03GN005) for SE2. Swap the DisplayPort cable (PN 02WN619) attached to the VGADP adapter for SE1 with the DisplayPort cable (PN 02WN619) attached to the VGADP adapter for SE2. Does the compact KMM now display video output? • Yes ... Done. The problem is the DisplayPort cable. Do the following: 1. Return the DisplayPort cables to their original positions. 2. Mark the defective DisplayPort cable so it can be easily located for replacement. 3. Order a replacement DisplayPort cable (PN 02WN619). 4. When the replacement DisplayPort cable is available, remove the defective DisplayPort cable (PN 02WN619) and replace it with the new DisplayPort cable (PN 02WN619). • No ... Return the DisplayPort cables to their original positions, then go to step 4.

Table 11. Symptoms and corrective actions (2461-SE1 and 2461-SE2) (continued)

Symptoms	Corrective actions
O - The compact keyboard/monitor/mouse (compact KMM) display is blank. (... continued)	**Step 4 --** At the rear of the frame, locate the VGADP adapter (PN 03GN005) for SE1 and the VGADP adapter (PN 03GN005) for SE2. Swap the 18-inch VGA cable (PN 03GN003) attached to the VGADP adapter for SE1 with the 18-inch VGA cable (PN 03GN003) attached to the VGADP adapter for SE2. Does the compact KMM now display video output? • Yes ... Done. The problem is the 18-inch VGA cable. Do the following: 1. Return the 18-inch VGA cables to their original positions. 2. Mark the defective 18-inch VGA cable so it can be easily located for replacement. 3. Order a replacement 18-inch VGA cable (PN 03GN003). 4. When the replacement 18-inch VGA cable is available, remove the defective 18-inch VGA cable (PN 03GN003) and replace it with the new 18-inch VGA cable (PN 03GN003). • No ... Return the 18-inch VGA cables to their original positions, then go to step 5.
	Step 5 -- At the rear of the frame, locate the VGADP adapter (PN 03GN005) for SE1 and the VGADP adapter (PN 03GN005) for SE2. Swap the 18-inch USB power cable (PN 03GN002) attached to the VGADP adapter for SE1 with the 18-inch USB power cable (PN 03GN002) attached to the VGADP adapter for SE2. Does the compact KMM now display video output? • Yes ... Done. The problem is the 18-inch USB cable. Do the following: 1. Return the 18-inch USB cables to their original positions. 2. Mark the defective 18-inch USB cable so it can be easily located for replacement. 3. Order a replacement 18-inch USB cable (PN 03GN002). 4. When the replacement 18-inch USB cable is available, remove the defective 18-inch USB cable (PN 03GN002) and replace it with the new 18-inch USB cable (PN 03GN002). • No ... Return the 18-inch USB cables to their original positions, then go to Step 6.

Table 11. Symptoms and corrective actions (2461-SE1 and 2461-SE2) (continued)

Symptoms	Corrective actions
O - The compact keyboard/monitor/mouse (compact KMM) display is blank (... continued)	**Step 6 --** Verify the correct operation of the VGADP (PN 03GN005) that is connected to the SE1 by doing the following: 1. Remove the USB (PN 03GN002) and VGA (PN 03GN003) cables from the VGADP (PN 03GN005) that is connected to the SE1. The USB and VGA cables should remain connected to the SE1. 2. Remove the USB (PN 03GN002) and VGA (PN 03GN003) cables from the VGADP (PN 03GN005) that is connected to the SE2. (The USB and VGA cables should remain connected to the SE2.) 3. Connect the USB (PN 03GN002) and VGA (PN 03GN003) cables that you disconnected from the VGADP for the SE1 to the USB and VGA ports on the VGADP for the SE2. 4. Set the interface adapter to the SE2. Is the display now visible on the compact KMM? • Yes ... Done. The VGADP (PN 03GN005) that was connected to the SE1 is the problem. Do the following: 1. Return the USB (PN 03GN002) and VGA (PN 03GN003) cables to their original positions on both VGADPs. 2. Order a replacement VGADP (PN 03GN005). 3. When the replacement VGADP (PN 03GN005) is available, remove the defective VGADP for the SE1 and replace it with the new VGADP (PN 03GN005). • No ... Go to step 7.
	Step 7 -- Verify the correct operation of the VGADP (PN 03GN005) that is connected to the SE2 by doing the following: 1. Remove the USB (PN 03GN002) and VGA (PN 03GN003) cables from the VGADP (PN 03GN005) that is connected to the SE2. (The USB and VGA cables should remain connected to the SE2.) 2. Remove the USB (PN 03GN002) and VGA (PN 03GN003) cables from the VGADP (PN 03GN005) that is connected to the SE1. The USB and VGA cables should remain connected to the SE1. 3. Connect the USB (PN 03GN002) and VGA (PN 03GN003) cables that you disconnected from the VGADP (PN 03GN005) for the SE2 to the USB and VGA ports on the VGADP for the SE1. 4. Set the interface adapter to the SE1. Is the display now visible on the compact KMM? • Yes ... Done. The VGADP (PN 03GN005) that was connected to the SE2 is the problem. Do the following: 1. Return the USB (PN 03GN002) and VGA (PN 03GN003) cables to their original positions on both VGADPs. 2. Order a replacement VGADP (PN 03GN005). 3. When the replacement VGADP (PN 03GN005) is available, remove the defective VGADP and replace it with the new VGADP (PN 03GN005). • No ... Go to step 8.

Table 11. Symptoms and corrective actions (2461-SE1 and 2461-SE2) (continued)

Symptoms	Corrective actions
O - The compact keyboard/monitor/mouse (compact KMM) display is blank (... continued)	**Step 8 --** Verify that the USB-C cable connectors are not defective. **Note:** Read the following instructions BEFORE starting. 1. Locate the connection between the white, 3-meter USB-C cable (PN 03GN584) and the compact KMM (PN 03FM329). 2. Carefully remove the USB-C connector from the KMM and turn it over 180 degrees, so that the flat, wide side of the connector that originally faced up, is now facing down. 3. Reattach the USB-C cable (PN 03GN584) to the KMM with the USB-C cable connector in this new position. Does the compact KMM now display video output? • Yes ... Although you now have video output, the white USB-C cable (PN 03GN584) is still defective. Leave the original USB-C cable (PN 03GN584) in place. In the meantime, order a replacement USB-C cable (PN 03GN584). When the replacement cable arrives, swap it with the original USB-C cable (PN 03GN584). • No ... Do the following: 1. Locate the connection between the white, 3-meter USB-C cable (PN 03GN584) and the interface adapter (PN 02WN619). 2. Carefully remove the USB-C connector from the interface adapter and turn it over 180 degrees, so that the flat, wide side of the connector that originally faced up, is now facing down. 3. Reattach the USB-C cable (PN 03GN584) to the interface adapter with the USB-C cable connector in this new position. Does the compact KMM now display video output? • **Yes**... Although you now have video output, the white USB-C cable (PN 03GN584) is still defective. Leave the original USB-C cable (PN 03GN584) in place. In the meantime, order a replacement USB-C cable (PN 03GN584). When the replacement cable arrives, swap it with the original USB-C cable (PN 03GN584). • **No**... Go to Step 9.

Table 11. Symptoms and corrective actions (2461-SE1 and 2461-SE2) (continued)	
Symptoms	**Corrective actions**
O - The compact keyboard/monitor/mouse (compact KMM) display is blank (... continued)	**Step 9 --** Order a replacement 3-meter white USB-C cable (PN 03GN584). When it becomes available, replace the existing white USB-C cable (PN 03GN584) with the new white USB-C cable (PN 03GN584). Does the compact KMM now display video output? • Yes ... Done. The white USB-C cable (PN 03GN584) is the problem. Leave the functioning white USB-C cable (PN 03GN584) in place on the KMM and discard the defective USB-C cable. • No ... Go to step 9.
	Step 10 -- If another compact KMM (PN 03FM329) is available locally, remove the white USB-C cable from the existing compact KMM and connect it to the substitute compact KMM. Does the compact KMM now display video output? **Note:** If another compact KMM is not available locally, order a replacement compact KMM (PN 03FM329). • Yes ... Done. The existing compact KMM is the problem. Do the following: 1. Remove the white USB-C cable from the substitute compact KMM. 2. Order a replacement compact KMM (PN 03FM329). 3. When the replacement compact KMM is available, use the instructions in “Exchanging the compact KMM (z13, z13s, or z14 only)” on page 136 to remove the defective compact KMM and replace it with the new compact KMM. • No ... Contact the your next level of support.

Symptoms and corrective actions (2461-SE3, 2461-VA3, and 2461-SE4)

This section contains troubleshooting information for the 2461-SE3, 2461-VA3, and 2461-SE4 (on non-rack mount configurations). For troubleshooting information for the 2461-SE4 or the 2461-VA3 on rack mount configurations, see “Symptoms and corrective actions (2461-VA3 and 2461-SE4 on rack mount configurations)” on page 65. For troubleshooting information for the 2461-SE1 and 2461-SE2, see “Symptoms and corrective actions (2461-SE1 and 2461-SE2)” on page 20.

Notes:

- The term *reseat* in the following tables means to follow the procedure as if you were going to replace the part, but you are just reinstalling the same part.
- As you go through the troubleshooting steps in Table 12 on page 49, for each step that requires you to replace a FRU, proceed with either of the following:
  - Continue the repair with a different FRU if you have one by continuing to the appropriate step.
  - Delay the repair until this FRU is available.
- You may encounter two different 2461 hard disk drives in the field with two different door styles. The most common is the original, 3.5-inch hard disk drive (found on 2461-SE3 and some 2461-SE4 Support Elements), with a rectangular latch for opening the hard disk drive door. The other is a 2.5-inch hard disk drive (found on some 2461-SE4 Support Elements) that provides a round slide mechanism for opening the hard disk drive door. For more information, refer to “What you should know before exchanging any component (2461-SE3 and 2461-SE4)” on page 7.

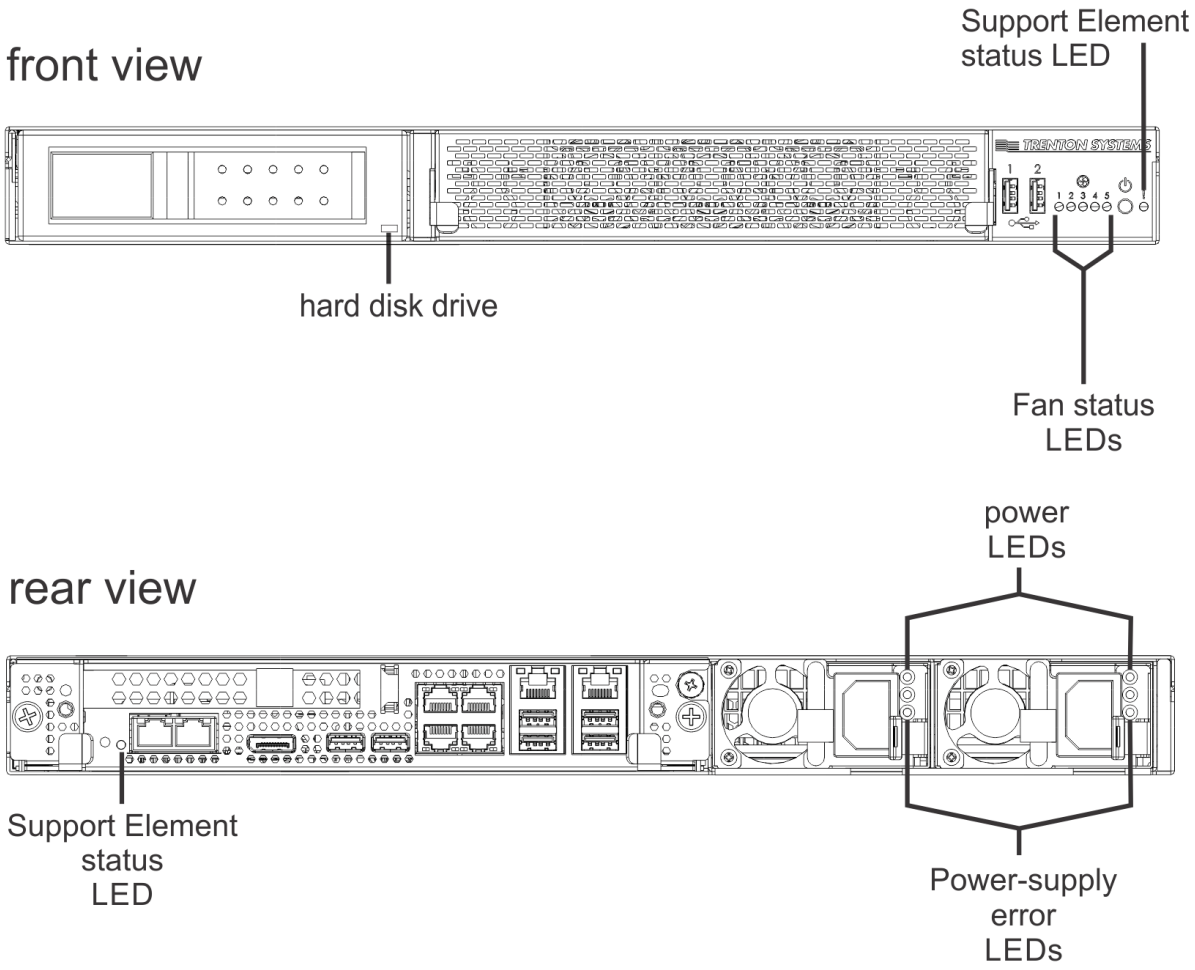

front view
Support Element status LED
hard disk drive
Fan status LEDs
rear view
power LEDs
Support Element status LED
Power-supply error LEDs

Table 12. Symptoms and corrective actions (2461-SE3 and 2461-SE4)

Symptoms	Corrective actions
A - The 2461 Support Element does not power up	**Step 1 --** Using the information in "Power LEDs (2461-SE3 and 2461-SE4)" on page 83, check the LEDs on one of the power supplies on the rear of the 2461 Support Element. **a --** If the power input LED is not lit (indicating no power), go to Step 2. **b --** If the power-supply error LED is lit (indicating the power supply is defective), go to Step 5. **c --** If the power LED is lit and the power-supply error LED is not lit (indicating normal operation) and you have only checked one power supply, repeat Step 1a - Step 1c for the other power supply. Otherwise, go to Step 6.
	Step 2 -- Verify with the customer that there is power at the source. Is there power at the source? • Yes ... Go to Step 3. • No ... Have the customer correct the power at the source. Did the 2461 Support Element power up? – Yes ... done – No ... Go to Step 3.
	Step 3 -- Check the power cords. Are the power cords connected at both ends? • Yes ... Disconnect the power cords and check both ends of the power cords to ensure they are not damaged. Are any power cord ends damaged? – Yes ... Go to Step 4. – No ... Connect the power cords, and go to Step 5. • No ... Check both ends of the power cords to ensure they are not damaged. Are any power cord ends damaged? – Yes ... Go to Step 4. – No ... Connect the power cords. Did the 2461 Support Element power up? - Yes ... done - No ... Go to Step 5.

Table 12. Symptoms and corrective actions (2461-SE3 and 2461-SE4) (continued)

Symptoms	Corrective actions
A - The 2461 Support Element does not power up (... continued)	**Step 4 --** Replace the damaged power cord. Did the 2461 Support Element power up? • Yes ... done • No ... Go to Step 5.
	Step 5 -- Reseat the power supplies. Did the 2461 Support Element power up? • Yes ... done • No ... Go to Step 6.
	Step 6 -- If new power supplies are available, replace the existing power supplies with the new power supplies using the information in the online **Repair & Verify** panels. Did the 2461 Support Element power up? • Yes ... done • No ... Reinstall the original power supplies using the information in the online **Repair & Verify** panels, then go to Step 7. If new power supplies are not available, proceed with one of the following: • Continue the repair with a different FRU if you have one. Go to Step 7. • Delay the repair until this FRU is available. When available, replace the power supplies using the information in the online **Repair & Verify** panels. Did the 2461 Support Element power up? – Yes ... done – No ... Reinstall the original power supplies using the information in the online **Repair & Verify** panels, then go to Step 7.
	Step 7 -- If a new system board is available, replace the existing system board with the new system board using the information in the online **Repair & Verify** panels. Did the 2461 Support Element power up? • Yes ... done • No ... Reinstall the original system board using the information in the online **Repair & Verify** panels, then go to Step 8. If a new system board is not available, proceed with one of the following: • Continue the repair with a different FRU if you have one. Go to Step 8. • Delay the repair until this FRU is available. When available, replace the system board using the information in the online **Repair & Verify** panels. Did the 2461 Support Element power up? – Yes ... done – No ... Reinstall the original system board using the information in the online **Repair & Verify** panels, then go to Step 8.
	Step 8 -- Order a replacement 2461 Support Element and replace the entire 2461 Support Element using the information in the online **Repair & Verify** panels.

Table 12. Symptoms and corrective actions (2461-SE3 and 2461-SE4) (continued)

Symptoms	Corrective actions
B - The 2461 Support Element will not boot up	**Step 1 --** Check the hard disk drive LED. Is the hard disk drive LED blinking? • Yes ... Do you see hard disk errors during the boot sequence? – Yes ... Go to section C, then return here. – No ... Go to Step 3. • No ... Go to Step 2.
	Step 2 -- Reseat the hard disk drive. Did the 2461 Support Element boot up? • Yes ... done • No ... Go to Step 3.
	Step 3 -- If a new hard disk drive is available, replace the existing hard disk drive with the new hard disk drive using the information in the online **Repair & Verify** panels. Did the 2461 Support Element boot up? • Yes ... done • No ... Reinstall the original hard disk drive using the information in the online **Repair & Verify** panels., then go to Step 4. If a new hard disk drive is not available, proceed with one of the following • Continue the repair with a different FRU if you have one. Go to Step 4. • Delay the repair until this FRU is available. When available, replace the hard disk drive using the information in the online **Repair & Verify** panels. Did the 2461 Support Element boot up? – Yes ... done – No ... Reinstall the original hard disk drive using the information in the online **Repair & Verify** panels., then go to Step 4.
	Step 4 -- Ensure each memory DIMM is seated properly using the information in the online **Repair & Verify** panels. Did the 2461 Support Element boot up? • Yes ... done • No ... Go to Step 5.

Table 12. Symptoms and corrective actions (2461-SE3 and 2461-SE4) (continued)

Symptoms	Corrective actions
B - The 2461 Support Element will not boot up (... continued)	**Step 5 --** If a new memory DIMM is available, starting with memory DIMM_01, replace the original memory DIMM using the information in the online **Repair & Verify** panels. Did the 2461 Support Element boot up? • Yes ... done • No ... Reinstall the original memory DIMM back into its original connector using the information in the online **Repair & Verify** panels. If you have not replaced all of the original memory DIMMs yet, repeat Step 2 to replace one of the other original memory DIMMs. Otherwise, go to Step 6. If a new memory DIMM is not available, proceed with one of the following: • Continue the repair with a different FRU if you have one. Go to Step 6. • Delay the repair until this FRU is available. When available, replace the memory DIMM using the information in the online **Repair & Verify** panels. Did the 2461 Support Element boot up? – Yes ... done – No ... Reinstall the original memory DIMM back into its original connector using the information in the online **Repair & Verify** panels.. If you have not replaced all of the original memory DIMMs yet, repeat Step 2 to replace one of the other original memory DIMMs. Otherwise, go to Step 6.
	Step 6 -- If a new system board is available, replace the existing system board with the new system board using the information in the online **Repair & Verify** panels. Did the 2461 Support Element boot up? • Yes ... done • No ... Reinstall the original system board using the information in the online **Repair & Verify** panels, then go to Step 7. If a new system board is not available, proceed with one of the following: • Continue the repair with a different FRU if you have one. Go to Step 7. • Delay the repair until this FRU is available. When available, replace the system board using the information in the online **Repair & Verify** panels. Did the 2461 Support Element boot up? – Yes ... done – No ... Reinstall the original system board using the information in the online **Repair & Verify** panels, then go to Step 7.
	Step 7 -- Order a replacement 2461 Support Element and replace the entire 2461 Support Element using the information in the online **Repair & Verify** panels.

Table 12. Symptoms and corrective actions (2461-SE3 and 2461-SE4) (continued)

Symptoms	Corrective actions
C - You are receiving hard drive errors	**Step 1 --** If a new hard disk drive is available, replace the existing hard disk drive with the new hard disk drive using the information in the online **Repair & Verify** panels. Are you still receiving hard drive errors? • Yes ... Reinstall the original hard disk drive using the information in the online **Repair & Verify** panels, then go to Step 2. • No ... done If a new hard disk drive is not available, proceed with one of the following: • Continue the repair with a different FRU if you have one. Go to Step 2. • Delay the repair until this FRU is available. When available, replace the hard disk drive using the information in the online **Repair & Verify** panels. Are you still receiving hard drive errors? – Yes ... Reinstall the original hard disk drive using the information in the online **Repair & Verify** panels, then go to Step 2. – No ... done
	Step 2 -- If a new system board is available, replace the existing system board with the new system board using the information in the online **Repair & Verify** panels. Are you still receiving hard drive errors? • Yes ... Reinstall the original system board using the information in the online **Repair & Verify** panels, then go to Step 3. • No ... done If a new system board is not available, proceed with one of the following: • Continue the repair with a different FRU if you have one. Go to Step 3. • Delay the repair until this FRU is available. When available, replace the system board using the information in the online **Repair & Verify** panels. Are you still receiving hard drive errors? – Yes ... Reinstall the original system board using the information in the online **Repair & Verify** panels, then go to Step 3. – No ... done
	Step 3 -- Replace the entire 2461 Support Element using the information in the online **Repair & Verify** panels.

Table 12. Symptoms and corrective actions (2461-SE3 and 2461-SE4) (continued)

Symptoms	Corrective actions
D - A fan LED is lit	**Step 1 --** Reseat the appropriate fan. Is the fan LED off? • Yes ... done • No ... Go to Step 2.
	Step 2 -- If a new fan is available, replace the existing fan with the new fan using the information in the online **Repair & Verify** panels. Is the fan LED off? • Yes ... done • No ... Reinstall the original fan using the information in the online **Repair & Verify** panels, then go to Step 3. If a new fan is not available, proceed with one of the following: • Continue the repair with a different FRU if you have one. Go to Step 3. • Delay the repair until this FRU is available. When available, replace the fan using the information in the online **Repair & Verify** panels. Is the fan LED off? – Yes ... done – No ... Reinstall the original fan using the information in the online **Repair & Verify** panels, then go to Step 3.
	Step 3 -- If a new system board is available, replace the existing system board with the new system board using the information in the online **Repair & Verify** panels. Is the fan LED off? • Yes ... done • No ... Reinstall the original system board using the information in the online **Repair & Verify** panels, then go to Step 4. If a new system board is not available, proceed with one of the following: • Continue the repair with a different FRU if you have one. Go to Step 4. • Delay the repair until this FRU is available. When available, replace the system board using the information in the online **Repair & Verify** panels. Is the fan LED off? – Yes ... done – No ... Reinstall the original system board using the information in the online **Repair & Verify** panels, then go to Step 4.
	Step 4 -- Replace the entire 2461 Support Element using the information in the online **Repair & Verify** panels.

Table 12. Symptoms and corrective actions (2461-SE3 and 2461-SE4) (continued)

Symptoms	Corrective actions
E - The console is reporting memory problems	**Step 1 --** Starting with DIMM_01, ensure the memory DIMMs are seated properly using the information in the online **Repair & Verify** panels. Is the console still reporting memory problems? • Yes ... Go to Step 2. • No ... done
	Step 2 -- If a new memory DIMM is available, starting with memory DIMM_01, replace the original memory DIMM using the information in the online **Repair & Verify** panels. Is the console still reporting memory problems? • Yes ... Reinstall the original memory DIMM back into its original connector using the information in the online **Repair & Verify** panels. If you have not replaced all of the original memory DIMMs yet, repeat Step 2 to replace one of the other original memory DIMMs. Otherwise, go to Step 3. • No ... done If a new memory DIMM is not available, proceed with one of the following: • Continue the repair with a different FRU if you have one. Go to Step 3. • Delay the repair until this FRU is available. When available, replace the memory DIMM using the information in the online **Repair & Verify** panels. Is the console still reporting memory problems? – Yes ... Reinstall the original memory DIMM back into its original connector using the information in the online **Repair & Verify** panels. If you have not replaced all of the original memory DIMMs yet, repeat Step 2 to replace one of the other original memory DIMMs. Otherwise, go to Step 3. – No ... done
	Step 3 -- If a new system board is available, replace the existing system board with the new system board using the information in the online **Repair & Verify** panels. Is the console still reporting memory problems? • Yes ... Reinstall the original system board using the information in the online **Repair & Verify** panels, then go to Step 4. • No ... done If a new system board is not available, proceed with one of the following: • Continue the repair with a different FRU if you have one. Go to Step 4. • Delay the repair until this FRU is available. When available, replace the system board using the information in the online **Repair & Verify** panels. Is the console still reporting memory problems? – Yes ... Reinstall the original system board using the information in the online **Repair & Verify** panels, then go to Step 4. – No ... done
	Step 4 -- Replace the entire 2461 Support Element using the information in the online **Repair & Verify** panels.

Table 12. Symptoms and corrective actions (2461-SE3 and 2461-SE4) (continued)

Symptoms	Corrective actions
F - Configuration settings are not saved across reboots	**Step 1 --** Using the information in the online **Repair & Verify** panels, check that the battery is facing in the correct direction (positive side facing up) and that it is sitting securely beneath the battery socket tab. Is the battery facing up and seated securely within the battery socket? • Yes ... Go to Step 2. • No ... Using the information in the online **Repair & Verify** panels, press down on the battery socket's tab to tilt the battery horizontally and push it out its socket. Then, reinstall the battery. Is the battery facing up and seated securely within the battery socket? – Yes ... Were the configuration settings saved across reboots? - Yes ... done - No ... Go to Step 2. – No ... Go to Step 3.
	Step 2 -- If a new battery is available, replace the existing battery with the new battery using the information in the online **Repair & Verify** panels. Were the configuration settings saved across reboots? • Yes ... done • No ... Reinstall the original battery using the information in the online **Repair & Verify** panels, then go to Step 3. If a new battery is not available, proceed with one of the following: • Continue the repair with a different FRU if you have one. Go to Step 3. • Delay the repair until this FRU is available. When available, replace the battery using the information in the online **Repair & Verify** panels. Were the configuration settings saved across reboots? – Yes ... done – No ... Reinstall the original battery using the information in the online **Repair & Verify** panels, then go to Step 3.

Table 12. Symptoms and corrective actions (2461-SE3 and 2461-SE4) (continued)	
Symptoms	**Corrective actions**
F - Configuration settings are not saved across reboots (... continued)	**Step 3 --** If a new system board is available, replace the existing system board with the new system board using the information in the online **Repair & Verify** panels. Were the configuration settings saved across reboots? • Yes ... done • No ... Reinstall the original system board using the information in the online **Repair & Verify** panels, then go to Step 4. If a new system board is not available, proceed with one of the following: • Continue the repair with a different FRU if you have one. Go to Step 4. • Delay the repair until this FRU is available. When available, replace the system board using the information in the online **Repair & Verify** panels. Were the configuration settings saved across reboots? – Yes ... done – No ... Reinstall the original system board using the information in the online **Repair & Verify** panels, then go to Step 4.
	Step 4 -- Replace the entire 2461 Support Element using the information in the online **Repair & Verify** panels.

Table 12. Symptoms and corrective actions (2461-SE3 and 2461-SE4) (continued)	
Symptoms	**Corrective actions**
G - The console is reporting problems reading/writing to the Smart Card	**Step 1 --** Reseat the Smart Card Reader. Are there still problems reading/writing to the Smart Card? • Yes ... Go to Step 2. • No ... done
	Step 2 -- If a new Smart Card Reader is available, replace the existing Smart Card Reader with the new Smart Card Reader using the information in the online **Repair & Verify** panels. Are there still problems reading/writing to the Smart Card? • Yes ... Reinstall the original Smart Card Reader using the information in the online **Repair & Verify** panels, then go to Step 3. • No ... done If a new Smart Card Reader is not available, proceed with one of the following: • Continue the repair with a different FRU if you have one. Go to Step 3. • Delay the repair until this FRU is available. When available, replace the Smart Card Reader using the information in the online **Repair & Verify** panels. Are there still problems reading/writing to the Smart Card? – Yes ... Reinstall the original Smart Card Reader using the information in the online **Repair & Verify** panels, then go to Step 3. – No ... done
	Step 3 -- If a new system board is available, replace the existing system board with the new system board using the information in the online **Repair & Verify** panels. Are there still problems reading/writing to the Smart Card? • Yes ... Reinstall the original system board using the information in the online **Repair & Verify** panels, then go to Step 4. • No ... done If a new system board is not available, proceed with one of the following: • Continue the repair with a different FRU if you have one. Go to Step 4. • Delay the repair until this FRU is available. When available, replace the system board using the information in the online **Repair & Verify** panels. Are there still problems reading/writing to the Smart Card? – Yes ... Reinstall the original system board using the information in the online **Repair & Verify** panels, then go to Step 4. – No ... done
	Step 4 -- Replace the entire 2461 Support Element using the information in the online **Repair & Verify** panels.

Table 12. Symptoms and corrective actions (2461-SE3 and 2461-SE4) (continued)

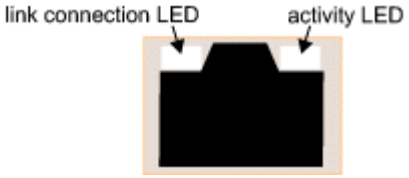
Symptoms	Corrective actions
H - The console is reporting communication errors or the console cannot be contacted remotely.	**Step 1 --** At the rear of the console, check that all the Ethernet cables are properly seated at both ends. Are the Ethernet cables properly seated? • Yes ... Go to Step 2. • No ... Reseat the Ethernet cables. Is the console still reporting errors or is the console still unable to be contacted remotely? – Yes ... Go to Step 2. – No ... done
	Step 2 -- Check the cables to ensure they are not damaged or bent. Are the Ethernet cables bent or damaged? • Yes ... Replace the Ethernet cable. Is the console still reporting errors or is the console still unable to be contacted remotely? – Yes ... Go to Step 3. – No ... done • No ... Go to Step 3.
	Step 3 -- Check the 2461 Support Element Ethernet port. Is the left link light on?  • Yes ... Go to Step 4. • No ... Replace the Ethernet cable. Is the console still reporting errors or is the console still unable to be contacted remotely? – Yes ... Go to Step 4. – No ... done
	Step 4 -- Verify with the customer that the customer port is OK. Is the customer port OK? • Yes ... Go to Step 5. • No ... Have the customer fix their port. Is the console still reporting errors or is the console still unable to be contacted remotely? – Yes ... Go to Step 5. – No ... done

Table 12. Symptoms and corrective actions (2461-SE3 and 2461-SE4) (continued)	
Symptoms	**Corrective actions**
H - The console is reporting communication errors or the console cannot be contacted remotely. (...continued)	**Step 5 --** If a new system board is available, replace the existing system board with the new system board using the information in the online **Repair & Verify** panels. Are there still problems reading/writing to the Smart Card? • Yes ... Reinstall the original system board using the information in the online **Repair & Verify** panels, then go to Step 6. • No ... done If a new system board is not available, proceed with one of the following: • Continue the repair with a different FRU if you have one. Go to Step 6. • Delay the repair until this FRU is available. When available, replace the system board using the information in the online **Repair & Verify** panels. Are there still problems reading/writing to the Smart Card? – Yes ... Reinstall the original system board using the information in the online **Repair & Verify** panels, then go to Step 6. – No ... done
	Step 6 -- Replace the entire 2461 Support Element using the information in the online **Repair & Verify** panels.

Table 12. Symptoms and corrective actions (2461-SE3 and 2461-SE4) (continued)

Symptoms	Corrective actions
I - The compact keyboard/monitor/mouse (compact KMM) display is blank.	**Step 1 --** Order a replacement white USB-C cable (03GN584). When it becomes available, remove the existing white USB-C cable (PN 03GN584) from the compact KMM and the interface adapter and replace it with the new white USB-C cable (PN 03GN584). **Note:** To remove a locking USB cable, press and hold the buttons on both sides of the USB cable plug as you pull it out of the connector. Is the compact KMM still blank? • Yes ... Remove the replacement USB-C cable (PN 03GN584) from the compact KMM and interface adapter and reinstall the original USB-C cable (PN 03GN584). Go to Step 2. • No ... done. Leave the functioning USB-C cable (PN 03GN584) in place and discard the defective USB-C cable.
	Step 2 -- Ensure that the USB cable (PN 02EC953) that is connected to the rear side of the interface adapter is connected to the **correct** Support Element. If the USB cable is plugged into the wrong SE, move it to the USB connector on the correct SE. Is the compact KMM still blank? • Yes ... Go to Step 3. • No ... done
	Step 3 -- Detach the white USB-C cable from its connector on the interface adapter. Next, detach the compact KMM from its mounting bracket on the frame. The USB-C cable should still be connected to the compact KMM. Connect the USB-C cable to the USB-C port on the rear of the frame and then check the compact KMM display. Is the compact KMM still blank? • Yes ... Return the compact KMM to its mounting bracket on the frame and reconnect the white USB-C cable to the interface adapter, then go to Step 4. • No ... Return the compact KMM to its mounting bracket on the frame and reconnect the white USB-C cable to the interface adapter. Then go to Step 4.

Table 12. Symptoms and corrective actions (2461-SE3 and 2461-SE4) (continued)	
Symptoms	**Corrective actions**
I - The compact keyboard/monitor/mouse (compact KMM) display is blank. (...continued)	**Step 4 --** Open the compact KMM storage box and look for the green lights on the front end of the interface adapter, then do one of the following: • If one of the interface adapter's lights is lit, press the up or down **Support Element selection button** to select the other SE. If the light for the other SE turns on and the light for the original SE turns off, the interface adapter is probably not causing the problem. Press the other **Support Element selection button** to return the KMM to the original SE, then go to Step 5. • If one of the interface adapter's lights is lit, but after pressing the up or down **Support Element selection button**, the light for the other SE does not turn on, the interface adapter might be defective. Determine which SE's light is not turning on, then check the cable that connects on the rear of that SE. If the cables are connected and seated properly, order a replacement interface adapter (FRU 03FM967). When the new interface adapter is available, use the instructions in "Display unit: Replace compact KMM interface adapter (2461-SE3)" on page 113 to replace the defective interface adapter with the new interface adapter. • If neither of the interface adapter's green lights is lit, the interface adapter might be defective. Check that the USB-C cables are connected on the rear of both SEs. If the cables are connected and seated properly, order a replacement interface adapter (FRU 03FM967). When the new interface adapter is available, use the instructions in "Display unit: Replace compact KMM interface adapter (2461-SE3)" on page 113 to replace the defective interface adapter with the new interface adapter.

Table 12. Symptoms and corrective actions (2461-SE3 and 2461-SE4) (continued)

Symptoms	Corrective actions
I - The compact keyboard/monitor/mouse (compact KMM) display is blank. (...continued)	**Step 5 --** Order a replacement interface adapter (FRU kit 03FM967). When the replacement interface adapter arrives, swap it with the existing interface adapter in the KMM storage box, as follows: 1. Remove the white USB-C cable from its connector on the front end of the interface adapter. The other end of the USB-C cable should remain connected to the compact KMM. **Note:** To remove a locking USB cable, press and hold the buttons on both sides of the USB cable plug as you pull it out of the connector. 2. Remove the existing interface adapter from the compact KMM storage box and detach all of the cables that are connected to it. Set the interface adapter aside. 3. Install all of the cables, including the white USB-C cable (PN 03GN584), into the appropriate connectors on the **replacement** interface adapter. 4. Install the replacement interface adapter (FRU kit 03FM967) into the empty interface adapter location in the compact KMM storage box. Is the compact KMM still blank? • Yes ... Remove the replacement interface adapter (FRU kit 03FM967) from its location in the compact KMM storage box, then remove the cables that you attached to it. Next, reattach the cables to the original interface adapter and then return it to its location in the KMM storage box. Go to Step 6. • No ... done. Return the defective interface adapter to IBM with other broken parts.
	Step 6 -- Verify that the USB, video, and power cables that are connected to the interface adapter are working by doing the following: 1. Ensure that the USB, video, and power cables are plugged into the appropriate connectors on the interface adapter and are fully seated. 2. Go to the rear of the frame and verify that the other end of the USB, video, and power cable is plugged into the appropriate connector on the Support Element and is fully seated. Is the compact KMM still blank? • Yes ... Go to Step 7. • No ... done

Table 12. Symptoms and corrective actions (2461-SE3 and 2461-SE4) (continued)	
Symptoms	**Corrective actions**
I - The compact keyboard/monitor/mouse (compact KMM) display is blank. (...continued)	**Step 7 --** Order a replacement compact KMM (FRU 02WN888). Use the instructions in “Display unit: Replace compact KMM keyboard display (2461-SE3)” on page 112 to remove the existing compact KMM and install the replacement compact KMM. Is the compact KMM still blank? • Yes ... Go to Step 8. • No ... done. Return the defective compact KMM to IBM with other broken parts.
	Step 8 -- Order replacement USB (PN 02EC953), video (02EC952), and power cables (02EC955). When the replacement cables are available, swap them with the USB, video, and power cables that are connected to the interface adapter. Is the compact KMM still blank? • Yes ... Contact your next level of support. • No ... done

Symptoms and corrective actions (2461-VA3 and 2461-SE4 on rack mount configurations)

This section contains troubleshooting information for the 2461-VA3 and 2461-SE4 on rack mount configurations. For troubleshooting information for the 2461-SE3 and 2461-SE4 (on non-rack mount configurations), see “Symptoms and corrective actions (2461-SE3, 2461-VA3, and 2461-SE4)” on page 47. For troubleshooting information for the 2461-SE1 and 2461-SE2, see “Symptoms and corrective actions (2461-SE1 and 2461-SE2)” on page 20.

Notes:

- The term *reseat* in the following tables means to follow the procedure as if you were going to replace the part, but you are just reinstalling the same part.
- As you go through the steps in the troubleshooting instructions in this section, for each step that requires you to replace a FRU, proceed with either of the following:
  - Continue the repair with a different FRU if you have one by continuing to the appropriate step.
  - Delay the repair until this FRU is available.

Table 13. Symptoms and corrective actions (2461-SE4 on rack mount configurations)	
Symptoms	**Corrective actions**
A - The 2461 Support Element does not power up	**Step 1 --** Using the information in “Power LEDs (2461-SE3 and 2461-SE4)” on page 83, check the LEDs on one of the power supplies on the rear of the 2461 Support Element. **a --** If the power input LED is not lit (indicating no power), go to Step 2. **b --** If the power-supply error LED is lit (indicating the power supply is defective), go to Step 5. **c --** If the power LED is lit and the power-supply error LED is not lit (indicating normal operation) and you have only checked one power supply, repeat Step 1a - Step 1c for the other power supply. Otherwise, go to Step 6.
	Step 2 -- Verify with the customer that there is power at the source. Is there power at the source? • Yes ... Go to Step 3. • No ... Have the customer correct the power at the source. Did the 2461 Support Element power up? – Yes ... done – No ... Go to Step 3.
	Step 3 -- Check the power cords. Are the power cords connected at both ends? • Yes ... Disconnect the power cords and check both ends of the power cords to ensure they are not damaged. Are any power cord ends damaged? – Yes ... Go to Step 4. – No ... Connect the power cords, and go to Step 5. • No ... Check both ends of the power cords to ensure they are not damaged. Are any power cord ends damaged? – Yes ... Go to Step 4. – No ... Connect the power cords. Did the 2461 Support Element power up? - Yes ... done - No ... Go to Step 5.

Table 13. Symptoms and corrective actions (2461-SE4 on rack mount configurations) (continued)

Symptoms	Corrective actions
A - The 2461 Support Element does not power up (... continued)	**Step 4 --** Replace the damaged power cord. Did the 2461 Support Element power up? • Yes ... done • No ... Go to Step 5.
	Step 5 -- Reseat the power supplies. Did the 2461 Support Element power up? • Yes ... done • No ... Go to Step 6.
	Step 6 -- If new power supplies are available, replace the existing power supplies with the new power supplies using the information in the online **Repair & Verify** panels. Did the 2461 Support Element power up? • Yes ... done • No ... Reinstall the original power supplies using the information in the online **Repair & Verify** panels, then go to Step 7. If new power supplies are not available, proceed with one of the following: • Continue the repair with a different FRU if you have one. Go to Step 7. • Delay the repair until this FRU is available. When available, replace the power supplies using the information in the online **Repair & Verify** panels. Did the 2461 Support Element power up? – Yes ... done – No ... Reinstall the original power supplies using the information in the online **Repair & Verify** panels, then go to Step 7.
	Step 7 -- If a new system board is available, replace the existing system board with the new system board using the information in the online **Repair & Verify** panels. Did the 2461 Support Element power up? • Yes ... done • No ... Reinstall the original system board using the information in the online **Repair & Verify** panels, then go to Step 8. If a new system board is not available, proceed with one of the following: • Continue the repair with a different FRU if you have one. Go to Step 8. • Delay the repair until this FRU is available. When available, replace the system board using the information in the online **Repair & Verify** panels. Did the 2461 Support Element power up? – Yes ... done – No ... Reinstall the original system board using the information in the online **Repair & Verify** panels, then go to Step 8.
	Step 8 -- Order a replacement 2461 Support Element and replace the entire 2461 Support Element using the information in the online **Repair & Verify** panels.

Table 13. Symptoms and corrective actions (2461-SE4 on rack mount configurations) (continued)	
Symptoms	**Corrective actions**
B - The 2461 Support Element will not boot up	**Step 1 --** Do you see hard disk errors during the boot sequence? • Yes ... Go to section C, then return here. • No ... Go to Step 3.
	Step 2 -- Reseat the hard disk drive. Did the 2461 Support Element boot up? • Yes ... done • No ... Go to Step 3.
	Step 3 -- If a new hard disk drive is available, replace the existing hard disk drive with the new hard disk drive using the information in the online **Repair & Verify** panels. Did the 2461 Support Element boot up? • Yes ... done • No ... Reinstall the original hard disk drive using the information in the online **Repair & Verify** panels., then go to Step 4. If a new hard disk drive is not available, proceed with one of the following • Continue the repair with a different FRU if you have one. Go to Step 4. • Delay the repair until this FRU is available. When available, replace the hard disk drive using the information in the online **Repair & Verify** panels. Did the 2461 Support Element boot up? – Yes ... done – No ... Reinstall the original hard disk drive using the information in the online **Repair & Verify** panels., then go to Step 4.
	Step 4 -- Ensure each memory DIMM is seated properly using the information in the online **Repair & Verify** panels. Did the 2461 Support Element boot up? • Yes ... done • No ... Go to Step 5.

Table 13. Symptoms and corrective actions (2461-SE4 on rack mount configurations) (continued)

Symptoms	Corrective actions
B - The 2461 Support Element will not boot up (... continued)	**Step 5 --** If a new memory DIMM is available, starting with memory DIMM_01, replace the original memory DIMM using the information in the online **Repair & Verify** panels. Did the 2461 Support Element boot up? • Yes ... done • No ... Reinstall the original memory DIMM back into its original connector using the information in the online **Repair & Verify** panels. If you have not replaced all of the original memory DIMMs yet, repeat Step 2 to replace one of the other original memory DIMMs. Otherwise, go to Step 6. If a new memory DIMM is not available, proceed with one of the following: • Continue the repair with a different FRU if you have one. Go to Step 6. • Delay the repair until this FRU is available. When available, replace the memory DIMM using the information in the online **Repair & Verify** panels. Did the 2461 Support Element boot up? – Yes ... done – No ... Reinstall the original memory DIMM back into its original connector using the information in the online **Repair & Verify** panels.. If you have not replaced all of the original memory DIMMs yet, repeat Step 2 to replace one of the other original memory DIMMs. Otherwise, go to Step 6.
	Step 6 -- If a new system board is available, replace the existing system board with the new system board using the information in the online **Repair & Verify** panels. Did the 2461 Support Element boot up? • Yes ... done • No ... Reinstall the original system board using the information in the online **Repair & Verify** panels, then go to Step 7. If a new system board is not available, proceed with one of the following: • Continue the repair with a different FRU if you have one. Go to Step 7. • Delay the repair until this FRU is available. When available, replace the system board using the information in the online **Repair & Verify** panels. Did the 2461 Support Element boot up? – Yes ... done – No ... Reinstall the original system board using the information in the online **Repair & Verify** panels, then go to Step 7.
	Step 7 -- Order a replacement 2461 Support Element and replace the entire 2461 Support Element using the information in the online **Repair & Verify** panels.

Table 13. Symptoms and corrective actions (2461-SE4 on rack mount configurations) (continued)	
Symptoms	**Corrective actions**
C - You are receiving hard drive errors	**Step 1 --** If a new hard disk drive is available, replace the existing hard disk drive with the new hard disk drive using the information in the online **Repair & Verify** panels. Are you still receiving hard drive errors? • Yes ... Reinstall the original hard disk drive using the information in the online **Repair & Verify** panels, then go to Step 2. • No ... done If a new hard disk drive is not available, proceed with one of the following: • Continue the repair with a different FRU if you have one. Go to Step 2. • Delay the repair until this FRU is available. When available, replace the hard disk drive using the information in the online **Repair & Verify** panels. Are you still receiving hard drive errors? – Yes ... Reinstall the original hard disk drive using the information in the online **Repair & Verify** panels, then go to Step 2. – No ... done
	Step 2 -- If a new system board is available, replace the existing system board with the new system board using the information in the online **Repair & Verify** panels. Are you still receiving hard drive errors? • Yes ... Reinstall the original system board using the information in the online **Repair & Verify** panels, then go to Step 3. • No ... done If a new system board is not available, proceed with one of the following: • Continue the repair with a different FRU if you have one. Go to Step 3. • Delay the repair until this FRU is available. When available, replace the system board using the information in the online **Repair & Verify** panels. Are you still receiving hard drive errors? – Yes ... Reinstall the original system board using the information in the online **Repair & Verify** panels, then go to Step 3. – No ... done
	Step 3 -- Replace the entire 2461 Support Element using the information in the online **Repair & Verify** panels.

Table 13. Symptoms and corrective actions (2461-SE4 on rack mount configurations) (continued)	
Symptoms	**Corrective actions**
D - A fan LED is lit	**Step 1 --** Reseat the appropriate fan. Is the fan LED off? • Yes ... done • No ... Go to Step 2.
	Step 2 -- If a new fan is available, replace the existing fan with the new fan using the information in the online **Repair & Verify** panels. Is the fan LED off? • Yes ... done • No ... Reinstall the original fan using the information in the online **Repair & Verify** panels, then go to Step 3. If a new fan is not available, proceed with one of the following: • Continue the repair with a different FRU if you have one. Go to Step 3. • Delay the repair until this FRU is available. When available, replace the fan using the information in the online **Repair & Verify** panels. Is the fan LED off? – Yes ... done – No ... Reinstall the original fan using the information in the online **Repair & Verify** panels, then go to Step 3.
	Step 3 -- If a new system board is available, replace the existing system board with the new system board using the information in the online **Repair & Verify** panels. Is the fan LED off? • Yes ... done • No ... Reinstall the original system board using the information in the online **Repair & Verify** panels, then go to Step 4. If a new system board is not available, proceed with one of the following: • Continue the repair with a different FRU if you have one. Go to Step 4. • Delay the repair until this FRU is available. When available, replace the system board using the information in the online **Repair & Verify** panels. Is the fan LED off? – Yes ... done – No ... Reinstall the original system board using the information in the online **Repair & Verify** panels, then go to Step 4.
	Step 4 -- Replace the entire 2461 Support Element using the information in the online **Repair & Verify** panels.

Table 13. Symptoms and corrective actions (2461-SE4 on rack mount configurations) (continued)

Symptoms	Corrective actions
E - The console is reporting memory problems	**Step 1 --** Starting with DIMM_01, ensure the memory DIMMs are seated properly using the information in the online **Repair & Verify** panels. Is the console still reporting memory problems? • Yes ... Go to Step 2. • No ... done
	Step 2 -- If a new memory DIMM is available, starting with memory DIMM_01, replace the original memory DIMM using the information in the online **Repair & Verify** panels. Is the console still reporting memory problems? • Yes ... Reinstall the original memory DIMM back into its original connector using the information in the online **Repair & Verify** panels. If you have not replaced all of the original memory DIMMs yet, repeat Step 2 to replace one of the other original memory DIMMs. Otherwise, go to Step 3. • No ... done If a new memory DIMM is not available, proceed with one of the following: • Continue the repair with a different FRU if you have one. Go to Step 3. • Delay the repair until this FRU is available. When available, replace the memory DIMM using the information in the online **Repair & Verify** panels. Is the console still reporting memory problems? – Yes ... Reinstall the original memory DIMM back into its original connector using the information in the online **Repair & Verify** panels. If you have not replaced all of the original memory DIMMs yet, repeat Step 2 to replace one of the other original memory DIMMs. Otherwise, go to Step 3. – No ... done
	Step 3 -- If a new system board is available, replace the existing system board with the new system board using the information in the online **Repair & Verify** panels. Is the console still reporting memory problems? • Yes ... Reinstall the original system board using the information in the online **Repair & Verify** panels, then go to Step 4. • No ... done If a new system board is not available, proceed with one of the following: • Continue the repair with a different FRU if you have one. Go to Step 4. • Delay the repair until this FRU is available. When available, replace the system board using the information in the online **Repair & Verify** panels. Is the console still reporting memory problems? – Yes ... Reinstall the original system board using the information in the online **Repair & Verify** panels, then go to Step 4. – No ... done
	Step 4 -- Replace the entire 2461 Support Element using the information in the online **Repair & Verify** panels.

Table 13. Symptoms and corrective actions (2461-SE4 on rack mount configurations) (continued)

Symptoms	Corrective actions
F - Configuration settings are not saved across reboots	**Step 1 --** Using the information in the online **Repair & Verify** panels, check that the battery is facing in the correct direction (positive side facing up) and that it is sitting securely beneath the battery socket tab. Is the battery facing up and seated securely within the battery socket? • Yes ... Go to Step 2. • No ... Using the information in the online **Repair & Verify** panels, press down on the battery socket's tab to tilt the battery horizontally and push it out its socket. Then, reinstall the battery. Is the battery facing up and seated securely within the battery socket? – Yes ... Were the configuration settings saved across reboots? - Yes ... done - No ... Go to Step 2. – No ... Go to Step 3.
	Step 2 -- If a new battery is available, replace the existing battery with the new battery using the information in the online **Repair & Verify** panels. Were the configuration settings saved across reboots? • Yes ... done • No ... Reinstall the original battery using the information in the online **Repair & Verify** panels, then go to Step 3. If a new battery is not available, proceed with one of the following: • Continue the repair with a different FRU if you have one. Go to Step 3. • Delay the repair until this FRU is available. When available, replace the battery using the information in the online **Repair & Verify** panels. Were the configuration settings saved across reboots? – Yes ... done – No ... Reinstall the original battery using the information in the online **Repair & Verify** panels, then go to Step 3.

Table 13. Symptoms and corrective actions (2461-SE4 on rack mount configurations) (continued)	
Symptoms	**Corrective actions**
F - Configuration settings are not saved across reboots (... continued)	**Step 3 --** If a new system board is available, replace the existing system board with the new system board using the information in the online **Repair & Verify** panels. Were the configuration settings saved across reboots? • Yes ... done • No ... Reinstall the original system board using the information in the online **Repair & Verify** panels, then go to Step 4. If a new system board is not available, proceed with one of the following: • Continue the repair with a different FRU if you have one. Go to Step 4. • Delay the repair until this FRU is available. When available, replace the system board using the information in the online **Repair & Verify** panels. Were the configuration settings saved across reboots? – Yes ... done – No ... Reinstall the original system board using the information in the online **Repair & Verify** panels, then go to Step 4.
	Step 4 -- Replace the entire 2461 Support Element using the information in the online **Repair & Verify** panels.

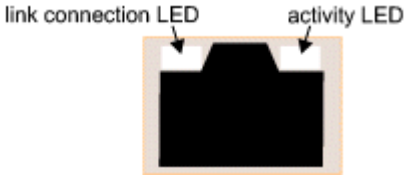
Table 13. Symptoms and corrective actions (2461-SE4 on rack mount configurations) (continued)	
Symptoms	**Corrective actions**
G - The console is reporting communication errors or the console cannot be contacted remotely.	**Step 1 --** At the rear of the console, check that all the Ethernet cables are properly seated at both ends. Are the Ethernet cables properly seated? • Yes ... Go to Step 2. • No ... Reseat the Ethernet cables. Is the console still reporting errors or is the console still unable to be contacted remotely? – Yes ... Go to Step 2. – No ... done
	Step 2 -- Check the cables to ensure they are not damaged or bent. Are the Ethernet cables bent or damaged? • Yes ... Replace the Ethernet cable. Is the console still reporting errors or is the console still unable to be contacted remotely? – Yes ... Go to Step 3. – No ... done • No ... Go to Step 3.
	Step 3 -- Check the 2461 Support Element Ethernet port. Is the left link light on?  • Yes ... Go to Step 4. • No ... Replace the Ethernet cable. Is the console still reporting errors or is the console still unable to be contacted remotely? – Yes ... Go to Step 4. – No ... done
	Step 4 -- Verify with the customer that the customer port is OK. Is the customer port OK? • Yes ... Go to Step 5. • No ... Have the customer fix their port. Is the console still reporting errors or is the console still unable to be contacted remotely? – Yes ... Go to Step 5. – No ... done

Table 13. Symptoms and corrective actions (2461-SE4 on rack mount configurations) (continued)	
Symptoms	**Corrective actions**
G - The console is reporting communication errors or the console cannot be contacted remotely. (...continued)	**Step 5 --** If a new system board is available, replace the existing system board with the new system board using the information in the online **Repair & Verify** panels. Are there still problems reading/writing to the Smart Card? • Yes ... Reinstall the original system board using the information in the online **Repair & Verify** panels, then go to Step 6. • No ... done If a new system board is not available, proceed with one of the following: • Continue the repair with a different FRU if you have one. Go to Step 6. • Delay the repair until this FRU is available. When available, replace the system board using the information in the online **Repair & Verify** panels. Are there still problems reading/writing to the Smart Card? – Yes ... Reinstall the original system board using the information in the online **Repair & Verify** panels, then go to Step 6. – No ... done
	Step 6 -- Replace the entire 2461 Support Element using the information in the online **Repair & Verify** panels.

Table 13. Symptoms and corrective actions (2461-SE4 on rack mount configurations) (continued)	
Symptoms	**Corrective actions**
H - The compact keyboard/monitor/mouse (compact KMM) display is blank.	**Step 1 --** Order a replacement white USB-C cable (03GN584). When it becomes available, remove the existing white USB-C cable (PN 03GN584) from the compact KMM and the interface adapter and replace it with the new white USB-C cable (PN 03GN584). **Note:** To remove a locking USB cable, press and hold the buttons on both sides of the USB cable plug as you pull it out of the connector. Is the compact KMM still blank? • Yes ... Remove the replacement USB-C cable (PN 03GN584) from the compact KMM and interface adapter and reinstall the original USB-C cable (PN 03GN584). Go to Step 2. • No ... done. Leave the functioning USB-C cable (PN 03GN584) in place and discard the defective USB-C cable.
	Step 2 -- Ensure that the USB cable (PN 02EC953) that is connected to the rear side of the interface adapter is connected to the **correct** Support Element. If the USB cable is plugged into the wrong SE, move it to the USB connector on the correct SE. Is the compact KMM still blank? • Yes ... Go to Step 3. • No ... done
	Step 3 -- Detach the white USB-C cable from its connector on the interface adapter. The USB-C cable should still be connected to the compact KMM. Connect the USB-C cable to the USB-C port on the rear of the frame and then check the compact KMM display. Is the compact KMM still blank? • Yes ... Reconnect the white USB-C cable to the interface adapter, then go to Step 4. • No ... Reconnect the white USB-C cable to the interface adapter, then go to Step 4.

Table 13. Symptoms and corrective actions (2461-SE4 on rack mount configurations) (continued)	
Symptoms	**Corrective actions**
H - The compact keyboard/monitor/mouse (compact KMM) display is blank. (...continued)	**Step 4 --** Open the compact KMM storage box and look for the green lights on the front end of the interface adapter, then do one of the following: • If one of the interface adapter's lights is lit, press the up or down **Support Element selection button** to select the other SE. If the light for the other SE turns on and the light for the original SE turns off, the interface adapter is probably not causing the problem. Press the other **Support Element selection button** to return the KMM to the original SE, then go to Step 5. • If one of the interface adapter's lights is lit, but after pressing the up or down **Support Element selection button**, the light for the other SE does not turn on, the interface adapter might be defective. Determine which SE's light is not turning on, then check the cable that connects on the rear of that SE. If the cables are connected and seated properly, order a replacement interface adapter (FRU 03FM967). When the new interface adapter is available, use the instructions in "Display unit: Replace compact KMM interface adapter (2461-SE4 on rack mount)" on page 117 to replace the defective interface adapter with the new interface adapter. • If neither of the interface adapter's green lights is lit, the interface adapter might be defective. Check that the USB-C cables are connected on the rear of both SEs. If the cables are connected and seated properly, order a replacement interface adapter (FRU 03FM967). When the new interface adapter is available, use the instructions in "Display unit: Replace compact KMM interface adapter (2461-SE4 on rack mount)" on page 117 to replace the defective interface adapter with the new interface adapter.

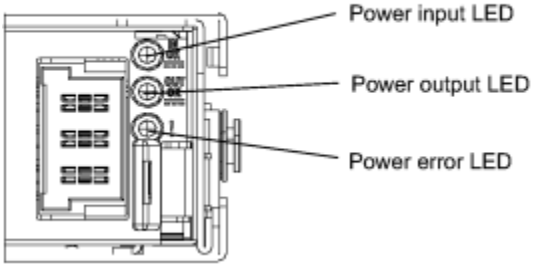
Table 13. Symptoms and corrective actions (2461-SE4 on rack mount configurations) (continued)

Symptoms	Corrective actions
H - The compact keyboard/monitor/mouse (compact KMM) display is blank. (...continued)	**Step 5 --** Order a replacement interface adapter (FRU kit 03FM967). When the replacement interface adapter arrives, swap it with the existing interface adapter in the KMM storage box, as follows: 1. Remove the white USB-C cable from its connector on the front end of the interface adapter. The other end of the USB-C cable should remain connected to the compact KMM. **Note:** To remove a locking USB cable, press and hold the buttons on both sides of the USB cable plug as you pull it out of the connector. 2. Remove the existing interface adapter from the compact KMM storage box and detach all of the cables that are connected to it. Set the interface adapter aside. 3. Install all of the cables, including the white USB-C cable (PN 03GN584), into the appropriate connectors on the **replacement** interface adapter. 4. Install the replacement interface adapter (FRU kit 03FM967) into the empty interface adapter location in the compact KMM storage box. Is the compact KMM still blank? • Yes ... Remove the replacement interface adapter (FRU kit 03FM967) from its location in the compact KMM storage box, then remove the cables that you attached to it. Next, reattach the cables to the original interface adapter and then return it to its location in the KMM storage box. Go to Step 6. • No ... done. Return the defective interface adapter to IBM with other broken parts.
	Step 6 -- Verify that the USB, video, and power cables that are connected to the interface adapter are working by doing the following: 1. Ensure that the USB, video, and power cables are plugged into the appropriate connectors on the interface adapter and are fully seated. 2. Go to the rear of the frame and verify that the other end of the USB, video, and power cable is plugged into the appropriate connector on the Support Element and is fully seated. Is the compact KMM still blank? • Yes ... Go to Step 7. • No ... done

Table 13. Symptoms and corrective actions (2461-SE4 on rack mount configurations) (continued)	
Symptoms	**Corrective actions**
H - The compact keyboard/monitor/mouse (compact KMM) display is blank. (...continued)	**Step 7 --** Order a replacement compact KMM (FRU 02WN888). Use the instructions in “Display unit: Replace compact KMM keyboard display (2461-SE4 on rack mount)” on page 116 to remove the existing compact KMM and install the replacement compact KMM. Is the compact KMM still blank? • Yes ... Go to Step 8. • No ... done. Return the defective compact KMM to IBM with other broken parts.
	Step 8 -- Order replacement USB (PN 02EC953), video (02EC952), and power cables (02EC955). When the replacement cables are available, swap them with the USB, video, and power cables that are connected to the interface adapter. Is the compact KMM still blank? • Yes ... Contact your next level of support. • No ... done

DC and AC power LEDs (2461-SE1 and 2461-SE2)

DC power supply



AC power supply

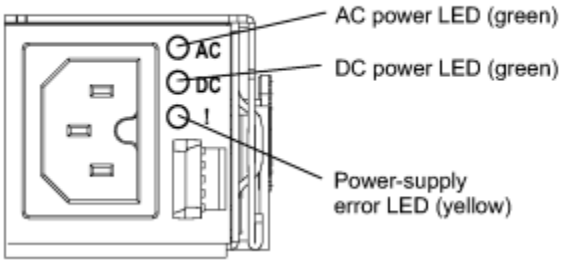


Table 14. DC and AC power supply LEDs

DC power supply LEDs (AC power supply LEDs)			Description	Action	Notes
IN OK (AC)	**OUT OK (DC)**	**Error (!)**			
On	On	Off	Normal operation.		
Off	Off	Off	No power to the server or a problem with the power source.	1. Check the power to the server. 2. Make sure that the power cord is connected to a functioning power source. 3. Restart the server. If the error remains, check the power supply LEDs. 4. If the problem remains, replace the power supply.	This is a normal condition when no power is present.
Off	Off	On	The power supply has failed.	Replace the power supply.	
Off	On	Off	The power supply has failed.	Replace the power supply.	
Off	On	On	The power supply has failed.	Replace the power supply.	
On	Off	Off	Power supply not fully seated, faulty system board, or the power supply has failed.	1. Reseat the power supply. 2. Replace the power supply. 3. Reseat the system board. 4. Replace the system board.	Typically indicates a power-supply is not fully seated.
On	Off	On	The power supply has failed.	Replace the power supply.	
On	On	On	The power supply has failed.	Replace the power supply.	

Table 14. DC and AC power supply LEDs (continued)

DC power supply LEDs (AC power supply LEDs)			Description	Action	Notes
IN OK (AC)	**OUT OK (DC)**	**Error (!)**			
On	blinking	Off	If the system is powered down, this is normal. If you try to power on and it will not power on.	Reseat or replace the power supply.	

Power LEDs (2461-SE3 and 2461-SE4)

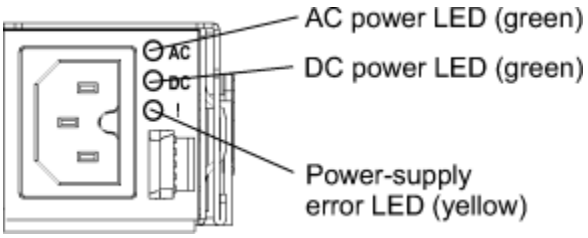
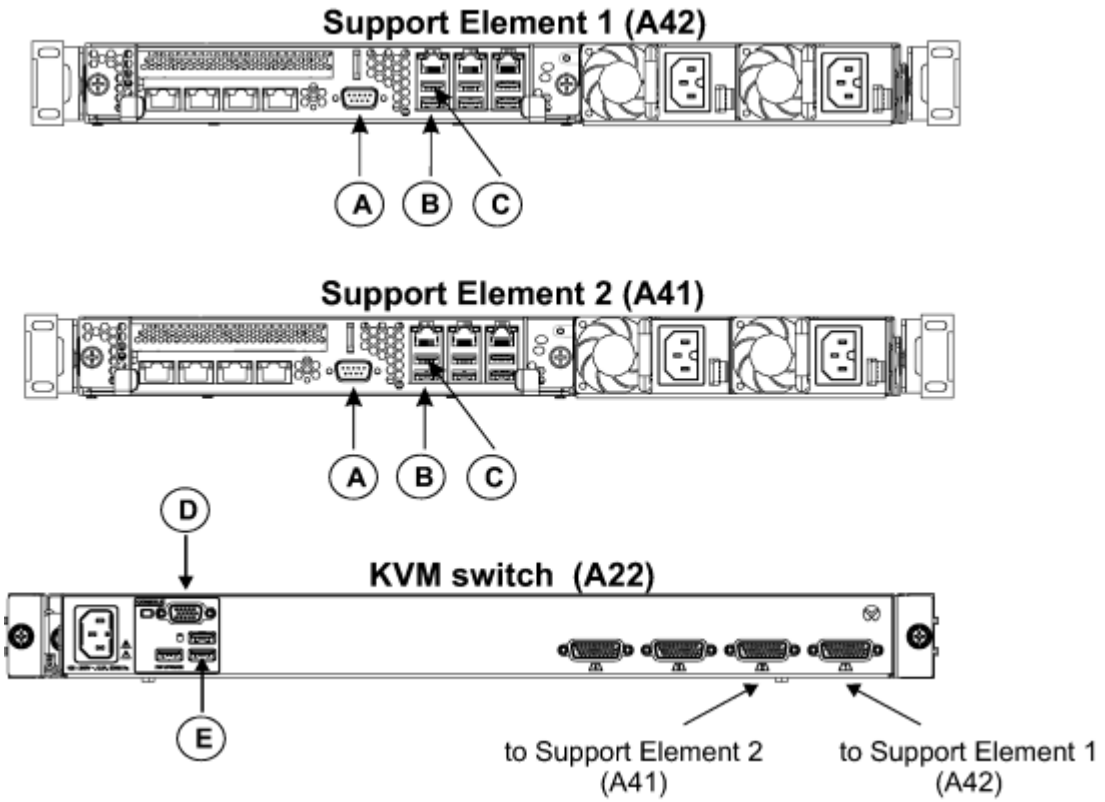


Table 15. Power supply LEDs

Power supply LEDs			Description	Action	Notes
IN OK (AC)	**OUT OK (DC)**	**Error (!)**			
On	On	Off	Normal operation.		
Off	Off	Off	No power to the server or a problem with the power source.	1. Check the power to the server. 2. Make sure that the power cord is connected to a functioning power source. 3. Restart the server. If the error remains, check the power supply LEDs. 4. If the problem remains, replace the power supply.	This is a normal condition when no power is present.
Off	Off	On	The power supply has failed.	Replace the power supply.	
Off	On	Off	The power supply has failed.	Replace the power supply.	
Off	On	On	The power supply has failed.	Replace the power supply.	
On	Off	Off	Power supply not fully seated, faulty system board, or the power supply has failed.	1. Reseat the power supply. 2. Replace the power supply. 3. Reseat the system board. 4. Replace the system board.	Typically indicates a power-supply is not fully seated.
On	Off	On	The power supply has failed.	Replace the power supply.	
On	On	On	The power supply has failed.	Replace the power supply.	
On	blinking	Off	If the system is powered down, this is normal. If you try to power on and it will not power on.	Reseat or replace the power supply.	

Bypass the KVM switch (2461-SE1 and 2461-SE2)

Use the following steps to bypass the KVM switch (for 2461-SE1 and 2461-SE2 only).



__ 1. Label, if necessary, and disconnect the KVM switch cables from the video port (**A**), USB port (**B**), and USB port (**C**) from back of both Support Elements.

__ 2. Label, if necessary, and disconnect the display unit video cable (**D**) and USB cable (**E**) from the KVM switch.

__ 3. Untie the extra length of the display unit video cable and display unit USB cable from the side of the rack and temporarily route them to the back of one of the Support Elements. (The goal is to connect to the primary Support Element, use the top Support Element first.)

__ 4. Plug the display unit video cable into the video port (**A**) on the back of the Support Element.

__ 5. Plug the display unit USB cable into the USB port (**B**) on the back of the Support Element.

__ 6. Verify that the primary Support Element displays. ("Welcome to the Primary Support Element" title will appear on the display unit.)

> **Attention:** Due to import restrictions, a replacement KVM switch might not be available in your country. In this case, leaving the KVM switch bypassed would be permanent. Refer to "Remove the KVM switch (2461-SE1 and 2461-SE2)" on page 86 for instructions on removing the KVM switch permanently.

- If the primary Support Element displays, leave the KVM switch bypassed, order a replacement KVM switch, and exchange the KVM switch at a later date.
- If the alternate Support Element displays, remove the display unit video cable and USB cable from the Support Element and plug them into the ports of the other Support Element.

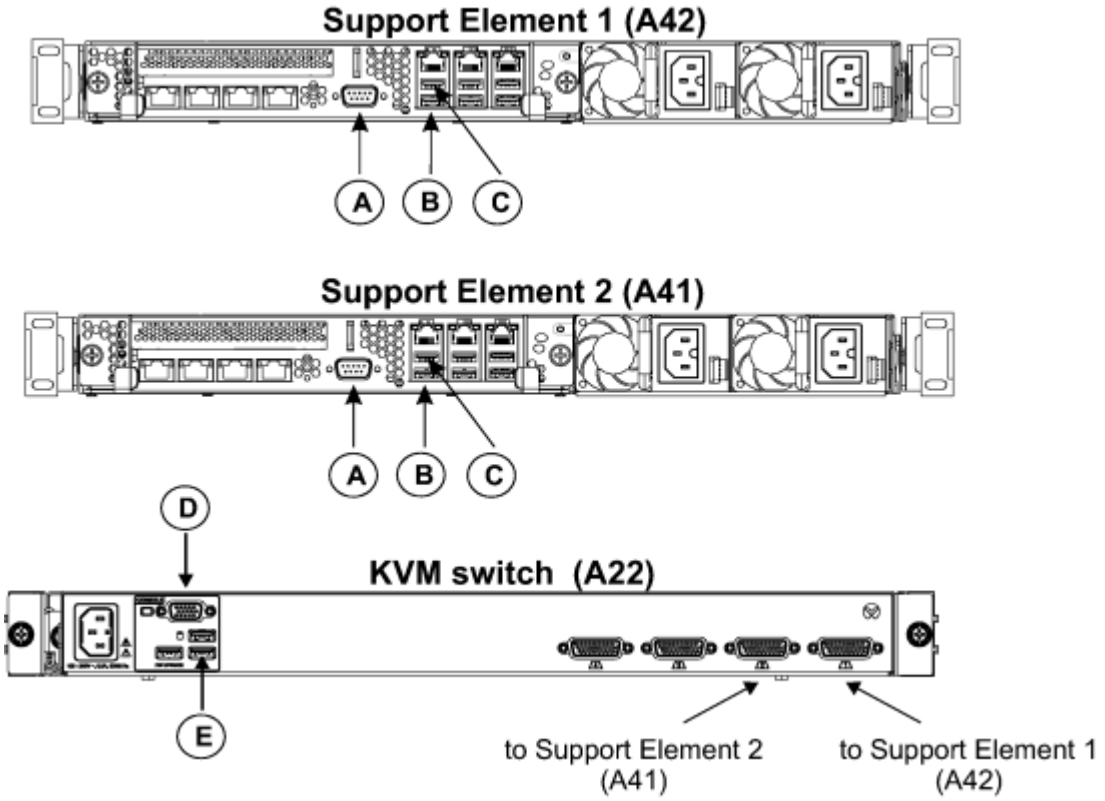
Then, if the primary Support Element displays, leave the KVM switch bypassed, order a replacement KVM switch, and exchange the KVM switch at a later date.

- If the bypass is not successful, replug the cables back into the KVM switch and Support Elements.

Remove the KVM switch (2461-SE1 and 2461-SE2)

Use the following steps to remove the KVM switch from a system's rack (for 2461-SE1 and 2461-SE2 only).

Due to import restrictions, a replacement KVM switch might not be available in your country. If this is your situation, and you have a 2461-SE1 or 2461-SE2 KVM switch that is no longer functioning, it is recommended that you remove the KVM from the system. Use the instructions here to disconnect and remove the KVM.



__ 1. Disconnect the KVM switch cables from the video port (**A**), USB port (**B**), and USB port (**C**) on the rear of both Support Elements.

__ 2. Remove the other end of the video cables (**A**) and two USB cables (**B** and **C**) from the KVM switch. Remove the cables from the rack and discard.

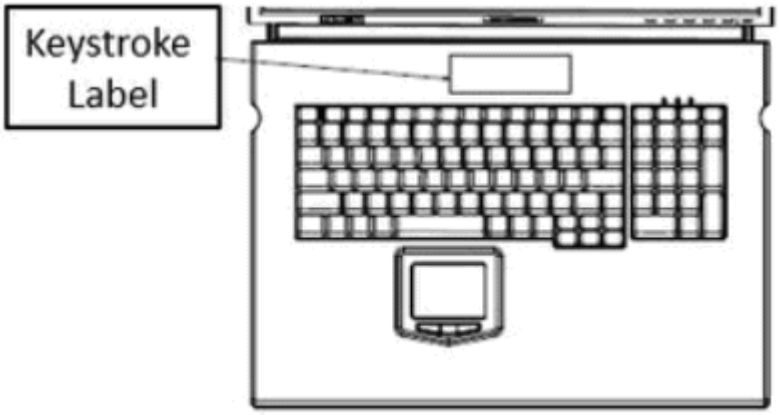
__ 3. Disconnect the display unit video cable (**D**) and the display unit USB cable (**E**) from the rear of the KVM switch.

__ 4. Plug the display unit video cable (**D**) into the video port (**A**) on the rear of the Primary Support Element. Plug the display unit USB cable (**E**) into the USB port (**B**) on the rear of the same Support Element. If the Alternate Support Element displays, remove the display unit video cable and the USB cable from the Support Element and plug them into the ports of the other Support Element.

__ 5. Unplug the power cable from the KVM, follow the cable to the PDU, and then unplug the power cable from the PDU. Pull the KVM-to-PDU power cable out of the rack and discard.

__ 6. Remove the KVM from the rack. To do this, unscrew the KVM's 8mm screws (or thumb screws, if present). Pull the KVM out of the frame (toward you).

__ 7. Open the KMM and remove the keystroke label from the KMM's keyboard. For future diagnostics, the lack of a keystroke label on the KMM's keyboard will indicate that there is no KVM switch in the frame.


Keystroke
Label

Chapter 4. Exchanging the components

This chapter describes the steps required to remove and replace the display unit on the IBM z Systems server.

Display unit: Replace Vertiv KMM with Vertiv KMM (2461-SE2)

Use the following steps to exchange the Vertiv display unit (KMM) with a new Vertiv KMM.

Attention: Failure to follow the step-by-step sequence for this FRU removal and replacement might result in FRU or system damage.

__ 1. Locate the new display unit, two frame rails, and removal tool (P/N 02EA980).

__ 2. In Step "7" on page 90, you will be removing the KVM switch from the frame. Before unplugging any cables from the KVM switch and removing the KVM switch, you need to examine where the cables are routed and how they are secured to the frame or other cables.

__ 3. Complete the following steps:

__ a. Remove the hook-and-loop fasteners that are securing the KVM power cable to the right side of the frame or to any other cables.

__ b. Unplug the KVM power cable from PDU 2 (A21ZPDU2J.05).

__ c. Label the KVM power cable.

__ 4. Unplug the display unit power cable from the PDU (location A21NPDU1J.04). Ensure the display unit power cable is labeled.

__ 5. Detach the power cable, keyboard cable, video cable, and two Support Element cables from the KVM switch. Ensure the cables are labeled. (The KVM power cable will now be completed detached from the machine. You will need it later in this procedure.)

__ 6. To make the removal of the KVM easier, you can optionally move the spine cable management bracket by removing the bottom screw and carefully slide the vertical cable spine bracket to the right or left of the tailgate bracket and carefully pull the bottom end of the vertical cable spine bracket away from the machine about 2 inches. Make sure the cables remain attached as you pull the vertical cable spine bracket away from the machine. If necessary, you can temporarily remove the cables from a cable clip.

__ 7. Remove the KVM using the following steps:

Note: Take note of how the display unit power cable, video cable, and keyboard cable are routed in the U-channel located on the left side of the KVM switch. You will be rerouting them later in this procedure.

__ a. Remove the two captive screws on the end of the rail of the KVM switch.

__ b. Pull out the KVM.

__ 8. Before removing the display unit, use a 14" screwdriver to remove the captive screw on the end of the display unit cable management arm. Make sure the cable management arm is detached from the rail.

__ 9. Coil up the display unit cables and place them inside the rack behind the cable management arm to avoid snagging and tangling with other cables when the display unit is being removed from the front.

__ 10. Continue with one of the following conditions:

- If the display unit is already pulled out (in service position), continue to Step "12" on page 91.
- If the mounting spacers between the display unit and the latches **are not** installed, continue to Step "11" on page 90.
- If the mounting spacers between the display unit and the latches **are** installed, release them by removing the two 7 mm screws located on the left-side and right-side of the display unit. Store the mounting spacers and the two screws for future use. Continue to Step "11" on page 90.

__ 11. Slide the display unit out until it clicks.

__ 12. Close the display unit if it is not already closed.

__ 13. Depress and hold the detents on each side of the display unit, then pull the display unit off of the slides.

__ 14. Continue with one of the following:

- If the frame rails are defective, continue to Step “16” on page 91.
- If the display unit is defective, continue to Step “18” on page 91

__ 15. If a third PCIe+ I/O drawer is installed, remove the front bezel.

__ 16. Remove defective frame rail using the following steps:

__ a. Insert the removal tool (**P/N 02EA980**) hook end into the rail latch cavity behind the blue tab.

__ b. Rotate the tool towards the middle of the frame to release the blue tab. This allows you to pull the slide directly away from the EIA rail then towards the middle of the frame.

__ c. Repeat Step “16.a” on page 91 and Step “16.b” on page 91 for the other end of the defective frame rail.

__ d. Examine the opposite rail and, if necessary, use Step “16.a” on page 91 to Step “16.c” on page 91 to remove it.

__ 17. Install the new frame slides using the following steps:

__ a. New slides, being loose piece, will have a disposable filler in the bearing race to ensure the balls stay in place. Remove the disposable filler.

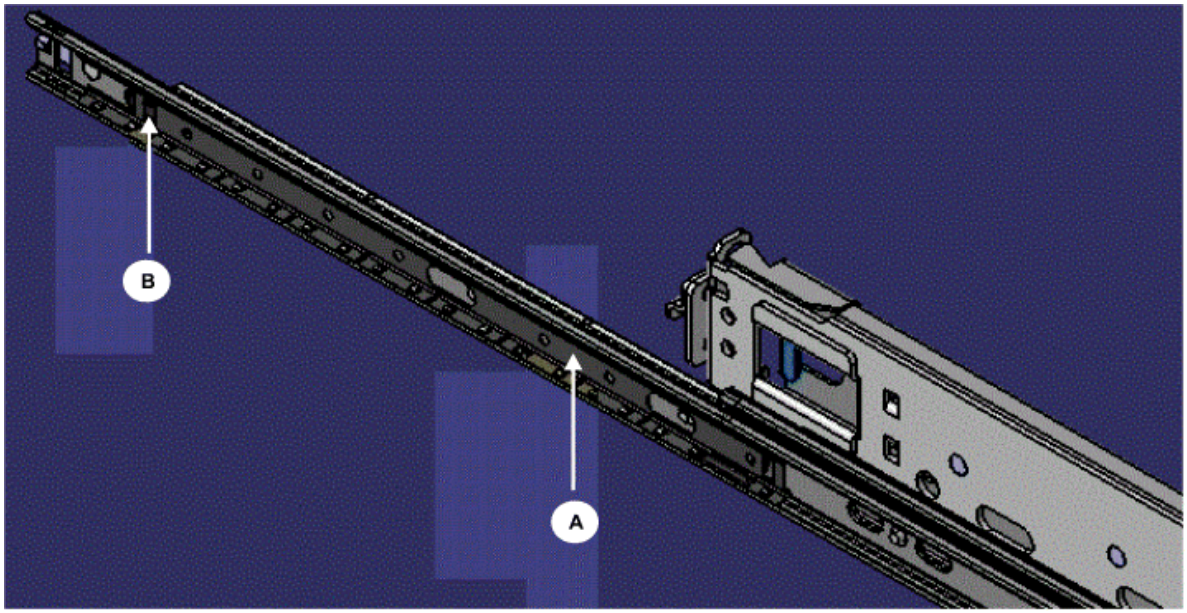
__ b. Line up the rails front and rear at EIA location 22.

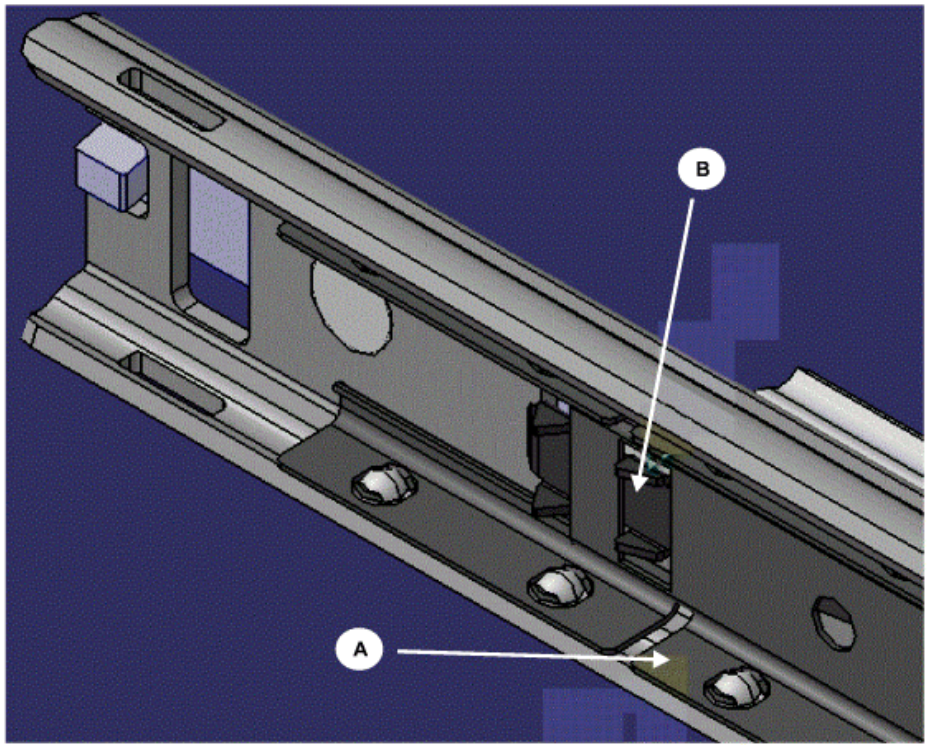
__ c. Facing the front of the frame, on the right side, push the rail into the frame. Repeat for the left side.

__ d. Facing the rear of the frame, on the right side, push the rail into the frame. Repeat for the left side.

__ e. Ensure the rails are latched in place and will not come off.

__ 18. Before installing the new display unit on the frame slides, extend the slide out of the frame as far as possible. The bearing race (**A**) MUST be pulled forward completely so it latches up with the detent (**B**). It might be this way for slides that are already in the frame, but new slides might come with the bearing race moving freely.





__ 19. Push the display unit cables to the back to make sliding the display unit easier.

__ 20. Mating the slide sections fastened to the sides of the display unit to the slides mounted in the frame can be cumbersome. You must take care when mating these slides because you can easily have one side mated while the other side is not mated.

Once successfully mated, push and pull the display unit from the frame a few times to ensure it is beyond the dents in the slides. This will prevent the display unit from being pulled off of the frame mounted slides and will ensure there is no interference or binding.

__ 21. Install the captive screw on the end of the display unit cable management arm.

Note: For easier installation of the captive screw, you might want to extend the display unit halfway.

__ 22. If the bezel was removed from the third PCIe+ I/O drawer, install the bezel in front of the PCIe+ I/O drawer.

__ 23. Reinstall the KVM using the following steps:

__ a. Position the KVM switch for installation and place the display unit power cable, video cable, and keyboard cable into the U-channel in the left side bracket.

__ b. Slide the KVM into the frame.

__ c. Insert and secure the two captive screws on the end of the rail of the KVM securing it to the frame.

__ 24. Reattach the power cable, keyboard cable, video cable, and two Support Element cables to the KVM switch. Ensure the cables are labeled.

Gather up any excess cable length and secure the cables to the side of the frame so they will not interfere when servicing other parts of the machine.

__ 25. Plug the KVM power cable to the PDU (location A21ZPDU2J.05).

__ 26. Plug the display unit power cable into the PDU (location A21ZPDU1J.04).

__ 27. Verify the Power LED is lit on the display unit. If the Power LED is not lit, ensure the power cable is secure.

__ 28. If the spine cable management bracket was moved, carefully move the vertical cable spine bracket to the right or left of the tailgate bracket and then behind the tailgate bracket. Then install the bottom screw to secure the vertical cable spine bracket. Make sure the cables remain attached as you move the vertical cable spine bracket. If any cables were removed from a cable clip, slide the cables back into the cable clip and use the hook-and-loop fasteners to secure the cables to the spine cable management bracket.

__ 29. Ensure both Support Elements can be displayed.

To display the Support Element in location EIA 42, use the following steps:

__ a. Press **Ctrl**

__ b. Press **Ctrl**

__ c. Press **0**

__ d. Press **1**

__ e. Press **Enter**

To display the Support Element in location EIA 41, using the following steps:

__ a. Press **Ctrl**

__ b. Press **Ctrl**

__ c. Press **0**

__ d. Press **2**

__ e. Press **Enter**

__ 30. Continue with one of the following:

- If the display unit exchange **was** initiated from the Repair & Verify panels, continue back to the Repair & Verify panels to complete the process.
- If the display unit exchange **was not** initiated from the Repair & Verify panels, complete the process using the following steps:

__ a. Log onto the primary Support Element.

__ b. From the left navigation, click **Tasks Index**.

__ c. Click the **Perform a Repair Action** task.

__ d. Click **Report a repair of a non-detected problem**.

__ 31. Close the display unit and slide the display unit into the frame.

__ 32. If the mounting spacers were previously removed, you must reinstall them using the two 7mm screws located on the left-side and right-side of the display unit. Otherwise, just secure the display unit using the two 7mm screws located on the left-side and right-side of the display unit.

END OF PROCEDURE

Display unit: Replace Vertiv KMM with UPG KMM (2461-SE2)

Use the following steps to exchange the Vertiv display unit (KMM) with the UPG KMM.

Attention: Failure to follow the step-by-step sequence for this FRU removal and replacement might result in FRU or system damage.

Before getting started, locate the universal UPG FRU kit (PN 02RA001). The FRU kit contains the following parts:

- 1 UPG KMM
- 1 Power supply and rack kit
- 1 Power jumper cable
- 1 set of these hardcopy instructions
- 1 bag of KVM parts (PN 02RA007):
  - Left and right brackets
  - 2 6mm x 13mm hex flange bolt with 8mm hex
  - 4 6-32 x ¼" flat head T10 screw
- 1 bag of KMM parts (PN 02RA008)
  - Left and right black earthquake brackets
  - 2 6mm x 13mm hex flange bolt with 8mm hex
  - 6 6-32 x ¼" pan head T15 screw
  - 2 safety labels
  - 1 keystroke label
- 1 bag of tools (PN 02RA009)
  - UPG rail removal bolt tool
  - UPG rail removal puller tool
  - Vertiv rail removal tool

Figure 9. Rail tools, from left to right; UPG rail removal bolt tool, UPG rail removal puller tool, and Vertiv rail removal tool.

You will also need the following tools, which are not provided in the FRU.

- #2 Phillips head screwdriver
- 14" #2 Phillips head screwdriver
- T10 Torx screwdriver
- T15 Torx screwdriver
- Needle nose pliers
- 8mm female hex nut driver or 8mm socket

Preparing to remove and replace the display unit

Before performing the FRU removal and replacement, inspect the I/O cables that are routed through the cable spine (if installed). If the cables fit tightly, consider finding additional slack to allow flexibility when removing or replacing parts from the rear of the system as you follow this process.

Step 1: Remove the Vertiv KVM switch, KMM, and rails

For this step, you will need the following:

- Bag of tools marked PN 02RA009

__ 1. In step “6” on page 96 , you will be removing the KVM switch from the frame. Before unplugging cables from the KVM switch, and then removing the KVM switch, examine where the cables are routed and how they are secured to the frame or other cables.

__ 2. Complete the following steps:

__ a. Remove the hook-and-loop fasteners, if any, that are securing the KVM power cable to the right side of the frame or to any other cables.

__ b. Unplug the KVM power cable from PDU 2 (location A21ZPDU2J.05). If it is not plugged into PDU 2, check for the KVM power cable in PDU 1 (location A21NPDU1J.05).

__ 3. Unplug the display unit power cable from PDU 1 (location A21NPDU1J.04). If it is not plugged into PDU 1, check for the display unit power cable in PDU 2 (location A21ZPDU2J.04).

__ 4. Detach the power cable, keyboard cable, video cable, and two Support Element cables from the KVM switch. Ensure the cables are labeled. (The KVM power cable will now be completely detached from the machine.)

__ 5. To make the removal of the KVM easier, you can optionally move the spine cable management bracket, as follows:

__ a. Remove the bottom (M5) screw (PN 46K4282).

__ b. Carefully slide the vertical cable spine bracket to the right or left of the tailgate bracket.

__ c. Carefully pull the bottom end of the vertical cable spine bracket away from the machine about 2 inches. Make sure that cables do not become unattached as you pull the vertical cable spine bracket away from the machine. If necessary, you can temporarily remove the cables from a cable clip.

__ 6. Remove the KVM using the following steps:

__ a. Remove the two captive screws on the end of the rail of the KVM switch.

__ b. Pull out the KVM.

__ 7. Before removing the display unit, use a 14" #2 Phillips head screwdriver (not provided in the FRU) to remove the captive screw on the end of the display unit cable management arm. Make sure the cable management arm is detached from the rail.

__ 8. Coil up the display unit cables and place them inside the rack behind the cable management arm to avoid snagging and tangling with other cables when the display unit is being removed from the front.

__ 9. Continue with one of the following conditions:

- If the display unit is already pulled out (in service position), continue to Step “11” on page 96 .
- If the mounting spacers between the display unit and the latches **are not** installed, continue to Step “10” on page 96 .
- If the mounting spacers between the display unit and the latches **are** installed, release them by removing the two 7 mm screws located on the left-side and right-side of the display unit. Store the mounting spacers and the two screws for future use. Continue to Step “10” on page 96.

__ 10. Slide the display unit out until it clicks.

__ 11. Close the display unit if it is not already closed.

__ 12. Depress and hold the detents on each side of the display unit, then pull the display unit off of the slides.

__ 13. If a third PCIe+ I/O drawer is installed, remove the front bezel.

__ 14. Remove the frame rails using the following steps. Perform these steps for the left and right rails.

__ a. At the front of the rack, remove the screw from the top EIA slot hole at location 22.

__ b. Insert the removal tool (**P/N 02EA980**) hook end into the rail latch cavity behind the blue tab.

__ c. Rotate the tool toward the middle of the frame to release the blue tab. This allows you to pull the slide directly away from the EIA rail then towards the middle of the frame.

__ d. Repeat steps “14.b” on page 97 and “14.c” on page 97 to remove the rails from the rear side of the frame.

__ e. Remove the rails out of the frame.

__ f. Remove the nut clips from the front of the EIA rack (slot 22). You might need to remove the I/O cage bezel.

__ 15. If the bezel was removed from the third PCIe+ I/O drawer, install the bezel in the front of the PCIe+ I/O drawer.

Step 2: Assemble the UPG KMM and rails

For this step, you will need the following:

- UPG KMM (PN 00RY702 or PN 02RA023)
- Power supply and rack kit (includes the rail assemblies, cable management arm, and cross brace)
- Power jumper cable
- Bag of parts marked PN 02RA008
- Bag of tools marked PN 02RA009

Note: The unlabeled bags of parts in the UPG packages contain spare parts. If these spare parts are not used, discard them.

__ 1. Find a large (at least 3 feet by 4 feet) table on which to attach the rail assemblies with slides, cross brace, and cable management arm to the KMM. If a table is not available, the KMM and rails can be assembled on the floor.

__ 2. Place the KMM near one end of the table. The rear side of the KMM should be facing the long side of the table.

Note: While handling the rail assemblies, your hands might get greasy. To keep the KMM clean, it is recommended that you not remove the plastic cling sheeting that covers the lid until the installation is complete.

__ 3. Place the rail assemblies behind the KMM, parallel to each other, with the ends that include the slides pointing toward the KMM.

Important: The rail assembly must be oriented so that the slides are on the lower side of the rail (below the rail's center point).

__ 4. Each rail assembly includes an inner slide rail. Remove the inner slide rails from the rail assemblies as follows.

a. Locate the inner slide on the rail assembly that is behind the right side of the KMM.

b. Pull the inner slide outward, extending it toward the KMM.

c. Pull the white release button on the inner slide forward, while pulling the slide itself forward, until it releases completely from the rail assembly. Note that considerable force is required to pull the slide forward.

d. Repeat steps “4.a” on page 97 through “4.c” on page 97 on the rail assembly on the left side of the KMM.

__ 5. Attach the right inner slide rail into the open screw holes on the right side of the KMM using two 6-32x1/4" machine screws (PN 02RA006, provided with the FRU) and the T15 Torx screwdriver. Notches in the body of the KMM mark the location of the screw holes.

Repeat this step on the left. The slide rails should now be firmly attached to the KMM.

__ 6. Slide the rail assembly on the right onto the slide rail that is attached the right side of the KMM. **The slides should be on the lower side of the rail, below its center point.**

Pull the rail all the way forward, toward the KMM, until it is fully extended (you will hear a snap). Repeat this step with the rail assembly on the left side of the KMM.

__ 7. Slide the cross brace into the rails from the rear opening. Using two 6-32 X 1/4" screws (PN 02RA006) and a T15 Torx screwdriver, attach the cross brace to the inside of the right and left rails in the holes provided. Note that the cross brace should sit within the C-shaped channels on the inside and of the KMM rails.

Attach the screws from the inside of the rail.

Note: Be careful to use only the 6-32 X ¼-inch screws (not the 6-32 X 3/8-inch screws) to attach the cross brace to the rails. If you have only 3/8-inch machine screws, swap them with the ¼" machine screws that hold the slides to the rails.

__ 8. Remove the two screws that are attached to the rear of the KMM using the T15 Torx screwdriver, and then attach the other end of the cable management arm to the rear of the KMM, in the same holes.

__ 9. Before continuing to the next step, refer to Figure 10 on page 98, which shows the KMM rail assembly with the cable management arm, cross brace, and cables installed. Use this figure as a reference as you complete the KMM and rail assembly installation (step “10” on page 98 through step “13” on page 99).

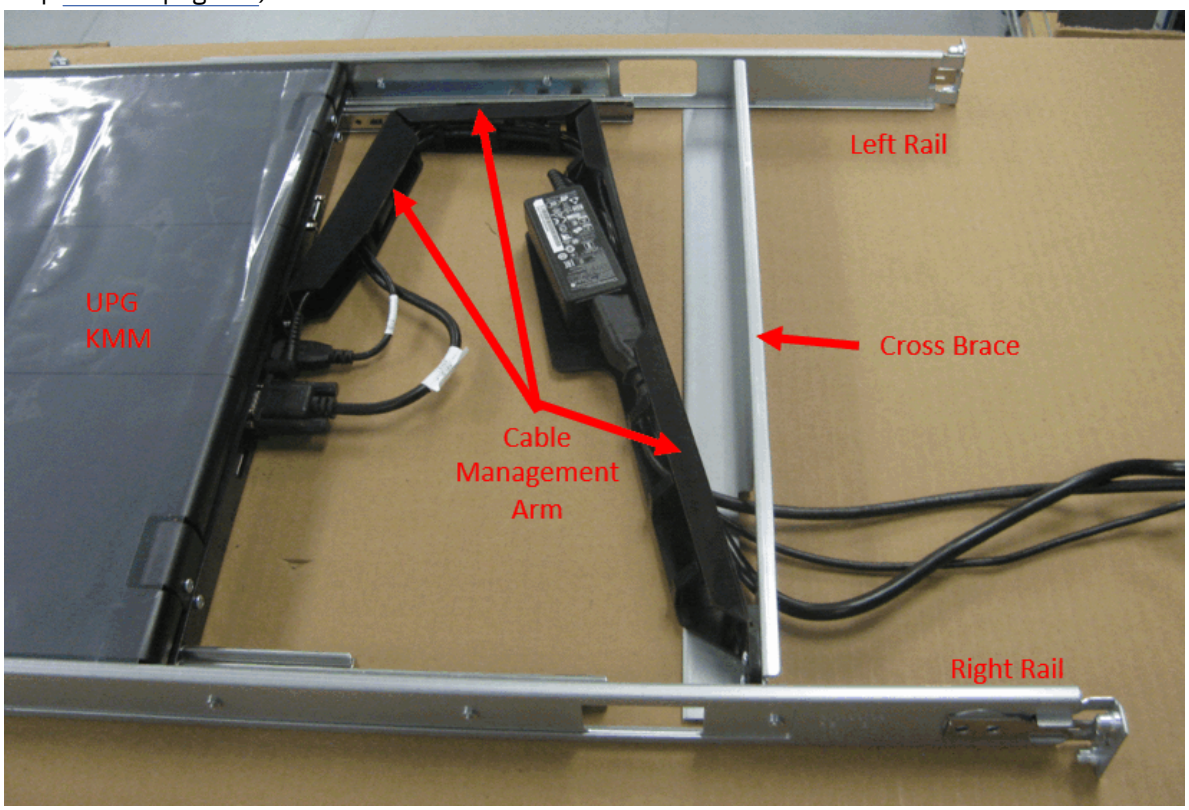


Figure 10. KMM rail assembly with cable management arm, cross brace, and cables installed

__ 10. In the cable management arm, attach the C5 to C14 Type power jumper cable (PN 00RY699) to the power supply. Route the power jumper cable through the hole in the cable management arm and the cross brace. Make sure to tuck the power cable inside the fingers along the length of the cable management arm so that is held securely in place.

__ 11. Route the UPG VGA cable (PN 3200019) and the UPG USB cable (PN 520-00110) through the hole in the cross brace and the hole in the cable management arm.

Connect each cable to its connector on the rear of the KMM.

Note: Leave some slack in the VGA cable when routing it through the cable management arm. There should be a U-shaped bend to the VGA cable between the connector on the rear of the KMM and entrance to the cable management arm.

__ 12. Tuck the VGA and USB cables inside the fingers along the length of the cable management arm so they are held securely in place. Make sure both cables are pushed far enough behind the power supply (the VGA and USB cables should sit securely behind the power supply).

__ 13. Route the power supply's cable through the cable management arm and connect its 90-degree plug to the power connector on the rear of the KMM. Make sure that the 90-degree power plug is turned sideways, so that it sits completely within and below the upper lip of the cable management arm.

Also, make sure that the ferrite core is within the cable management arm's fingers and loop the extra cable behind the fingers that are between the core and the power supply.

Note: At this point, ensure that all of the other cables are contained within the upper lip of the cable management arm. Cables that protrude above the cable management arm or the KMM might cause problems when the KMM is installed into the rack. All cables should be within the cable management arm and fingers.

__ 14. The KMM and rail assembly is complete. In the next few steps, you will temporarily disassemble some of the parts that you previously connected in order to make it easier to install the KMM into the rack.

__ 15. Carefully disconnect the power, VGA, and USB cables from the back of the KMM.

__ 16. Remove the two 6-32 x 3/8-inch machine screws that hold the cable management arm to the KMM. Retain the screws.

__ 17. On the right side of the KMM, slide the white button on the inner rail forward while pulling the KMM forward slightly, to disengage it from the slide. Repeat this step on the left.

__ 18. Holding the ends of the cables in one hand, carry the rail assembly to the front of the rack.

__ 19. Route the cables through the EIA slot in the front of the rack, pushing them as far back as possible. Note that you should consider bundling the cables together using velcro or cable ties to make it easier to route them from the front to the rear of the rack. At the rear of the rack, make sure the cables are pulled through completely and are pushed to the left side.

__ 20. Insert the rail ends of the KMM/rack assembly into the EIA slot in the rack. You might need to press the rail ends inward (toward the inside of the rack) to allow them to clear the vertical sides of the rack. Push the rails into the rack until the humps on the rails are about four inches in front of the cross brace. **(Be careful not to push the rear rails too back from the slides in order to prevent them from dropping out of the slides and falling down into the rack)**.

__ 21. Carefully shift and turn the assembly from side to side as you push it forward into the rack. To move the section of the assembly where the cross brace is connected forward and into the rack, you need to insert one rail further into the rack than the other, so that the cross brace is on a slight diagonal. Alternate doing this on the left and right sides while pushing the assembly slightly forward. The idea is to advance one of the PEM nuts past the EIA rail at a time.

__ 22. Fully lock the front end of the KMM rails to the front EIA rail. Push outward to compress the spring as you push the rail into the rack.

You might feel or hear a click as the spring engages the back of the EIA rail.

__ 23. From the back of the rack, use the UPG rail removal puller tool (PN 02RA009) to pull each rail end toward the rear of the rack until it meets the rail. Then, using the tool, pull the end of the rail around the EIA rail so that it is now beyond the EIA rail.

Next, push the end of the KMM rail into the EIA rail until if fully locks.

__ 24. At the front of the rack, make sure that the ball bearings in the KMM rails are fully forward, then reattach the KMM by pushing it into the rails until they fully engage.

Next, pull the KMM fully forward. It should be retained by the rails.

__ 25. Reattach the cable management arm to the back of the KMM using the two 6-32 x 3/8-inch screws and the T15 Torx screwdriver. Then, carefully reconnect the three cables to their connectors, ensuring that they remain on the inside of the cable management arm.

Step 3: Return the Vertiv KVM switch to the rack

For this step, you will need the following:

- Bag of parts marked PN 02RA007

__ 1. Remove the two screws from the right side of the KVM switch and remove the bracket. Retain the screws. Repeat this step on the left side of the KVM.

__ 2. Connect the new KVM brackets to each side of the KVM switch, using two 6-32 x 1/4" flat head T10 screws (PN 01PP817). Pay careful attention to the orientation of the brackets. The left bracket (PN 02EC989) is marked with **L**, the right bracket (PN 02EC990) is marked with **R**, and both brackets are marked with **UP**.

__ 3. Push the KMM cables to the left side of the rack. Arrange the VGA, USB, and power cables in your left hand, with the thinnest cable on the bottom and the thickest cable on the top.

In the next step, you will slide the KVM into the rack. When you do, the cables must be routed along the left side of the KVM, over the front shoulder of the bracket, and through the notch in the bracket's rear foot.

__ 4. Continue to hold the cables in your left hand while sliding the KVM into the rack. At the same time, ensure that the VGA, USB, and power cables remain correctly routed over the bracket on the left side of the KVM.

Note: If you have trouble sliding the KVM into the rack, make sure that the rails did not become disengaged from one another.

When the KVM is in place, the cables should still be next to the KVM in the left side bracket.

__ 5. At this point, the screw holes of the left and right KVM brackets should be flush and aligned with the holes in the rack. Reattach the KVM with the 6mm x 13mm hex flange bolts (PN 46K4308) through the brackets to secure it to the rack.

__ 6. Reattach the VGA, USB, display power, and Support Element cables to their connectors on the KVM. Ensure that the cables are labeled.

Gather up any excess cable length and secure the cables to the side of the frame so they will not interfere when servicing other parts of the machine.

__ 7. Plug the KVM power cable into PDU 2 (location A21ZPDU2J.05).

__ 8. Plug the display unit power cable into PDU 1 (location A21ZPDU1J.04).

__ 9. If the spine cable management bracket was moved, return it to its original position, as follows:

a. Carefully move the vertical cable spine bracket to the right or left of the tailgate bracket and then behind the tailgate bracket. **Make sure no cables become unattached as you move the vertical cable spine bracket.**

b. Install the bottom screw to secure the vertical cable spine bracket.

c. If any cables were removed from a cable clip, slide the cables back into the cable clip and use the hook-and-loop fasteners to secure the cables to the spine cable management bracket.

__ 10. Ensure that both Support Elements can be displayed.

To display the Support Element in location EIA 42, use the following steps:

__ a. Press **Ctrl**

__ b. Press **Ctrl**

__ c. Press **0**

__ d. Press **1**

__ e. Press **Enter**

To display the Support Element in location EIA 41, using the following steps:

__ a. Press **Ctrl**

__ b. Press **Ctrl**

__ c. Press **0**

__ d. Press **2**

__ e. Press **Enter**

__ 11. The UPG display might be slightly off center. In this case, it is recommended that you center the screen, as follows.

a. Press the **OSD activation button** (1), which is on the front of the UPG display.

b. On the OSD Main Menu, the **Auto Configuration** option should already be selected. Press the OSD activation button (1).

Note: Screen centering only lasts for a single power session. Therefore, if you do an Emergency Power Off of the CPC, you must repeat the screen centering steps.

__ 12. Close the display unit and slide it into the frame.

__ 13. Remove the plastic cling sheeting from the lid of the KMM.

__ 14. Apply the labels, as follows.

- Apply the keystroke label to the inside of the KMM.
- Apply one of the two the safety labels to the inside of the KMM.
- Apply the second safety label to the outside of the KMM.

__ 15. Return the UPG rail removal puller tool to IBM with other broken parts. Discard the Vertiv KMM locally.

END OF PROCEDURE

Display unit: Replace UPG KMM with UPG KMM (2461-SE2)

Use the following steps to exchange the UPG display unit (KMM) with a replacement UPG KMM.

Before getting started, locate the universal UPG FRU kit (PN 02RA001). The FRU kit contains the following parts:

- 1 UPG KMM
- 1 Power supply and rack kit
- 1 Power jumper cable
- 1 set of these hardcopy instructions
- 1 bag of KMM parts (PN 02RA008)
  - Left and right black earthquake brackets
  - 2 6mm x 13mm hex flange bolt with 8mm hex
  - 6 6-32 x ¼" pan head T15 screw
  - 2 safety labels
  - 1 keystroke label
- 1 bag of tools (PN 02RA009)
  - UPG rail removal bolt tool
  - UPG rail removal puller tool

You will also need the following tools:

- T15 Torx screwdriver
- 8mm female hex nut driver or 8mm socket

Preparing to remove and replace the display unit

Before performing the FRU removal and replacement, inspect the I/O cables that are routed through the cable spine (if installed). If the cables fit tightly, consider finding additional slack to allow flexibility when removing or replacing parts from the rear of the system as you follow this process.

Step 1: Remove KVM switch

__ 1. In step “6” on page 103, you will be removing the KVM switch from the frame. Before unplugging cables from the KVM switch, and then removing the KVM switch, examine where the cables are routed and how they are secured to the frame or other cables.

__ 2. Complete the following steps:

  __ a. Remove the hook-and-loop fasteners, if any, that are securing the KVM power cable to the right side of the frame or to any other cables.

  __ b. Unplug the KVM power cable from PDU 2 (A21ZPDU2J.05). If it is not plugged into PDU 2, check for the KVM power cable in PDU 1 (location A21NPDU1J.05).

__ 3. Unplug the display unit power cable from the PDU (location A21NPDU1J.04). If it is not plugged into PDU 1, check for the display unit power cable in PDU 2 (location A21ZPDU2J.04).

__ 4. Detach the power cable, keyboard cable, video cable, and two Support Element cables from the KVM switch. Ensure the cables are labeled. (The KVM power cable will now be completely detached from the machine.)

__ 5. To make the removal of the KVM easier, you can optionally move the spine cable management bracket, as follows:

  __ a. Remove the bottom (M5) screw (PN 46K4282).

__ b. Carefully slide the vertical cable spine bracket to the right or left of the tailgate bracket.

__ c. Carefully pull the bottom end of the vertical cable spine bracket away from the machine about 2 inches. Make sure that cables do not become unattached as you pull the vertical cable spine bracket away from the machine. If necessary, you can temporarily remove the cables from a cable clip.

__ 6. Remove the KVM using the following steps:

__ a. Remove the two 6mm x 13mm hex flange bolts that secure the KVM switch to the rack using an 8mm six-sided hex nut driver.

__ b. Use the UPG rail removal puller tool to pull the KVM away from the rack.

Continue pulling the KVM all the way out of the rack by sliding your fingers behind the flange on the KVM bracket and pulling toward you.

__ 7. Coil up the display unit cables and place them inside the rack behind the cable management arm to avoid snagging and tangling with other cables when the display unit is being removed from the front.

Step 2: Release the UPG KMM rails from rear of rack

__ 1. Locate the UPG rail removal puller tool and the UPG rail removal bolt tool.

__ 2. At the rear of the rack, release the KMM rails as follows:

a. On the rear, right side of the rack, insert the UPG rail removal bolt tool into the screw hole on the end of the KMM rail. Turn it to the right once or twice until it is firmly seated.

b. Insert the hooked end of the puller tool into the horizontal slot of the KMM rail on the right side of the rack.

When you insert the tool, the hook should be horizontal with the ground. The following photographs show a rail that has been pulled out of the frame so you can see the orientation of the hook more clearly.

c. Turn the puller tool 90 degrees so that the hooked end is facing downward.

d. Grasp the puller tool in your left hand and the bolt tool in your right hand. Next, simultaneously pull the rail toward the center of the rack using the puller tool and pull the rail toward you slightly using the bolt tool. You will hear and feel a snap as the rail disengages from the rack.

e. Repeat the steps above to release the KMM rail on the left side.

__ 3. After the rail end is disengaged, use the bolt tool to move it inside, behind the rack rails. Next, push the rail as far as you can into the rack, to prevent it from falling off in the next step.

Step 3: Remove the UPG KMM

__ 1. At the front of the rack, close the lid of the KMM.

__ 2. Slide the KMM out far enough to gain access to the cables that are connected at the rear.

__ 3. Remove the VGA, USB cables, and power supply plugs from their connectors on the rear of the KMM.

__ 4. Use a T15 bit screwdriver to remove the screws that connect the cable management arm to the back of the KMM.

__ 5. Stand directly in front of the KMM. On the slide rails that are attached to each side of the KMM, pull the white button toward you and begin to slide the KMM away from the rack.

Keep pulling the KMM toward you until it is completely free.

Step 4: Release and remove the UPG KMM rails from the front of the rack

__ 1. Leaving the rail slides out (unretracted) release the KMM rails from the front of the rack, as follows:

a. On the front, right side of the rack, insert the UPG rail removal bolt tool into the screw hole on the end of the KMM rail. Turn it to the right once or twice until it is firmly seated.

b. Insert the hooked end of the puller tool into the horizontal slot of the KMM rail on the right side of the rack. When you insert the tool, the hook should be horizontal with the ground. The following photographs show a rail that has been pulled out of the frame so you can see the orientation of the hook more clearly.

c. Turn the puller tool 90 degrees so that the hooked end is facing downward.

d. Grasp the puller tool in your left hand and the bolt tool in your right hand. Next, simultaneously pull the rail toward the center of the rack using the puller tool and pull the rail toward you slightly using the bolt tool. You will hear and feel a snap as the rail disengages from the rack.

e. Repeat the steps above to release the KMM rail on the left side.

__ 2. Press the outer sides of the rails toward the center of the rack and pull them toward you.

Continue pulling the rails and slides out of the rack until the cable management arm is fully accessible.

__ 3. Tuck the cable management arm into the inner edges of the rails and cross brace.

__ 4. Continue pulling the rail assembly toward you until it is completely free of the rack.

Step 5: Assemble the UPG KMM and rails

For this step, you will need the following:

- UPG KMM (PN 00RY702 or PN 02RA023)
- Power supply and rack kit (includes the rail assemblies, cable management arm, and cross brace)
- Power jumper cable
- Bag of parts marked PN 02RA008
- Bag of parts marked PN 02RA009

Note: The unlabeled bags of parts in the UPG packages contain spare parts. If these spare parts are not used, discard them.

__ 1. Find a large (at least 3 feet by 4 feet) table on which to attach the rail assemblies with slides, cross brace, and cable management arm to the KMM. If a table is not available, the KMM and rails can be assembled on the floor.

__ 2. Place the KMM near one end of the table. The rear side of the KMM should be facing the long side of the table.

Note: While handling the rail assemblies, your hands might get greasy. To keep the KMM clean, it is recommended that you not remove the plastic cling sheeting that covers the lid until the installation is complete.

__ 3. Place the rail assemblies behind the KMM, parallel to each other, with the ends that include the slides pointing toward the KMM.

Important: The rail assembly must be oriented so that the slides are on the lower side of the rail (below the rail's center point).

__ 4. Each rail assembly includes an inner slide rail. Remove the inner slide rails from the rail assemblies as follows.

a. Locate the inner slide on the rail assembly that is behind the right side of the KMM.

b. Pull the inner slide outward, extending it toward the KMM.

c. Pull the white release button on the inner slide forward, while pulling the slide itself forward, until it releases completely from the rail assembly. Note that considerable force is required to pull the slide forward.

d. Repeat steps “4.a” on page 104 through “4.c” on page 105 on the rail assembly on the left side of the KMM.

__ 5. Attach the right inner slide rail into the open screw holes on the right side of the KMM using two 6-32x1/4" machine screws (PN 02RA006, provided with the FRU) and the T15 Torx screwdriver. Notches in the body of the KMM mark the location of the screw holes.

Repeat this step on the left. The slide rails should now be firmly attached to the KMM.

__ 6. Slide the rail assembly on the right onto the slide rail that is attached the right side of the KMM. **The slides should be on the lower side of the rail, below its center point.**

Pull the rail all the way forward, toward the KMM, until it is fully extended (you will hear a snap). Repeat this step with the rail assembly on the left side of the KMM.

__ 7. Slide the cross brace into the rails from the rear opening. Using two 6-32 X 1/4" screws (PN 02RA006) and a T15 Torx screwdriver, attach the cross brace to the inside of the right and left rails in the holes provided. Note that the cross brace should sit within the C-shaped channels on the inside and of the KMM rails.

Attach the screws from the inside of the rail.

Note: Be careful to use only the 6-32 X ¼-inch screws (not the 6-32 X 3/8-inch screws) to attach the cross brace to the rails. If you have only 3/8-inch machine screws, swap them with the ¼" machine screws that hold the slides to the rails.

__ 8. Remove the two screws that are attached to the rear of the KMM using the T15 Torx screwdriver, and then attach the other end of the cable management arm to the rear of the KMM, in the same holes.

__ 9. Before continuing to the next step, refer to Figure 11 on page 106, which shows the KMM rail assembly with the cable management arm, cross brace, and cables installed. Use this figure as a reference as you complete the KMM and rail assembly installation (step “10” on page 106 through step “13” on page 106).

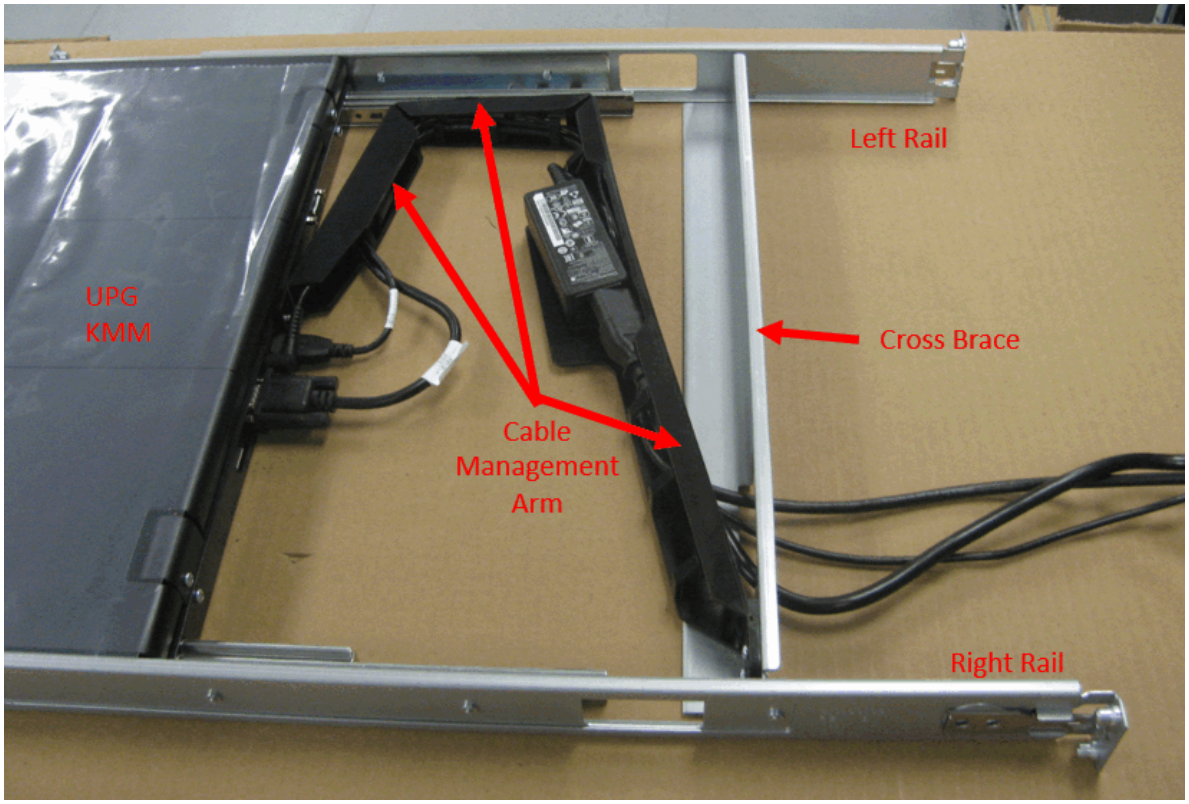


Figure 11. KMM rail assembly with cable management arm, cross brace, and cables installed

__ 10. In the cable management arm, attach the C5 to C14 Type power jumper cable (PN 00RY699) to the power supply. Route the power jumper cable through the hole in the cable management arm and the cross brace. Make sure to tuck the power cable inside the fingers along the length of the cable management arm so that is held securely in place.

__ 11. Route the UPG VGA cable (PN 3200019) and the UPG USB cable (PN 520-00110) through the hole in the cross brace and the hole in the cable management arm.

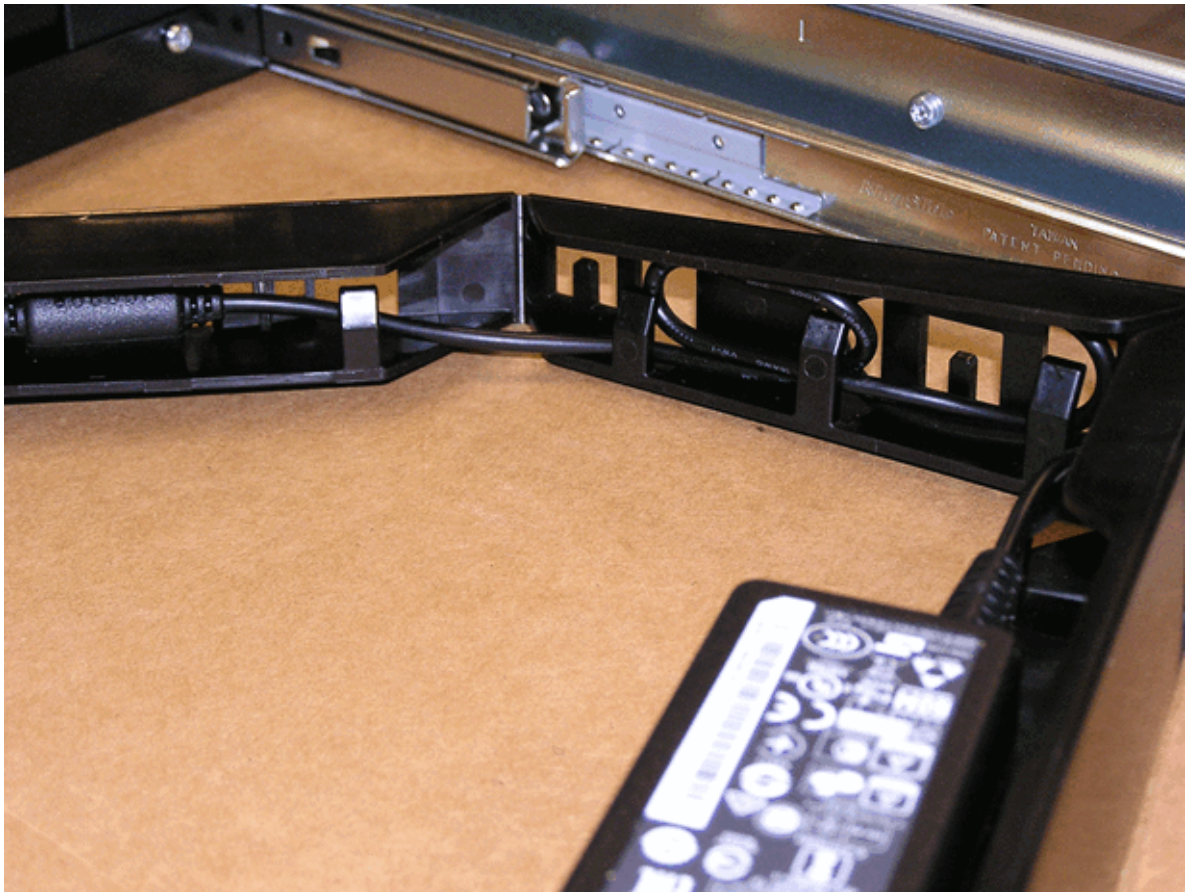
Connect each cable to its connector on the rear of the KMM, but tighten the screws on VGA the connector lightly, as you will be removing the cables again in Step “15” on page 108.

Note: Leave some slack in the VGA cable when routing it through the cable management arm. There should be a U-shaped bend to the VGA cable between the connector on the rear of the KMM and entrance to the cable management arm.

__ 12. Tuck the VGA and USB cables inside the fingers along the length of the cable management arm so they are held securely in place. Make sure both cables are pushed far enough behind the power supply (the VGA and USB cables should sit securely behind the power supply).

__ 13. Route the power supply's cable through the cable management arm and connect its 90-degree plug to the power connector on the rear of the KMM. Make sure that the 90-degree power plug is turned sideways, so that it sits completely within and below the upper lip of the cable management arm.

Also, make sure that the ferrite core is within the cable management arm's fingers and loop the extra cable behind the fingers that are between the core and the power supply.



Note: At this point, ensure that all of the other cables are contained within the upper lip of the cable management arm. Cables that protrude above the cable management arm or the KMM might cause problems when the KMM is installed into the rack. All cables should be within the cable management arm and fingers.

__ 14. The KMM and rail assembly is complete. In the next few steps, you will temporarily disassemble some of the parts that you previously connected in order to make it easier to install the KMM into the rack.

__ 15. Carefully disconnect the power, VGA, and USB cables from the back of the KMM.

__ 16. Remove the two 6-32 x 3/8-inch machine screws holding the cable management arm to the KMM. Retain the screws.

__ 17. On the right side of the KMM, slide the white button on the inner rail forward while pulling the KMM forward slightly, to disengage it from the slide. Repeat this step on the left.

__ 18. Holding the ends of the cables in one hand, carry the rail assembly to the front of the rack.

__ 19. Route the cables through the EIA slot in the front of the rack, pushing them as far back as possible. Note that you should consider bundling the cables together using hook and loop fastener or cable ties to make it easier to route them from the front to the rear of the rack. At the back of the rack, make sure the cables are pulled through completely and are pushed to the left side.

__ 20. Insert the rail ends of the KMM/rack assembly into the EIA slot in the rack. You might need to press the rail ends inward (toward the inside of the rack) to allow them to clear the vertical sides of the rack. Push the rails into the rack until the hump on the rail is about four inches from the cross brace.

__ 21. Carefully shift and turn the assembly from side to side as you push it forward into the rack. To move the section of the assembly where the cross brace is connected forward and into the rack, you need to insert one rail further into the rack than the other, so that the cross brace is on a slight diagonal. Alternate doing this on the left and right sides while pushing the assembly slightly forward. The idea is to advance one of the PEM nuts past the EIA rail at a time.

__ 22. Fully lock the front end of the KMM rails to the front EIA rail. Push outward to compress the spring as you push the rail into the rack.

You might feel or hear a click as the spring engages the back of the EIA rail.

__ 23. From the back of the rack, use the UPG rail removal puller tool (PN 02RA009) to pull each rail end toward the rear of the rack until it meets the rail. Then, using the tool, pull the end of the rail around the EIA rail so that it is now beyond the EIA rail.

Next, push the end of the KMM rail into the EIA rail until if fully locks.

__ 24. At the front of the rack, make sure that the ball bearings in the KMM rails are fully forward.

a. Reattach the KMM by pushing it into the rails until they fully engage.

b. Next, pull the KMM fully forward. It should be retained by the rails.

__ 25. Reattach the cable management arm to the back of the KMM using the two 6-32 x 3/8-inch screws and the T15 Torx screwdriver. Then, carefully reconnect the three cables to their connectors, ensuring that they remain on the inside of the cable management arm.

Step 6: Return the Vertiv KVM switch to the rack

__ 1. Push the KMM cables to the left side of the rack. Arrange the VGA, USB, and power cables in your left hand, with the thinnest cable on the bottom and the thickest cable on the top.

In the next step, you will slide the KVM into the rack. When you do, the cables must be routed along the left side of the KVM, over the front shoulder of the bracket, and through the notch in the bracket's rear foot.

__ 2. Continue to hold the cables in your left hand while sliding the KVM into the rack. At the same time, ensure that the VGA, USB, and power cables remain correctly routed over the bracket on the left side of the KVM.

Note: If you have trouble sliding the KVM into the rack, make sure that the rails did not become disengaged from one another.

When the KVM is in place, the cables should still be next to the KVM in the left side bracket.

__ 3. At this point, the screw holes of the left and right KVM brackets should be flush and aligned with the holes in the rack. Reattach the KVM with the 6mm x 13mm hex flange bolts (PN 46K4308) through the brackets to secure it to the rack.

__ 4. Reattach the VGA, USB, display power, and Support Element cables to their connectors on the KVM. Ensure that the cables are labeled.

Gather up any excess cable length and secure the cables to the side of the frame so they will not interfere when servicing other parts of the machine.

__ 5. Plug the KVM power cable into PDU 2 (location A21ZPDU2J.05).

__ 6. Plug the display unit power cable into the PDU (location A21ZPDU1J.04).

__ 7. If the spine cable management bracket was moved, return it to its original position, as follows:

a. Carefully move the vertical cable spine bracket to the right or left of the tailgate bracket and then behind the tailgate bracket. **Make sure no cables become unattached as you move the vertical cable spine bracket.**

b. Install the bottom screw to secure the vertical cable spine bracket.

c. If any cables were removed from a cable clip, slide the cables back into the cable clip and use the hook-and-loop fasteners to secure the cables to the spine cable management bracket.

__ 8. Ensure that both Support Elements can be displayed.

To display the Support Element in location EIA 42, use the following steps:

__ a. Press **Ctrl**

__ b. Press **Ctrl**

__ c. Press **0**

__ d. Press **1**

__ e. Press **Enter**

To display the Support Element in location EIA 41, using the following steps:

__ a. Press **Ctrl**

__ b. Press **Ctrl**

__ c. Press **0**

__ d. Press **2**

__ e. Press **Enter**

__ 9. The UPG display might be slightly off center. In this case, it is recommended that you center the screen, as follows.

a. Open the UPG KMM and press the **OSD activation button**, which is on the front of the UPG display, just below the screen.

b. On the OSD Main Menu, the **Auto Configuration** option should already be selected. Press the **OSD activation button**.

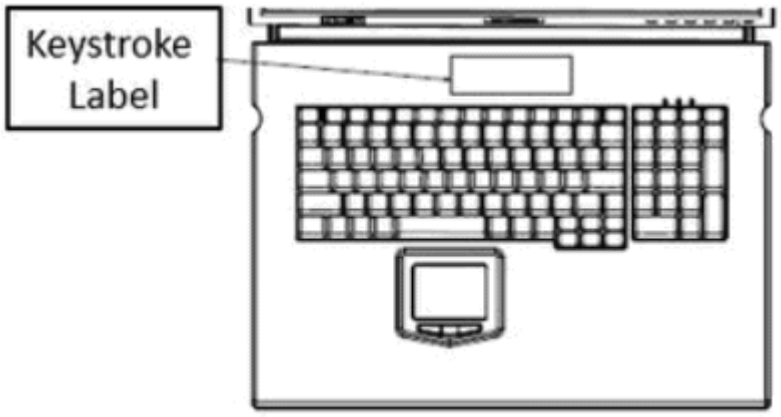
Note: Screen centering only lasts for a single power session. Therefore, if you do an Emergency Power Off of the CPC, you must repeat the screen centering steps.

__ 10. Close the display unit and slide it into the frame.

__ 11. Remove the plastic cling sheeting from the lid of the KMM.

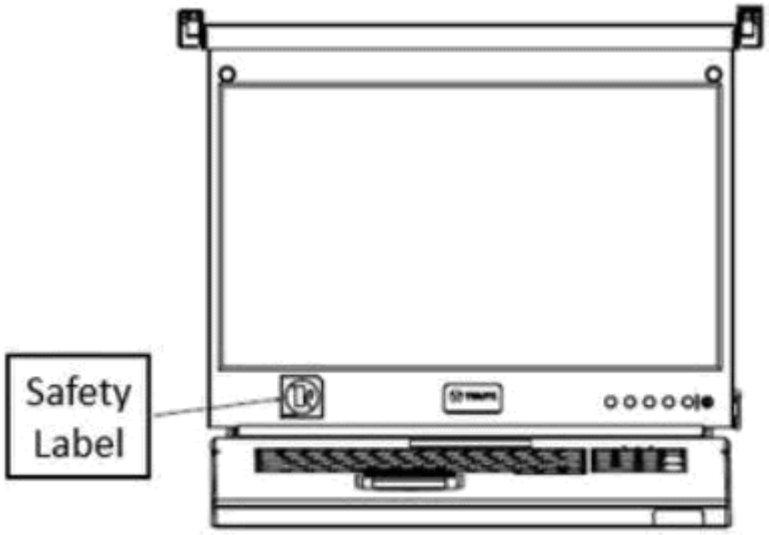
__ 12. Apply the labels, as follows.

__ a. Apply the keystroke label to the inside of the



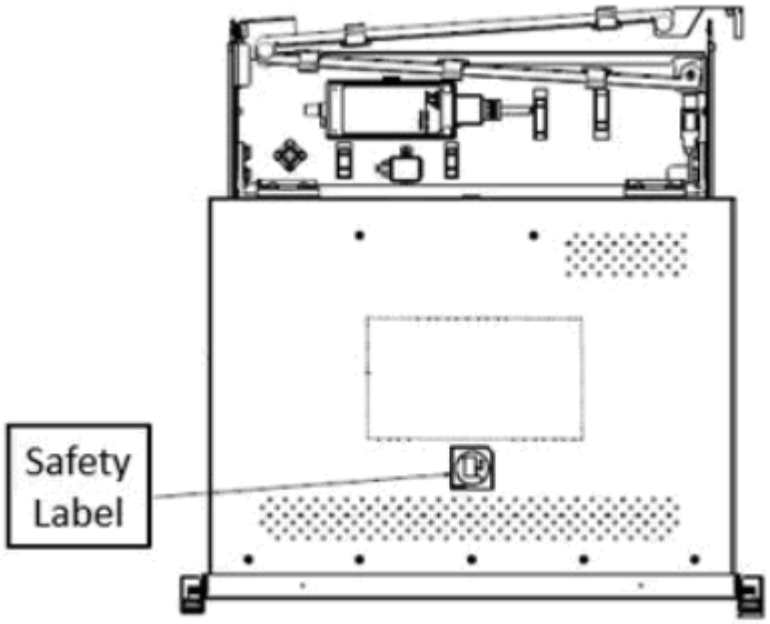
KMM.

__ b. Apply one of the two the safety labels to the inside of the



KMM.

__ c. Apply the second safety label to the outside of the



KMM.

__ 13. Return the UPG rail removal puller tool to IBM with other broken parts.

END OF PROCEDURE

Display unit: Replace compact KMM keyboard display (2461-SE3)

Use the following steps to exchange the compact keyboard/monitor/mouse (compact KMM) keyboard display.

Note: This procedure assumes that you used the information in "Symptoms and corrective actions (2461-SE3, 2461-VA3, and 2461-SE4)" on page 47 to determine that the compact KMM is defective. It also assumes that you ordered a replacement compact KMM (FRU kit 02WN888) and that it is now available to you.

Before getting started, locate the compact KMM FRU kit (PN 02WN888). The FRU kit contains the following parts:

- Compact keyboard/monitor/mouse (compact KMM) display unit (PN 03FM329)
- Environmental Notices User Guide CD ROM (PN 02CM200)
- Croatia flier (PN 46T8818)
- Restriction of Hazardous Substance (RoHS) specification (PN 97P3864)

Certain steps in this procedure require you to remove a captive screw. In some cases, the *red handle torque tool* (PN 41V1059 or PN 6422789) might be helpful for removing a captive screw that is tight, and difficult to turn.

1. Remove the white USB-C cable from the side of the compact KMM.

   Note: To remove a locking USB cable, press and hold the buttons on both sides of the USB cable plug as you pull it out of the connector.
2. To remove the defective compact KMM from the mounting bracket, push it toward the frame and then lift the KMM up and away from the bracket.
3. Return the defective compact KMM (PN 02EC957) to IBM with other broken parts.
4. Place the replacement compact KMM onto the mounting bracket and pull it toward you to fasten it to the bracket.
5. Open the lid of the compact KMM and tilt the screen to a usable position.
6. Reconnect the white USB-C cable that you removed from the defective compact KMM to the connector on the side of the replacement compact KMM.

For information on using the compact KMM's on-screen display for displaying and managing settings and functions, see Appendix C, "Operating the compact KMM console unit (keyboard/display)," on page 273.

END OF PROCEDURE

Display unit: Replace compact KMM interface adapter (2461-SE3)

Use the following steps to exchange the compact KMM interface adapter.

Note: This procedure assumes that you used the information in "Symptoms and corrective actions (2461-SE3, 2461-VA3, and 2461-SE4)" on page 47 to determine that the compact KMM interface adapter is defective. It also assumes that you ordered a replacement compact KMM interface adapter (FRU kit 03FM967) and that it is now available to you.

Before getting started, locate the compact KMM interface adapter FRU kit (PN 03FM967). The FRU kit contains the following parts:

- Interface adapter (PN 02WN859)
- Environmental Notices User Guide CD ROM (PN 02CM200)
- Croatia flier (PN 46T8818)
- Restriction of Hazardous Substance (RoHS) specification (PN 97P3864)

Getting started

This section contains information that you should familiarize yourself with before replacing the compact KMM interface adapter.

Red handle torque tool:

Certain steps in this procedure require you to remove a captive screw. In some cases, the *red handle torque tool* (PN 41V1059 or PN 6422789) might be helpful for removing a captive screw that is tight, and difficult to turn.

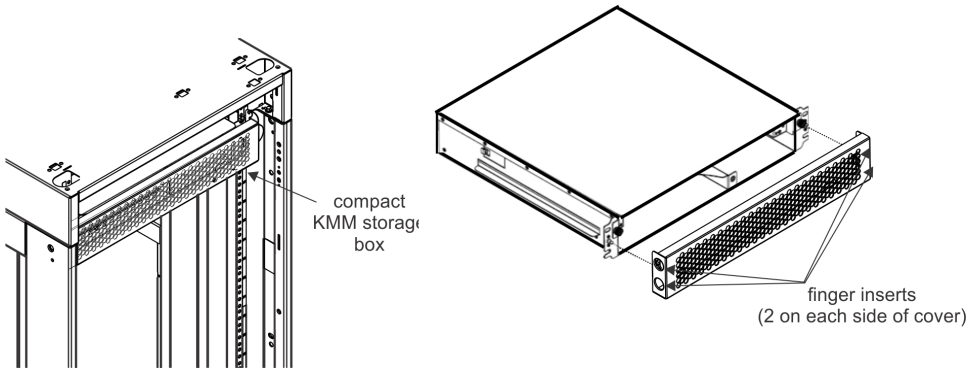
KMM storage box cover:

The KMM storage box cover (door) that is installed with the mini-KMM can be one of two different styles: a hinged style (PN 02WN767) or a removable style. While this document depicts the hinged KMM storage box cover, information about the removable cover is provided where necessary. Both styles are described as follows:

Hinged KMM storage box cover (PN 02WN767):
If the hinged KMM storage box cover (PN 02WN767) is installed, open it by sliding the latch to the left, swinging the bezel up, and then pushing the bezel towards the frame to lock. To close the storage box cover, pull the bezel toward you to unlock it, swing it closed, and then fasten the latch. Retrieve the KMM from the KMM storage box.

Removable KMM storage box cover (PN 03FM971)
If the removable KMM storage box cover (PN 03FM971) is installed, remove the shipping captive screw (PN 15R7345) using the red handle torque tool. Insert the tool through the cover's hexagon perforation, as shown below.

Place your two fingers into the two inserts on either side of the KMM storage box cover (P/N 03FM971) and pull it towards you to remove. Retrieve the KMM from the KMM storage box.



Place the storage box cover in the KMM storage box to keep it out of the way during servicing.

Selecting Support Elements:

To switch between the two Support Elements, you use the **Support Element selection buttons**, which are on the front end of the interface adapter. The SE selection buttons light up when the related SE is selected. This allows you to know which SE is communicating with the compact keyboard/monitor/mouse (compact KMM) at any given time.

Replace the interface adapter with a new interface adapter

This procedure describes how to remove and replace the interface adapter, which resides within the KMM storage box, on the left side.

Notes:

- **Note:** This procedure assumes that you used the information in "Symptoms and corrective actions (2461-SE3, 2461-VA3, and 2461-SE4)" on page 47 to determine that the compact KMM interface adapter is defective. It also assumes that you ordered a replacement compact KMM interface adapter (FRU kit 03FM967) and that it is now available to you.
- Ensure that the video, USB, and power cables that are connected to the defective interface adapter are properly labeled before starting this procedure.

1. Locate the replacement interface adapter FRU kit (PN 03FM967).
2. Remove the replacement interface adapter from its packaging and then set it aside.
3. Open the front cover of frame A and locate the KMM storage box.
4. Open the KMM storage box cover. For information about opening the KMM storage box cover, see "Getting started" on page 113.

   The interface adapter is located on the left side of the frame within the KMM storage box. The USB-C cable is connected to the interface adapter and its other end is connected to the compact KMM.
5. Remove the defective interface adapter from the KMM storage box, as follows:
   a. Remove the white USB-C cable from its connector on the front end of the interface adapter. The other end of the USB-C cable should remain connected to the compact KMM.

      Note: To remove a locking USB cable, press and hold the buttons on both sides of the USB cable plug as you pull it out of the connector.
   b. Using your fingers, turn the captive screw that holds the interface adapter to the side of the KMM storage box, counter-clockwise. When the captive screw is loose enough for the interface adapter to be removed, the interface adapter releases slightly from the frame.
   c. Slide the interface adapter, with all of its cables still connected, out of the rack (toward you). After the interface adapter is free from the frame, gently pull it toward you far enough so that it hangs in front of the rack slightly. You might need to gently shift the cable bundle to provide enough slack for the interface adapter to move toward you.
   d. Detach the video, USB, and power cables from the interface adapter (the other end of each cable should remain connected). Leave the cables in this position, hanging freely in front of the frame.
   e. Return the defective interface adapter to IBM with other broken parts.
6. Install the new interface adapter, as follows:
   a. Find the replacement interface adapter that you set aside in an earlier step.
   b. With the cables still hanging in front of the frame, connect the video, USB, and power cables to the replacement interface adapter. Note that the interface adapter should be oriented so that the end with the **Support Element selection buttons** and lights, and the USB-C connector faces you. You will connect the white USB-C cable in a later step.
   c. Slide the replacement interface adapter into the defective adapter's place on the left side of the KMM storage box.

d. Using your fingers, hand-tighten the captive screw on the front end of the interface adapter by turning it clockwise.

e. Attach the white USB-C cable to the front end of the interface adapter.

7. Verify that the new interface adapter is working. On the front end of the new interface adapter, verify that one of the green lights is lit. Press the up or down arrow **Support Element selection button** to select the other SE and to verify that its light also turns on. If one or both of the lights is not working, see “Symptoms and corrective actions (2461-SE3, 2461-VA3, and 2461-SE4)” on page 47 for information about how to proceed.

END OF PROCEDURE

Display unit: Replace compact KMM keyboard display (2461-SE4 on rack mount)

Use the following steps to exchange the compact keyboard/monitor/mouse (compact KMM) keyboard display.

Note: This procedure assumes that you used the information in "Symptoms and corrective actions (2461-SE3, 2461-VA3, and 2461-SE4)" on page 47 to determine that the compact KMM is defective. It also assumes that you ordered a replacement compact KMM (FRU kit 02WN888) and that it is now available to you.

Before getting started, locate the compact KMM FRU kit (PN 02WN888). The FRU kit contains the following parts:

- Compact keyboard/monitor/mouse (compact KMM) display unit (PN 03FM329)
- Environmental Notices User Guide CD ROM (PN 02CM200)
- Croatia flier (PN 46T8818)
- Restriction of Hazardous Substance (RoHS) specification (PN 97P3864)

The KMM is initially located within the KMM storage box. After the system is installed, the customer places the KMM in a location that meets their needs. When not in use, the KMM should be returned to the storage box.

To remove and replace a defective compact KMM, use the following steps:

1. Choose one of the following:
   - If the compact KMM **is not** currently in use (it is stored in the KMM storage box), go to Step 2.
   - If the compact KMM **is** currently in use (it is not stored in the KMM storage box), go to Step 7.
2. Remove the KMM storage box bezel, as follows:
   a. Grasp the grip points on each side of the bezel.
   b. Pull the bezel upward and tilt it slightly toward you to remove it.
3. Remove the defective KMM from the KMM storage box.
4. Slide the replacement compact KMM into the KMM storage box.
5. Reattach the bezel to the KMM storage box, as follows:
   a. Grasp the grip points on each side of the storage box bezel.
   b. On the inside and lower edge of the bezel, there are two metal hooks, one on the left and one on the right. The hooks correspond to two metal tabs on the bottom edge of the storage box chassis.

      Place the hooks over the metal tabs and then push the bezel forward, into the storage box opening, until it snaps into place. You might need to adjust the cables at the top of the chassis so they feed through the rectangular opening on the upper sides of the bezel.
6. Go to Step 9.
7. Remove the white USB-C cable from the side of the defective compact KMM.
8. Connect the white USB-C cable that you removed from the defective compact KMM to the USB-C connector on the side of the replacement compact KMM.
9. Return the defective compact KMM to IBM with other broken parts.

For information on using the compact KMM's on-screen display for displaying and managing settings and functions, see Appendix C, "Operating the compact KMM console unit (keyboard/display)," on page 273.

Display unit: Replace compact KMM interface adapter (2461-SE4 on rack mount)

Use the following steps to exchange the compact keyboard/monitor/mouse (compact KMM interface adapter of a Rack Mount Bundle (rack mount) configuration.

Note: This procedure assumes that you used the information in "Symptoms and corrective actions (2461-SE3, 2461-VA3, and 2461-SE4)" on page 47 to determine that the compact KMM interface adapter is defective. It also assumes that you ordered a replacement compact KMM interface adapter (FRU kit 03FM967) and that it is now available to you.

Before getting started, locate the compact KMM interface adapter FRU kit (PN 03FM967). The FRU kit contains the following parts:

- Interface adapter (PN 03FM966)
- Environmental Notices User Guide CD ROM (PN 02CM200)
- Croatia flier (PN 46T8818)
- Restriction of Hazardous Substance (RoHS) specification (PN 97P3864)

Getting started

This section contains information that you should familiarize yourself with before replacing the compact KMM interface

Locating the interface adapter:

The interface adapter is located within the KMM storage box, which sits below the Support Elements in the rack mount configuration.

Red handle torque tool:

Certain steps in this procedure require you to remove a captive screw. In some cases, the *red handle torque tool* (PN 41V1059 or PN 6422789) is helpful for removing a captive screw that is tight, and difficult to turn, or in a place that is difficult to reach.

Selecting Support Elements:

To switch between the two Support Elements, use the **Support Element selection buttons**, which are on the front end of the interface adapter. The SE selection buttons light up when the related SE is selected. This allows you to know which SE is communicating with the compact KMM at any given time.

Replacing the defective interface adapter (2461-SE4 on rack mount)

This procedure describes how to remove and replace the interface adapter, which resides within the KMM storage box.

Note: This procedure assumes the following:

- That you used the information in "Symptoms and corrective actions (2461-SE3, 2461-VA3, and 2461-SE4)" on page 47 to determine that the compact KMM interface adapter is defective.
- That you ordered a replacement compact KMM interface adapter (FRU kit 03FM967) and that it is now available to you.
- That you ensured that the video, USB, and power cables that are connected to the defective interface adapter are properly labeled before starting this procedure.

Step 1: Remove the interface adapter (2461-SE4 on rack mount)

1. Locate the replacement interface adapter FRU kit (PN 03FM967).
2. Remove the replacement interface adapter (PN 03FM966) from its packaging and then set it aside.

3. Locate the KMM storage box within the customer frame.
4. Open the KMM storage box cover, as follows:
   a. Grasp the grip points on each side of the bezel.
   b. Pull the bezel upward and tilt it slightly toward you to remove it.

   The interface adapter is located within the KMM storage box. The USB-C cable is connected to the interface adapter and its other end is connected to the compact KMM.
5. Remove the defective interface adapter from the KMM storage box, as follows:
   a. Remove the white USB-C cable from its connector on the front end of the interface adapter. The other end of the USB-C cable should remain connected to the compact KMM.
   b. Using your fingers, turn the captive screw that holds the interface adapter to the metal chassis within the KMM storage box, counter-clockwise. If the captive screw is tight and does not turn easily, use the *red handle torque tool* (PN 41V1059 or PN 6422789) to start it moving.

      When the captive screw is loose enough for the interface adapter to be removed, the interface adapter releases slightly from the chassis.
   c. Slide the interface adapter, with all of its cables still connected, out of the rack (toward you). After the interface adapter is free from the frame, gently pull it toward you far enough so that it hangs in front of the rack slightly. You might need to gently shift the cable bundle to provide enough slack for the interface adapter to move toward you.
   d. Detach the video, USB, and power cables from the interface adapter (the other end of each cable should remain connected). Leave the cables in this position, hanging freely in front of the frame.
   e. Return the defective interface adapter to IBM with other broken parts.

Step 2: Install the replacement interface adapter (2461-SE4 on rack mount)

1. Install the new interface adapter, as follows:
   a. Find the replacement interface adapter (PN 03FM966) that you set aside in an earlier step.
   b. With the cables still hanging in front of the frame, connect the video, USB, and power cables to the replacement interface adapter. Note that the interface adapter should be oriented so that the end with the **Support Element selection buttons** and lights, and the USB-C connector faces you. You will connect the white USB-C cable in Step 1e.
   c. Slide the replacement interface adapter into the defective adapter's place in the KMM storage box.
   d. Using your fingers, hand-tighten the captive screw on the front end of the interface adapter by turning it clockwise.
   e. Attach the white USB-C cable to the front end of the interface adapter.
2. Verify that the new interface adapter (PN 03FM966) is working. On the front end of the new interface adapter, verify that one of the green lights is lit. Press the up or down arrow **Support Element selection button** to select the other SE and to verify that its light also turns on. If one or both of the lights is not working, see “Symptoms and corrective actions (2461-SE3, 2461-VA3, and 2461-SE4)” on page 47 for information about how to proceed.

END OF PROCEDURE

Display unit: Replace z13, z13s, or z14 displays and keyboards with UPG compact KMM (FRU 03GN006)

Use the instructions in this section to exchange the following displays and keyboards with the UPG Compact KMM (PN 02RA055), **which is contained in FRU PN 03GN006**:

- For z13 and z13s, the 18.5" Avocent display and Lite-On keyboard
- For z14, the 15.6" Vertiv display and Vertiv keyboard.

Note: These instructions often refer to the *front* and *rear* side of the gate. The front of the gate is the side that is visible when the gate is in the closed position.

Parts list

Before proceeding, locate the universal UPG FRU kit (PN 03GN006).

Compact KMM, interface adapter, and other parts

- One UPG compact KMM (PN 02RA055)
- One interface adapter (PN 03FM966)
- Two 10-foot SCH power cables: (PN 02WN841)
- Cable labels (PN 03GN911)
- Soft tie kit (PN 00RR794)

One KMM mounting kit (PN 03GN233)

The universal FRU kit (PN 03GN006) contains **one** KMM mounting kit (PN 03GN233), which includes the following parts.

Note: If the earthquake feature was not ordered, the earthquake bracket (PN 02WN847) and the earthquake bar (PN 02WN848) are not needed for this procedure.

- One upper backplate (PN 02WN701)
- One locking plate (PN 02WN702)
- One keyboard shelf (PN 02WN703)
- One earthquake bracket (PN 02WN847)
- One earthquake bar (PN 02WN848)
- 15 hex flange screws (7mm) (PN 46K4281)

Two VGA adapter kits (PN 03GN004)

The universal FRU kit (PN 03GN006) contains **two** VGA adapter kits (PN 03GN004). Each kit includes the following parts:

- One VGA-to-DisplayPort (VGADP) adapter (PN 03GN005)
- One 9-foot DisplayPort cable (PN 02WN619)
- One 18-inch VGA (video) cable (PN 03GN003)
- One 18-inch USB Type A (power) cable (PN 03GN002)
- One 9-foot USB Type A (keyboard) cable (PN 02JD581)
- One 3-meter white USB-C cable (PN 03GN584)

Getting started

Tools

You will need the following tools from the Standard SSR tool kit or the 8561 Ship Group tool kit:

- Mille-Rod *push pull* tool
- ¼ inch drive ratchet (PN 1650887)
- 7mm socket (PN 73G1464)
- 8mm socket (PN 73G1458)
- 10mm socket (PN 73G1463)
- Hook and loop fastener

How to use these instructions

These instructions are divided into the following four parts. Start with Part 1 (choose either the z13/z13s or the z14 instructions) and proceed, in order, through Part 2, Part 3, and Part 4 (Part 4 is only required if the earthquake feature was ordered).

- “Part 1: Label the cables (for z13 and z13s systems) ” on page 121

  OR

  “Part 1: Label the cables (for z14 systems) ” on page 125
- “Part 2: Remove the z13, z13s, and z14 displays and keyboards ” on page 128
- “Part 3: Install the compact KMM” on page 130
- “Part 4: Install the earthquake feature hardware” on page 134

Part 1: Label the cables (for z13 and z13s systems)

This section shows you how to label the cables that are included with the universal UPG FRU kit (PN 03GN006) for z13 and z13s systems.

Note: The part numbers of the cables that are used in this procedure are not printed on the cables themselves. As a result, use the following instructions to apply part number labels to the cables before continuing.

Note: If you are servicing a z14 system, refer to “Part 1: Label the cables (for z14 systems) ” on page 125.

To apply a label to a cable, do the following:

1. Peel the label off the label sheet.
2. About two inches from the cable connector, wrap the label around the cable and press the sticky sides of each end together. When you are done, the information on the label should be readable from both sides.

Step 1. Apply labels to compact KMM cable

1. Locate the 3-meter white USB-C cable (PN 03GN584).
2. On the label sheet, locate the following two labels:

IA (Z99S)-USBC IA (Z99S)-USBC
PN 03GN584 PN 03GN584

KMM (Z99S)-USBC KMM (Z99S)-USBC
PN 03GN584 PN 03GN584

3. Peel off the IA (Z99S)-USBC label and attach it to either end of the 3-meter white USB-C cable (PN 03GN584).
4. Peel off the KMM (Z99S)-USBC label and attach it to the other end of the 3-meter white USB-C cable (PN 03GN584).

Step 2. Apply labels to SCH power cables

This procedure uses two, identical 9-foot SCH power cables (PN 02WN841). These cables have different types of connectors on each end. On one end is an SCH power connector and on the other end is a DC power connector.

In the following steps, you will connect labels to one of the 9-foot SCH power cables (PN 02WN841) and then to the other.

1. Locate the 9-foot SCH power cables (PN 02WN841).
2. On the label sheet, locate the following labels:

A31BSCH1J.36 A31BSCH1J.36
PN 02WN841 PN 02WN841

IA (Z99S)-PWR1 IA (Z99S)-PWR1
PN 02WN841 PN 02WN841

3. Peel off the A31BSCH1J.36 label and attach it about two inches from the **SCH power connector** of the first 9-foot SCH power cable (PN 02WN841).

4. Peel off the IA (Z99S)-PWR1 label and attach it about two inches from the **DC power connector** of the same 9-foot SCH power cable (PN 02WN841).
5. On the label sheet, locate the following labels.

   A31BSCH2J.36 A31BSCH2J.36
   PN 02WN841 PN 02WN841

   IA (Z99S)-PWR2 IA (Z99S)-PWR2
   PN 02WN841 PN 02WN841

6. Peel off the A31BSCH2J.36 label and attach it about two inches from the **SCH power connector** of the second 9-foot SCH power cable (PN 02WN841).
7. Peel off the IA (Z99S)-PWR2 label and attach it about two inches from the **DC power connector** of the same 9-foot SCH power cable (PN 02WN841).

Step 3. Apply labels to SE1-related cables

1. Locate the 9-foot USB Type A (keyboard) cable (PN 02JD581) in the SE1 (lower left) area of the table.
2. On the label sheet, locate the following two labels:

   SE1 (A42B)-USBEXT SE1 (A42B)-USBEXT
   PN 02JD581 PN 02JD581

   IA (Z99S)-USB1 IA (Z99S)-USB1
   PN 02JD581 PN 02JD581

3. Peel off the SE1 (A42B)-USBEXT label and attach it to either end of the 9-foot USB Type A (keyboard) cable (PN 02JD581).
4. Peel off the IA (Z99S)-USB1 label and attach it to the other end of the 9-foot USB Type A (keyboard) cable (PN 02JD581).
5. Locate the 18-inch VGA (video) cable (PN 03GN003) in the SE1 (lower left) area of the table.
6. On the label sheet, locate the following two labels:

   SE1 (A42B)-VGA SE1 (A42B)-VGA
   PN 03GN003 PN 03GN003

   VGADP1 (A42J/K)-VGA VGADP1 (A42J/K)-VGA
   PN 03GN003 PN 03GN003

7. Peel off the SE1 (A42B)-VGA label and attach it to either end of the 18-inch VGA cable (PN 03GN003).
8. Peel off the VGADP1 (A42J/K)-VGA label and attach it to the other end of the 18-inch VGA cable (PN 03GN003).
9. Locate the 18-inch USB Type A (power) cable (PN 03GN002) in the SE1 (lower left) area of the table.
10. On the label sheet, locate the following two labels:

    SE1 (A42B)-USB6 SE1 (A42B)-USB6
    PN 03GN002 PN 03GN002

VGADP1 (A42J/K)-USB VGADP1 (A42J/K)-USB
PN 03GN002 PN 03GN002

11. Peel off the SE1 (A42B)-USB6 label and attach it to either end of the 18-inch USB Type A (power) cable (PN 03GN002).
12. Peel off the VGADP1 (A42J/K)-USB label and attach it to the other end of the 18-inch USB Type A (power) cable (PN 03GN002).
13. Locate the 9-foot DisplayPort cable (PN 02WN619) in the SE1 (lower left) area of the table.
14. On the label sheet, locate the following two labels:

    VGADP1 (A42J/K)-DISP VGADP1 (A42J/K)-DISP
    PN 02WN619 PN 02WN619

    IA (Z99S)-DISP1 IA (Z99S)-DISP1
    PN 02WN619 PN 02WN619

15. Peel off the VGADP1 (A42J/K)-DISP label and attach it to either end of the 9-foot DisplayPort cable (PN 02WN619).
16. Peel off the IA (Z99S)-DISP1 label and attach it to the other end of the 9-foot DisplayPort cable (PN 02WN619).

Step 4. Apply labels to SE2-related cables

1. Locate the 9-foot USB Type A (keyboard) cable (PN 02JD581) in the SE2 (upper left) area of the table.
2. On the label sheet, locate the following two labels:

    SE2 (A41B)-USBEXT SE2 (A41B)-USBEXT
    PN 02JD581 PN 02JD581

    IA (Z99S)-USB2 IA (Z99S)-USB2
    PN 02JD581 PN 02JD581

3. Peel off the SE2 (A41B)-USBEXT label and attach it to either end of the 9-foot USB Type A (keyboard) cable (PN 02JD581).
4. Peel off the IA (Z99S)-USB2 label and attach it to the other end of the 9-foot USB Type A (keyboard) cable (PN 02JD581).
5. Locate the 18-inch VGA (video) cable (PN 03GN003) in the SE2 (upper left) area of the table.
6. On the label sheet, locate the following two labels:

    SE2 (A41B)-VGA SE2 (A41B)-VGA
    PN 03GN003 PN 03GN003

    VGADP2 (A41J/K)-VGA VGADP2 (A41J/K)-VGA
    PN 03GN003 PN 03GN003

7. Peel off the SE2 (A41B)-VGA label and attach it to either end of the 18-inch VGA cable (PN 03GN003).
8. Peel off the VGADP2 (A41J/K)-VGA label and attach it to the other end of the 18-inch VGA cable (PN 03GN003).
9. Locate the 18-inch USB Type A (power) cable (PN 03GN002) in the SE2 (upper left) area of the table.

10. On the label sheet, locate the following two labels:

    SE2 (A41B)-USB6 SE1 (A42B)-USB6
    PN 03GN002 PN 03GN002

    VGADP2 (A41J/K)-USB VGADP2 (A41J/K)-USB
    PN 03GN002 PN 03GN002

11. Peel off the SE2 (A41B)-USB6 label and attach it to either end of the 18-inch USB Type A (power) cable (PN 03GN002).
12. Peel off the VGADP2 (A41J/K)-USB label and attach it to the other end of the 18-inch USB Type A (power) cable (PN 03GN002).
13. Locate the 9-foot DisplayPort cable (PN 02WN619) in the SE2 (upper left) area of the table.
14. On the label sheet, locate the following two labels:

    VGADP2 (A41J/K)-DISP VGADP2 (A41J/K)-DISP
    PN 02WN619 PN 02WN619

    IA (Z99S)-DISP2 IA (Z99S)-DISP2
    PN 02WN619 PN 02WN619

15. Peel off the VGADP2 (A41J/K)-DISP label and attach it to either end of the 9-foot DisplayPort cable (PN 02WN619).
16. Peel off the IA (Z99S)-DISP2 label and attach it to the other end of the 9-foot DisplayPort cable (PN 02WN619).

Part 1: Label the cables (for z14 systems)

This section shows you how to label the cables that are included with the universal UPG FRU kit (PN 03GN006) for z14 systems.

Note: The part numbers of the cables that are used in this procedure are not printed on the cables themselves. As a result, use the following instructions to apply part number labels to the cables before continuing.

Note: If you are servicing a z13 or z13s system, refer to “Part 1: Label the cables (for z13 and z13s systems) ” on page 121.

In the next section, you will apply the labels to each cable. To apply a label to a cable, do the following:

1. Peel the label off the label sheet.
2. About two inches from the cable connector, wrap the label around the cable and press the sticky sides of each end together. When you are done, the information on the label should be readable on both sides.

Step 1. Apply labels to compact KMM cable

1. Locate the 3-meter white USB-C cable (PN 03GN584).
2. On the label sheet, locate the following two labels:

   IA (Z99S)-USBC IA (Z99S)-USBC
   PN 03GN584 PN 03GN584

   KMM (Z99S)-USBC KMM (Z99S)-USBC
   PN 03GN584 PN 03GN584

3. Peel off the IA (Z99S)-USBC label and attach it to either end of the 3-meter white USB-C cable (PN 03GN584).
4. Peel off the KMM (Z99S)-USBC label and attach it to the other end of the 3-meter white USB-C cable (PN 03GN584).

Step 2. Apply labels to SCH power cables

This procedure uses two, identical 9-foot SCH power cables (PN 02WN841). These cables have different types of connectors on each end. On one end is an SCH power connector and on the other end is a DC power connector.

In the following steps, you will connect labels to one of the 9-foot SCH power cables (PN 02WN841) and then to the other.

1. Locate the 9-foot SCH power cables (PN 02WN841).
2. On the label sheet, locate the following labels:

   A31BSCH1J.36 A31BSCH1J.36
   PN 02WN841 PN 02WN841

   IA (Z99S)-PWR1 IA (Z99S)-PWR1
   PN 02WN841 PN 02WN841

3. Peel off the A31BSCH1J.36 label and attach it about two inches from the **SCH power connector** of the first 9-foot SCH power cable (PN 02WN841).

4. Peel off the IA (Z99S)-PWR1 label and attach about two inches from the **DC power connector** of the same 9-foot SCH power cable (PN 02WN841).
5. On the label sheet, locate the following labels.

   A31BSCH2J.36 A31BSCH2J.36
   PN 02WN841 PN 02WN841

   IA (Z99S)-PWR2 IA (Z99S)-PWR2
   PN 02WN841 PN 02WN841

6. Peel off the A31BSCH2J.36 label and attach it about two inches from the **SCH power connector** of the second 9-foot SCH power cable (PN 02WN841).
7. Peel off the IA (Z99S)-PWR2 label and attach it about two inches from the **DC power connector** of the same 9-foot SCH power cable (PN 02WN841).

Step 3. Apply labels to SE1-related cables

1. Locate the 18-inch VGA (video) cable (PN 03GN003) in the SE1 (lower left) area of the table.
2. On the label sheet, locate the following two labels:

   SE1 (A42B)-VGA SE1 (A42B)-VGA
   PN 03GN003 PN 03GN003

   VGADP1 (A42J/K)-VGA VGADP1 (A42J/K)-VGA
   PN 03GN003 PN 03GN003

3. Peel off the SE1 (A42B)-VGA label and attach it to either end of the 18-inch VGA (video) cable (PN 03GN003).
4. Peel off the VGADP1 (A42J/K)-VGA label and attach it to the other end of the 18-inch VGA (video) cable (PN 03GN003).
5. Locate the 18-inch USB Type A (power) cable (PN 03GN002) in the SE1 (lower left) area of the table.
6. On the label sheet, locate the following two labels:

   SE1 (A42B)-USB6 SE1 (A42B)-USB6
   PN 03GN002 PN 03GN002

   VGADP1 (A42J/K)-USB VGADP1 (A42J/K)-USB
   PN 03GN002 PN 03GN002

7. Peel off the SE1 (A42B)-USB6 label and attach it to either end of the 18-inch USB Type A (power) cable (PN 03GN002).
8. Peel off the VGADP1 (A42J/K)-USB label and attach it to the other end of the 18-inch USB Type A (power) cable (PN 03GN002).
9. Locate the 9-foot DisplayPort cable (PN 02WN619) in the SE1 (lower left) area of the table.
10. On the label sheet, locate the following two labels:

    VGADP1 (A42J/K)-DISP VGADP1 (A42J/K)-DISP
    PN 02WN619 PN 02WN619

    IA (Z99S)-DISP1 IA (Z99S)-DISP1

PN 02WN619 PN 02WN619

11. Peel off the VGADP1 (A42J/K)-DISP label and attach it to either end of the 9-foot DisplayPort cable (PN 02WN619).
12. Peel off the IA (Z99S)-DISP1 label and attach it to the other end of the 9-foot DisplayPort cable (PN 02WN619).

Step 4. Apply labels to SE2-related cables

1. Locate the 9-foot DisplayPort cable (PN 02WN619) in the SE2 (upper left) area of the table.
2. On the label sheet, locate the following two labels:

   VGADP2 (A41J/K)-DISP VGADP2 (A41J/K)-DISP
   PN 02WN619 PN 02WN619

   IA (Z99S)-DISP2 IA (Z99S)-DISP2
   PN 02WN619 PN 02WN619
3. Peel off the VGADP2 (A41J/K)-DISP label and attach it to either end of the 9-foot DisplayPort cable (PN 02WN619).
4. Peel off the IA (Z99S)-DISP2 label and attach it to the other end of the 9-foot DisplayPort cable (PN 02WN619).
5. Locate the 18-inch USB Type A (power) cable (PN 03GN002) in the SE2 (upper left) area of the table.
6. On the label sheet, locate the following two labels:

   SE2 (A41B)-USB6 SE1 (A42B)-USB6
   PN 03GN002 PN 03GN002

   VGADP2 (A41J/K)-USB VGADP2 (A41J/K)-USB
   PN 03GN002 PN 03GN002

7. Peel off the SE2 (A41B)-USB6 label and attach it to either end of the 18-inch USB Type A (power) cable (PN 03GN002).
8. Peel off the VGADP2 (A41J/K)-USB label and attach it to the other end of the 18-inch USB Type A (power) cable (PN 03GN002).
9. Locate the 18-inch VGA (video) cable (PN 03GN003) in the SE2 (upper left) area of the table.
10. On the label sheet, locate the following two labels:

    SE2 (A41B)-VGA SE2 (A41B)-VGA
    PN 03GN003 PN 03GN003

    VGADP2 (A41J/K)-VGA VGADP2 (A41J/K)-VGA
    PN 03GN003 PN 03GN003

11. Peel off the SE2 (A41B)-VGA label and attach it to either end of the 18-inch VGA (video) cable (PN 03GN003).
12. Peel off the VGADP2 (A41J/K)-VGA label and attach it to the other end of the 18-inch VGA (video) cable (PN 03GN003).

Part 2: Remove the z13, z13s, and z14 displays and keyboards

Step 1. Remove the VGA (video) and power cables

The z13, z13s, and z14 displays and keyboards are located on the front and rear sides of the swing gate at the front of the frame.

Note: In this procedure, you will disconnect VGA (video) cables and SCH power cables. These cables will no longer be used, but because they would be difficult to remove from the frame, leave them in place. Instead, double the unused connector back onto its cable and tie-wrap, or use hook and loop fastener, to secure the connector to its cable.

1. At the front of the frame, turn the power off to both displays by pressing the power button on the front of each display.
2. At the rear of the frame, disconnect the VGA (video) cables (that connect the displays) from each SE (SE1 and SE2).
3. At the rear of the frame, disconnect the SCH power cable for each display.
4. At the front of the frame, disconnect the SCH power cable from each display.
5. At the front of the frame, disconnect the VGA (video) cable from its connector on each of the displays.

Step 2. Remove the displays from the gate

Perform the following steps to remove the z13, z13s, or z14 displays from the **front** side of the gate. Then, when instructed to do so, return here and repeat the steps for removing the display on the **rear** side of the gate.

1. Remove the disconnected VGA and power cables from the **front** of the gate.
2. On the front side of the gate, hold the top of the display firmly to the top of the gate with one hand, and with the other hand, remove the five screws that hold the display to the upper backplate.
3. Remove the upper backplate from the front of the gate, as follows:
   a. Locate the slide button at the bottom left area of the backplate, which releases the backplate from the gate. The backplate must be in the locked position (secured to the gate). If it is not, press the backplate against the gate until you feel it lock into place.
   b. If it is still attached, remove the locking screw at the bottom, center edge of the backplate.
   c. Hold the top of the upper backplate on the **front** side of the gate firmly to the top of the gate with one hand. At the same time, remove the screws from each of the two hinges that hold the backplate to the top and front side of the gate.
   d. At the front side of the gate, push the slide button to the left until the backplate releases from the gate. Immediately use both hands to grasp the backplate and then set it aside.
4. If you have not removed the display and upper backplate from both sides of the gate, return to Step “1” on page 128 and repeat the preceding steps for the rear side. If you have removed the display from both the front and rear of the gate, proceed to the next step (Step “5” on page 128).
5. Remove any remaining hinges from the top of the gate.

Step 3. Remove the keyboard cables

Perform the following steps to remove the keyboard cables from the front and rear sides of the gate.

- For z14, start at Step “1” on page 128.
- For z13 or z13s, start at Step “3” on page 128.

1. At the front of the frame, disconnect the USB cable from its connector on each of the keyboards.
2. Proceed to “Step 4. Remove the keyboards from the gate” on page 129.
3. At the rear of the frame, disconnect the USB keyboard cables.

4. At the front of the frame, locate the USB keyboard cable that is attached to the keyboard on the rear side of the gate and carefully pull the USB keyboard cable toward you and out of the frame. Note that because this cable is physically attached to the keyboard, it **must** be removed from the frame.
5. Repeat the preceding steps to remove the USB keyboard cable that is attached to the keyboard on the front side of the gate.

Step 4. Remove the keyboards from the gate

1. At the **front** side of the gate, use a 10mm socket driver to loosen the two screws that hold the hinge hardware in the upper right corner of the keyboard assembly. Loosen the screws enough so that the hinge hardware is loose, but still attached.
2. Slide the keyboard to the right and left slightly, until it disengages from the hinges on the gate.
3. If you have not removed the keyboards from **both** sides of the gate, return to Step "1" on page 129 and repeat the preceding steps for the rear side.
4. **On the rear side of the gate**, tighten the screws that secure the hinge on the right (which you loosened in "1" on page 129.
5. If you have removed the keyboards from **both** sides of the gate, do one of the following:
   - For z14, proceed to "Part 3: Install the compact KMM" on page 130.
   - For z13 or z13s, proceed to "Step 5. Thread the USB Type A keyboard cables through the frame (for z13 and z13s only)" on page 129.

Step 5. Thread the USB Type A keyboard cables through the frame (for z13 and z13s only)

1. Thread the 9-Foot USB Type A (keyboard) cables (PN 02JD581) through the frame and connect them to the extension cables. You will need the Mille-Rod *push pull* tool for this step.
2. Connect the USB Type A cable for the SE1 to the extension cable that is connected to the SE1, and then connect the USB Type A cable for the SE2 to the extension cable that is connected to the SE2.
3. Tie wrap both USB Type A cable connectors to the extension cable connectors.

Part 3: Install the compact KMM

This section leads you through the steps for installing a single compact KMM (PN 02RA055) to the gate.

Step 1. Install the new upper backplate to the gate

Mount the upper backplate (PN 02WN701) to the gate, as follows:

1. Place the upper backplate (PN 02WN701) on the **rear** side of the gate. The circular cutouts should be at the top, with the right-angle of its sheet metal sitting on the top edge of the gate.
2. From the front side of the gate, align the three holes in the top of the upper backplate (PN 02WN701) with the three threaded holes on the top edge of the gate. Also, align the backplate's outermost screw hole with the outermost screw hole of the gate.
3. Insert a 7mm screw (PN 46K4281) through each of the three screw holes at the top edge of the upper backplate and the gate.
4. From the rear side of the gate, insert two 7mm screws (PN 46K4281) through the two holes at the bottom of the upper backplate (PN 02WN701) and the two threaded holes in the gate.
5. Tighten the five screws that you attached to the front and rear sides of the backplate (PN 02WN701).

Step 2. Install the interface adapter

1. Turn the interface adapter (PN 03FM966) over and locate the right-angled metal hook on its underside.
2. Locate the rectangular slot on the top of edge of the upper backplate (PN 02WN701) (above the backplate's circular cutouts).
3. From the front of the gate, place the interface adapter (PN 03FM966) on the top edge of the upper backplate (PN 02WN701), with its VGA, USB, and power connectors facing up and the captive screw facing away from the frame. As you do this, make sure the metal hook on the underside of the interface adapter (PN 03FM966) is inserted into the slot on the top edge of the backplate.
4. Slide the interface adapter to the right (toward the frame) until you feel it lock into place.
5. Secure the interface adapter (PN 03FM966) to the backplate by tightening its captive screw.

Step 3. Attach the compact KMM to the keyboard shelf

1. Place the compact KMM (PN 02RA055), bottom side up, on a flat surface.
2. Turn the locking plate (PN 02WN702) over so that its metal tongue is facing up. Place the locking plate into the square slot with the word INSERT on the locking plate facing away from the rear of the KMM.
3. Slide the locking plate (PN 02WN702) forward (toward the rectangular channel) until it locks into place.
4. Locate the keyboard shelf (PN 02WN703). Turn the shelf over so that its strips of hook and loop fastener face up. Hold the shelf over the underside of the KMM (PN 02RA055) so that the shelf's hinges point toward the rear of the KMM. Align the holes in the shelf with the holes in the locking plate's (PN 02WN702) tongue.
5. Insert a 7mm screw (PN 46K4281) through each of the holes, then tighten the screws.

Step 4. Hang the keyboard shelf and compact KMM on the gate

1. On the front of the gate, locate the left hinge along the gate's left edge.
2. Orient the KMM assembly so the hooks of the keyboard shelf (PN 02WN703) are facing up and the lid of the KMM (PN02RA055) is facing you.
3. Place the left hook of the KMM assembly over the bushing on the gate's left hinge.
4. Place the hook on the right side of the KMM assembly over the mounting arm and bushing of the gate's right hinge.

5. Tighten the screws of the hinge hardware at the right side of the gate.
6. Lift the KMM (PN 02RA055) upward to 90 degrees, and then push it into the frame slightly. The KMM should now be at a 90 degree angle to the gate, with the lid closed.

Step 5. Install the USB-C cable

1. Connect one end of the USB-C cable to the USB connector on the left side of the KMM (PN 02RA055). Tighten the thumb screws on the USB-C cable plug.
2. Note the round cut-out holes in the gate behind the KMM (PN 02RA055). Insert the free end of the USB-C cable into the left-most hole in the gate behind the KMM.
3. Route the USB-C cable upward on the rear side of the gate and connect the USB-C cable's plug to the USB connector on the front end of the interface adapter (PN 03FM966). Tighten the thumb screws on the USB-C cable plug.
4. Gently bend the cable toward the gate and use a strip of hook and loop fastener to secure the cable to the gate just below the captive screw. To attach the hook and loop fastener, use the rectangular slot provided.
5. Use the hook and loop fastener along the right side of the upper backplate to fasten the USB-C cable to the backplate in the rectangular slots provided (PN 02WN701).

IMPORTANT

The top of the interface adapter (PN 03FM966) includes connectors for the DisplayPort, USB, and power cables (one set for the SE1 and one set for the SE2). A label to the left of each set of connectors identifies the related SE.

The lighted SE selection buttons on the front end of the interface adapter (PN 03FM966) allow you to switch between SEs. The lights also indicate which SE is currently being used, as follows:

- When the button on the left side is lighted, the SE1 is in use.
- When the button on the right side is lighted, the SE2 is in use.

Step 6. Thread the DisplayPort and SCH power cables through the frame

1. Check the labels on the the two 9-foot VGA (DisplayPort) cables (PN 02WN619) and the two SCH power cables (PN 02WN841) and separate them based on >whether they are associated with the SE1 or SE2.

   The SE1 cables are:

   - DisplayPort cable labeled **VGADP1 (A42J/K)-DISP**
   - SCH power cable labeled **A31BSCH1J.36**

   The SE2 cables are:

   - DisplayPort cable labeled **VGADP2 (A41J/K)-DISP**
   - SCH power cable labeled **A31BSCH2J.36**
2. From the front of the frame, thread the SE1 and SE2 DisplayPort cables through the frame to the rear. You will need the Mille-Rod *push pull* tool (in the ship group tool kit) for this step.
3. From the rear of the frame, thread both SCH cables, DC connector ends first, through the frame to the front.

Step 7. Install the VGADP adapter and cables

At the end of the procedure, you will be instructed to return to the beginning (Step “2” on page 132) and repeat the steps for the SE2.

1. Locate the two VGADP adapters (PN 03GN005).

2. Connect the 18-inch VGA (video) cable (PN 03GN003) for the SE1 to the connector labeled *VGA* on one of the VGADP adapters (PN 03GN005).
3. Connect the 18-inch USB Type A (power) cable (PN 03GN002) for the SE1 to the connector labeled *USB*, which sits beside the VGA connector on the **same** VGADP adapter (PN 03GN005).
4. At the rear of the frame, locate the free end of the 9-foot DisplayPort cable for the SE1 (PN 02WN619).
5. At the rear of the frame, connect the DisplayPort cable (PN 02WN619) for the SE1 to the connector labeled *DisplayPort* on the VGADP adapter (PN 03GN005).
6. At the rear of the frame, connect the free end of the SCH power cable (PN 02WN841) for the SE1 to the system control hub (SCH).
7. Connect the free end of the 18-inch VGA (video) cable (PN 03GN003) to the VGA connector on the rear of the SE1.
8. Connect the free end of the 18-inch USB Type A (power) cable (PN 03GN002) to the upper right-most USB connector on the rear of the SE1.
9. Use the soft ties (PN00RR794) to secure the VGADP adapter (PN 03GN005) and its cables to the existing cable bundle within the rear of the frame.
10. Repeat the preceding steps to connect the VGADP adapter (PN 03GN005) and cables, the DisplayPort cable, and the SCH power cable for the SE2.

Step 8. Completing the DisplayPort and SCH power, and USB Type A cable connections

The DisplayPort, SCH power, and USB Type A connectors are located on the top side of the interface adapter. The SE1 connectors sit behind the SE1 label on the interface adapter, while the SE2 connectors sit behind the SE2 label on the interface adapter.

1. At the front of the frame, locate the free ends of the DisplayPort, SCH power, and USB keyboard cables.
2. At the front of the frame, connect the DisplayPort cable (PN02WN619) for the SE1 to the DisplayPort connector (located behind the SE1 label) on the interface adapter (PN 03FM966).
3. Connect the SCH power cable (PN 02WN841) for the SE1 to the power connector (located behind the SE1 label) on the interface adapter (PN 03FM966).
4. Connect one of the following types of USB keyboard cables for the SE1 to the USB connector (located behind the SE1 label) on the interface adapter (PN 03FM966):
   - **For z14 systems:** Existing USB cable (labeled *SE1*)
   - **For z13 and z13s systems:** 9-foot USB Type A (keyboard) cable (PN 02JD581), labeled *SE1*)
5. Connect the DisplayPort cable for the SE2 to the DisplayPort connector (located behind the SE2 label) on the interface adapter (PN 03FM966).
6. Connect the SCH power cable (PN 02WN841) for the SE2 to the power connector (located behind the SE2 label) on the interface adapter (PN 03FM966).
7. Connect one of the following types of keyboard cables for the SE2 to the USB connector (located behind the SE2 label) on the interface adapter (PN 03FM966):
   - **For z14 systems:** Existing USB cable (labeled *SE2*)
   - **For z13 and z13s systems:** 9-foot USB Type A cable (PN 02JD581), labeled *SE2*)
8. At the rear side of the gate, route the cables along the left side of the upper backplate (PN 02WN701), securing them with the hook and loop fasteners provided.

Step 9. Power on the compact KMM and verify correct operation

Open the lid of the KMM and press the on-screen display (OSD) activation button, which is located on the compact keyboard/monitor/mouse (compact KMM) keyboard, to launch the on-screen display. The main menu is displayed on the screen.

For information on using the compact KMM's on-screen display for displaying and managing settings and functions, refer to Appendix C, “Operating the compact KMM console unit (keyboard/display),” on page 273.

Note: If the earthquake feature was ordered for the system being serviced, proceed to “Part 4: Install the earthquake feature hardware” on page 134.

END OF PROCEDURE

Part 4: Install the earthquake feature hardware

Use the instructions in this section only if the earthquake feature was ordered for the system being serviced, and only after completing the steps in “Part 1: Label the cables (for z13 and z13s systems) ” on page 121 or “Part 1: Label the cables (for z14 systems) ” on page 125, “Part 2: Remove the z13, z13s, and z14 displays and keyboards ” on page 128, and “Part 3: Install the compact KMM” on page 130.

Step 1. Install the earthquake bracket

Attach the earthquake bracket (PN 02WN847) to the gate, as shown in the following steps.

1. Locate the earthquake bracket (PN 02WN847).
2. At the rear side of the gate, place the earthquake bracket (PN 02WN847) flat against the gate's bottom edge. The bottom edge of the gate includes holes in the same locations as the holes in the earthquake bracket. Align the left-most holes of the bracket (the holes that are the widest apart) over the left-most and center holes at the bottom edge of the gate.
3. Secure the earthquake bracket (PN 02WN847) to the gate using two 7mm screws (PN 46K4281). Using a 7mm socket driver, tighten the screws.

   After attaching the earthquake bracket (PN 02WN847), the bracket's third hole should be visible from the front side of the gate (in the lower left corner, through the round sheet metal cutout on the gate). You will use it in a later step.

Step 2. Install the earthquake bar

Attach the earthquake bar (PN 02WN848) and secure the KMM to the gate, as shown in the following steps.

1. Locate the earthquake bar (PN 02WN848). It is included with the KMM mounting kit (PN 03GN233).
2. If the compact KMM (PN 02RA055) is not in the storage position (lid closed and its underside flat against the gate), lift the front edge of the KMM (PN 02RA055) slightly and gently pull it toward you until the hooks on the rear of the KMM disengage from the gate. Push the KMM downward and inward until its underside is flat against the gate.
3. Orient the earthquake bar (PN 02WN848) over the lower edge of the KMM (PN02RA055) so that the end with two prongs is on the right side of the KMM, and the end that has the captive screw is on the left.
4. Insert the two prongs of the earthquake bar (PN 02WN848) into the two circular sheet metal cut-outs along the gate's right side and beside the lower right corner of the KMM.
5. Insert the captive screw on the left side of the earthquake **bar** (PN 02WN848) into the hole of the earthquake **bracket** (PN 02WN847) that is visible through the circular cut-out in the lower left corner of the gate.
6. Tighten the captive screw to secure the earthquake bar (PN 02WN848) to the earthquake bracket (PN 02WN847).

END OF PROCEDURE

Post installation: Exchanging the compact KMM or interface adapter (z13, z13s, or z14 only)

Use the instructions in this section to remove and replace a **defective** compact KMM or interface adapter that was previously installed on a z13, z13s, or z14 system. These instructions assume the following:

- You have already used the steps in "Symptoms and corrective actions (2461-SE1 and 2461-SE2)" on page 20 (section *O - The compact keyboard/monitor/mouse (compact KMM) display is blank*) and have determined that the compact KMM or interface adapter is defective.
- The replacement compact KMM (PN 02RA055) or interface adapter (PN 02WN619) has been ordered and is now available to you.

Exchanging the compact KMM (z13, z13s, or z14 only)

Use the following steps to exchange a defective compact KMM (PN 02RA055) with a replacement compact KMM (PN 02RA055).

Removing a defective compact KMM

__ 1. At the front side of the gate, loosen the two screws that hold the hinge hardware in the upper right corner of the compact KMM (PN 02RA055) assembly. Loosen the screws enough so that the hinge hardware is loose, but still attached.

__ 2. Slide the KMM (PN 02RA055) to the right and left slightly, until it disengages from the hinges in the left and right top corners of the gate.

__ 3. On a flat surface, turn the defective compact KMM assembly over so that the metal shelf is facing up.

__ 4. Remove the two 7mm screws on the underside of the shelf.

__ 5. Remove the shelf from the compact KMM (PN 02RA055).

__ 6. The underside of the compact KMM should now be facing up. Slide the locking plate downward into the square slot and then lift it out of the compact KMM.

Installing a replacement compact KMM

__ 1. Place the replacement compact KMM (PN 02RA055), bottom side up, on a flat surface.

__ 2. Turn the locking plate (PN 02WN702) over so that its metal tongue is facing up. Place the locking plate into the square slot with the word INSERT on the locking plate facing away from the rear of the compact KMM (PN 02RA055).

__ 3. Slide the locking plate (PN 02WN702) forward (toward the rectangular channel) until it locks into place.

__ 4. Turn the keyboard shelf (PN 02WN703) over so that its strips of hook and loop fastener face up. Hold the shelf over the underside of the compact KMM (PN 02RA055) so that the shelf's hinges point toward the rear of the KMM. Align the holes in the shelf with the holes in the locking plate's (PN 02WN702) tongue.

__ 5. Insert a 7mm screw (PN 46K4281) through each of the holes. Tighten the screws.

__ 6. On the front of the gate, locate the left hinge along the gate's left edge.

__ 7. Orient the compact KMM assembly so the hooks of the keyboard shelf (PN 02WN703) are facing up and the lid of the compact KMM (PN 02RA055) is facing you.

__ 8. Place the left hook of the compact KMM (PN 02RA055) assembly over the bushing on the gate's left hinge.

__ 9. Holding the compact KMM assembly level and in place with your left hand, use your right hand to place the hook on the right side of the KMM assembly over the mounting arm and bushing of the gate's right hinge.

__ 10. Tighten the screws of the hinge hardware on the right side of the gate.

__ 11. Lift the compact KMM (PN 02RA055) upward to 90 degrees, and then push it into the frame slightly. The compact KMM should now be at a 90 degree angle to the gate, with the lid closed.

END OF PROCEDURE

Exchanging the interface adapter (z13, z13s, or z14 only)

Use the following steps to exchange a defective interface adapter (PN 03FM966) with a replacement interface adapter (PN 03FM966).

Removing a defective interface adapter

__ 1. From the front of the gate, remove the DisplayPort, USB, and SCH power cables from the interface adapter.

__ 2. On the front of the interface adapter, loosen the thumb screws of the white USB-C cable and then remove it from the connector.

__ 3. Loosen the captive screw on the front of the interface adapter.

__ 4. From the front side of the gate, slide the interface adapter to the left (toward the outside edge of the gate) until the hook on its underside disengages from the slot on the top of the metal backplate.

Installing a replacement interface adapter

__ 1. Turn the replacement interface adapter (PN 03FM966) over and locate the right-angled metal hook on its underside.

__ 2. From the front of the gate, place the replacement interface adapter (PN 03FM966) on the top edge of the upper backplate (PN 02WN701) with its VGA, USB, and power connectors facing up and the captive screw facing away from the frame. As you do this, make sure the metal hook on the underside of the interface adapter (PN 03FM966) is inserted into the slot on the top edge of the backplate.

__ 3. Slide the interface adapter to the right (toward the frame) until you feel it lock into place.

__ 4. Secure the interface adapter (PN 03FM966) to the backplate by tightening its captive screw.

__ 5. Return the cables to their connectors on the new interface adapter as follows:

   a. Plug the white USB-C cable that is connected to the compact KMM to the front of the interface adapter.

   b. Referring to the cable labels, return the DisplayPort, USB, and SCH power cables to their original positions on the interface adapter.

END OF PROCEDURE

Hard disk drive: Replace the hard disk drive door release latch

Use this procedure to remove and replace a broken hard disk drive door release latch.

Note: You may encounter two different 2461 hard disk drives in the field, with two different door styles. This procedure applies only to the 3.5-inch style door (shown in the following figure), which is found on 2461-SE3, 2461-VA3, and some 2461-SE4 Support Elements. A 2.5-inch hard disk drive door also exists on some 2461-SE4 Support Elements, which provides a slide mechanism for opening it. For more information, refer to “Opening the 2.5-inch hard disk drive (2461-SE4)” on page 8.

If you have not done so already, contact the first level of support to get the repair kit for the disk drive door latch. After the repair kit arrives, return here and continue with this procedure.

Parts

- 1 disk drive release latch housing
- 2 screws (3mm x .05)

Replacement procedure

1. Notes off the system.
2. If the disk drive door is open, go to Step “3” on page 138. Otherwise, open the disk drive door using a flat head screwdriver. Push the zinc latch mechanism forward (to the right). As the latch mechanism disengages, the disk drive door will open slightly.
3. Gently pull the disk drive door fully open (the disk drive will release).
4. On the back of the existing disk drive door, remove the two screws with a Phillips head #1 screwdriver and then remove the plastic latch housing from the disk drive door.
5. Attach the new latch housing to the disk drive door with the 2 screws provided in the repair kit.

Appendix A. Reloading the hard disk drive

This appendix provides instructions for reloading a hard disk drive after a hard disk drive failure. To reload the hard disk drive, do one of the following:

- For Support Element 2461-SE1, refer to “Hard disk errors for 2461 Support Element (2461-SE1)” on page 140.
- For Support Element 2461-SE2, refer to “Hard disk errors for 2461 Support Element (2461-SE2)” on page 143.
- For Support Element 2461-SE3, refer to “Hard disk errors for 2461 Support Element (2461-SE3)” on page 146.
- For Support Element 2461-SE4, refer to “Hard disk errors for 2461 Support Element (2461-SE4)” on page 148.
- For Hardware Management Appliance, refer to “Hard disk errors for Hardware Management Appliance (2461-SE4)” on page 150.

Hard disk errors for 2461 Support Element (2461-SE1)

1. Use the information in “Testing 2461 Support Element (2461-SE1) ” on page 141 to test the 2461 Support Element (Model 2461-SE1). Select **Hard Disk** problem area.

   Return here when the test is complete, then continue below.

2. Did the hard disk tests fail?

   - If **YES**, go to Step “3” on page 140.
   - If **NO**, go to Step “5” on page 140.

3. Exchange the FRUs called by the diagnostics one at a time. For FRU removal and replacement instructions, refer to the appropriate section in Chapter 4, “Exchanging the components,” on page 89.

   If you exchanged the hard disk, check to see if there are jumpers or tab settings on the new hard disk. **Ensure any jumper or tab settings are the same as on the old drive**.

   After the FRU is exchanged, test the repair using the procedure in “Testing 2461 Support Element (2461-SE1) ” on page 141. Select **Hard Disk** problem area.

   Return here when the test is complete, then continue below.

4. Did the hard disk tests continue to fail?

   If **YES**, call for assistance.

   If **NO**, continue with the next step to restore the licensed internal code.

5. You must **RESTORE the LICENSED INTERNAL CODE** and back up critical data to the new hard disk **USING the FOLLOWING PROCEDURES:**

   a. Insert the Support Element DVD-R 001 in the Support Element DVD drive. Perform the following steps to enable booting from the DVD drive:

      i) Press the **DEL** or **ESC** key to enter **SETUP** when you see the American Megatrends splash screen appear on the display.

      Note: Note that a machine in the field may have a customer-assigned admin password. If this is the case, the customer will need to provide the password (or temporarily remove the admin password). If the customer has set an admin password, you will be prompted for it in order to change the uEFI settings.

      ii) Once you are on the **Aptio Setup Utility** screen, select the **Boot** tab, select **Boot Option #1** and press **Enter**, then select **HL-DT-ST DVDRAM** and press **Enter**.

      iii) Press **F4** to save and select **Yes** to reboot.

   b. The Support Element will boot from the Support Element DVD-R.

   c. Follow the Hard Disk Reload/Restore prompts on the Support Element display panel to restore the Licensed Internal Code.

   d. After the LIC is loaded, you will be directed to remove the Support Element DVD-R and reboot the system.

   e. Follow the prompts on the Support Element display panel to complete the restore.

   f. After the restore is complete, perform the following steps to remove the DVD drive from the boot list:

      i) Press the **DEL** or **ESC** key to enter **SETUP** when you see the American Megatrends splash screen appear on the display. Enter the admin password if one is set.

      ii) Once you are back to the **Aptio Setup Utility** screen, select the **Boot** tab, then select **Boot Option #1** and change it to **P0: ST1000NX0313...**. Select **Boot Option #2** and change it to **Disabled**, leave Boot Option #3 as **Disabled**.

      iii) Press **F4** to save and select **Yes** to reboot.

END OF PROCEDURE.

Testing 2461 Support Element (2461-SE1)

Use the information in this section when you are directed to test the 2461 Support Element (model 2461-SE1) to isolate a problem or verify a repair.

__ 1. Running the prediagnostics:

- __ a. Power on the display.
- __ b. Power on or reboot the machine.
- __ c. Press **ESC** or **DEL** when prompted at the BIOS splash screen to enter the setup screens.
- __ d. Go to the **Advanced** tab, navigate to **Network Stack Configuration**, and press **Enter** to expand it.
- __ e. Change **Network Stack** to "Enabled."
- __ f. Change **Ipv4 PXE Support** to "Disabled."
- __ g. Change **Ipv6 PXE Support** to "Disabled."
- __ h. Press **F4** to save these values.
- __ i. Select **Yes** to reboot.
- __ j. Press **ESC** or **DEL** when prompted at the AMI splash screen.

  Note: It takes a long time to enter the setup screens now that the Network Stack is enabled.
- __ k. Select the **Save & Exit** tab, then select **AMIDiag for UEFI**.

__ 2. Running the diagnostics:

- __ a. Go to the **Options** tab, navigate to **Toggle All Tests**, and press **Enter**.

  Note: Note that it says that all tests are selected.
- __ b. Go to the **Memory** tab and deselect **Walking 1's Test**, **"Walking 0's Test"**, and **Random Memory Test** because each requires hours to run. To deselect an item, use the arrow keys to navigate to the item and then press the space bar. (The * to the left of each item will disappear indicating it is deselected.)
- __ c. Go to the **System** tab and deselect **CMOS Validity Test** because it will abort.
- __ d. Go to the **HDD/CD** tab and deselect **CD-DVD Tests** because they will all fail to find media in the DVD drive.
- __ e. Go to the **KBD** tab and deselect **KBD Layout Test** because it will not run in batch mode.
- __ f. Go to the **USB** tab, navigate to **USB Controller Test**, press **Enter**, and deselect **HotPlug/ Removal Test** because it will not run in batch mode.
- __ g. Go to the **Misc** tab and complete the following:
  - i) Navigate to **ACPI Tests**, press **Enter**, and deselect **ACPI Power Button Test** and **ACPI Sleep Test**.
  - ii) Press **ESC**.
  - iii) Navigate to **Mouse Tests**, press **Enter**, and deselect **Mouse Access Test**.
  - iv) Press **ESC** and deselect **Ping Test**.
  - v) Navigate to **IPMI Tests**, press **Enter**, and deselect **IPMI Event Log Test**, **Event Log Stress Test**, and **Event Log Erase Test** because these tests do not run in batch mode.

Note: If you want to run the keyboard (KBD) or mouse tests, they must be run separately with manual intervention.

__ 3. If you want to get a full report at the end of the diagnostic run, complete the following steps:

- __ a. Insert a formatted USB flash memory drive into one of the USB ports.
- __ b. Go to the **Options** tab, navigate to **Generate Report**, and press **Enter**.

__ c. Select **I still want to change log device**, press **Enter**.

__ d. Change **Report destination** from ""None"" to "File," pick the long entry that shows USB in the name, keep or change the default filename, and add your choice of words in the Heading field.

__ e. Change **Log device info on fail** from "NO" to "YES."

__ f. Change **Log device info on abort**"from "NO" to "YES."

__ g. Then select **CONTINUE**, press **Enter**.

__ 4. Press **F10** to start running the tests. The tests will run for about 30 minutes. As the tests run, the **Total Errors** and **Errors in Current Test** right-side columns should have no entries in them.

__ 5. If you inserted a USB flash memory drive to capture a report, you must close the file using the following steps:

__ a. Go to the **Options** tab, navigate to **Generate Report**, and press **Enter**.

__ b. Select **I still want to change log device**, press **Enter**.

__ c. Change **Report destination** from "File" to "None."

__ d. Select **CONTINUE**, and press **Enter**.

__ e. Remove the USB flash memory drive.

__ 6. Exit the diagnostics by pressing **ESC** and selecting **"YES**.

__ 7. After running diagnostics, complete the following steps:

__ a. Go to the **Advanced** tab, navigate to **Network Stack Configuration**, and press **Enter** to expand it.

__ b. Change **Network Stack** to "Disabled."

__ c. Press **F4** to save these values.

__ d. Select **Yes** to reboot.

END OF PROCEDURE

Hard disk errors for 2461 Support Element (2461-SE2)

1. Use the information in “Testing 2461 Support Element (2461-SE2) ” on page 144 to test the 2461 Support Element (2461-SE2). Select **Hard Disk** problem area.

   Return here when the test is complete, then continue below.

2. Did the hard disk tests fail?

   - If **YES**, go to Step “3” on page 143.
   - If **NO**, go to Step “5” on page 143.

3. Exchange the FRUs called by the diagnostics one at a time. For FRU removal and replacement instructions, refer to the appropriate section in Chapter 4, “Exchanging the components,” on page 89.

   If you exchanged the hard disk, check to see if there are jumpers or tab settings on the new hard disk. **Ensure any jumper or tab settings are the same as on the old drive**.

   After the FRU is exchanged, test the repair using the procedure in “Testing 2461 Support Element (2461-SE2) ” on page 144. Select **Hard Disk** problem area.

   Return here when the test is complete, then continue below.

4. Did the hard disk tests continue to fail?

   If **YES**, call for assistance.

   If **NO**, continue with the next step to restore the licensed internal code.

5. You must **RESTORE the LICENSED INTERNAL CODE** and back up critical data to the new hard disk **USING the FOLLOWING PROCEDURES:**

   a. Insert the Support Element DVD-R 001 in the Support Element DVD drive. Perform the following steps to enable booting from the DVD drive:

      Note: Note that a machine in the field may have a customer-assigned admin password. If this is the case, the customer will need to provide the password (or temporarily remove the admin password). If the customer has set an admin password, you will be prompted for it in order to change the uEFI settings.

      i) Power on the display.

      ii) Power on or reboot the Support Element.

      iii) When you see the American Megatrends splash screed, press the **DEL** or **ESC** key to enter the Setup Utility.

      iv) Use the arrow keys to navigate to the **Save & Exit** tab.

      v) Use the arrow keys to highlight the UEFI DVD selection (for example, "UEFI: (FAT) HL-DT-ST DVDRAM GTC0N").

      vi) Press **Enter**. It will automatically boot from the DVD drive selection.

   b. The Support Element will boot from the Support Element DVD-R.

   c. Follow the Hard Disk Reload/Restore prompts on the Support Element display panel to restore the Licensed Internal Code.

   d. After the LIC is loaded, you will be directed to remove the Support Element DVD-R and reboot the system.

   e. Follow the prompts on the Support Element display panel to complete the restore.

6. Test using the procedure in “Testing 2461 Support Element (2461-SE2) ” on page 144. Select **Run All Selected** problem area.

   Return here when the test is complete, then continue below.

   Did any of the hard disk tests fail?

- If **YES**, exchange the FRUs called by the diagnostics one at a time. For FRU removal and replacement instructions, refer to the HMM for the appropriate machine type on the Diagnostic CD-ROM. When the problem is resolved, go to "7" on page 144.
- If **NO**, continue with the next step to close the call.
- If the tests do not fail and the problem remains, call for assistance.

7. Close the call. For instructions, refer to the *Service Guide* for the server to which this console is connected.

END OF PROCEDURE.

Testing 2461 Support Element (2461-SE2)

Use the information in this section when you are directed to test the 2461 Support Element (model 2461-SE2) to isolate a problem or verify a repair.

__ 1. Running the prediagnostics:

__ a. Power on the display.

__ b. Power on or reboot the machine.

__ c. Press **ESC** or **DEL** when prompted at the BIOS splash screen to enter the setup screens.

__ d. Go to the **Advanced** tab, navigate to **Network Stack Configuration**, and press **Enter** to expand it.

__ e. Change **Network Stack** to "Enabled."

__ f. Change **Ipv4 PXE Support** to "Disabled."

__ g. Change **Ipv6 PXE Support** to "Disabled."

__ h. Press **F4** to save these values.

__ i. Select **Yes** to reboot.

__ j. Press **ESC** or **DEL** when prompted at the AMI splash screen.

Note: It takes a long time to enter the setup screens now that the Network Stack is enabled.

__ k. Select the **Save & Exit** tab, then select **AMIDiag for UEFI**.

__ 2. Running the diagnostics:

__ a. Go to the **Options** tab, navigate to **Toggle All Tests**, and press **Enter**.

Note: Note that it says that all tests are selected.

__ b. Go to the **Memory** tab and deselect **Walking 1's Test**, **"Walking 0's Test"**, and **Random Memory Test** because each requires hours to run. To deselect an item, use the arrow keys to navigate to the item and then press the space bar. (The * to the left of each item will disappear indicating it is deselected.)

__ c. Go to the **System** tab and deselect **CMOS Validity Test** because it will abort.

__ d. Go to the **HDD/CD** tab and deselect **CD-DVD Tests** because they will all fail to find media in the DVD drive.

__ e. Go to the **KBD** tab and deselect **KBD Layout Test** because it will not run in batch mode.

__ f. Go to the **USB** tab, navigate to **USB Controller Test**, press **Enter**, and deselect **HotPlug/ Removal Test** because it will not run in batch mode.

__ g. Go to the **Misc** tab and complete the following:

i) Navigate to **ACPI Tests**, press **Enter**, and deselect **ACPI Power Button Test** and **ACPI Sleep Test**.

ii) Press **ESC**.

iii) Navigate to **Mouse Tests**, press **Enter**, and deselect **Mouse Access Test**.

iv) Press **ESC** and deselect **Ping Test**.

v) Navigate to **IPMI Tests**, press **Enter**, and deselect **IPMI Event Log Test**, **Event Log Stress Test**, and **Event Log Erase Test** because these tests do not run in batch mode.

Note: If you want to run the keyboard (KBD) or mouse tests, they must be run separately with manual intervention.

__ 3. If you want to get a full report at the end of the diagnostic run, complete the following steps:

__ a. Insert a formatted USB flash memory drive into one of the USB ports.

__ b. Go to the **Options** tab, navigate to **Generate Report**, and press **Enter**.

__ c. Select **I still want to change log device**, press **Enter**.

__ d. Change **Report destination** from ""None"" to "File," pick the long entry that shows USB in the name, keep or change the default filename, and add your choice of words in the Heading field.

__ e. Change **Log device info on fail** from "NO" to "YES."

__ f. Change **Log device info on abort**"from "NO" to "YES."

__ g. Then select **CONTINUE**, press **Enter**.

__ 4. Press **F10** to start running the tests. The tests will run for about 30 minutes. As the tests run, the **Total Errors** and **Errors in Current Test** right-side columns should have no entries in them.

__ 5. If you inserted a USB flash memory drive to capture a report, you must close the file using the following steps:

__ a. Go to the **Options** tab, navigate to **Generate Report**, and press **Enter**.

__ b. Select **I still want to change log device**, press **Enter**.

__ c. Change **Report destination** from "File" to "None."

__ d. Select **CONTINUE**, and press **Enter**.

__ e. Remove the USB flash memory drive.

__ 6. Exit the diagnostics by pressing **ESC** and selecting **"YES**.

__ 7. After running diagnostics, complete the following steps:

__ a. Go to the **Advanced** tab, navigate to **Network Stack Configuration**, and press **Enter** to expand it.

__ b. Change **Network Stack** to "Disabled."

__ c. Press **F4** to save these values.

__ d. Select **Yes** to reboot.

END OF PROCEDURE

Hard disk errors for 2461 Support Element (2461-SE3)

1. Use the information in “Testing 2461 Support Element (2461-SE3) ” on page 147 to test the 2461 Support Element (2461-SE3). Select **Hard Disk** problem area.

   Return here when the test is complete, then continue below.

2. Did the hard disk tests fail?

   - If **YES**, go to Step “3” on page 146.
   - If **NO**, go to Step “5” on page 146.

3. Exchange the FRUs called by the diagnostics one at a time. For FRU removal and replacement instructions, refer to the appropriate section in Chapter 4, “Exchanging the components,” on page 89.

   If you exchanged the hard disk, check to see if there are jumpers or tab settings on the new hard disk. **Ensure any jumper or tab settings are the same as on the old drive**.

   After the FRU is exchanged, test the repair using the procedure in “Testing 2461 Support Element (2461-SE3) ” on page 147. Select **Hard Disk** problem area.

   Return here when the test is complete, then continue below.

4. Did the hard disk tests continue to fail?

   If **YES**, call for assistance.

   If **NO**, continue with the next step to restore the licensed internal code.

5. You must **RESTORE the LICENSED INTERNAL CODE** and back up critical data to the new hard disk **USING the FOLLOWING PROCEDURES:**

   Note: In some cases, you might need to reload the licensed internal code from a network instead of USB media. (For example, if you have feature code 0846). For information about *loading images to a system from a network*, refer to the *8561 Service Guide*, GC28-6998.

   a. Insert the Support Element USB flash memory drive into the Support Element USB port. Perform the following steps to enable booting from the USB drive:

      Note: Note that a machine in the field may have a customer-assigned admin password. If this is the case, the customer will need to provide the password (or temporarily remove the admin password). If the customer has set an admin password, you will be prompted for it in order to change the uEFI settings.

      i) Power on the display.

      ii) Power on or reboot the Support Element.

      iii) Press the **ESC** key to enter SETUP when you see the *Insyde* BIOS logo appear on the display.

      iv) Use the arrow keys to navigate to the **Boot Manager**, then select the USB brand listed.

      v) Press **Enter**. It will automatically boot from the USB drive selection.

   b. The Support Element will boot from the Support Element USB.

   c. Follow the Hard Disk Reload/Restore prompts on the Support Element display panel to restore the Licensed Internal Code.

   d. After the LIC is loaded, you will be directed to remove the Support Element USB and reboot the system.

   e. Follow the prompts on the Support Element display panel to complete the restore.

6. Test using the procedure in “Testing 2461 Support Element (2461-SE3) ” on page 147. Select **Run All Selected** problem area.

   Return here when the test is complete, then continue below.

   Did any of the hard disk tests fail?

- If **YES**, exchange the FRUs called by the diagnostics one at a time.
- If **NO**, continue with the next step to close the call.
- If the tests do not fail and the problem remains, call for assistance.

7. Close the call. For instructions, refer to the *Service Guide* for the server to which this console is connected.

END OF PROCEDURE.

Testing 2461 Support Element (2461-SE3)

The Insyde H2ODST diagnostics are embedded in the system BIOS firmware. To run the H2ODST diagnostics, do the following:

1. Power on or reboot the machine.
2. Press **ESC** when prompted at the Insyde screen to enter the setup screen.
3. Select **H2ODST Tool**.
4. Select the orange box for **All Device** in the diagnostics window.
5. Press ESC to exit the H2ODST diagnostics.

Note: The Audio and Hard Drive tests will fail when running the H2ODST diagnostics, because Support Element 2461-SE3 has no audio device and the data transfer test will fail.

END OF PROCEDURE

Hard disk errors for 2461 Support Element (2461-SE4)

1. Use the information in “Testing 2461 Support Element (2461-SE4) ” on page 149 to test the 2461 Support Element (2461-SE4). Select **Hard Disk** problem area.

   Return here when the test is complete, then continue below.

2. Did the hard disk tests fail?

   - If **YES**, go to Step “3” on page 148.
   - If **NO**, go to Step “5” on page 148.

3. Exchange the FRUs called by the diagnostics one at a time. For FRU removal and replacement instructions, refer to the appropriate section in Chapter 4, “Exchanging the components,” on page 89.

   If you exchanged the hard disk, check to see if there are jumpers or tab settings on the new hard disk. **Ensure any jumper or tab settings are the same as on the old drive**.

   After the FRU is exchanged, test the repair using the procedure in “Testing 2461 Support Element (2461-SE4) ” on page 149. Select **Hard Disk** problem area.

   Return here when the test is complete, then continue below.

4. Did the hard disk tests continue to fail?

   If **YES**, call for assistance.

   If **NO**, continue with the next step to restore the licensed internal code.

5. You must **RESTORE the LICENSED INTERNAL CODE** and back up critical data to the new hard disk **USING THE FOLLOWING PROCEDURES:**

   Note: In some cases, you might need to reload the licensed internal code from a network instead of USB media. (For example, if you have feature code 0846). For information about *loading images to a system from a network*, refer to one of the following:

   - *3932 Single Frame Service Guide*, GC28-7042
   - *z16 and LinuxONE Rockhopper 4 Rack Mount Bundle Service Guide*, GC28-7037.

   a. Insert the Support Element USB flash memory drive into the Support Element USB port. Perform the following steps to enable booting from the USB drive:

      Note: Note that a machine in the field may have a customer-assigned admin password. If this is the case, the customer will need to provide the password (or temporarily remove the admin password). If the customer has set an admin password, you will be prompted for it in order to change the uEFI settings.

      i) Power on the display.

      ii) Power on or reboot the Support Element.

      iii) Press the **ESC** key to enter SETUP when you see the *Trenton Systems* logo appear on the display.

      iv) Use the arrow keys to navigate to the **Boot Manager**, then select the USB brand listed.

      v) Press **Enter**. It will automatically boot from the USB drive selection.

   b. The Support Element will boot from the Support Element USB.

   c. Follow the Hard Disk Reload/Restore prompts on the Support Element display panel to restore the Licensed Internal Code.

   d. After the LIC is loaded, you will be directed to remove the Support Element USB and reboot the system.

   e. Follow the prompts on the Support Element display panel to complete the restore.

6. Test using the procedure in “Testing 2461 Support Element (2461-SE4) ” on page 149. Select **Run All Selected** problem area.

Return here when the test is complete, then continue below.

Did any of the hard disk tests fail?

- If **YES**, exchange the FRUs called by the diagnostics one at a time.
- If **NO**, continue with the next step to close the call.
- If the tests do not fail and the problem remains, call for assistance.

7. Close the call. For instructions, refer to the *Service Guide* for the server to which this console is connected.

END OF PROCEDURE.

Testing 2461 Support Element (2461-SE4)

The Insyde H2ODST diagnostics are embedded in the system BIOS firmware. To run the H2ODST diagnostics, do the following:

1. Power on or reboot the machine.
2. Press **ESC** when prompted at the *Trenton Systems* logo to enter the setup screen.
3. Select **H2ODST Tool**.
4. Select the orange box for **All Device** in the diagnostics window.
5. Press **ESC** to exit the H2ODST diagnostics.

Note: The Audio and Hard Drive tests will fail when running the H2ODST diagnostics, because Support Element 2461-SE4 has no audio device and the data transfer test will fail.

END OF PROCEDURE

Hard disk errors for Hardware Management Appliance (2461-SE4)

1. Is the failing hard disk drive on the HMC that is hosting the Primary SE?
   - If **YES**, go to Step “2” on page 150 .
   - If **NO**, switch the Primary SE with the Alternate SE so that the Primary SE is always running. For information on switching Support Elements, refer to one of the following:
     - *3932 Single Frame Service Guide*, GC28-7042
     - *IBM z16 and LinuxONE Rockhopper 4 Rack Mount Bundle Service Guide*, GC28-7037.
2. Replace the hard disk drive on the Hardware Management Console (HMC) that hosts the Alternate SE. For instructions on replacing the HMC's hard disk drive, refer to the *Service Guide for 2461 Hardware Management Console*, GC28-7021 (Base version) or GC28-7030 (Proprietary version).
3. Go to the *Service Guide for 2461 Hardware Management Console*, GC28-7021 (Base version) or GC28-7030 (Proprietary version) and follow the instructions for reloading an HMC.
4. When the HMC reload operation is complete, plug the Support Element USB stick into the right-most USB port on the front of the SE.
5. Log into the HMC and launch the **Virtual Support Element Management** task.
6. From the **Install SE** section, select **USB** and click **Install SE**.
7. Follow the Hard Disk Reload/Restore prompts on the Support Element display panel to restore the Licensed Internal Code (LIC).
8. After the LIC is loaded, you will be directed to remove the Support Element USB and reboot the system.
9. From the **Virtual Support Element Management** task, click **Start SE Virtual Machine**.
10. After the SE Virtual Machine is started, click **Show SE Console**.
11. Follow the prompts on the Support Element display panel to complete the restore.

END OF PROCEDURE.

Testing 2461 Hardware Management Appliance (2461-SE4)

The Insyde H2ODST diagnostics are embedded in the system BIOS firmware. To run the H2ODST diagnostics, do the following:

1. Power on or reboot the machine.
2. Press **ESC** when prompted at the *Trenton Systems* logo to enter the setup screen.
3. Select **H2ODST Tool**.
4. Select the orange box for **All Device** in the diagnostics window.
5. Press **ESC** to exit the H2ODST diagnostics.

Note: The Audio and Hard Drive tests will fail when running the H2ODST diagnostics, because Support Element 2461-SE4 has no audio device and the data transfer test will fail.

END OF PROCEDURE

Appendix B. 2461 configuration

Use the information in this section if you are directed to verify the configuration for the 2461 Support Element. To verify the configuration, do one of the following:

- For Support Element 2461-SE1, refer to “Support Element 2461-SE1 configuration” on page 152.
- For Support Element 2461-SE2, refer to “Support Element 2461-SE2 configuration” on page 161.
- For Support Element 2461-SE3, refer to “Support Element 2461-SE3 configuration” on page 170.
- For Support Element 2461-SE4, refer to “Support Element 2461-SE4 configuration” on page 196.
- For Hardware Management Appliance, refer to “Hardware Management Appliance 2461-VA3 configuration” on page 221.
- For Hardware Management Appliance, refer to “Hardware Management Appliance 2461-SE4 configuration” on page 247.

Support Element 2461-SE1 configuration

Use the information in this section if you are directed to verify the configuration for the 2461 Support Element (2461-SE1).

Manual Configuration: Using IBM Setup Utility (**ESC** or **DEL** during boot)

1. Power on the display.
2. Power on the system unit.
3. Verify the following:

```
BIOS Information
BIOS Vendor                             American Megatrends
Core Version                            4.6.5.5
Compliancy                              UEFI 2.3.1; PI 1.2
Project Version                         0ACHT 0.10 x64
Build Date and Time                     03/29/2016 16:00:00
Customer Ref. Number                    006250

System Language                         [English]

System Date                             [Day mm/dd/yyyy]     (varies)
System Time                             [hh:mm:ss]           (varies - make sure seconds
advance)

Access Level                            Administrator

Processor Information
Name                                    Haswell
Brand String                            Intel(R) Xeon(R) CPU E3-
Frequency                               3400 MHz
Processor ID                            306c3
Stepping                                C
Number of Processors                    4Core(s) / 4Thread(s)
Microcode Revision                      1d
GT Info                                 Not Applicable

IGFX VBIOS Version                      N/A
Memory RC Version                       1.8.0.3
Total Memory                            32768MB (DDR3)
Memory Frequency                        1600 Mhz

PCH Information
Name                                    LynxPoint
PCH SKU                                 C226
Stepping                                05/C2
LAN PHY Revision                        N/A

ME FW Verison                           N/A
ME Firmware SKU                         N/A

SPI Clock Frequency
DOFR Support                            Unsupported
Read Status Clock Frequency             20 MHz
Write Status Clock Frequency            20 MHz
Fast Read Status Clock Frequency        20 MHz


{Advanced Tab}

PCI Subsystem Settings (hit ENTER to expand)

PCI Bus Driver Version                  V 2.05.02

PCI 64bit Resources Handling
Above 4G Decoding                       [Disabled]

PCI Express Settings (hit ENTER to expand)

PCI Express Device Register Settings
Relaxed Ordering                        [Disabled]
Extended Tag                            [Disabled]
No Snoop                                [Enabled]
Maximum Payload                         [Auto]
Maximum Read Request                    [Auto]
```

```
PCI Express Link Register Settings
ASPM Support                          [Disabled]
WARNING: Enabling ASPM may cause some
         PCI-E devices to fail
Extended Synch                        [Disabled]
Clock Power Management                [Disabled]

Link Training Retry                   [5]
Link Training Timeout (uS)            100
Unpopulated Links                     [Keep Link ON]
Restore PCIE Registers                [Disabled]

{hit ESC twice}

ACPI Settings (hit ENTER to expand)

Enable ACPI Auto Configuration        [Disabled]

Enable Hibernation                    [Disabled]
ACPI Sleep State                      [Suspend Disabled]
Lock Legacy Resources                 [Disabled]
S3 Video Repost                       [Disabled]

{hit ESC}

Trusted Computing (hit ENTER to expand)

Configuration
  Security Device Support             [Enable]
  TPM State                           [Disabled]
Pending operation                     [None]

Current Status Information
  TPM Enabled Status:                 [Disabled]
  TPM Active Status:                  [Deactivated]
  TPM Owner Status:                   [Unowned]

{press ESC}

SATA Configuration (hit ENTER to expand)

SATA Controller(s)                    [Enabled]
SATA Mode Selection                   [AHCI]
SATA Test Mode                        [Disabled]
Aggressive LPM Support                [Enabled]

Serial ATA Port 0                     ST1000NX0313 (1000.2GB
  Software Preserve                   SUPPORTED
  Port 0                              [Enabled]
  Hot Plug                            [Enabled]
  Mechanical Presence Switch          [Disabled]
  External SATA                       [Enabled]
  SATA Device Type                    [Hard Disk Drive]
  Spin Up Device                      [Disabled]
Serial ATA Port 1                     Empty
  Software Preserve                   Unknown
  Port 1                              [Enabled]
  Hot Plug                            [Enabled]
  Mechanical Presence Switch          [Disabled]
  External SATA                       [Enabled]
  SATA Device Type                    [Hard Disk Drive]
  Spin Up Device                      [Disabled]
Serial ATA Port 2                     HL-DT-ST DVDRA ATAPI
  Software Preserve                   N/A
  Port 2                              [Enabled]
  Hot Plug                            [Enabled]
  Mechanical Presence Switch          [Disabled]
  External SATA                       [Enabled]
  SATA Device Type                    [Hard Disk Drive]
  Spin Up Device                      [Disabled]
Serial ATA Port 3                     Empty
  Software Preserve                   Unknown
  Port 3                              [Enabled]
  Hot Plug                            [Disabled]
  External SATA                       [Disabled]
  SATA Device Type                    [Hard Disk Drive]
  Spin Up Device                      [Disabled]
Serial ATA Port 4                     Empty
  Software Preserve                   Unknown
  Port 4                              [Enabled]
  Hot Plug                            [Disabled]
```

```
  External SATA                          [Disabled]
  SATA Device Type                       [Hard Disk Drive]
  Spin Up Device                         [Disabled]
Serial ATA Port 5                        Empty
  Software Preserve                      Unknown
  Port 5                                 [Enabled]
  Hot Plug                               [Disabled]
  External SATA                          [Disabled]
  SATA Device Type                       [Hard Disk Drive]
  Spin Up Device                         [Disabled]

{hit ESC}

PCH-FW Configuration (hit ENTER to expand)

ME FW Version                            N/A
Firmware Update Configuration (hit ENTER to expand)

Me PW Image Re-Flash                     [Disabled]

{hit ESC twice}

USB Configuration (hit ENTER to expand)

USB Module Version                       8.10.34

USB Controllers:
       2 EHCIs, 1 XHCI
USB Devices:
       1 Keyboard, 1 Mouse, 3 Hubs

Legacy USB Support                       [Enabled]
XHCI Hand-Off                            [Enabled]
EHCI Hand-Off                            [Disabled]
USB Mass Storage Driver Support          [Enabled]

USB hardware delays and time-outs:
USB transfer time-out                    [20 sec]
Device reset time-out                    [20 sec]
Device power-up delay                    [Auto]

{hit ESC}

Network Stack Configuration (hit ENTER to expand)

Network Stack                            [Disabled]

{hit ESC}

Intel(R) I350 Gigabit Network Connection - 00:10:6F:0D:5A:93 {varies} (hit ENTER to expand)

PORT CONFIGURATION MENU
NIC Configuration (hit ENTER to expand)

Link Speed                               [Auto Negotiated]
Wake On LAN                              [Disabled]

{hit ESC}

Blink LEDs                               0

PORT CONFIGURATION INFORMATION
UEFI Driver:                             Intel(R) PRO/1000 6.1.16
Adapter PBA:                             106100-000
Chip Type                                Intel i350
PCI Device ID                            1521
PCI Address                              02:00:00
Link Status                              [Disconnected]            {varies}
MAC Address                              00:10:6F:0D:5A:93         {varies}
Virtual MAC Address                      00:10:6F:0D:5A:93         {varies}

{hit ESC}

Intel(R) I350 Gigabit Network Connection - 00:10:6F:0D:5A:94 {varies} (hit ENTER to expand)

PORT CONFIGURATION MENU
NIC Configuration (hit ENTER to expand)

Link Speed                               [Auto Negotiated]
Wake On LAN                              [Disabled]

{hit ESC}
```

```
Blink LEDs                              0

PORT CONFIGURATION INFORMATION
UEFI Driver:                            Intel(R) PRO/1000 6.1.16
Adapter PBA:                            106100-000
Chip Type                               Intel i350
PCI Device ID                           1521
PCI Address                             02:00:01
Link Status                             [Disconnected]          {varies}
MAC Address                             00:10:6F:0D:5A:94       {varies}
Virtual MAC Address                     00:10:6F:0D:5A:94       {varies}

{hit ESC}

Intel(R) I350 Gigabit Network Connection - 00:10:6F:0D:5A:95 {varies} (hit ENTER to expand)

PORT CONFIGURATION MENU
NIC Configuration (hit ENTER to expand)

Link Speed                              [Auto Negotiated]
Wake On LAN                             [Disabled]

{hit ESC}

Blink LEDs                              0

PORT CONFIGURATION INFORMATION
UEFI Driver:                            Intel(R) PRO/1000 6.1.16
Adapter PBA:                            106100-000
Chip Type                               Intel i350
PCI Device ID                           1521
PCI Address                             02:00:02
Link Status                             [Disconnected]          {varies}
MAC Address                             00:10:6F:0D:5A:95       {varies}
Virtual MAC Address                     00:10:6F:0D:5A:95       {varies}

{hit ESC}

Intel(R) I350 Gigabit Network Connection - 00:10:6F:0D:5A:96 {varies} (hit ENTER to expand)

PORT CONFIGURATION MENU
NIC Configuration (hit ENTER to expand)

Link Speed                              [Auto Negotiated]
Wake On LAN                             [Disabled]

{hit ESC}

Blink LEDs                              0

PORT CONFIGURATION INFORMATION
UEFI Driver:                            Intel(R) PRO/1000 6.1.16
Adapter PBA:                            106100-000
Chip Type                               Intel i350
PCI Device ID                           1521
PCI Address                             02:00:03
Link Status                             [Disconnected]          {varies}
MAC Address                             00:10:6F:0D:5A:96       {varies}
Virtual MAC Address                     00:10:6F:0D:5A:96       {varies}

{hit ESC}

Intel(R) I350 Gigabit Network Connection - 00:10:6F:0D:5A:97 {varies} (hit ENTER to expand)

PORT CONFIGURATION MENU
NIC Configuration (hit ENTER to expand)

Link Speed                              [Auto Negotiated]
Wake On LAN                             [Disabled]

{hit ESC}

Blink LEDs                              0

PORT CONFIGURATION INFORMATION
UEFI Driver:                            Intel(R) PRO/1000 6.1.16
Adapter PBA:                            106100-000
Chip Type                               Intel i350
PCI Device ID                           1521
PCI Address                             03:00:00
Link Status                             [Disconnected]          {varies}
```

```
MAC Address                          00:10:6F:0D:5A:97       {varies}
Virtual MAC Address                  00:10:6F:0D:5A:97       {varies}

{hit ESC}

Intel(R) I350 Gigabit Network Connection - 00:10:6F:0D:5A:98 {varies} (hit ENTER to expand)

PORT CONFIGURATION MENU
NIC Configuration (hit ENTER to expand)

Link Speed                           [Auto Negotiated]
Wake On LAN                          [Disabled]

{hit ESC}

Blink LEDs                           0

PORT CONFIGURATION INFORMATION
UEFI Driver:                         Intel(R) PRO/1000 6.1.16
Adapter PBA:                         106100-000
Chip Type                            Intel i350
PCI Device ID                        1521
PCI Address                          03:00:01
Link Status                          [Disconnected]          {varies}
MAC Address                          00:10:6F:0D:5A:98       {varies}
Virtual MAC Address                  00:10:6F:0D:5A:98       {varies}

{hit ESC}

Intel(R) I210 Gigabit  Network Connection - 00:10:6F:0D:... {varies} (hit ENTER to expand)

PORT CONFIGURATION MENU
NIC Configuration (hit ENTER to expand)

Link Speed                           [Auto Negotiated]
Wake On LAN                          [Disabled]

{hit ESC}

Blink LEDs                           0

PORT CONFIGURATION INFORMATION
UEFI Driver:                         Intel(R) PRO/1000 6.1.
Adapter PBA:                         000300-000
Chip Type                            Intel i210
PCI Device ID                        1533
PCI Address                          06:00:00
Link Status                          [Disconnected]          {varies}
MAC Address                          00:10:6F:0D:5A:99       {varies}
Virtual MAC Address                  00:10:6F:0D:5A:99       {varies}

{hit ESC}

{Chipset Tab}

PCH-IO Configuration (hit ENTER to expand)

Intel PCH RC Version                 2.7.0.0
Intel PCH SKU Name                   C226
Intel PCH Rev ID                     05/C2

USB Configuration (press ENTER to expand)

USB Precondition                     [Enabled]

USB Ports Per-Port Disable Control   [Disabled]

{hit ESC}

BIOS Security Configuration (press ENTER to expand)

SMI Lock                             [Enabled]
BIOS Lock                            [Enabled]
GPIO Lock                            [Disabled]
BIOS Interface Lock                  [Enabled]
RTC Lock                             [Enabled]

{hit ESC}

PCH LAN Controller                   [Disabled]
SLP_S4 Assertion Width               [Disabled]
Restore AC Power Loss                [Power On]
```

```
{hit ESC}

System Agent (SA) Configuration (hit ENTER to expand)

VT-d Capability                          Supported

VT-d                                     [Enabled]

{hit ESC}

{Boot Tab}

Boot Configuration
Setup Prompt Timeout                     5
Bootup NumLock State                     [Off]

Quiet Boot                               [Disabled]
Fast Boot                                [Disabled]
 SATA Support                            [HDD Only]
 VGA Support                             [EFI Driver]
 USB Support                             [Partial Initial]
 PS2 Devices Support                     [Enabled]
 NetWork Stack Driver Support            [Disabled]

Driver Option Priorities

Boot Option Priorities
Boot Option #1                           [P0: ST1000NX0313...]     Changed from default of
"P2:"
Boot Option #2                           [Disabled]                Changed from default of
"P0:"
Boot Option #3                           [Disabled]                Changed from default of
"UEFI:"

CD/DVD ROM Drive BBS Priorities (hit ENTER to expand)

Boot Option #1                           [P2: HL-DT-ST DVDRAM...]

{hit ESC}

Hard Drive BBS Priorities (hit ENTER to expand)

Boot Option #1                           [P0: ST1000NX0313   ...]

{hit ESC}

Per Port Boot Option Control (hit ENTER to expand)

SATA 0 - Midplane P1 - Internal          [Enabled]
SATA 1 - Midplane P2 - Internal          [Disabled]
SATA 2 - Midplane P3 - Internal          [Disabled]
SATA 3 - P14 - Internal SATA 3           [Disabled]
SATA 4 - P13 - Internal SATA 4           [Disabled]
SATA 5 - P11 - Internal SATA 5           [Disabled]

USB 0 - P6 Bottom - USB 5                [Disabled]
USB 1 - P6 Top - USB 4                   [Disabled]
USB 2 - P3 Bottom - USB 7                [Disabled]
USB 3 - P3 Top - USB 6                   [Disabled]
USB 4 - P4 Bottom - USB 9                [Disabled]
USB 5 - P4 Top - USB 8                   [Disabled]
USB 6 - P24 [1,3,5,7] - Internal         [Disabled]
USB 7 - P24 [2,4,6,8] - Internal         [Disabled]
USB 8 - P25 [1,3,5,7] - Internal         [Disabled]
USB 9 - P36 - Internal USB 3             [Disabled]
USB 10 - N/A - BMC                       [Disabled]
USB 11 - N/A - BMC                       [Disabled]
USB 12 - Midplane USB 0 P3 - USB 1       [Disabled]
USB 13 - Midplane USB 1 P2 - USB 2       [Disabled]

{hit ESC}

CSM16 Parameters (hit ENTER to expand)

CMS16 Module Version                     07.79

GateA20 Active                           [Upon Request]
Option ROM Messages                      [Force BIOS]
INT19 Trap Response                      [Immediate]

{hit ESC}
```

```
CSM parameters (hit ENTER to expand)

Launch CSM                                [Enabled]
Boot option filter                        [UEFI and Legacy]
Launch PXE OpROM policy                   [Do not launch]
Launch Storage OpROM policy               [Legacy Only]
Launch Video OpROM policy                 [Legacy Only]

Other PCI device ROM priority             [UEFI OpROM]

{hit ESC}


{Security Tab}

Password Description

If ONLY the Administrator's password is set,
then this only limits access to Setup and is
only asked for when entering Setup.
If ONLY the User's password is set, then this
is a power on password and must be entered to
boot or enter Setup.  In Setup the User will
have Administrator rights.
The password length must be
in the following range:
Minimum length                            3
Maximum length                            20

Administrator Password (hit ENTER to create password, must confirm new password)

Secure Boot menu (hit ENTER to expand)

System Mode                               Setup
Secure Boot                               Not Active

Secure Boot                               [Disabled]
Secure Boot Mode                          [Custom]
Key Management (hit ENTER to expand)

Default Key Provision                     [Disabled]

Enroll All Factory Default Keys
Save   All Secure Boot Variables

Platform Key (PK)                         NOT INSTALLED
Delete  PK
Set new PK

Key Exchange Key (KEK)                    NOT INSTALLED
Delete  KEK
Set New KEK
Append  KEK
Authorized Signatures                     NOT INSTALLED
Delete  DB
Set new DB
Append  DB
Authorized TimeStamps                     NOT INSTALLED
Delete  DBT
Set new DBT
Append  DBT
Forbidden Signatures                      NOT INSTALLED
Delete  DBX
Set new DBX
Append  DBX

{hit ESC twice}

HDD Security Configuration:
P0:ST1000NX0313 (hit ENTER to expand)

HDD Password Description:

Allows  Access to  Set, Modify  and  Clear
HardDisk User and Master Passwords.
User Password need to be installed for
Enabling Security. Master Password can
be Modified only when successfully unlocked
with Master Password in POST.
If the 'Set HDD Password' option is greyed out,
do power cycle to enable the option again.
```

```
HDD PASSWORD CONFIGURATION:

Security Supported       :            Yes
Security Enabled         :            No
Security Locked          :            No
Security Frozen          :            Yes    (varies)
HDD User Pwd Status      :            NOT INSTALLED
HDD Master Pwd Status    :            INSTALLED

Set User Password

{hit ESC}


{Save & Exit Tab}

Save Changes and Exit
Discard Changes and Exit
Save Changes and Reset
Discard Changes and Reset

Save Options
Save Changes
Discard Changes

Restore Defaults
Save as User Defaults
Restore User Defaults

Boot Override
P2: HL-DT-ST DVDRAM GTB0N    (the order of these choices may vary)
UEFI: Built-in EFI Shell
P0: ST1000NX0313

AMIDiag for UEFI


{Event Logs Tab}

Change Smbios Event Log Settings (hit ENTER to expand)

Enabling/Disabling Options
Smbios Event Log                        [Enabled]

Erasing Settings
Erase Event Log                         [No]
When Log is Full                        [Do Nothing]

Smbios Event Log Standard Settings
Log System Boot Event                   [Enabled]
MECI                                    1
METW                                    60

Custom Options
Log OEM Codes                           [Enabled]
Convert OEM Codes                       [Disabled]

NOTE: All values changed here do not take effect
      until computer is restarted.

{hit ESC}

View Smbios Event Log (hit ENTER to view log)

{hit ESC}


{Server Mgmt Tab}

BMC Self Test Status                    PASSED

BMC Support                             [Enabled]
Wait For BMC                            [Enabled]
FRB-2 Timer                             [Enabled]
FRB-2 Timer timeout                     [6 minutes]
FRB-2 Time Policy                       [Reset]
OS Watchdog Timer                       [Disabled]
OS Wtd Timer Timeout                    [10 minutes]
OS Wtd Timer Policy                     [Reset]
Serial Mux                              [Disabled]
Bmc self test log (hit ENTER to expand)
```

```
Log area usage = 00 out of 20 logs

Erase Log                              [Yes, On every reset]
When log is full                       [Clear Log]

Log Empty

{hit ESC}

System Event Log (hit ENTER to expand)

Enabling/Disabling Options
SEL Components                         [Enabled]

Erasing Settings
Erase SEL                              [No]
When SEL is Full                       [Do Nothing]

Custom EFI Logging Options
Log EFI Status Codes                   [Both]

NOTE:  All values changed here do not take effect
       until computer is restarted.

{hit ESC}

View FRU information (hit ENTER to expand)

FRU Information  (all of the values in this section can vary)

System Manufacturer                    Trenton Systems
System Product Name                    SBC, 1U, E3-1225v3,32GB 19
System Version                         RDH-04
System Serial Number                   xxxxx
Board Manufacturer                     Trenton Systems
Board Product Name                     MBC8240
Board Version                          92-508240-E-02
Board Serial Number                    xxxxx
Chassis Manufacturer                   Trenton Systems
Chassis Product Name                   xxxxx
Chassis Serial Number                  xxxxx
SDR Revision                           -

{hit ESC}

BMC network configuration (hit ENTER to expand)

BMC network configuration

Lan channel 1
Configuration Address source           [Unspecified]
Station IP address                     00.00.00.00             (varies)
Subnet mask                            00.00.00.00             (varies)
Station MAC address                    00-10-6f-18-0b-47       (varies)
Router IP address                      00.00.00.00             (varies)
Router MAC address                     00-00-00-00-00-00       (varies)

Lan channel 2
Configuration Address source           [Unspecified]
Station IP address                     00.00.00.00
Subnet mask                            00.00.00.00
Station MAC address                    00-00-00-00-00-00
Router IP address                      00.00.00.00
Router MAC address                     00-00-00-00-00-00
```

END OF PROCEDURE

Support Element 2461-SE2 configuration

Use the information in this section if you are directed to verify the configuration for the 2461 Support Element (2461-SE2).

Manual Configuration: Using IBM Setup Utility (ESC or DEL during boot)

1. Power on the display.
2. Power on the system unit.
3. Verify the following:

```
BIOS Information
BIOS Vendor                          American Megatrends
Core Version                         4.6.5.5
Compliancy                           UEFI 2.3.1; PI 1.2
Project Version                      0ACIR 0.07 x64
Build Date and Time                  04/27/2017 11:00:00
Customer Ref. Number                 006250

System Language                      [English]

System Date                          [Day mm/dd/yyyy]    {varies}
System Time                          [hh:mm:ss]          (varies - make sure seconds advance)

Access Level                         Administrator

Processor Information
Name                                 Haswell
Brand String                         Intel(R) Xeon(R) CPU E3-
Frequency                            3400 MHz
Processor ID                         306c3
Stepping                             C
Number of Processors                 4Core(s) / 4Thread(s)
Microcode Revision                   1d
GT Info                              Not Applicable

IGFX VBIOS Version                   N/A
Memory RC Version                    1.8.0.3
Total Memory                         32768MB (DDR3)
Memory Frequency                     1600 Mhz

PCH Information
Name                                 LynxPoint
PCH SKU                              C226
Stepping                             05/C2
LAN PHY Revision                     N/A

ME FW Verison                        9.1.20.1035
ME Firmware SKU                      5MB

SPI Clock Frequency
DOFR Support                         Unsupported
Read Status Clock Frequency          20 MHz
Write Status Clock Frequency         20 MHz
Fast Read Status Clock Frequency     20 MHz


{Advanced Tab}

PCI Subsystem Settings (press ENTER to expand)

PCI Bus Driver Version               V 2.05.02

PCI 64bit Resources Handling
Above 4G Decoding                    [Disabled]

PCI Express Settings (press ENTER to expand)

PCI Express Device Register Settings
Relaxed Ordering                     [Disabled]
Extended Tag                         [Disabled]
No Snoop                             [Enabled]
Maximum Payload                      [Auto]
Maximum Read Request                 [Auto]
```

```
PCI Express Link Register Settings
ASPM Support                          [Disabled]
WARNING: Enabling ASPM may cause some
     PCI-E devices to fail
Extended Synch                        [Disabled]
Clock Power Management                [Disabled]

Link Training Retry                   [5]
Link Training Timeout (uS)            100
Unpopulated Links                     [Keep Link ON]
Restore PCIE Registers                [Disabled]

{press ESC twice}

ACPI Settings (press ENTER to expand)

Enable ACPI Auto Configuration        [Disabled]

Enable Hibernation                    [Disabled]
ACPI Sleep State                      [Suspend Disabled]
Lock Legacy Resources                 [Disabled]
S3 Video Repost                       [Disabled]

{press ESC}

Trusted Computing (press ENTER to expand)

Configuration
  Security Device Support             [Enable]
  TPM State                           [Enabled]
Pending operation                     [None]

Current Status Information
  TPM Enabled Status:                 [Enabled]
  TPM Active Status:                  [Activated]
  TPM Owner Status:                   [Owned]

{press ESC}

SATA Configuration (press ENTER to expand)

SATA Controller(s)                    [Enabled]
SATA Mode Selection                   [AHCI]
SATA Test Mode                        [Disabled]
Aggressive LPM Support                [Enabled]

Serial ATA Port 0                     ST1000NX0313 (1000.2GB
  Software Preserve                   SUPPORTED
  Port 0                              [Enabled]
  Hot Plug                            [Enabled]
  Mechanical Presence Switch          [Disabled]
  External SATA                       [Enabled]
  SATA Device Type                    [Hard Disk Drive]
  Spin Up Device                      [Disabled]
Serial ATA Port 1             Empty
  Software Preserve                    Unknown
  Port 1                               [Enabled]
  Hot Plug                             [Enabled]
  Mechanical Presence Switch           [Disabled]
  External SATA                        [Enabled]
  SATA Device Type                     [Hard Disk Drive]
  Spin Up Device                       [Disabled]
Serial ATA Port 2                      HL-DT-ST DVDRA ATAPI
  Software Preserve                    N/A
  Port 2                               [Enabled]
  Hot Plug                             [Enabled]
  Mechanical Presence Switch           [Disabled]
  External SATA                        [Enabled]
  SATA Device Type                     [Hard Disk Drive]
  Spin Up Device                       [Disabled]
Serial ATA Port 3                      Empty
  Software Preserve                    Unknown
  Port 3                               [Enabled]
  Hot Plug                             [Disabled]
  External SATA                        [Disabled]
  SATA Device Type                     [Hard Disk Drive]
  Spin Up Device                       [Disabled]
Serial ATA Port 4                      Empty
  Software Preserve                    Unknown
  Port 4                               [Enabled]
  Hot Plug                             [Disabled]
  External SATA                        [Disabled]
```

```
  SATA Device Type                    [Hard Disk Drive]
  Spin Up Device                      [Disabled]
Serial ATA Port 5                     Empty
  Software Preserve                   Unknown
  Port 5                              [Enabled]
  Hot Plug                            [Disabled]
  External SATA                       [Disabled]
  SATA Device Type                    [Hard Disk Drive]
  Spin Up Device                      [Disabled]

{press ESC}

PCH-FW Configuration (press ENTER to expand)

ME FW Version                         9.1.20.1035
Firmware Update Configuration (press ENTER to expand)

Me FW Image Re-Flash                  [Disabled]

{press ESC twice}

USB Configuration (press ENTER to expand)

USB Module Version                    8.10.34

USB Controllers:
    2 EHCIs, 1 XHCI
USB Devices:
    1 Keyboard, 1 Mouse, 2 Hubs  {varies}

Legacy USB Support                    [Enabled]
XHCI Hand-Off                         [Enabled]
EHCI Hand-Off                         [Disabled]
USB Mass Storage Driver Support       [Enabled]

USB hardware delays and time-outs:
USB transfer time-out                  [20 sec]
Device reset time-out                  [20 sec]
Device power-up delay                  [Auto]

{press ESC}

Network Stack Configuration (press ENTER to expand)

Network Stack                          [Disabled]

{press ESC}


Intel(R) I350 Gigabit Network Connection - 00:10:6F:0D:5A:93 {varies} (press ENTER to expand)

PORT CONFIGURATION MENU
NIC Configuration (press ENTER to expand)

Link Speed                             [Auto Negotiated]
Wake On LAN                            [Disabled]

{press ESC}

Blink LEDs                             0

PORT CONFIGURATION INFORMATION
UEFI Driver:                           Intel(R) PRO/1000 6.1.16
Adapter PBA:                           106100-000
Chip Type                              Intel i350
PCI Device ID                          1521
PCI Address                            02:00:00
Link Status                            [Disconnected]          {varies}
MAC Address                            00:10:6F:0D:5A:93       {varies}
Virtual MAC Address                    00:10:6F:0D:5A:93       {varies}

{press ESC}

Intel(R) I350 Gigabit Network Connection - 00:10:6F:0D:5A:94 {varies} (press ENTER to expand)

PORT CONFIGURATION MENU
NIC Configuration (press ENTER to expand)

Link Speed                             [Auto Negotiated]
Wake On LAN                            [Disabled]

{press ESC}
```

```
Blink LEDs                              0

PORT CONFIGURATION INFORMATION
UEFI Driver:                            Intel(R) PRO/1000 6.1.16
Adapter PBA:                            106100-000
Chip Type                               Intel i350
PCI Device ID                           1521
PCI Address                             02:00:01
Link Status                             [Disconnected]         {varies}
MAC Address                             00:10:6F:0D:5A:94      {varies}
Virtual MAC Address                     00:10:6F:0D:5A:94      {varies}

{press ESC}

Intel(R) I350 Gigabit Network Connection - 00:10:6F:0D:5A:95 {varies} (press ENTER to expand)

PORT CONFIGURATION MENU
NIC Configuration (press ENTER to expand)

Link Speed                              [Auto Negotiated]
Wake On LAN                             [Disabled]

{press ESC}

Blink LEDs                              0

PORT CONFIGURATION INFORMATION
UEFI Driver:                            Intel(R) PRO/1000 6.1.16
Adapter PBA:                            106100-000
Chip Type                               Intel i350
PCI Device ID                           1521
PCI Address                             02:00:02
Link Status                             [Disconnected]        {varies}
MAC Address                             00:10:6F:0D:5A:95     {varies}
Virtual MAC Address                     00:10:6F:0D:5A:95     {varies}

{press ESC}

Intel(R) I350 Gigabit Network Connection - 00:10:6F:0D:5A:96 {varies} (press ENTER to expand)

PORT CONFIGURATION MENU
NIC Configuration (press ENTER to expand)

Link Speed                              [Auto Negotiated]
Wake On LAN                             [Disabled]

{press ESC}

Blink LEDs                              0

PORT CONFIGURATION INFORMATION
UEFI Driver:                            Intel(R) PRO/1000 6.1.16
Adapter PBA:                            106100-000
Chip Type                               Intel i350
PCI Device ID                           1521
PCI Address                             02:00:03
Link Status                             [Disconnected]         {varies}
MAC Address                             00:10:6F:0D:5A:96      {varies}
Virtual MAC Address                     00:10:6F:0D:5A:96      {varies}

{press ESC}

Intel(R) I350 Gigabit Network Connection - 00:10:6F:0D:5A:97 {varies} (press ENTER to expand)

PORT CONFIGURATION MENU
NIC Configuration (press ENTER to expand)

Link Speed                              [Auto Negotiated]
Wake On LAN                             [Disabled]

{press ESC}

Blink LEDs                              0

PORT CONFIGURATION INFORMATION
UEFI Driver:                            Intel(R) PRO/1000 6.1.16
Adapter PBA:                            106100-000
Chip Type                               Intel i350
PCI Device ID                           1521
PCI Address                             03:00:00
Link Status                             [Disconnected]         {varies}
```

```
MAC Address                             00:10:6F:0D:5A:97      {varies}
Virtual MAC Address                     00:10:6F:0D:5A:97      {varies}

{press ESC}

Intel(R) I350 Gigabit Network Connection - 00:10:6F:0D:5A:98 {varies} (press ENTER to expand)

PORT CONFIGURATION MENU
NIC Configuration (press ENTER to expand)

Link Speed                              [Auto Negotiated]
Wake On LAN                             [Disabled]

{press ESC}

Blink LEDs                              0

PORT CONFIGURATION INFORMATION
UEFI Driver:                            Intel(R) PRO/1000 6.1.16
Adapter PBA:                            106100-000
Chip Type                               Intel i350
PCI Device ID                           1521
PCI Address                             03:00:01
Link Status                             [Disconnected]         {varies}
MAC Address                             00:10:6F:0D:5A:98      {varies}
Virtual MAC Address                     00:10:6F:0D:5A:98      {varies}

{press ESC}

Intel(R) I210 Gigabit  Network Connection - 00:10:6F:0D:... {varies} (press ENTER to expand)

PORT CONFIGURATION MENU
NIC Configuration (press ENTER to expand)

Link Speed                              [Auto Negotiated]
Wake On LAN                             [Disabled]

{press ESC}

Blink LEDs                              0

PORT CONFIGURATION INFORMATION
UEFI Driver:                            Intel(R) PRO/1000 6.1.16
Adapter PBA:                            000300-000
Chip Type                               Intel i210
PCI Device ID                           1533
PCI Address                             06:00:00
Link Status                             [Disconnected]         {varies}
MAC Address                             00:10:6F:0D:5A:99      {varies}
Virtual MAC Address                     00:10:6F:0D:5A:99      {varies}

{press ESC}

{Chipset Tab}

PCH-IO Configuration (press ENTER to expand)

Intel PCH RC Version                    2.7.0.0
Intel PCH SKU Name                      C226
Intel PCH Rev ID                        05/C2

USB Configuration (press ENTER to expand)

USB Precondition                        [Enabled]

USB Ports Per-Port Disable Control      [Disabled]

{press ESC}

BIOS Security Configuration (press ENTER to expand)

SMI Lock                               [Enabled]
BIOS Lock                              [Enabled]
GPIO Lock                              [Disabled]
BIOS Interface Lock                    [Enabled]
RTC Lock                               [Enabled]

{press ESC}

PCH LAN Controller                     [Disabled]
SLP_S4 Assertion Width                 [Disabled]
Restore AC Power Loss                  [Power On]
```

```
{press ESC}

System Agent (SA) Configuration (press ENTER to expand)

VT-d Capability                         Supported

VT-d                                    [Enabled]

{press ESC}

{Boot Tab}

Boot Configuration
Setup Prompt Timeout                    5
Trenton Release Mode                    [On]
Bootup NumLock State                    [Off]

Quiet Boot                              [Disabled]
Fast Boot                               [Enabled]
 SATA Support                           [HDD Only]
 VGA Support                            [EFI Driver]
 USB Support                            [Partial Initial]
 PS2 Devices Support                    [Enabled]
 NetWork Stack Driver Support           [Disabled]


Boot Option Priorities
Boot Option #1                          [BOOT_EMBEDDED (P0: ...]
Boot Option #2                          [UEFI: Built-in EFI ...]

Note:  It is no longer necessary to change the default boot choices, as the EFI manager
       will control the boot list.

Per Port Boot Option Control (press ENTER to expand)

SATA 0 - Midplane P1 - Internal         [Enabled]
SATA 1 - Midplane P2 - Internal         [Disabled]
SATA 2 - Midplane P3 - Internal         [Disabled]
SATA 3 - P14 - Internal SATA 3          [Disabled]
SATA 4 - P13 - Internal SATA 4          [Disabled]
SATA 5 - P11 - Internal SATA 5          [Disabled]

USB 0 - P6 Bottom - USB 5               [Disabled]
USB 1 - P6 Top - USB 4                  [Disabled]
USB 2 - P3 Bottom - USB 7               [Disabled]
USB 3 - P3 Top - USB 6                  [Disabled]
USB 4 - P4 Bottom - USB 9               [Disabled]
USB 5 - P4 Top - USB 8                  [Disabled]
USB 6 - P24 [1,3,5,7] - Internal        [Disabled]
USB 7 - P24 [2,4,6,8] - Internal        [Disabled]
USB 8 - P25 [1,3,5,7] - Internal        [Disabled]
USB 9 - P36 - Internal USB 3            [Disabled]
USB 10 - N/A - BMC                      [Disabled]
USB 11 - N/A - BMC                      [Disabled]
USB 12 - Midplane USB 0 P3 - USB 1      [Disabled]
USB 13 - Midplane USB 1 P2 - USB 2      [Disabled]

{press ESC}

CSM16 Parameters (press ENTER to expand)

CMS16 Module Version                     00.20

GateA20 Active                           [Upon Request]
Option ROM Messages                      [Force BIOS]
INT19 Trap Response                      [Immediate]

{press ESC}


{Security Tab}

Password Description

If ONLY the Administrator's password is set,
then this only limits access to Setup and is
only asked for when entering Setup.
If ONLY the User's password is set, then this
is a power on password and must be entered to
boot or enter Setup.  In Setup the User will
have Administrator rights.
```

```
The password length must be
in the following range:
Minimum length                          3
Maximum length                          20

Administrator Password (press ENTER to create password, must confirm new password)

Secure Boot menu (press ENTER to expand)

System Mode                             User
Secure Boot                             Active

Secure Boot                             [Enabled]
Secure Boot Mode                        [Custom]
Key Management (press ENTER to expand)

Default Key Provision                   [Disabled]

Enroll All Factory Default Keys
Save   All Secure Boot Variables

Platform Key (PK)                       INSTALLED
Delete  PK
Set new PK

Key Exchange Key (KEK)                  INSTALLED
Delete  KEK
Set New KEK
Append  KEK
Authorized Signatures                   INSTALLED
Delete  DB
Set new DB
Append  DB
Authorized TimeStamps                   NOT INSTALLED
Delete  DBT
Set new DBT
Append  DBT
Forbidden Signatures                    NOT INSTALLED
Delete  DBX
Set new DBX
Append  DBX

{press ESC}

Preserve variables on BIOS upgrade      [Enabled]
Preserve variables on clear CMOS        [Enabled]

{press ESC}

HDD Security Configuration:
P0:ST1000NX0313 (press ENTER to expand)

HDD Password Description:

Allows  Access to  Set, Modify  and  Clear
HardDisk User and Master Passwords.
User Password need to be installed for
Enabling Security. Master Password can
be Modified only when successfully unlocked
with Master Password in POST.
If the 'Set HDD Password' option is greyed out,
do power cycle to enable the option again.

HDD PASSWORD CONFIGURATION:

Security Supported      :               Yes
Security Enabled        :               No
Security Locked         :               No
Security Frozen         :               Yes       {varies}
HDD User Pwd Status     :               NOT INSTALLED
HDD Master Pwd Status   :               INSTALLED

Set User Password

{press ESC}


{Save & Exit Tab}

Save Changes and Exit
Discard Changes and Exit
Save Changes and Reset
```

```
Discard Changes and Reset

Save Options
Save Changes
Discard Changes

Restore Defaults
Save as User Defaults
Restore User Defaults

Boot Override
UEFI: Built-in EFI Shell    {the order and number of these choices may vary}
BOOT_EMBEDDED (P0: ST1000NX0313)

AMIDiag for UEFI


{Event Logs Tab}

Change Smbios Event Log Settings (press ENTER to expand)

Enabling/Disabling Options
Smbios Event Log                        [Enabled]

Erasing Settings
Erase Event Log                         [No]
When Log is Full                        [Do Nothing]

Smbios Event Log Standard Settings
Log System Boot Event                   [Enabled]
MECI                                    1
METW                                    60

Custom Options
Log OEM Codes                           [Enabled]
Convert OEM Codes                       [Disabled]

NOTE: All values changed here do not take effect
      until computer is restarted.

{press ESC}

View Smbios Event Log (press ENTER to view log)

{press ESC}


{Server Mgmt Tab}

BMC Self Test Status                    PASSED

BMC Support                             [Enabled]
Wait For BMC                            [Enabled]
FRB-2 Timer                             [Enabled]
FRB-2 Timer timeout                     [6 minutes]
FRB-2 Time Policy                       [Reset]
OS Watchdog Timer                       [Disabled]
OS Wtd Timer Timeout                    [10 minutes]
OS Wtd Timer Policy                     [Reset]
Serial Mux                              [Disabled]
Bmc self test log (press ENTER to expand)

Log area usage = 00 out of 20 logs

Erase Log                               [Yes, On every reset]
When log is full                        [Clear Log]

Log Empty

{press ESC}

System Event Log (press ENTER to expand)

Enabling/Disabling Options
SEL Components                          [Enabled]

Erasing Settings
Erase SEL                               [No]
When SEL is Full                        [Do Nothing]

Custom EFI Logging Options
Log EFI Status Codes                    [Both]
```

```
NOTE:  All values changed here do not take effect
       until computer is restarted.

{press ESC}

View FRU information (press ENTER to expand)

FRU Information  {all of the values in this section can vary}

System Manufacturer                     Trenton Systems, Inc.
System Product Name                     MBC8240 Modular Blade Ca
System Version                          N-08
System Serial Number                    11S00RY462YH10DK651112
Board Manufacturer                      Trenton Systems, Inc.
Board Product Name                      MBC8240 Processor Board
Board Version                           92-508240-000
Board Serial Number                     11S00RY462YH10DK651112
Chassis Manufacturer                    Intel
Chassis Product Name                    -
Chassis Serial Number                   -
SDR Revision                            -

{press ESC}

BMC network configuration (press ENTER to expand)

BMC network configuration

Lan channel 1
Configuration Address source            [Unspecified]
Station IP address                      00.00.00.00             {varies}
Subnet mask                             00.00.00.00             {varies}
Station MAC address                     00-10-6f-18-0b-47       {varies}
Router IP address                       00.00.00.00             {varies}
Router MAC address                      00-00-00-00-00-00       {varies}

Lan channel 2
Configuration Address source            [Unspecified]
Station IP address                       00.00.00.00
Subnet mask                              00.00.00.00
Station MAC address                      00-00-00-00-00-00
Router IP address                        00.00.00.00
Router MAC address                       00-00-00-00-00-00
```

END OF PROCEDURE

Support Element 2461-SE3 configuration

Use the information in this section if you are directed to verify the configuration for the 2461 Support Element (2461-SE3).

The following is a list of the configuration settings for the 2461-SE3.

```
InsydeH20 Version    KabyLake.05.12.09.0049
Processor Type        Intel(R) Xeon(R) CPU E3-1225 v5 @ 3.30GHz
System Bus Speed    100 MHz
System Memory Speed    2133 MHz
Cache RAM         1024 KB
Total Memory        32768 MB
Channel A
DIMM 0             16384 MB
Unknown 1         [Not Installed]
Channel B
DIMM 0             16384 MB
Unknown 1         [Not Installed]
Platform Configuration
CPUID:             0x506E3 (SKYLAKE DT HALO)
CPU Speed:         3300 MHz
CPU Stepping:         03 (R0/S0/N0 Stepping)
L1 Data Cache:         32 KB
L1 Instruction Cache:    32 KB
L2 Cache:         256 KB
L3 Cache:         8192 KB
Number of Processors:    4 Core(s) / 4 Thread(s)
Microcode Rev:         000000C2
GT Info:         Unknown (0xFF)
SMX/TXT:         Supported
PCH Rev / SKU         31 (D1 Stepping) / SKL PCH-H C236
GOP Ver:         9.0.1069
EC Ver:             N/A
Board ID:         Zumba Beach Server Crb
FAB ID:             0
Intel ME Version / SKU    UnKnow
LAN PHY Revision    Unknown
Language         <English>
System Time         {varies}
System Date         {varies}

(press right arrow)

[Advanced Tab]

Platform Variable Revision    26
ME Setup Variable Revision    2
CPU Setup Variable Revision    11
SA Setup Variable Revision    9
PCH Setup Variable Revision    10
Boot Configuration (Enter to expand)

Numlock            <Off>

(press ESC)

Peripheral Configuration (Enter to expand)

Serial Port A         <Disabled>
Infrared Port         <Disabled>

(press ESC)

SATA Configuration (Enter to expand)

Serial ATA Port 0    [ST2000NM0008-2F3100]
Serial ATA Port 1    [Not Installed]
Serial ATA Port 2    [Not Installed]
Serial ATA Port 3    [Not Installed]
Serial ATA Port 4    [Not Installed]
Serial ATA Port 5    [Not Installed]
Serial ATA Port 6    [Not Installed]
Serial ATA Port 7    [Not Installed]

(press ESC)

Type C Support         <Disabled>
```

```
USB Configuration (Enter to expand)

USB BIOS Support        <Enabled>
Usb Legacy SMI bit Clean    <Disabled>

(press ESC)

Chipset Configuration (Enter to expand)

Setup Warning:
Setting items on this screen to incorrect values
may cause your system to malfunction!

(press ESC)

ACPI Settings (Enter to expand)

ACPI Settings (Enter to expand)

ACPI Version            5.0
Enable ACPI Auto Configuration    [X]

Native PCIE Enable        <Enabled>
Native ASPM            <Auto>
BDAT ACPI Table Support        <Disabled>

Low Power S0 Idle Capability    <Disabled>
Lpit Recidency Counter        <SLP S0>

Intel Ready Mode Technology    <Disabled>

SSDT table from file        <Disabled>

PCI Delay Optimization        <Disabled>

(press ESC)

FACP - RTC S4 Wakeup        <Enabled>
APIC - IO APIC Mode        <Enabled>
ACPI Memory Debug        <Disabled>

(press ESC)

CPU Configuration (Enter to expand)

Type         Intel(R) Xeon(R) CPU E3-1225 v5 @ 3.30GHz
ID                    0x506E3
Speed                    3300 MHz
L1 Data Cache                32 KB x 4
L1 Instruction Cache            32 KB x 4
L2 Cache                256 KB x 4
L3 Cache                8 MB
L4 Cache                N/A
VMX                     Supported
SMX/TXT                     Supported

SW Guard Extensions (SGX)        <Software Controlled>
Select Owner EPOCH input type        <No Change in Owner EPOCHs>
PRMRR Size                <INVALID PRMRR>
CPU Flex Ratio Override            <Disabled>
CPU Flex Ratio Settings            [33]
Hardware Prefetcher            <Enabled>
Adjacent Cache Line Prefetch        <Enabled>
Intel (VMX) Virtualization Technology    <Enabled>
PECI                    <Enabled>
Active Processor Cores            <All>
BIST                    <Disabled>
JTAG C10 Power                <Disabled>
AP threads Idle Manner            <MWAIT Loop>
AP threads Handoff Manner        <MWAIT Loop>
AES                    <Enabled>
MachineCheck                <Enabled>
MonitorMWait                <Enabled>
BIOS Guard                <Disabled>
Flash Wear Out Protection        <Disabled>
Current Debug Interface Status        Disabled
Debug Interface                <Disabled>
Debug Interface Lock            <Enabled>
Processor trace memory allocation    <Disabled>
FCLK Frequency for Early Power On    <Normal (800Mhz)>
Three Strike Counter            <Enabled>
Voltage Optimization            <Auto>
```

```
(press ESC)

Power & Performance (Enter to expand)

CPU - Power Management Control (Enter to expand)

Boot performance mode            <Max Non-Turbo Performance>
Intel(R) SpeedStep(tm)            <Enabled>
Race To Halt (RTH)            <Enabled>
Intel(R) Speed Shift Technology        <Enabled>
HDC Control                <Enabled>
  Turbo Mode                <Enabled>
  View/Configure Turbo Options (Enter to expand)

Current Turbo Settings

Max Turbo Power Limit        4095.875
Min Turbo Power Limit        0.0
Package TDP Limit        80.0
Power Limit 1            80.0
Power Limit 2            100.0
1-core Turbo Ratio        37
2-core Turbo Ratio        36
3-core Turbo Ratio        35
4-core Turbo Ratio        34

Package Power Limit MSR Lock    <Disabled>
Power Limit 1 Override        <Disabled>
Power Limit 2 Override        <Enabled>
Power Limit 2            [0]
1-Core Ratio Limit Override    [37]
2-Core Ratio Limit Override    [36]
3-Core Ratio Limit Override    [35]
4-Core Ratio Limit Override    [34]
Energy Efficient Turbo        <Enabled>

(press ESC)

CPU VR Settings (Enter to expand)

PSYS Slope        [0]
PSYS Offset        [0]
PSYS PMax Power        [0]
Acoustic Noise Settings (Enter to expand)

Acoustic Noise Mitigation        <Disabled>

IA VR Domain
Disable Fast PKG C State Ramp for IA    <False>
Domain
Slow Slew Rate for IA Domain        <Fast/2>

GT VR Domain
Disable Fast PKG C State Ramp for GT    <False>
Domain
Slow Slew Rate for GT Domain        <Fast/2>

SA VR Domain
Disable Fast PKG C State Ramp for SA    <False>
Domain
Slow Slew Rate for SA Domain        <Fast/2>

(press ESC)

Core/IA VR Settings (Enter to expand)

VR Config Enable        <Enabled>
AC Loadline            [0]
DC Loadline            [0]
PS Current Threshold1        [0]
PS Current Threshold2        [0]
PS Current Threshold3        [0]
PS3 Enable            <Enabled>
PS4 Enable            <Enabled>
IMON Slope            [0]
IMON Offset            [0]
  IMON Prefix            <+>
VR Current Limit        [0]
VR Voltage Limit        [0]
TDC Enable            <Enabled>
TDC Current Limit        [0]
```

```
TDC Time Window            <1 ms>
TDC Lock            <Disabled>

(press ESC)

VR Mailbox Command options    [0]
Intersil VR Command        <Disabled>

(press ESC)

Platform PL1 Enable            <Disabled>
Platform PL2 Enable            <Disabled>
Power Limit 4 Override            <Disabled>
C states                <Enabled>
  Enhanced C-states            <Enabled>
  C-State Auto Demotion            <C1 and C3>
  C-State Un-demotion            <C1 and C3>
  Package C-State Demotion        <Auto>
  Package C-State Un-demotion        <Auto>
CState Pre-Wake                <Enabled>
IO MWAIT Redirection            <Disabled>
Package C State Limit            <Auto>
C3 Latency Control (MSR 0x60A)
Time Unit                <1024 ns>
Latency                    [78]
C6/C7 Short Latency Control (MSR 0x60B)
Time Unit                <1024 ns>
Latency                    [118]
C6/C7 Long Latency Control (MSR 0x60C)
Time Unit                <1024 ns>
Latency                    [148]
Thermal Monitor                <Enabled>
Interrupt Redirection Mode Selection    <PAIR with Fixed Priority>
Timed MWAIT                <Disabled>
Custom P-state Table (Enter to expand)

Number of P states            [0]

(press ESC)

Energy Performance Gain            <Disabled>
EPG DIMM Idd3N                [26]
EPG DIMM Idd3P                [11]
Power Limit 3 Settings (Enter to expand)

Power Limit 3 Override            <Disabled>

(press ESC)

CPU Lock Configuration (Enter to expand)

CPG Lock                <Enabled>
Overclocking Lock            <Disabled>

(press ESC twice)

GT - Power Management Control (Enter to expand)

RC6(Render Standby)        <Enabled>
Maximum GT frequency        <Default Max Frequency>

(press ESC twice)

OverClocking Performance Menu (Enter to expand)

OverClocking Feature        <Disabled>
WDT Enable            <Enabled>

(press ESC)

Memory Configuration (Enter to expand)

Memory Thermal Configuration (Enter to expand)

Memory Power and Thermal Throttling (Enter to expand)

DDR PowerDown and idle counter        <BIOS>
For LPDDR Only: DDR PowerDown and idle    <BIOS>
counter
REFRESH_2X_MODE                <Disabled>
LPDDR Thermal Sensor            <Enabled>
SelfRefresh Enable            <Enabled>
```

```
SelfRefresh IdleTimer            [512]
Throttler CKEMin Defeature        <Disabled>
Throttler CKEMin Timer            [48]
Dram Power Meter (Enter to expand)

Use user provided power weights, scale    <Disabled>
factor, and channel power floor values
Energy Scale Factor            [4]

Idle Energy Ch0Dimm0            [10]
PowerDown Energy Ch0Dimm0        [6]
Activate Energy Ch0Dimm0        [172]
Read Energy Ch0Dimm0            [212]
Write Energy Ch0Dimm0            [221]

Idle Energy Ch0Dimm1            [10]
PowerDown Energy Ch0Dimm1        [6]
Activate Energy Ch0Dimm1        [172]
Read Energy Ch0Dimm1            [212]
Write Energy Ch0Dimm1            [221]

Idle Energy Ch1Dimm0            [10]
PowerDown Energy Ch1Dimm0        [6]
Activate Energy Ch1Dimm0        [172]
Read Energy Ch1Dimm0            [212]
Write Energy Ch1Dimm0            [221]

Idle Energy Ch1Dimm1            [10]
PowerDown Energy Ch1Dimm1        [6]
Activate Energy Ch1Dimm1        [172]
Read Energy Ch1Dimm1            [212]
Write Energy Ch1Dimm1            [221]

(press ESC)

Memory Thermal Reporting (Enter to expand)

Lock Thermal Management Registers    <Enabled>

Memory Thermal Reporting

Extern Therm Status            <Disabled>
Closed Loop Therm Manage        <Disabled>
Open Loop Therm Manage            <Disabled>

Thermal Threshold Settings

Warm Threshold Ch0 Dimm0        [255]
Warm Threshold Ch0 Dimm1        [255]
Hot Threshold Ch0 Dimm0            [255]
Hot Threshold Ch0 Dimm1            [255]
Warm Threshold Ch1 Dimm0        [255]
Warm Threshold Ch1 Dimm1        [255]
Hot Threshold Ch1 Dimm0            [255]
Hot Threshold Ch1 Dimm1            [255]

Thermal Throttle Budget Settings

Warm Budget Ch0 Dimm0            [255]
Warm Budget Ch0 Dimm1            [255]
Hot Budget Ch0 Dimm0            [255]
Hot Budget Ch0 Dimm1            [255]
Warm Budget Ch1 Dimm0            [255]
Warm Budget Ch1 Dimm1            [255]
Hot Budget Ch1 Dimm0            [255]
Hot Budget Ch1 Dimm1            [255]

(press ESC)

Memory RAPL (Enter to expand)

Rapl Power Floor Ch0        [0]
Rapl Power Floor Ch1        [0]

RAPL PL Lock            <Disabled>
RAPL PL 1 enable        <Disabled>
RAPL PL 1 Power            [0]
RAPL PL 1 WindowX        [0]
RAPL PL 1 WindowY        [0]

RAPL PL 2 enable        <Disabled>
RAPL PL 2 Power            [222]
```

```
RAPL PL 2 WindowX        [1]
RAPL PL 2 WindowY        [10]

(press ESC twice)

Memory Thermal Management    <Disabled>

(press ESC)

Memory Training Algorithms (Enter to expand)

Early Command Training            <Disabled>
SenseAmp Offset Training        <Enabled>
Early ReadMPR Timing Centering 2D    <Enabled>
Read MPR Training             <Enabled>
Receive Enable Training            <Enabled>
Jedec Write Levelling            <Enabled>
Early Write Time Centering 2D        <Enabled>
Early Write Drive Strength/Equalization    <Enabled>
Early Read Time Centering 2D        <Enabled>
Write Timing Centering 1D        <Enabled>
Write Voltage Centering 1D        <Enabled>
Read Timing Centering 1D        <Enabled>
Dimm ODT Training*            <Enabled>
  Max RTT_WR                <ODT Off>
DIMM RON Training*            <Enabled>
Write Drive Strength/Equalization 2D*    <Disabled>
Write Slew Rate Training*        <Enabled>
Read ODT Training*            <Enabled>
Read Equalization Training*        <Enabled>
Read Amplifier Training*        <Enabled>
Write Timing Centering 2D        <Enabled>
Read Timing Centering 2D        <Enabled>
Command Voltage Centering        <Enabled>
Write Voltage Centering 2D        <Enabled>
Read Voltage Centering 2D        <Enabled>
Late Command Training            <Enabled>
Round Trip Latency            <Enabled>
Turn Around Timing Training        <Enabled>
Rank Margin Tool            <Disabled>
Memory Test                <Disabled>
DIMM SPD Alias Test            <Enabled>
Receive Enable Centering 1D        <Enabled>
Retrain Margin Check            <Enabled>
Write Drive Strength Up/Dn independently<Disabled>
CMD Slew Rate Training            <Enabled>
CMD Drive Strength / Tx Equalization    <Enabled>
CMD Normalization            <Enabled>

(press ESC)

Memory Configuration

Memory RC Version            2.0.0.6
Memory Frequency             2133 MHz
Memory Timings (tCL-tRCD-tRP-tRAS)    15-15-15-35

Channel 0 Slot 0            Populated & Enabled
    Size                16384 MB (DDR4)
    Number of Ranks            2
    Manufacturer            Samsung {varies}
Channel 0 Slot 1            Not Populated / Disabled
Channel 1 Slot 0            Populated & Enabled
    Size                16384 MB (DDR4)
    Number of Ranks            2
    Manufacturer            Samsung {varies}
Channel 1 Slot 1            Not Populated / Disabled

Memory ratio/reference clock options moved to Overclock->Memory->Custom Profile menu
MRC ULT Safe Config            <Disabled>
Maximum Memory Frequency        <Auto>
HOB Buffer Size                <Auto>
ECC Support                <Enabled>
Max TOLUD                <Dynamic>
SA GV                    <Enabled>
SA GV Low Freq                <MRC default>
Retrain on Fast Fail            <Enabled>
Command Tristate            <Enabled>
Enable RH Prevention            <Enabled>
Row Hammer Solution            <Hardware RHP>
RH Activation Probability        <1/2^11>
Exit On Failure (MRC)            <Enabled>
```

```
MC Lock                    <Enabled>
Probless Trace               <Disabled>
Enable/Disable IED (Intel Enhanced Debug)<Disabled>
Ch Hash Support               <Enabled>
Ch Hash Mask                [0]
Ch Hash Interleaved Bit           <BIT8>
VC1 Read Metering            <Enabled>
VC1 RdMeter Time Window           [800]
VC1 RdMeter Threshold          [280]
Strong Weak Leaker           [7]
Memory Scrambler            <Enabled>
Force ColdReset               <Disabled>
Channel A DIMM Control           <Enable both DIMMs>
Channel B DIMM Control           <Enable both DIMMs>
Force Single Rank            <Disabled>
Memory Remap                <Enabled>
Time Measure                <Disabled>
Lpddr Mem WL Set            <Set B>
EV Loader                <Disabled>
EV Loader Delay               <Enabled>

(press ESC)

System Agent (SA) Configuration (Enter to expand)

SA PCIe Code Version        3.1.2.0
VT-d                Supported

Graphics Configuration (Enter to expand)

Skip Scaning of External Gfx Card    <Disabled>

Primary Display               <Auto>
Internal Graphics           <Auto>
GTT Size               <8MB>
Aperture Size               <256MB>
DVMT Pre-Allocated           <32M>
DVMT Total Gfx Mem           <256M>
Intel Graphics Pei Display Peim        <Disabled>
PM Support               <Enabled>
PAVP Enable                <Enabled>
Cdynmax Clamping Enable           <Enabled>
Cd Clock Frequency           <675 Mhz>
IUER Button Enable           <Disabled>

(press ESC)

DMI/OPI Configuration (Enter to expand)

DMI                    X4  Gen3

DMI Max Link Speed           <Auto>
DMI Gen3 Eq Phase 2           <Auto>
DMI Gen3 Eq Phase 3 Method       <Auto>
DMI Vc1 Control              <Disabled>
DMI Vcm Control              <Enabled>
Program Static Phase1 Eq       <Enabled>
Gen3 Root Port Preset value for each Lane (Enter to expand)

Lane 0        [4]
Lane 1        [4]
Lane 2        [4]
Lane 3        [4]

(press ESC)

Gen3 Endpoint Preset value for each Lane (Enter to expand)

Lane 0        [7]
Lane 1        [7]
Lane 2        [7]
Lane 3        [7]

(press ESC)

Gen3 Endpoint Hint value for each Lane (Enter to expand)

Lane 0        [2]
Lane 1        [2]
Lane 2        [2]
Lane 3        [2]
```

```
(press ESC)

Gen3 RxCTLE Control (Enter to expand)

Bundle0        [3]
Bundle1        [3]

(press ESC)

DMI Link ASPM Control        <L1>
DMI Extended Sync Control    <Disabled>
DMI De-emphasis Control        <-3.5 dB>
DMI IOT                <Disabled>

(press ESC)

PEG Port Configuration (Enter to expand)

PEG 0:1:0            Not Present
  Enable Root Port        <Auto>
  Max Link Speed        <Auto>
  PEG0 Slot Power Limit Value    [75]
  PEG0 Slot Power Limit Scale    <1.0x>
  PEG0 Physical Slot Number    [1]
PEG 0:1:1            x4  Gen2
  Enable Root Port        <Auto>
  Max Link Speed        <Auto>
  Max Link Width        <Auto>
  Power Down Unused Lanes    <Auto>
  Gen3 Eq Phase 2        <Auto>
  Gen3 Eq Phase 3 Method    <Auto>
  ASPM                <Auto>
  De-emphasis Control        <-3.5 dB>
  OBFF                <Enabled>
  LTR                <Enabled>
  PEG1 Slot Power Limit Value    [75]
  PEG1 Slot Power Limit Scale    <1.0x>
  PEG1 Physical Slot Number    [2]
  Max Link Width        <Auto>
  Power Down Unused Lanes    <Auto>
  Gen3 Eq Phase 2        <Auto>
  Gen3 Eq Phase 3 Method    <Auto>
  ASPM                <Auto>
  De-emphasis Control        <-3.5 dB>
  OBFF                <Enabled>
  LTR                <Enabled>
  PEG2 Slot Power Limit Value    [75]
  PEG2 Slot Power Limit Scale    <1.0x>
  PEG2 Physical Slot Number    [3]
PEG1 Max Payload size        <Auto>
PEG2 Max Payload size        <Auto>

Program PCIe ASPM after OpROM    <Disabled>
Program Static Phase1 Eq    <Enabled>
Gen3 Root Port Preset value for each Lane (Enter to expand)

Lane 0        [7]
Lane 1        [7]
Lane 2        [7]
Lane 3        [7]
Lane 4        [7]
Lane 5        [7]
Lane 6        [7]
Lane 7        [7]
Lane 8        [7]
Lane 9        [7]
Lane 10        [7]
Lane 11        [7]
Lane 12        [7]
Lane 13        [7]
Lane 14        [7]
Lane 15        [7]

(press ESC)

Gen3 Endpoint Preset value for each Lane (Enter to expand)

Lane 0        [7]
Lane 1        [7]
Lane 2        [7]
Lane 3        [7]
Lane 4        [7]
```

```
Lane 5        [7]
Lane 6        [7]
Lane 7        [7]
Lane 8        [7]
Lane 9        [7]
Lane 10        [7]
Lane 11        [7]
Lane 12        [7]
Lane 13        [7]
Lane 14        [7]
Lane 15        [7]

(press ESC)

Gen3 Endpoint Hint value for each Lane (Enter to expand)

Lane 0        [2]
Lane 1        [2]
Lane 2        [2]
Lane 3        [2]
Lane 4        [2]
Lane 5        [2]
Lane 6        [2]
Lane 7        [2]
Lane 8        [2]
Lane 9        [2]
Lane 10        [2]
Lane 11        [2]
Lane 12        [2]
Lane 13        [2]
Lane 14        [2]
Lane 15        [2]

(press ESC)

Gen3 RxCTLE Control (Enter to expand)

Bundle0        [0]
Bundle1        [0]
Bundle2        [0]
Bundle3        [0]
Bundle4        [0]
Bundle5        [0]
Bundle6        [0]
Bundle7        [0]
RxCTLE Override    <Disabled>

(press ESC)

Gen3 Adaptive Software Equalization
  Always Attempt SW EQ        <Disabled>
  Number of Presets to test    <Auto>
  Allow PERST# GPIO Usage    <Enabled>
  SW EQ Enable VOC        <Auto>
  Jitter Dwell Time        [3000]
  Jitter Error Target        [2]
  VOC Dwell Time        [10000]
  VOC Error Target        [2]
Generate BDAT PEG Margin Data    <Disabled>
PCIe Rx CEM Test Mode        <Disabled>
PCIe Spread Spectrum Clocking    <Enabled>

(press ESC)

Stop Grant Configuration    <Auto>
VT-d                <Enabled>
CHAP Device (B0:D7:F0)        <Disabled>
Thermal Device (B0:D4:F0)    <Disabled>
GMM Device (B0:D8:F0)        <Enabled>
CRID Support            <Disabled>
Above 4GB MMIO BIOS assignment    <Disabled>
X2APIC Opt Out            <Disabled>

(press ESC)

PCH-IO Configuration (Enter to expand)

PCI Express Configuration (Enter to expand)

PCI Express Clock Gating    <Enabled>
Legacy IO Low Latency        <Disabled>
DMI Link ASPM Control        <Enabled>
```

```
PCIE Port assigned to LAN    Disabled
Port8xh Decode            <Disabled>
Peer Memory Write Enable    <Disabled>
Compliance Test Mode        <Disabled>
PCIe-USB Glitch W/A        <Disabled>
PCIe function swap        <Enabled>
PCI Express Gen3 Eq Lanes (Enter to expand)

PCIE1  Cm    [6]
PCIE1  Cp    [2]
PCIE2  Cm    [6]
PCIE2  Cp    [2]
PCIE3  Cm    [6]
PCIE3  Cp    [2]
PCIE4  Cm    [6]
PCIE4  Cp    [2]
PCIE5  Cm    [6]
PCIE5  Cp    [2]
PCIE6  Cm    [6]
PCIE6  Cp    [2]
PCIE7  Cm    [6]
PCIE7  Cp    [2]
PCIE8  Cm    [6]
PCIE8  Cp    [2]
PCIE9  Cm    [6]
PCIE9  Cp    [2]
PCIE10 Cm    [6]
PCIE10 Cp    [2]
PCIE11 Cm    [6]
PCIE11 Cp    [2]
PCIE12 Cm    [6]
PCIE12 Cp    [2]
PCIE13 Cm    [6]
PCIE13 Cp    [2]
PCIE14 Cm    [6]
PCIE14 Cp    [2]
PCIE15 Cm    [6]
PCIE15 Cp    [2]
PCIE16 Cm    [6]
PCIE16 Cp    [2]
PCIE17 Cm    [6]
PCIE17 Cp    [2]
PCIE18 Cm    [6]
PCIE18 Cp    [2]
PCIE19 Cm    [6]
PCIE19 Cp    [2]
PCIE20 Cm    [6]
PCIE20 Cp    [2]

Override SW EQ settings    <Disabled>

(press ESC)

PCI Express Root Port 1 (Enter to expand)

PCI Express Root Port 1        <Enabled>
  Topology            <Unknown>
ASPM              <Auto>
L1 Substrates            <L1.1 & L1.2>
Gen3 Eq Phase3 Method        <Software Search>
UPTP                [5]
DPTP                [7]
ACS               <Enabled>
  URR               <Disabled>
  FER               <Disabled>
  NFER               <Disabled>
  CER               <Disabled>
  CTO               <Disabled>
  SEFE               <Disabled>
  SENFE               <Disabled>
  SECE               <Disabled>
  PME SCI            <Enabled>
  Hot Plug           <Disabled>
  Advanced Error Reporting    <Enabled>
PCIe Speed            <Auto>
  Transmitter Half Swing    <Disabled>
Detect Timeout           [0]
Extra Bus Reserved       [0]
Reserved Memory           [10]
Reserved I/O           [4]

PCH PCIe LTR Configuration
```

```
PCH PCIE1 LTR            <Enabled>
  Snoop Latency Override    <Auto>
  Non Snoop Latency Override    <Auto>
  Force LTR Override        <Disabled>

PCIE1 LTR Lock            <Disabled>

PCH PCIe CLKREQ# Configuration
PCIE1 CLKREQ Mapping Override    <Default>

(press ESC)

PCI Express Root Port 5 (Enter to expand)

PCI Express Root Port 5        <Enabled>
  Topology            <Unknown>
ASPM                <Auto>
L1 Substrates            <L1.1 & L1.2>
Gen3 Eq Phase3 Method        <Software Search>
UPTP                [5]
DPTP                [7]
ACS                <Enabled>
  URR                <Disabled>
  FER                <Disabled>
  NFER                <Disabled>
  CER                <Disabled>
  CTO                <Disabled>
  SEFE                <Disabled>
  SENFE                <Disabled>
  SECE                <Disabled>
  PME SCI            <Enabled>
  Hot Plug            <Disabled>
  Advanced Error Reporting    <Enabled>
PCIe Speed            <Auto>
  Transmitter Half Swing    <Disabled>
Detect Timeout            [0]
Extra Bus Reserved        [0]
Reserved Memory            [10]
Reserved I/O            [4]

PCH PCIe LTR Configuration
PCH PCIE5 LTR            <Enabled>
  Snoop Latency Override    <Auto>
  Non Snoop Latency Override    <Auto>
  Force LTR Override        <Disabled>

PCIE5 LTR Lock            <Disabled>

PCH PCIe CLKREQ# Configuration
PCIE5 CLKREQ Mapping Override    <Default>

(press ESC)

PCI Express Root Port 6 (Enter to expand)

PCI Express Root Port 6        <Enabled>
  Topology            <Unknown>
ASPM                <Auto>
L1 Substrates            <L1.1 & L1.2>
Gen3 Eq Phase3 Method        <Software Search>
UPTP                [5]
DPTP                [7]
ACS                <Enabled>
  URR                <Disabled>
  FER                <Disabled>
  NFER                <Disabled>
  CER                <Disabled>
  CTO                <Disabled>
  SEFE                <Disabled>
  SENFE                <Disabled>
  SECE                <Disabled>
  PME SCI            <Enabled>
  Hot Plug            <Disabled>
  Advanced Error Reporting    <Enabled>
PCIe Speed            <Auto>
  Transmitter Half Swing    <Disabled>
Detect Timeout            [0]
Extra Bus Reserved        [0]
Reserved Memory            [10]
Reserved I/O            [4]

PCH PCIe LTR Configuration
```

```
PCH PCIE6 LTR            <Enabled>
  Snoop Latency Override    <Auto>
  Non Snoop Latency Override    <Auto>
  Force LTR Override        <Disabled>

PCIE6 LTR Lock            <Disabled>

PCH PCIe CLKREQ# Configuration
PCIE6 CLKREQ Mapping Override    <Default>

(press ESC)

PCI Express Root Port 7 (Enter to expand)

PCI Express Root Port 7        <Enabled>
  Topology            <Unknown>
ASPM                <Auto>
L1 Substrates            <L1.1 & L1.2>
Gen3 Eq Phase3 Method        <Software Search>
UPTP                [5]
DPTP                [7]
ACS                <Enabled>
  URR                <Disabled>
  FER                <Disabled>
  NFER                <Disabled>
  CER                <Disabled>
  CTO                <Disabled>
  SEFE                <Disabled>
  SENFE                <Disabled>
  SECE                <Disabled>
  PME SCI            <Enabled>
  Hot Plug            <Disabled>
  Advanced Error Reporting    <Enabled>
PCIe Speed            <Auto>
  Transmitter Half Swing    <Disabled>
Detect Timeout            [0]
Extra Bus Reserved        [7]
Reserved Memory            [17]
Reserved I/O            [16]

PCH PCIe LTR Configuration
PCH PCIE7 LTR            <Enabled>
  Snoop Latency Override    <Auto>
  Non Snoop Latency Override    <Auto>
  Force LTR Override        <Disabled>

PCIE7 LTR Lock            <Disabled>

PCH PCIe CLKREQ# Configuration
PCIE7 CLKREQ Mapping Override    <Default>

(press ESC)

PCI Express Root Port 8 (Enter to expand)

PCI Express Root Port 8        <Enabled>
  Topology            <Unknown>
ASPM                <Auto>
L1 Substrates            <L1.1 & L1.2>
Gen3 Eq Phase3 Method        <Software Search>
UPTP                [5]
DPTP                [7]
ACS                <Enabled>
  URR                <Disabled>
  FER                <Disabled>
  NFER                <Disabled>
  CER                <Disabled>
  CTO                <Disabled>
  SEFE                <Disabled>
  SENFE                <Disabled>
  SECE                <Disabled>
  PME SCI            <Enabled>
  Hot Plug            <Disabled>
  Advanced Error Reporting    <Enabled>
PCIe Speed            <Auto>
  Transmitter Half Swing    <Disabled>
Detect Timeout            [0]
Extra Bus Reserved        [7]
Reserved Memory            [17]
Reserved I/O            [8]

PCH PCIe LTR Configuration
```

```
PCH PCIE8 LTR            <Enabled>
  Snoop Latency Override    <Auto>
  Non Snoop Latency Override    <Auto>
  Force LTR Override        <Disabled>

PCIE8 LTR Lock            <Disabled>

PCH PCIe CLKREQ# Configuration
PCIE8 CLKREQ Mapping Override    <Default>

(press ESC)

PCI Express Root Port 9 (Enter to expand)

PCI Express Root Port 9        <Enabled>
  Topology            <M2>
ASPM                <Auto>
L1 Substrates            <L1.1 & L1.2>
Gen3 Eq Phase3 Method        <Software Search>
UPTP                [5]
DPTP                [7]
ACS                <Enabled>
  URR                <Disabled>
  FER                <Disabled>
  NFER                <Disabled>
  CER                <Disabled>
  CTO                <Disabled>
  SEFE                <Disabled>
  SENFE                <Disabled>
  SECE                <Disabled>
  PME SCI            <Enabled>
  Hot Plug            <Disabled>
  Advanced Error Reporting    <Enabled>
PCIe Speed            <Auto>
  Transmitter Half Swing    <Disabled>
Detect Timeout            [0]
Extra Bus Reserved        [0]
Reserved Memory            [10]
Reserved I/O            [4]

PCH PCIe LTR Configuration
PCH PCIE9 LTR            <Enabled>
  Snoop Latency Override    <Auto>
  Non Snoop Latency Override    <Auto>
  Force LTR Override        <Disabled>

PCIE9 LTR Lock            <Disabled>

PCH PCIe CLKREQ# Configuration
PCIE9 CLKREQ Mapping Override    <Default>

(press ESC)

PCI Express Root Port 10 (Enter to expand)

PCI Express Root Port 10    <Enabled>
  Topology            <Unknown>
ASPM              <Auto>
L1 Substrates            <L1.1 & L1.2>
Gen3 Eq Phase3 Method        <Software Search>
UPTP                [5]
DPTP                [7]
ACS                <Enabled>
  URR                <Disabled>
  FER                <Disabled>
  NFER                <Disabled>
  CER                <Disabled>
  CTO                <Disabled>
  SEFE                <Disabled>
  SENFE                <Disabled>
  SECE                <Disabled>
  PME SCI            <Enabled>
  Hot Plug            <Disabled>
  Advanced Error Reporting    <Enabled>
PCIe Speed            <Auto>
  Transmitter Half Swing    <Disabled>
Detect Timeout            [0]
Extra Bus Reserved        [0]
Reserved Memory            [10]
Reserved I/O            [4]

PCH PCIe LTR Configuration
```

```
PCH PCIE10 LTR            <Enabled>
  Snoop Latency Override    <Auto>
  Non Snoop Latency Override    <Auto>
  Force LTR Override        <Disabled>

PCIE10 LTR Lock            <Disabled>

PCH PCIe CLKREQ# Configuration
PCIE10 CLKREQ Mapping Override    <Default>

(press ESC)

PCI Express Root Port 11 (Enter to expand)

PCI Express Root Port 11    <Enabled>
  Topology            <Unknown>
ASPM                <Auto>
L1 Substrates            <L1.1 & L1.2>
Gen3 Eq Phase3 Method        <Software Search>
UPTP                [5]
DPTP                [7]
ACS                <Enabled>
  URR                <Disabled>
  FER                <Disabled>
  NFER                <Disabled>
  CER                <Disabled>
  CTO                <Disabled>
  SEFE                <Disabled>
  SENFE                <Disabled>
  SECE                <Disabled>
  PME SCI            <Enabled>
  Hot Plug            <Disabled>
  Advanced Error Reporting    <Enabled>
PCIe Speed            <Auto>
  Transmitter Half Swing    <Disabled>
Detect Timeout            [0]
Extra Bus Reserved        [0]
Reserved Memory            [10]
Reserved I/O            [4]

PCH PCIe LTR Configuration
PCH PCIE11 LTR            <Enabled>
  Snoop Latency Override    <Auto>
  Non Snoop Latency Override    <Auto>
  Force LTR Override        <Disabled>

PCIE11 LTR Lock            <Disabled>

PCH PCIe CLKREQ# Configuration
PCIE11 CLKREQ Mapping Override    <Default>

(press ESC)

PCI Express Root Port 12 (Enter to expand)

PCI Express Root Port 12    <Enabled>
  Topology            <Unknown>
ASPM                <Auto>
L1 Substrates            <L1.1 & L1.2>
Gen3 Eq Phase3 Method        <Software Search>
UPTP                [5]
DPTP                [7]
ACS                <Enabled>
  URR                <Disabled>
  FER                <Disabled>
  NFER                <Disabled>
  CER                <Disabled>
  CTO                <Disabled>
  SEFE                <Disabled>
  SENFE                <Disabled>
  SECE                <Disabled>
  PME SCI            <Enabled>
  Hot Plug            <Disabled>
  Advanced Error Reporting    <Enabled>
PCIe Speed            <Auto>
  Transmitter Half Swing    <Disabled>
Detect Timeout            [0]
Extra Bus Reserved        [0]
Reserved Memory            [10]
Reserved I/O            [4]

PCH PCIe LTR Configuration
```

```
PCH PCIE12 LTR            <Enabled>
  Snoop Latency Override    <Auto>
  Non Snoop Latency Override    <Auto>
  Force LTR Override        <Disabled>

PCIE12 LTR Lock            <Disabled>

PCH PCIe CLKREQ# Configuration
PCIE12 CLKREQ Mapping Override    <Default>

(press ESC)

PCI Express Root Port 13 (Enter to expand)

PCI Express Root Port 13    <Enabled>
  Topology            <Unknown>
ASPM                <Auto>
L1 Substrates            <L1.1 & L1.2>
Gen3 Eq Phase3 Method        <Software Search>
UPTP                [5]
DPTP                [7]
ACS                <Enabled>
  URR                <Disabled>
  FER                <Disabled>
  NFER                <Disabled>
  CER                <Disabled>
  CTO                <Disabled>
  SEFE                <Disabled>
  SENFE                <Disabled>
  SECE                <Disabled>
  PME SCI            <Enabled>
  Hot Plug            <Disabled>
  Advanced Error Reporting    <Enabled>
PCIe Speed            <Auto>
  Transmitter Half Swing    <Disabled>
Detect Timeout            [0]
Extra Bus Reserved        [0]
Reserved Memory            [10]
Reserved I/O            [4]

PCH PCIe LTR Configuration
PCH PCIE13 LTR            <Enabled>
  Snoop Latency Override    <Auto>
  Non Snoop Latency Override    <Auto>
  Force LTR Override        <Disabled>

PCIE13 LTR Lock            <Disabled>

PCH PCIe CLKREQ# Configuration
PCIE13 CLKREQ Mapping Override    <Default>

(press ESC)

PCI Express Root Port 17 (Enter to expand)

PCI Express Root Port 17    <Enabled>
  Topology            <Unknown>
ASPM                <Auto>
L1 Substrates            <L1.1 & L1.2>
Gen3 Eq Phase3 Method        <Software Search>
UPTP                [5]
DPTP                [7]
ACS                <Enabled>
  URR                <Disabled>
  FER                <Disabled>
  NFER                <Disabled>
  CER                <Disabled>
  CTO                <Disabled>
  SEFE                <Disabled>
  SENFE                <Disabled>
  SECE                <Disabled>
  PME SCI            <Enabled>
  Hot Plug            <Disabled>
  Advanced Error Reporting    <Enabled>
PCIe Speed            <Auto>
  Transmitter Half Swing    <Disabled>
Detect Timeout            [0]
Extra Bus Reserved        [0]
Reserved Memory            [10]
Reserved I/O            [4]

PCH PCIe LTR Configuration
```

```
PCH PCIE17 LTR            <Enabled>
  Snoop Latency Override    <Auto>
  Non Snoop Latency Override    <Auto>
  Force LTR Override        <Disabled>

PCIE17 LTR Lock            <Disabled>

PCH PCIe CLKREQ# Configuration
PCIE17 CLKREQ Mapping Override    <Default>

(press ESC)

PCI Express Root Port 21 (Enter to expand)

PCI Express Root Port 21    <Enabled>
  Topology            <Unknown>
ASPM                <Auto>
L1 Substrates            <L1.1 & L1.2>
Gen3 Eq Phase3 Method        <Software Search>
UPTP                [5]
DPTP                [7]
ACS                <Enabled>
  URR                <Disabled>
  FER                <Disabled>
  NFER                <Disabled>
  CER                <Disabled>
  CTO                <Disabled>
  SEFE                <Disabled>
  SENFE                <Disabled>
  SECE                <Disabled>
  PME SCI            <Enabled>
  Hot Plug            <Disabled>
  Advanced Error Reporting    <Enabled>
PCIe Speed            <Auto>
  Transmitter Half Swing    <Disabled>
Detect Timeout            [0]
Extra Bus Reserved        [0]
Reserved Memory            [10]
Reserved I/O            [4]

PCH PCIe LTR Configuration
PCH PCIE21 LTR            <Enabled>
  Snoop Latency Override    <Auto>
  Non Snoop Latency Override    <Auto>
  Force LTR Override        <Disabled>

PCIE21 LTR Lock            <Disabled>

PCH PCIe CLKREQ# Configuration
PCIE20 CLKREQ Mapping Override    <Default>

(press ESC)

PCI Express Root Port 22 (Enter to expand)

PCI Express Root Port 22    <Enabled>
  Topology            <Unknown>
ASPM                <Auto>
L1 Substrates            <L1.1 & L1.2>
Gen3 Eq Phase3 Method        <Software Search>
UPTP                [5]
DPTP                [7]
ACS                <Enabled>
  URR                <Disabled>
  FER                <Disabled>
  NFER                <Disabled>
  CER                <Disabled>
  CTO                <Disabled>
  SEFE                <Disabled>
  SENFE                <Disabled>
  SECE                <Disabled>
  PME SCI            <Enabled>
  Hot Plug            <Disabled>
  Advanced Error Reporting    <Enabled>
PCIe Speed            <Auto>
  Transmitter Half Swing    <Disabled>
Detect Timeout            [0]
Extra Bus Reserved        [0]
Reserved Memory            [10]
Reserved I/O            [4]

PCH PCIe LTR Configuration
```

```
PCH PCIE22 LTR            <Enabled>
  Snoop Latency Override    <Auto>
  Non Snoop Latency Override    <Auto>
  Force LTR Override        <Disabled>

PCIE22 LTR Lock            <Disabled>

PCH PCIe CLKREQ# Configuration
PCIE20 CLKREQ Mapping Override    <Default>

(press ESC)

PCI Express Root Port 23 (Enter to expand)

PCI Express Root Port 23    <Enabled>
  Topology            <Unknown>
ASPM                <Auto>
L1 Substrates            <L1.1 & L1.2>
Gen3 Eq Phase3 Method        <Software Search>
UPTP                [5]
DPTP                [7]
ACS                <Enabled>
  URR                <Disabled>
  FER                <Disabled>
  NFER                <Disabled>
  CER                <Disabled>
  CTO                <Disabled>
  SEFE                <Disabled>
  SENFE                <Disabled>
  SECE                <Disabled>
  PME SCI            <Enabled>
  Hot Plug            <Disabled>
  Advanced Error Reporting    <Enabled>
PCIe Speed            <Auto>
  Transmitter Half Swing    <Disabled>
Detect Timeout            [0]
Extra Bus Reserved        [0]
Reserved Memory            [10]
Reserved I/O            [4]

PCH PCIe LTR Configuration
PCH PCIE23 LTR            <Enabled>
  Snoop Latency Override    <Auto>
  Non Snoop Latency Override    <Auto>
  Force LTR Override        <Disabled>

PCIE23 LTR Lock            <Disabled>

PCH PCIe CLKREQ# Configuration
PCIE20 CLKREQ Mapping Override    <Default>

(press ESC)

PCI Express Root Port 24 (Enter to expand)

PCI Express Root Port 24    <Enabled>
  Topology            <Unknown>
ASPM                <Auto>
L1 Substrates            <L1.1 & L1.2>
Gen3 Eq Phase3 Method        <Software Search>
UPTP                [5]
DPTP                [7]
ACS                <Enabled>
  URR                <Disabled>
  FER                <Disabled>
  NFER                <Disabled>
  CER                <Disabled>
  CTO                <Disabled>
  SEFE                <Disabled>
  SENFE                <Disabled>
  SECE                <Disabled>
  PME SCI            <Enabled>
  Hot Plug            <Disabled>
  Advanced Error Reporting    <Enabled>
PCIe Speed            <Auto>
  Transmitter Half Swing    <Disabled>
Detect Timeout            [0]
Extra Bus Reserved        [0]
Reserved Memory            [10]
Reserved I/O            [4]

PCH PCIe LTR Configuration
```

```
PCH PCIE24 LTR            <Enabled>
  Snoop Latency Override    <Auto>
  Non Snoop Latency Override    <Auto>
  Force LTR Override        <Disabled>

PCIE24 LTR Lock            <Disabled>

PCH PCIe CLKREQ# Configuration
PCIE20 CLKREQ Mapping Override    <Default>

(press ESC twice)

SATA and RST Configuration (Enter to expand)

SATA Controller(s)        <Enabled>
SATA Mode Selection        <AHCI>
SATA Test Mode            <Disabled>
Software Feature Mask Configuration (Enter to expand)

HDD Unlock            <Enabled>
LED Locate            <Enabled>

(press ESC)

Aggressive LPM Support        <Enabled>

Serial ATA Port 0        ST2000NM0008-2 (4000.7GB)
  Software Preserve         SUPPORTED
  Port 0            <Enabled>
  Hot Plug            <Disabled>
  Configured as eSATA        Hot Plug supported
  Spin Up Device        <Disabled>
  SATA Device Type        <Hard Disk Drive>
  Topology            <Flex>
  SATA Port 0 DevSlp        <Disabled>
  DITO Configuration        <Disabled>
  DITO Value            [625]
  DM Value            [15]
Serial ATA Port 1        Empty
  Software Preserve         Unknown
  Port 1            <Enabled>
  Hot Plug            <Disabled>
  Configured as eSATA        Hot Plug supported
  Spin Up Device        <Disabled>
  SATA Device Type        <Hard Disk Drive>
  Topology            <Direct Connect>
  SATA Port 1 DevSlp        <Disabled>
  DITO Configuration        <Disabled>
  DITO Value            [625]
  DM Value            [15]
Serial ATA Port 2        Empty
  Software Preserve         Unknown
  Port 2            <Enabled>
  Hot Plug            <Disabled>
  Configured as eSATA        Hot Plug supported
  Spin Up Device        <Disabled>
  SATA Device Type        <Hard Disk Drive>
  Topology            <Unknown>
  SATA Port 2 DevSlp        <Disabled>
  DITO Configuration        <Disabled>
  DITO Value            [625]
  DM Value            [15]
Serial ATA Port 3        Empty
  Software Preserve         Unknown
  Port 2            <Enabled>
  Hot Plug            <Disabled>
  Configured as eSATA        Hot Plug supported
  Spin Up Device        <Disabled>
  SATA Device Type        <Hard Disk Drive>
  Topology            <Unknown>
  SATA Port 3 DevSlp        <Disabled>
  DITO Configuration        <Disabled>
  DITO Value            [625]
  DM Value            [15]
Serial ATA Port 4        Empty
  Software Preserve         Unknown
  Port 2            <Enabled>
  Hot Plug            <Disabled>
  Configured as eSATA        Hot Plug supported
  Spin Up Device        <Disabled>
  SATA Device Type        <Hard Disk Drive>
  Topology            <Unknown>
```

```
  SATA Port 4 DevSlp        <Disabled>
  DITO Configuration        <Disabled>
  DITO Value            [625]
  DM Value              [15]
Serial ATA Port 5        Empty
  Software Preserve         Unknown
  Port 2             <Enabled>
  Hot Plug             <Disabled>
  Configured as eSATA        Hot Plug supported
  Spin Up Device         <Disabled>
  SATA Device Type         <Hard Disk Drive>
  Topology             <M2>
  SATA Port 5 DevSlp        <Disabled>
  DITO Configuration        <Disabled>
  DITO Value            [625]
  DM Value              [15]
Serial ATA Port 6        Empty
  Software Preserve         Unknown
  Port 2             <Enabled>
  Hot Plug             <Disabled>
  Configured as eSATA        Hot Plug supported
  Spin Up Device         <Disabled>
  SATA Device Type         <Hard Disk Drive>
  Topology             <Unknown>
  SATA Port 6 DevSlp        <Disabled>
  DITO Configuration        <Disabled>
  DITO Value            [625]
  DM Value              [15]
Serial ATA Port 7        Empty
  Software Preserve         Unknown
  Port 2             <Enabled>
  Hot Plug             <Disabled>
  Configured as eSATA        Hot Plug supported
  Spin Up Device         <Disabled>
  SATA Device Type         <Hard Disk Drive>
  Topology             <Unknown>
  SATA Port 7 DevSlp        <Disabled>
  DITO Configuration        <Disabled>
  DITO Value            [625]
  DM Value              [15]

(press ESC)

USB Configuration (Enter to expand)

XHCI Disable Compliance Mode    <False>

xDCI Support             <Disabled>

USB Port Disable Override    <Disable>

(press ESC)

Security Configuration (Enter to expand)

RTC Lock             <Enabled>
BIOS Lock             <Enabled>

(press ESC)

SerialIo Configuration (Enter to expand)

I2C0 Controller             <Enabled>
I2C1 Controller             <Enabled>
I2C2 Controller             <Disabled>
I2C3 Controller             <Disabled>
SPI0 Controller             <Disabled>
SPI1 Controller             <Disabled>
UART0 Controller         <Enabled>
UART1 Controller         <Disabled>
UART2 Controller         <for debug only>
GPIO Controller             <Enabled>

Serial IO I2C0 Settings (Enter to expand)

I2C IO Voltage Select        <3.3V>

Connected device         <Disabled>

(press ESC)

Serial IO I2C1 Settings (Enter to expand)
```

```
I2C IO Voltage Select        <3.3V>

Connected device        <Disabled>

(press ESC)

Serial IO UART0 Settings (Enter to expand)

Bluetooth Device        <Disabled>
Wireless Charging Mode        <WC Disabled>
Hardware Flow Control        <Enabled>

(press ESC)

Serial IO GPIO Settings (Enter to expand)

GPIO IRQ Route            <IRQ14>

(press ESC)

WITT/MITT Test Device        <Disabled>
UART Test Device        <Disabled>
Additional Serial IO devices    [ ]
SerialIO timing parameters (Enter to expand)

SerialIO timing parameters    [ ]

(press ESC)

UCSI/UCMC device        <Disabled>

(press ESC)

TraceHub Configuration Menu (Enter to expand)

TraceHub Enable Mode        <Disable>
MemRegion 0 Buffer Size        <1MB>
MemRegion 1 Buffer Size        <1MB>

(press ESC)

Pch Thermal Throttling Control (Enter to expand)

Thermal Throttling Level    <Suggested Setting>
DMI Thermal Setting        <Suggested Setting>
SATA Thermal Setting        <Suggested Setting>

(press ESC)

DCI enable (HDCIEN)        <Disabled>
Debug Port Selection        <Legacy UART>
GNSS               <Disabled>
PCH LAN Controller        No GbE Region
DeepSx Power Policies        <Disabled>
LAN Wake From DeepSx        <Enabled>
Wake on WLAN and BT Enable    <Disabled>
Disable DSX ACPRESENT PullDown    <Disabled>
CLKRUN# logic            <Enabled>
Serial IRQ Mode            <Quiet>
Port 61h Bit-4 Emulation    <Enabled>
State After G3            <S0 State>

{The SE and Hardware Management Appliance will use "S0 State", the HMC
and TKE will use "Last State".  This determines what the machine will
do when input power is restored.}

Port 80h Redirection        <LPC Bus>
Enhance Port 80h LPC Decoding    <Enabled>
Compatible Revision ID        <Disabled>
PCH Cross Throttling        <Enabled>
Disable Energy Reporting    <False>
Enable TCO Timer        <Disabled>
Pcie PII SSC            <Auto>
IOAPIC 24-119 Entries        <Enabled>
Unlock PCH P2SB            <Disabled>
Flash Protection Range Registers (FPRR) <Enabled>
SPD Write Disable        <True>
ChipsetInit HECI Message    [X]
Bypass ChipsetInit sync reset    <Disabled>

(press ESC)
```

```
PCH-FW Configuration (Enter to expand)

ME Firmware Version        0.0.0.0
ME Firmware Mode        ME Failed
ME Firmware SKU           Unidentified
ME File System Integrity Value    0
ME Firmware Status 1        0x000F0345
ME Firmware Status 2        0x8A116006
NFC Support            Disabled

ME State            <Enabled>
Comms Hub Support        <Disabled>
JHI Support            <Disabled>
Core Bios Done Message        <Enabled>

Firmware Update Configuration (Enter to expand)

Me FW Image Re-Flash        <Disabled>

(press ESC)

PTT Configuration (Enter to expand)

PTT Capability / State        0 / 0

PTP aware OS            <PTP Aware>

(press ESC)

ME Debug Configuration (Enter to expand)

HECI Timeouts            [X]

Force ME DID Init Status    <Disabled>
CPU Replaced Polling Disable    <Disabled>
ME DID Message            <Enabled>
HECI Retry Disable        <Disabled>
HECI Message check Disable    <Disabled>
MBP HOB Skip            <Disabled>
HECI2 Interface Communication    [ ]
KT Device            [X]
IDER Device            [X]
End Of Post Message        <Send in DXE>
DOI3 Setting for HECI Disable    <Disabled>

(press ESC twice)

Thermal Configuration (Enter to expand)

CPU Thermal Configuration (Enter to expand)

DTS SMM                <Disabled>
Tcc Activation Offset        [0]
Tcc Offset Time Window        <Disabled>
Tcc Offset Clamp Enable        <Disabled>
Tcc Offset Lock Enable        <Disabled>
Bi-directional PROCHOT#        <Enabled>
Disable PROCHOT# Output        <Enabled>
Disable VR Thermal Alert    <Disabled>
PROCHOT Response        <Disabled>
PROCHOT Lock            <Disabled>
ACPI T-States            [ ]
PECI Reset            <Disabled>
PECI C10 Reset            <Disabled>

(press ESC)

Platform Thermal Configuration (Enter to expand)

Automatic Thermal Reporting    <Disabled>
Critical Trip Point        <119C (POR)>
Active Trip Point 0        <71 C>
Active Trip Point 0 Fan Speed    [100]
Active Trip Point 1        <55 C>
Active Trip Point 1 Fan Speed    [75]
Passive Trip Point        <95 C>
  Passive TC1 Value        [1]
  Passive TC2 Value        [5]
  Passive TSP Value        [10]

Active Trip Points        <Enabled>
```

```
Passive Trip Points        <Disabled>
Critical Trip Points        <Enabled>

PCH Thermal Device        <Enabled in PCI mode>
PCH Temp Read            [X]
CPU Energy Read            [X]
CPU Temp Read            [X]
Alert Enable Lock        <Disabled>
CPU Temp            [0]
CPU Fan Speed            [65]

(press ESC)

DPTF Configuration (Enter to expand)

(press ESC)

Hardware Health Monitor (Enter to expand)

Thermal Sensor 1 Temp        <0 C>
Thermal Sensor 2 Temp        <0 C>
Thermal Sensor 3 Temp        <0 C>
Thermal Sensor 4 Temp        <0 C>
Thermal Sensor 5 Temp        <0 C>
Thermal Sensor 6 Temp        <0 C>
Thermal Sensor 7 Temp        <0 C>
Thermal Sensor 8 Temp        <0 C>
Thermal Thermistor 1 Temp    <0 raw>
Thermal Thermistor 2 Temp    <0 raw>
Thermal Thermistor 3 Temp    <0 raw>
Thermal Thermistor 4 Temp    <0 raw>
Thermal Thermistor 5 Temp    <0 raw>
Thermal Thermistor 6 Temp    <0 raw>
CPU Fan Speed            <0 rpm>
PCH DTS Temp from PCH        <0 C>

(press ESC twice)

Platform Settings (Enter to expand)

UCSI Retry Workaround        <Disabled>
PS2 Keyboard and Mouse        <Enabled>

(press ESC)

RTD3 settings (Enter to expand)

RTD3 Support            <Enabled>

VR Staggering delay            [16]
VR Ramp up delay            [16]
PCIE Slot 5 Device Power-on delay in ms    [100]
PCIE Slot 5 Device Power-off dealy in ms[10]
Audio Delay                [200]
I2C0 Controller                [0]
SensorHub                [68]
I2C1 Controller                [0]
TouchPad                [68]
TouchPanel                [68]
P-state Capping                <Disabled>
USB Port 1                <Disabled>
USB Port 2                <Disabled>
I2C0 Sensor Hub                <Enabled>
WWAN                    <Enabled>
Sata Port 1                <Disabled>
Sata Port 2                <Disabled>
RST Raid Volumes            <Enabled>

(press ESC)

Thunderbolt Device (Enter to expand)

Thunderbolt(TM) Support        <Disabled>
Thunderbolt(TM) PCIe Support    <Disabled>

(press ESC)

Server ME Configuration (Enter to expand)

Operational Firmware Version    4.1.4.54
Backup Firmware Version        0.0.0.0
Recovery Firmware Version    4.1.4.54
```

```
Server ME SKU            Silicon Enabling
ME Firmware Status #1        0x000F0345
ME Firmware Status #2        0x8A116006
Current State            Operational
Error Code           No Error

(press ESC)

Intel ICC (Enter to expand)

ICC/OC Watchdog Timer        <Disabled>
ICC Locks after EOP        <Default>
ICC Profile            [0]

(press ESC)

SIO AST2400 (Enter to expand)

Serial Port A            <AUTO>

(press ESC)

Trenton Systems (Enter to expand)

BIOS Info:
Platform            BIOS_MBC8272
Version               Main.001.012
State                release

SMBIOS OEM Strings:
Trenton BIOS version: BIOS_MBC8272.Main.001.012.release
Insyde  BIOS version: KabyLake.05.12.09.0049
Trenton Notes: Mainline

SPI OEM Contents:
SPI                SYSFLASH_MBC8272.Main.001.006
BIOS                BIOS_MBC8272.Main.001.004.release
ME               SPS_E3_04.01.04.054.0

(press ESC)

Ipmi Sensor Control (Enter to expand)

Per-Sensor Enables
FAN1 Enable        <Disabled>    {Enabled for TKE}
FAN2 Enable        <Enabled>
FAN3 Enable        <Enabled>
FAN4 Enable        <Enabled>
FAN5 Enable        <Disabled>    {Enabled for TKE}

(press ESC)

H2O IPMI Configuration (Enter to expand)

IPMI Support            <Enabled>

System Interface Type        KCS
IPMI Base Address for OS    CA2/CA3
IPMI Base Address for POST    CA2/CA3
IPMI Base Address for SMM    CA2/CA3

BMC Status            OK
BMC Firmware Version        3.03
IPMI Specification Version    2.0
BMC MAC Address            00:10:6F:23:73:B4    {varies}

BMC Warmup Time            [240]
ACPI SPMI Table            <Enabled>
Boot Option Support        <Disabled>
Set BIOS version to BMC        <Disabled>

BMC Configuration (Enter to expand)

Watchdog Timer Support        <Disabled>
Watchdog Timer Timeout        [5]
Watchdog Timer Action        <Hard Reset>

Power Cycle Time Support    <Disabled>
Power Cycle Time        [10]

Power Button            <Enabled>
Reset Button            <Enabled>
```

```
NMI Button            <Enabled>

Lan Port Configuration        <Dedicated>

LAN Channel Number         [1]
IPv4 Source             <DHCP>        {varies}
IPv4 IP Address             9.60.15.239    {varies}
IPv4 Subnet Mask         255.255.255.0    {varies}
IPv4 Gateway Address         9.60.15.254    {varies}

IPv6 Mode             <Disabled>
IPv6 AutoConfig             <Enabled>
IPv6 Prefix Length         [0]
IPv6 IP Address             0:0:0:0:0:0:0:0
IPv6 Gateway Address         0:0:0:0:0:0:0:0

(press ESC)

SDR List (Enter to expand)

SDR List Support        <Disabled>

(press ESC)

Execute H2O IPMI Utility

LOAD IPMI OPTIMAL DEFAULT

(press ESC)

Console Redirection (Enter to expand)

Console Serial Redirect         <Enabled>
Terminal Type            <VT_100>
Baud Rate             <115200>
Data Bits             <8 Bits>
Parity                 <None>
Stop Bits             <1 Bit>
Flow Control             <None>
Information Wait Time         < 5 Second>
C.R. After Post            <Yes>
Text Mode Resolution         <AUTO>
AutoRefresh             <Enabled>
FailSafeBaudRate         <Disabled>
COMA (Enter to expand)

PortEnable            <Enabled>
UseGlobalSetting        <Enabled>

(press ESC)

Enable VT-100, 115200, N81

(press ESC)

H2oUve Configuration (Enter to expand)

H2OUVE Support            <Enabled>

(press ESC)

Diagnostics and System Tester (Enter to expand)

H2ODST Tool

(press ESC)

[Security Tab]

Current TPM Device            <TPM 2.0 (DTPM)>
TPM State                All Hierarchies Enabled, UnOwned    {varies}
TPM Active PCR Hash Algorithm         SHA1, SHA256
TPM Hardware Supported Hash Algorithm    SHA1, SHA256
TrEE Protocol Version             <1.1>
TPM Availability            <Available>
TPM Operation                <No Operation>
Clear TPM                [ ]

Supervisor Password            Not Installed
User Password                Not Installed

Set Supervisor Password
```

```
Set User Password
Set All Hdd Password
Set All Master Hdd Password

Storage Password Setup Page (Enter to expand)

ST2000NM0008-2F3100 (Enter to expand)

Device Name:        [ST2000NM0008-2F3100]

Security Mode:        No Accessed

Set Storage Password
Set Master Hdd Password

(press ESC twice)

[Power Tab]

ACPI S3            <Enabled>
Wake on PME        <Enabled>
Wake on Modem Ring    <Disabled>
Auto Wake on S5        <Disabled>
S5 long run test    <Disabled>

[Boot Tab]

Boot Type            <UEFI Boot Type>
Quick Boot            <Enabled>
Quiet Boot            <Enabled>
Network Stack            <Enabled>
PXE Boot capability        <UEFI:IPv4>
Power Up In Standby Support    <Disabled>
Add Boot Options        <Auto>
ACPI Selection            <Acpi5.0>
USB Boot            <Enabled>
EFI Device First        <Enabled>
UEFI OS Fast Boot        <Enabled>
  USB Hot Key Support        <Disabled>
Timeout                [10]
Automatic Failover        <Enabled>

EFI (Enter to expand)

BOOT_EMBEDDED (ST2000NM0008-2F3100)    {This list will vary}
EFI Hard Drive (ST2000NM0008-23F3100)
EFI Network LAN8  for IPv4 (00-10-6F-23-73-B3)
EFI Network LAN7  for IPv4 (00-10-6F-23-73-B2)
EFI Network LAN6  for IPv4 (00-10-6F-23-73-B1)
EFI Network LAN5  for IPv4 (00-10-6F-23-73-B0)
EFI Network LAN4  for IPv4 (00-10-6F-23-73-AF)
EFI Network LAN3  for IPv4 (00-10-6F-23-73-AE)
EFI Network LAN2  for IPv4 (00-10-6F-23-73-AD)
EFI Network LAN1  for IPv4 (00-10-6F-23-73-AC)
Internal EFI Shell

(press ESC)

Per-port boot filer (Enter to expand)

Rear Port1 Enable    <Enabled>
Rear Port2 Enable    <Enabled>
Rear Port3 Enable    <Enabled>
Rear Port4 Enable    <Enabled>
Rear Port5 Enable    <Enabled>
Rear Port6 Enable    <Enabled>
Front Port1 Enable    <Enabled>
Front Port2 Enable    <Enabled>

(press ESC)

[Exit Tab]

Exit Saving Changes
Save Change Without Exit
Exit Discarding Changes
Load Optimal Defaults
Load Custom Defaults
Save Custom Defaults
Discard Changes
```

```
(end of BIOS Setup values)
```

END OF PROCEDURE

Support Element 2461-SE4 configuration

Use the information in this section if you are directed to verify the configuration for the 2461-SE4 Support Element.

The following is a list of the configuration settings for the 2461-SE4.

```
InsydeH20 Version       CFL.05.23.04.0047
Processor Type          Intel(R) Xeon(R) E-2226GE CPU @ 3.40GHz
System Bus Speed        100 MHz
System Memory Speed     2667 MHz
Cache RAM               1536 KB
Total Memory            65536 MB
Channel A
DIMM 0                  16384 MB
DIMM 1                  16384 MB
Channel B
DIMM 0                  16384 MB
DIMM 1                  16384 MB
Platform Configuration
CPUID:                  0x906EA (CoffeeLake DT)
CPU Speed:              3400 MHz
CPU Stepping:           906EA (U0 Stepping)
L1 Data Cache:          32 KB
L1 Instruction Cache:   32 KB
L2 Cache:               256 KB
L3 Cache:               12288 KB
Number of Processors:   6 Core(s) / 6 Thread(s)
Microcode Rev:          000000EA
GT Info:                GT4 (0xFFFF)
SMX/TXT:                Supported
PCH Rev / SKU           10 (B0 Stepping) / CNL PCH-H C246
GOP Ver:                9.0.1107
EC Ver:                 N/A
Board ID:               Moss Beach Server
FAB ID:                 0
Language                <English>
System Time             {varies}
System Date             {varies}

(press right arrow)

[Advanced Tab]

Boot Configuration (Enter to expand)

Numlock                 <Off>

(press ESC)

Peripheral Configuration (Enter to expand)

Serial Port A           <Disabled>
Infrared Port           <Disabled>

(press ESC)

SATA Configuration (Enter to expand)

Serial ATA Port 0       [ST2000NM000A-2J2100 ]
Serial ATA Port 1       [Not Installed]
Serial ATA Port 2       [Not Installed]
Serial ATA Port 3       [Not Installed]
Serial ATA Port 4       [Not Installed]
Serial ATA Port 5       [Not Installed]
Serial ATA Port 6       [Not Installed]
Serial ATA Port 7       [Not Installed]

(press ESC)

USB Configuration (Enter to expand)

USB BIOS Support                <Enabled>
Usb Legacy SMI bit Clean        <Disabled>

(press ESC)

Chipset Configuration (Enter to expand)
```

```
Setup Warning:
Setting items on this screen to incorrect values
may cause your system to malfunction!

(press ESC)

Debug Settings (Enter to expand)

Kernel Debug Serial Port        <Legacy UART>
Platform Debug Consent          <Disabled>
Advanced Debug Settings (Enter to expand)

USB3 Type-C UFP2DFP Kernel/Platform     <No Change>
Debug Support
PCH Trace Hub Enable Mode               <Disabled>
Processor trace memory allocation       <Disabled>
JTAG C10 Power Gate                     <Enabled>
Three Strike Counter                    <Enabled>
CrashLog Feature                        <Enabled>
CrashLog On All Reset                   <Disabled>
PMC Debug Message Enable                <Disabled>
CPU Wakeup Timer                        <Enabled>
Delayed Authentication Mode             <Disabled>

(press ESC twice)

Type C Support                  <Platform-POR>

ACPI Table/Features Control (Enter to expand)

ACPI Settings (Enter to expand)

ACPI Version                    5.0
Enable ACPI Auto Configuration  [ ]

Enable Hibernation              [X]
PTID Support                    [X]
PECI Access Method              <Direct I/O>
ACPI S3 Support                 <Disabled>
Native PCIE Enable              <Enabled>
Native ASPM                     <Auto>

ACPI Debug                      <Disabled>
Low Power S0 Idle Capability    <Disabled>

SSDT table from file            <Disabled>

PCI Delay Optimization          <Disabled>
MSI enabled                     <Enabled>

(press ESC)

FACP - RTC S4 Wakeup            <Enabled>
APIC - IO APIC Mode             <Enabled>

(press ESC)

CPU Configuration (Enter to expand)

Type                                    Intel(R) Xeon(R) E-2226GE CPU @ 3.40GHz
ID                                      0x906EA
Speed                                   3400 MHz
L1 Data Cache                           32 KB x 6
L1 Instruction Cache                    32 KB x 6
L2 Cache                                256 KB x 6
L3 Cache                                12 MB
L4 Cache                                N/A
VMX                                     Supported
SMX/TXT                                 Supported

C6DRAM                                  <Enabled>
Software Guard Extensions (SGX) <Software Controlled>
Select Owner EPOCH input type   <No Change in Owner EPOCHS>
CPU Flex Ratio Override                 <Disabled>
CPU Flex Ratio Settings                 [34]
Hardware Prefetcher                     <Enabled>
Adjacent Cache Line Prefetch            <Enabled>
Intel (VMX) Virtualization Technology   <Enabled>
PECI                                    <Enabled>
Active Processor Cores                  <All>
BIST                                    <Disabled>
```

```
AP threads Idle Manner                  <MWAIT Loop>
AES                                     <Enabled>
MachineCheck                            <Enabled>
MonitorMWait                            <Enabled>
Intel Trusted Execution Technology      <Disabled>
Alias Check Request                     <Disabled>
DPR Memory Size (MB)                    [4]
Reset AUX Content                       <no>
FCLK Frequency for Early Power On       <Normal (800Mhz)>
Voltage Optimization                    <Auto>

(press ESC)

Connectivity Configuration (Enter to expand)

CNVi present                    No
CNVi Configuration
 CNVi Mode                      <Disable Integrated>

Coexistence Manager             <Disabled>

Preboot BLE                     <Disabled>

Discrete Bluetooth Module       <Disabled>

Advanced settings               <Disabled>

WWAN Configuration (Enter to expand)

WWAN Device                     <Disabled>
WWAN Reset Workaround           <Enabled>

(press ESC twice)

Power & Performance (Enter to expand)

CPU - Power Management Control (Enter to expand)

Boot performance mode                   <Max Non-Turbo Performance>
Intel(R) SpeedStep(tm)                  <Enabled>
Race To Halt (RTH)                      <Enabled>
Intel(R) Speed Shift Technology         <Disabled>
HDC Control                             <Enabled>
Turbo Mode                              <Enabled>
  View/Configure Turbo Options (Enter to expand)

Current Turbo Settings

Max Turbo Power Limit           4095.875
Min Turbo Power Limit           0.0
Package TDP Limit               80.0
Power Limit 1                   80.0
Power Limit 2                   112.0
1-core Turbo Ratio              46
2-core Turbo Ratio              45
3-core Turbo Ratio              44
4-core Turbo Ratio              43
5-core Turbo Ratio              42
6-core Turbo Ratio              41

Power Limit 1 Override          <Disabled>
Power Limit 2 Override          <Enabled>
Power Limit 2                   [0]
Energy Efficient Turbo          <Enabled>

(press ESC)

CPU VR Settings (Enter to expand)

VR Power Delivery Design        <CFL_S_95_WATT_8_2>
PSYS Slope                      [0]
PSYS Offset                     [0]
PSYS PMax Power                 [0]
Acoustic Noise Settings (Enter to expand)

Acoustic Noise Mitigation               <Disabled>
Pre Wake Time                           [0]
Ramp Up Time                            [0]
Ramp Down Time                          [0]

IA VR Domain
Disable Fast PKG C State Ramp for IA    <False>
```

```
Domain
Slow Slew Rate for IA Domain            <Fast/2>

GT VR Domain
Disable Fast PKG C State Ramp for GT    <False>
Domain
Slow Slew Rate for GT Domain            <Fast/2>

SA VR Domain
Disable Fast PKG C State Ramp for SA    <False>
Domain
Slow Slew Rate for SA Domain            <Fast/2>

VccIn VR Domain
Disable Fast PKG C State Ramp for VccIn <False>
Domain
Slow Slew Rate for VccIn Domain         <Fast/2>

(press ESC)

Core/IA VR Settings (Enter to expand)

VR Config Enable                <Enabled>
AC Loadline                     [160]
DC Loadline                     [160]
PS Current Threshold1           [80]
PS Current Threshold2           [20]
PS Current Threshold3           [4]
PS3 Enable                      <Enabled>
PS4 Enable                      <Enabled>
IMON Slope                      [0]
IMON Offset                     [0]
  IMON Prefix                   <+>
VR Current Limit                [772]
VR Voltage Limit                [1520]
TDC Enable                      <Enabled>
TDC Current Limit               [1200]
TDC Time Window                 <1 ms>
TDC Lock                        <Disabled>

(press ESC)

Intersil VR Command             <Disabled>

(press ESC)

Platform PL1 Enable                     <Disabled>
Platform PL2 Enable                     <Disabled>
Power Limit 4 Override                  <Disabled>
C states                                <Enabled>
  Enhanced C-states                     <Enabled>
  C-State Auto Demotion                 <C1 and C3>
  C-State Un-demotion                   <C1 and C3>
  Package C-State Demotion              <Disabled>
  Package C-State Un-demotion           <Disabled>
CState Pre-Wake                         <Enabled>
IO MWAIT Redirection                    <Disabled>
Package C State Limit                   <Auto>
C3 Latency Control (MSR 0x60A)
Time Unit                               <1024 ns>
Latency                                 [78]
C6/C7 Short Latency Control (MSR 0x60B)
Time Unit                               <1024 ns>
Latency                                 [118]
C6/C7 Long Latency Control (MSR 0x60C)
Time Unit                               <1024 ns>
Latency                                 [148]
C8 Latency Control (MSR 0x633)
Time Unit                               <1024 ns>
Latency                                 [250]
C9 Latency Control (MSR 0x634)
Time Unit                               <1024 ns>
Latency                                 [332]
C10 Latency Control (MSR 0x635)
Time Unit                               <1024 ns>
Latency                                 [1010]
Thermal Monitor                         <Enabled>
Interrupt Redirection Mode Selection    <PAIR with Fixed Priority>
Timed MWAIT                             <Disabled>
Custom P-state Table (Enter to expand)

Number of P states                      [0]
```

```
(press ESC)

Energy Performance Gain                 <Disabled>
EPG DIMM Idd3N                          [26]
EPG DIMM Idd3P                          [11]
Power Limit 3 Settings (Enter to expand)

Power Limit 3 Override                  <Disabled>

(press ESC)

CPU Lock Configuration (Enter to expand)

CPG Lock                                <Enabled>
Overclocking Lock                       <Disabled>

(press ESC twice)

GT - Power Management Control (Enter to expand)

RC6(Render Standby)             <Enabled>
Maximum GT frequency            <Default Max Frequency>
Disable Turbo GT frequency      <Disabled>

(press ESC twice)

OverClocking Performance Menu (Enter to expand)

OverClocking Feature            <Disabled>
WDT Enable                      <Enabled>

(press ESC)

Memory Configuration (Enter to expand)

Memory Thermal Configuration (Enter to expand)

Memory Power and Thermal Throttling (Enter to expand)

DDR PowerDown and idle counter          <BIOS>
For LPDDR Only: DDR PowerDown and idle  <BIOS>
counter
REFRESH_2X_MODE                         <Disabled>
LPDDR Thermal Sensor                    <Enabled>
SelfRefresh Enable                      <Enabled>
SelfRefresh IdleTimer                   [512]
Throttler CKEMin Defeature              <Disabled>
Throttler CKEMin Timer                  [48]
Dram Power Meter (Enter to expand)

Use user provided power weights, scale  <Disabled>
factor, and channel power floor values
Energy Scale Factor                     [4]

Idle Energy Ch0Dimm0                    [10]
PowerDown Energy Ch0Dimm0               [6]
Activate Energy Ch0Dimm0                [172]
Read Energy Ch0Dimm0                    [212]
Write Energy Ch0Dimm0                   [221]

Idle Energy Ch0Dimm1                    [10]
PowerDown Energy Ch0Dimm1               [6]
Activate Energy Ch0Dimm1                [172]
Read Energy Ch0Dimm1                    [212]
Write Energy Ch0Dimm1                   [221]

Idle Energy Ch1Dimm0                    [10]
PowerDown Energy Ch1Dimm0               [6]
Activate Energy Ch1Dimm0                [172]
Read Energy Ch1Dimm0                    [212]
Write Energy Ch1Dimm0                   [221]

Idle Energy Ch1Dimm1                    [10]
PowerDown Energy Ch1Dimm1               [6]
Activate Energy Ch1Dimm1                [172]
Read Energy Ch1Dimm1                    [212]
Write Energy Ch1Dimm1                   [221]

(press ESC)

Memory Thermal Reporting (Enter to expand)
```

```
Lock Thermal Management Registers       <Enabled>

Memory Thermal Reporting

Extern Therm Status                     <Disabled>
Closed Loop Therm Manage                <Disabled>
Open Loop Therm Manage                  <Disabled>

Thermal Threshold Settings

Warm Threshold Ch0 Dimm0                [255]
Warm Threshold Ch0 Dimm1                [255]
Hot Threshold Ch0 Dimm0                 [255]
Hot Threshold Ch0 Dimm1                 [255]
Warm Threshold Ch1 Dimm0                [255]
Warm Threshold Ch1 Dimm1                [255]
Hot Threshold Ch1 Dimm0                 [255]
Hot Threshold Ch1 Dimm1                 [255]

Thermal Throttle Budget Settings

Warm Budget Ch0 Dimm0                   [255]
Warm Budget Ch0 Dimm1                   [255]
Hot Budget Ch0 Dimm0                    [255]
Hot Budget Ch0 Dimm1                    [255]
Warm Budget Ch1 Dimm0                   [255]
Warm Budget Ch1 Dimm1                   [255]
Hot Budget Ch1 Dimm0                    [255]
Hot Budget Ch1 Dimm1                    [255]

(press ESC)

Memory RAPL (Enter to expand)

Rapl Power Floor Ch0            [0]
Rapl Power Floor Ch1            [0]

RAPL PL Lock                    <Disabled>
RAPL PL 1 enable                <Disabled>
RAPL PL 1 Power                 [0]
RAPL PL 1 WindowX               [0]
RAPL PL 1 WindowY               [0]

RAPL PL 2 enable                <Disabled>
RAPL PL 2 Power                 [222]
RAPL PL 2 WindowX               [1]
RAPL PL 2 WindowY               [10]

(press ESC twice)

Memory Thermal Management       <Disabled>

(press ESC)

Memory Training Algorithms (Enter to expand)

Early Command Training                    <Enabled>
SenseAmp Offset Training                  <Enabled>
Early ReadMPR Timing Centering 2D         <Enabled>
Read MPR Training                         <Enabled>
Receive Enable Training                   <Enabled>
Jedec Write Levelling                     <Enabled>
Early Write Time Centering 2D             <Enabled>
Early Read Time Centering 2D              <Enabled>
Write Timing Centering 1D                 <Enabled>
Write Voltage Centering 1D                <Enabled>
Read Timing Centering 1D                  <Enabled>
Dimm ODT Training*                        <Enabled>
  Max RTT_WR                              <ODT Off>
DIMM RON Training*                        <Enabled>
Write Drive Strength/Equalization 2D*     <Disabled>
Write Slew Rate Training*                 <Enabled>
Read ODT Training*                        <Enabled>
Read Equalization Training*               <Enabled>
Read Amplifier Training*                  <Enabled>
Write Timing Centering 2D                 <Enabled>
Read Timing Centering 2D                  <Enabled>
Command Voltage Centering                 <Enabled>
Write Voltage Centering 2D                <Enabled>
Read Voltage Centering 2D                 <Enabled>
Late Command Training                     <Enabled>
```

```
Round Trip Latency                          <Enabled>
Turn Around Timing Training                 <Enabled>
Rank Margin Tool                            <Disabled>
Memory Test                                 <Disabled>
DIMM SPD Alias Test                         <Enabled>
Receive Enable Centering 1D                 <Enabled>
Retrain Margin Check                        <Enabled>
Write Drive Strength Up/Dn independently    <Disabled>

(press ESC)

Memory Configuration

Memory RC Version                           0.7.1.121
Memory Frequency                            2667 MHz
Memory Timings (tCL-tRCD-tRP-tRAS)          19-19-19-43

Channel 0 Slot 0                            Populated & Enabled
    Size                                    16384 MB (DDR4)
    Number of Ranks                         2
    Manufacturer                            Transcend {varies}
Channel 0 Slot 1                            Not Populated / Disabled
Channel 1 Slot 0                            Populated & Enabled
    Size                                    16384 MB (DDR4)
    Number of Ranks                         2
    Manufacturer                            Transcend {varies}
Channel 1 Slot 1                            Not Populated / Disabled

{The HMA will have Ch0 Sl1 and Ch1 Sl1 populated with 16GB DIMMs}

Memory ratio/reference clock options moved to Overclock->Memory->Custom Profile menu
MRC ULT Safe Config                         <Disabled>
LPDDR DqDqs Re-Training                     <Enabled>
Safe Mode Support                           <Disabled>
Memory Test on Warm Boot                    <Enabled>
Maximum Memory Frequency                    <2667>
HOB Buffer Size                             <Auto>
ECC Support                                 <Enabled>
Max TOLUD                                   <Dynamic>
SA GV                                       <Enabled>
SA GV Low Freq                              <MRC default>
Retrain on Fast Fail                        <Enabled>
BER Support                                 <Enabled>
Enable RH Prevention                        <Enabled>
Row Hammer Solution                         <Hardware RHP>
RH Activation Probability                   <1/2^11>
Exit On Failure (MRC)                       <Enabled>
MC Lock                                     <Enabled>
Probless Trace                              <Disabled>
Enable/Disable IED (Intel Enhanced Debug)   <Disabled>
Ch Hash Support                             <Enabled>
Ch Hash Mask                                [0]
Ch Hash Interleaved Bit                     <BIT8>
VC1 Read Metering                           <Enabled>
Strong Weak Leaker                          [7]
Memory Scrambler                            <Enabled>
Force ColdReset                             <Disabled>
Channel A DIMM Control                      <Enable both DIMMs>
Channel B DIMM Control                      <Enable both DIMMs>
Force Single Rank                           <Disabled>
Memory Remap                                <Enabled>
Time Measure                                <Disabled>
Fast Boot                                   <Enabled>
Train On Warm Boot                          <Disabled>
Rank Margin Tool Per Task                   <Disabled>
Training Tracing                            <Disabled>
Lpddr Mem WL Set                            <Set B>
BDAT ACPI Table Support                     <Disabled>
BDAT Memory Test Type                       <Rank Margin Tool Rank>
Rank Margin Tool Loop Count                 [0]
Lpddr Dram Odt                              <Auto>
DDR4 Skip Refresh Enable                    <Enabled>
Late Command Training Relaxed Reset         <Disabled>

(press ESC)

System Agent (SA) Configuration (Enter to expand)

SA PCIe Code Version            7.0.118.48
VT-d                            Supported

Graphics Configuration (Enter to expand)
```

```
Skip Scaning of External Gfx Card       <Disabled>

Primary Display                         <Auto>
Select PCIE Card                        <Auto>
Internal Graphics                       <Disabled>
GTT Size                                <8MB>
Aperture Size                           <256MB>
PSMI SUPPORT                            <Disabled>
DVMT Pre-Allocated                      <32M>
DVMT Total Gfx Mem                      <256M>
Intel Graphics Pei Display Peim         <Disabled>
PM Support                              <Enabled>
PAVP Enable                             <Enabled>
Cdynmax Clamping Enable                 <Enabled>
Cd Clock Frequency                      <675 Mhz>
Skip CD Clock Init in S3 resume         <Disabled>
IUER Button Enable                      <Disabled>

(press ESC)

DMI/OPI Configuration (Enter to expand)

DMI                                     X4  Gen3

DMI Max Link Speed                      <Auto>
DMI Gen3 Eq Phase 2                     <Auto>
DMI Gen3 Eq Phase 3 Method              <Auto>
Program Static Phase1 Eq                <Enabled>
Gen3 Root Port Preset value for each Lane (Enter to expand)

Lane 0          [4]
Lane 1          [4]
Lane 2          [4]
Lane 3          [4]

(press ESC)

Gen3 Endpoint Preset value for each Lane (Enter to expand)

Lane 0          [7]
Lane 1          [7]
Lane 2          [7]
Lane 3          [7]

(press ESC)

Gen3 Endpoint Hint value for each Lane (Enter to expand)

Lane 0          [2]
Lane 1          [2]
Lane 2          [2]
Lane 3          [2]

(press ESC)

Gen3 RxCTLE Control (Enter to expand)

Bundle0         [0]
Bundle1         [0]

(press ESC)

DMI Link ASPM Control           <L0sL1>
DMI Extended Sync Control       <Disabled>
DMI De-emphasis Control         <-3.5 dB>
DMI IOT                         <Disabled>

(press ESC)

PEG Port Configuration (Enter to expand)

PEG 0:1:0                       Not Present
  Enable Root Port              <Auto>
  Max Link Speed                <Auto>
  PEG0 Slot Power Limit Value   [75]
  PEG0 Slot Power Limit Scale   <1.0x>
  PEG0 Physical Slot Number     [1]
PEG 0:1:1                       x4  Gen2
  Enable Root Port              <Auto>
  Max Link Speed                <Auto>
  Max Link Width                <Auto>
```

```
  Power Down Unused Lanes       <Auto>
  Gen3 Eq Phase 2               <Auto>
  Gen3 Eq Phase 3 Method        <Auto>
  ASPM                          <Auto>
  De-emphasis Control           <-3.5 dB>
  OBFF                          <Enabled>
  LTR                           <Enabled>
  PEG1 Slot Power Limit Value   [75]
  PEG1 Slot Power Limit Scale   <1.0x>
  PEG1 Physical Slot Number     [2]
  Max Link Width                <Auto>
  Power Down Unused Lanes       <Auto>
  Gen3 Eq Phase 2               <Auto>
  Gen3 Eq Phase 3 Method        <Auto>
  ASPM                          <Auto>
  De-emphasis Control           <-3.5 dB>
  OBFF                          <Enabled>
  LTR                           <Enabled>
  PEG2 Slot Power Limit Value   [75]
  PEG2 Slot Power Limit Scale   <1.0x>
  PEG2 Physical Slot Number     [3]
  PEG3 Slot Power Limit Value   [75]
  PEG3 Slot Power Limit Scale   <1.0x>
  PEG3 Physical Slot Number     [3]

Program PCIe ASPM after OpROM   <Disabled>
Program Static Phase1 Eq        <Enabled>
Gen3 Root Port Preset value for each Lane (Enter to expand)

Lane 0          [7]
Lane 1          [7]
Lane 2          [7]
Lane 3          [7]
Lane 4          [7]
Lane 5          [7]
Lane 6          [7]
Lane 7          [7]
Lane 8          [7]
Lane 9          [7]
Lane 10         [7]
Lane 11         [7]
Lane 12         [7]
Lane 13         [7]
Lane 14         [7]
Lane 15         [7]

(press ESC)

Gen3 Endpoint Preset value for each Lane (Enter to expand)

Lane 0          [7]
Lane 1          [7]
Lane 2          [7]
Lane 3          [7]
Lane 4          [7]
Lane 5          [7]
Lane 6          [7]
Lane 7          [7]
Lane 8          [7]
Lane 9          [7]
Lane 10         [7]
Lane 11         [7]
Lane 12         [7]
Lane 13         [7]
Lane 14         [7]
Lane 15         [7]

(press ESC)

Gen3 Endpoint Hint value for each Lane (Enter to expand)

Lane 0          [2]
Lane 1          [2]
Lane 2          [2]
Lane 3          [2]
Lane 4          [2]
Lane 5          [2]
Lane 6          [2]
Lane 7          [2]
Lane 8          [2]
Lane 9          [2]
Lane 10         [2]
```

```
Lane 11         [2]
Lane 12         [2]
Lane 13         [2]
Lane 14         [2]
Lane 15         [2]

(press ESC)

Gen3 RxCTLE Control (Enter to expand)

Bundle0                 [0]
Bundle1                 [0]
Bundle2                 [0]
Bundle3                 [0]
Bundle4                 [0]
Bundle5                 [0]
Bundle6                 [0]
Bundle7                 [0]
PEG10 RxCTLE Override   <Disabled>
PEG11 RxCTLE Override   <Disabled>
PEG12 RxCTLE Override   <Disabled>
DMI RxCTLE Override     <Disabled>

(press ESC)

Gen3 Adaptive Software Equalization
  Always Attempt SW EQ          <Disabled>
  Number of Presets to test     <Auto>
  Allow PERST# GPIO Usage       <Enabled>
  SW EQ Enable VOC              <Auto>
  Jitter Dwell Time             [3000]
  Jitter Error Target           [2]
  VOC Dwell Time                [10000]
  VOC Error Target              [2]
Generate BDAT PEG Margin Data   <Disabled>
PCIe Rx CEM Test Mode           <Disabled>
PCIe Spread Spectrum Clocking   <Enabled>

(press ESC)

Display setup menu (Enter to expand)

Display Configuration

(press ESC)

Stop Grant Configuration        <Auto>
VT-d                            <Enabled>
CHAP Device (B0:D7:F0)          <Disabled>
Thermal Device (B0:D4:F0)       <Disabled>
GNA Device (B0:D8:F0)           <Enabled>
CRID Support                    <Disabled>
Above 4GB MMIO BIOS assignment  <Disabled>
X2APIC Opt Out                  <Disabled>
IPU Device (B0:D5:F0)           <Disabled>

(press ESC)

PCH-IO Configuration (Enter to expand)

PCI Express Configuration (Enter to expand)

PCI Express Clock Gating        <Enabled>
DMI Link ASPM Control           <Auto>
PCIE Port assigned to LAN       Disabled
Port8xh Decode                  <Disabled>
Peer Memory Write Enable        <Disabled>
Compliance Test Mode            <Disabled>
PCIe-USB Glitch W/A             <Disabled>
PCIe function swap              <Enabled>
PCI Express Gen3 Eq Lanes (Enter to expand)

PCIE1  Cm       [6]
PCIE1  Cp       [2]
PCIE2  Cm       [6]
PCIE2  Cp       [2]
PCIE3  Cm       [6]
PCIE3  Cp       [2]
PCIE4  Cm       [6]
PCIE4  Cp       [2]
PCIE5  Cm       [6]
PCIE5  Cp       [2]
```

```
PCIE6  Cm       [6]
PCIE6  Cp       [2]
PCIE7  Cm       [6]
PCIE7  Cp       [2]
PCIE8  Cm       [6]
PCIE8  Cp       [2]
PCIE9  Cm       [6]
PCIE9  Cp       [2]
PCIE10 Cm       [6]
PCIE10 Cp       [2]
PCIE11 Cm       [6]
PCIE11 Cp       [2]
PCIE12 Cm       [6]
PCIE12 Cp       [2]
PCIE13 Cm       [6]
PCIE13 Cp       [2]
PCIE14 Cm       [6]
PCIE14 Cp       [2]
PCIE15 Cm       [6]
PCIE15 Cp       [2]
PCIE16 Cm       [6]
PCIE16 Cp       [2]
PCIE17 Cm       [6]
PCIE17 Cp       [2]
PCIE18 Cm       [6]
PCIE18 Cp       [2]
PCIE19 Cm       [6]
PCIE19 Cp       [2]
PCIE20 Cm       [6]
PCIE20 Cp       [2]
PCIE21 Cm       [6]
PCIE21 Cp       [2]
PCIE22 Cm       [6]
PCIE22 Cp       [2]
PCIE23 Cm       [6]
PCIE23 Cp       [2]
PCIE24 Cm       [6]
PCIE24 Cp       [2]

Override SW EQ settings <Disabled>

(press ESC)

IMR Configuration (Press Enter to exand)

PCIe IMR                <Disabled>

(press ESC)

PCI Express Root Port 1 (Enter to expand)

PCI Express Root Port 1         <Enabled>
Disable Gen2 PII Shutdown and L1<Disabled>
Controller Power gating
  Topology                      <Board specific>
Connection Type                 <Slot>
ASPM 0                          <Auto>
L1 Substrates                   <L1.1 & L1.2>
Gen3 Eq Phase3 Method           <Hardware>
UPTP                            [5]
DPTP                            [7]
ACS                             <Enabled>
PTM                             <Enabled>
DPC                             <Enabled>
EDPC                            <Enabled>
  URR                           <Disabled>
  FER                           <Disabled>
  NFER                          <Disabled>
  CER                           <Disabled>
  CTO                           <Disabled>
  SEFE                          <Disabled>
  SENFE                         <Disabled>
  SECE                          <Disabled>
  PME SCI                       <Enabled>
  Hot Plug                      <Disabled>
  Advanced Error Reporting      <Enabled>
PCIe Speed                      <Auto>
  Transmitter Half Swing        <Disabled>
Detect Timeout                  [0]
Extra Bus Reserved              [0]
Reserved Memory                 [10]
Reserved I/O                    [4]
```

```
PCH PCIe LTR Configuration
LTR                             <Enabled>
  Snoop Latency Override        <Auto>
  Non Snoop Latency Override    <Auto>
  Force LTR Override            <Disabled>

LTR Lock                        <Disabled>

(press ESC)

PCI Express Root Port 2         Shadowed by x2/x4 port
PCI Express Root Port 3         Shadowed by x2/x4 port
PCI Express Root Port 4         Shadowed by x2/x4 port
PCI Express Root Port 5 (Enter to expand)

PCI Express Root Port 5         <Enabled>
Disable Gen2 PII Shutdown and L1<Disabled>
Controller Power gating
  Topology                      <Board specific>
Connection Type                 <Slot>
ASPM 4                          <Auto>
L1 Substrates                   <L1.1 & L1.2>
Gen3 Eq Phase3 Method           <Hardware>
UPTP                            [5]
DPTP                            [7]
ACS                             <Enabled>
PTM                             <Enabled>
DPC                             <Enabled>
EDPC                            <Enabled>
  URR                           <Disabled>
  FER                           <Disabled>
  NFER                          <Disabled>
  CER                           <Disabled>
  CTO                           <Disabled>
  SEFE                          <Disabled>
  SENFE                         <Disabled>
  SECE                          <Disabled>
  PME SCI                       <Enabled>
  Hot Plug                      <Disabled>
  Advanced Error Reporting      <Enabled>
PCIe Speed                      <Auto>
  Transmitter Half Swing        <Disabled>
Detect Timeout                  [0]
Extra Bus Reserved              [0]
Reserved Memory                 [10]
Reserved I/O                    [4]

PCH PCIe LTR Configuration
LTR                             <Enabled>
  Snoop Latency Override        <Auto>
  Non Snoop Latency Override    <Auto>
  Force LTR Override            <Disabled>

LTR Lock                        <Disabled>

(press ESC)

PCI Express Root Port 6 (Enter to expand)

PCI Express Root Port 6         <Enabled>
Disable Gen2 PII Shutdown and L1<Disabled>
Controller Power gating
  Topology                      <Board specific>
Connection Type                 <Slot>
ASPM 5                          <Auto>
L1 Substrates                   <L1.1 & L1.2>
Gen3 Eq Phase3 Method           <Hardware>
UPTP                            [5]
DPTP                            [7]
ACS                             <Enabled>
PTM                             <Enabled>
DPC                             <Enabled>
EDPC                            <Enabled>
  URR                           <Disabled>
  FER                           <Disabled>
  NFER                          <Disabled>
  CER                           <Disabled>
  CTO                           <Disabled>
  SEFE                          <Disabled>
  SENFE                         <Disabled>
  SECE                          <Disabled>
```

```
  PME SCI                         <Enabled>
  Hot Plug                        <Disabled>
  Advanced Error Reporting        <Enabled>
PCIe Speed                        <Auto>
  Transmitter Half Swing          <Disabled>
Detect Timeout                    [0]
Extra Bus Reserved                [0]
Reserved Memory                   [10]
Reserved I/O                      [4]

PCH PCIe LTR Configuration
LTR                               <Enabled>
  Snoop Latency Override          <Auto>
  Non Snoop Latency Override      <Auto>
  Force LTR Override              <Disabled>

LTR Lock                          <Disabled>

(press ESC)

PCI Express Root Port 7 (Enter to expand)

PCI Express Root Port 7           <Enabled>
Disable Gen2 PII Shutdown and L1<Disabled>
Controller Power gating
  Topology                        <Board specific>
Connection Type                   <Slot>
ASPM 6                            <Auto>
L1 Substrates                     <L1.1 & L1.2>
Gen3 Eq Phase3 Method             <Hardware>
UPTP                              [5]
DPTP                              [7]
ACS                               <Enabled>
PTM                               <Enabled>
DPC                               <Enabled>
EDPC                              <Enabled>
  URR                             <Disabled>
  FER                             <Disabled>
  NFER                            <Disabled>
  CER                             <Disabled>
  CTO                             <Disabled>
  SEFE                            <Disabled>
  SENFE                           <Disabled>
  SECE                            <Disabled>
  PME SCI                         <Enabled>
  Hot Plug                        <Disabled>
  Advanced Error Reporting        <Enabled>
PCIe Speed                        <Auto>
  Transmitter Half Swing          <Disabled>
Detect Timeout                    [0]
Extra Bus Reserved                [0]
Reserved Memory                   [10]
Reserved I/O                      [4]

PCH PCIe LTR Configuration
LTR                               <Enabled>
  Snoop Latency Override          <Auto>
  Non Snoop Latency Override      <Auto>
  Force LTR Override              <Disabled>

LTR Lock                          <Disabled>

(press ESC)

PCI Express Root Port 8 (Enter to expand)

PCI Express Root Port 8           <Enabled>
Disable Gen2 PII Shutdown and L1<Disabled>
Controller Power gating
  Topology                        <Board specific>
Connection Type                   <Slot>
ASPM 7                            <Auto>
L1 Substrates                     <L1.1 & L1.2>
Gen3 Eq Phase3 Method             <Hardware>
UPTP                              [5]
DPTP                              [7]
ACS                               <Enabled>
PTM                               <Enabled>
DPC                               <Enabled>
EDPC                              <Enabled>
  URR                             <Disabled>
  FER                             <Disabled>
```

```
  NFER                          <Disabled>
  CER                           <Disabled>
  CTO                           <Disabled>
  SEFE                          <Disabled>
  SENFE                         <Disabled>
  SECE                          <Disabled>
  PME SCI                       <Enabled>
  Hot Plug                      <Disabled>
  Advanced Error Reporting      <Enabled>
PCIe Speed                      <Auto>
  Transmitter Half Swing        <Disabled>
Detect Timeout                  [0]
Extra Bus Reserved              [0]
Reserved Memory                 [10]
Reserved I/O                    [4]

PCH PCIe LTR Configuration
LTR                             <Enabled>
  Snoop Latency Override        <Auto>
  Non Snoop Latency Override    <Auto>
  Force LTR Override            <Disabled>

LTR Lock                        <Disabled>

(press ESC)

PCI Express Root Port 9 (Enter to expand)

PCI Express Root Port 9         <Enabled>
Disable Gen2 PII Shutdown and L1<Disabled>
Controller Power gating
  Topology                      <Board specific>
Connection Type                 <Slot>
ASPM 8                          <Auto>
L1 Substrates                   <L1.1 & L1.2>
Gen3 Eq Phase3 Method           <Hardware>
UPTP                            [5]
DPTP                            [7]
ACS                             <Enabled>
PTM                             <Enabled>
DPC                             <Enabled>
EDPC                            <Enabled>
  URR                           <Disabled>
  FER                           <Disabled>
  NFER                          <Disabled>
  CER                           <Disabled>
  CTO                           <Disabled>
  SEFE                          <Disabled>
  SENFE                         <Disabled>
  SECE                          <Disabled>
  PME SCI                       <Enabled>
  Hot Plug                      <Disabled>
  Advanced Error Reporting      <Enabled>
PCIe Speed                      <Auto>
  Transmitter Half Swing        <Disabled>
Detect Timeout                  [0]
Extra Bus Reserved              [0]
Reserved Memory                 [10]
Reserved I/O                    [4]

PCH PCIe LTR Configuration
LTR                             <Enabled>
  Snoop Latency Override        <Auto>
  Non Snoop Latency Override    <Auto>
  Force LTR Override            <Disabled>

LTR Lock                        <Disabled>

(press ESC)

PCI Express Root Port 10        Shadowed by x2/x4 port
PCI Express Root Port 11        Shadowed by x2/x4 port
PCI Express Root Port 12        Shadowed by x2/x4 port
PCI Express Root Port 13        Lane configured as USB/SATA
PCI Express Root Port 14        Lane configured as USB/SATA
PCI Express Root Port 15        Lane configured as USB/SATA
PCI Express Root Port 16        Lane configured as USB/SATA
PCI Express Root Port 17        Lane configured as USB/SATA
PCI Express Root Port 18        Shadowed by x2/x4 port
PCI Express Root Port 19        Shadowed by x2/x4 port
PCI Express Root Port 20        Shadowed by x2/x4 port
PCI Express Root Port 21 (Enter to expand)
```

```
PCI Express Root Port 21        <Enabled>
Disable Gen2 PII Shutdown and L1<Disabled>
Controller Power gating
  Topology                      <Board specific>
Connection Type                 <Slot>
ASPM 20                         <Auto>
L1 Substrates                   <L1.1 & L1.2>
Gen3 Eq Phase3 Method           <Hardware>
UPTP                            [5]
DPTP                            [7]
ACS                             <Enabled>
PTM                             <Enabled>
DPC                             <Enabled>
EDPC                            <Enabled>
  URR                           <Disabled>
  FER                           <Disabled>
  NFER                          <Disabled>
  CER                           <Disabled>
  CTO                           <Disabled>
  SEFE                          <Disabled>
  SENFE                         <Disabled>
  SECE                          <Disabled>
  PME SCI                       <Enabled>
  Hot Plug                      <Disabled>
  Advanced Error Reporting      <Enabled>
PCIe Speed                      <Auto>
  Transmitter Half Swing        <Disabled>
Detect Timeout                  [0]
Extra Bus Reserved              [0]
Reserved Memory                 [10]
Reserved I/O                    [4]

PCH PCIe LTR Configuration
LTR                             <Enabled>
  Snoop Latency Override        <Auto>
  Non Snoop Latency Override    <Auto>
  Force LTR Override            <Disabled>

LTR Lock                        <Disabled>

(press ESC)

PCI Express Root Port 22 (Enter to expand)

PCI Express Root Port 22        <Enabled>
Disable Gen2 PII Shutdown and L1<Disabled>
Controller Power gating
  Topology                      <Board specific>
Connection Type                 <Slot>
ASPM 21                         <Auto>
L1 Substrates                   <L1.1 & L1.2>
Gen3 Eq Phase3 Method           <Hardware>
UPTP                            [5]
DPTP                            [7]
ACS                             <Enabled>
PTM                             <Enabled>
DPC                             <Enabled>
EDPC                            <Enabled>
  URR                           <Disabled>
  FER                           <Disabled>
  NFER                          <Disabled>
  CER                           <Disabled>
  CTO                           <Disabled>
  SEFE                          <Disabled>
  SENFE                         <Disabled>
  SECE                          <Disabled>
  PME SCI                       <Enabled>
  Hot Plug                      <Disabled>
  Advanced Error Reporting      <Enabled>
PCIe Speed                      <Auto>
  Transmitter Half Swing        <Disabled>
Detect Timeout                  [0]
Extra Bus Reserved              [0]
Reserved Memory                 [10]
Reserved I/O                    [4]

PCH PCIe LTR Configuration
LTR                             <Enabled>
  Snoop Latency Override        <Auto>
  Non Snoop Latency Override    <Auto>
  Force LTR Override            <Disabled>
```

```
LTR Lock                        <Disabled>

(press ESC)

PCI Express Root Port 23 (Enter to expand)

PCI Express Root Port 23        <Enabled>
Disable Gen2 PII Shutdown and L1<Disabled>
Controller Power gating
  Topology                      <Board specific>
Connection Type                 <Slot>
ASPM 22                         <Auto>
L1 Substrates                   <L1.1 & L1.2>
Gen3 Eq Phase3 Method           <Hardware>
UPTP                            [5]
DPTP                            [7]
ACS                             <Enabled>
PTM                             <Enabled>
DPC                             <Enabled>
EDPC                            <Enabled>
  URR                           <Disabled>
  FER                           <Disabled>
  NFER                          <Disabled>
  CER                           <Disabled>
  CTO                           <Disabled>
  SEFE                          <Disabled>
  SENFE                         <Disabled>
  SECE                          <Disabled>
  PME SCI                       <Enabled>
  Hot Plug                      <Disabled>
  Advanced Error Reporting      <Enabled>
PCIe Speed                      <Auto>
  Transmitter Half Swing        <Disabled>
Detect Timeout                  [0]
Extra Bus Reserved              [0]
Reserved Memory                 [10]
Reserved I/O                    [4]

PCH PCIe LTR Configuration
LTR                             <Enabled>
  Snoop Latency Override        <Auto>
  Non Snoop Latency Override    <Auto>
  Force LTR Override            <Disabled>

LTR Lock                        <Disabled>

(press ESC)

PCI Express Root Port 24 (Enter to expand)

PCI Express Root Port 24        <Enabled>
Disable Gen2 PII Shutdown and L1<Disabled>
Controller Power gating
  Topology                      <Board specific>
Connection Type                 <Slot>
ASPM 23                         <Auto>
L1 Substrates                   <L1.1 & L1.2>
Gen3 Eq Phase3 Method           <Hardware>
UPTP                            [5]
DPTP                            [7]
ACS                             <Enabled>
PTM                             <Enabled>
DPC                             <Enabled>
EDPC                            <Enabled>
  URR                           <Disabled>
  FER                           <Disabled>
  NFER                          <Disabled>
  CER                           <Disabled>
  CTO                           <Disabled>
  SEFE                          <Disabled>
  SENFE                         <Disabled>
  SECE                          <Disabled>
  PME SCI                       <Enabled>
  Hot Plug                      <Disabled>
  Advanced Error Reporting      <Enabled>
PCIe Speed                      <Auto>
  Transmitter Half Swing        <Disabled>
Detect Timeout                  [0]
Extra Bus Reserved              [0]
Reserved Memory                 [10]
Reserved I/O                    [4]
```

```
PCH PCIe LTR Configuration
LTR                           <Enabled>
  Snoop Latency Override      <Auto>
  Non Snoop Latency Override  <Auto>
  Force LTR Override          <Disabled>

LTR Lock                      <Disabled>

(press ESC)

PCIE clocks (Press Enter to expand)

Clock0 assignment       <Platform-POR>
ClkReq for Clock0       <Platform-POR>
Clock1 assignment       <Platform-POR>
ClkReq for Clock1       <Platform-POR>
Clock2 assignment       <Platform-POR>
ClkReq for Clock2       <Platform-POR>
Clock3 assignment       <Platform-POR>
ClkReq for Clock3       <Platform-POR>
Clock4 assignment       <Platform-POR>
ClkReq for Clock4       <Platform-POR>
Clock5 assignment       <Platform-POR>
ClkReq for Clock5       <Platform-POR>
Clock6 assignment       <Platform-POR>
ClkReq for Clock6       <Platform-POR>
Clock7 assignment       <Platform-POR>
ClkReq for Clock7       <Platform-POR>
Clock8 assignment       <Platform-POR>
ClkReq for Clock8       <Platform-POR>
Clock9 assignment       <Platform-POR>
ClkReq for Clock9       <Platform-POR>
Clock10 assignment      <Platform-POR>
ClkReq for Clock10      <Platform-POR>
Clock11 assignment      <Platform-POR>
ClkReq for Clock11      <Platform-POR>
Clock12 assignment      <Platform-POR>
ClkReq for Clock12      <Platform-POR>
Clock13 assignment      <Platform-POR>
ClkReq for Clock13      <Platform-POR>
Clock14 assignment      <Platform-POR>
ClkReq for Clock14      <Platform-POR>
Clock15 assignment      <Platform-POR>
ClkReq for Clock15      <Platform-POR>

(press ESC twice)

SATA and RST Configuration (Enter to expand)

SATA Controller(s)              <Enabled>
SATA Mode Selection             <AHCI>
SATA Test Mode                  <Disabled>
Software Feature Mask Configuration (Enter to expand)

HDD Unlock                      <Enabled>
LED Locate                      <Enabled>

(press ESC)

Aggressive LPM Support          <Enabled>

Serial ATA Port 0               ST2000NM000A-2 (2000.3GB)
  Software Preserve             SUPPORTED
  Port 0                        <Enabled>
  Hot Plug                      <Disabled>
  Configured as eSATA           Hot Plug supported
  External                      <Disabled>
  Spin Up Device                <Disabled>
  SATA Device Type              <Hard Disk Drive>
  Topology                      <Unknown>
  SATA Port 0 DevSlp            <Disabled>
  DITO Configuration            <Disabled>
  DITO Value                    [625]
  DM Value                      [15]
Serial ATA Port 1               Empty
  Software Preserve             Unknown
  Port 1                        <Enabled>
  Hot Plug                      <Disabled>
  Configured as eSATA           Hot Plug supported
  External                      <Disabled>
  Spin Up Device                <Disabled>
```

```
  SATA Device Type              <Hard Disk Drive>
  Topology                      <Unknown>
  SATA Port 1 DevSlp            <Disabled>
  DITO Configuration            <Disabled>
  DITO Value                    [625]
  DM Value                      [15]
Serial ATA Port 2               Empty
  Software Preserve             Unknown
  Port 2                        <Enabled>
  Hot Plug                      <Disabled>
  Configured as eSATA           Hot Plug supported
  External                      <Disabled>
  Spin Up Device                <Disabled>
  SATA Device Type              <Hard Disk Drive>
  Topology                      <Unknown>
  SATA Port 2 DevSlp            <Disabled>
  DITO Configuration            <Disabled>
  DITO Value                    [625]
  DM Value                      [15]
Serial ATA Port 3               Empty
  Software Preserve             Unknown
  Port 3                        <Enabled>
  Hot Plug                      <Disabled>
  Configured as eSATA           Hot Plug supported
  External                      <Disabled>
  Spin Up Device                <Disabled>
  SATA Device Type              <Hard Disk Drive>
  Topology                      <Unknown>
  SATA Port 3 DevSlp            <Disabled>
  DITO Configuration            <Disabled>
  DITO Value                    [625]
  DM Value                      [15]
Serial ATA Port 4               Empty
  Software Preserve             Unknown
  Port 4                        <Enabled>
  Hot Plug                      <Disabled>
  Configured as eSATA           Hot Plug supported
  External                      <Disabled>
  Spin Up Device                <Disabled>
  SATA Device Type              <Hard Disk Drive>
  Topology                      <Unknown>
  SATA Port 4 DevSlp            <Disabled>
  DITO Configuration            <Disabled>
  DITO Value                    [625]
  DM Value                      [15]
Serial ATA Port 5               Empty
  Software Preserve             Unknown
  Port 5                        <Enabled>
  Hot Plug                      <Disabled>
  Configured as eSATA           Hot Plug supported
  External                      <Disabled>
  Spin Up Device                <Disabled>
  SATA Device Type              <Hard Disk Drive>
  Topology                      <Unknown>
  SATA Port 5 DevSlp            <Disabled>
  DITO Configuration            <Disabled>
  DITO Value                    [625]
  DM Value                      [15]
Serial ATA Port 6               Empty
  Software Preserve             Unknown
  Port 6                        <Enabled>
  Hot Plug                      <Disabled>
  Configured as eSATA           Hot Plug supported
  External                      <Disabled>
  Spin Up Device                <Disabled>
  SATA Device Type              <Hard Disk Drive>
  Topology                      <Unknown>
  SATA Port 6 DevSlp            <Disabled>
  DITO Configuration            <Disabled>
  DITO Value                    [625]
  DM Value                      [15]
Serial ATA Port 7               Empty
  Software Preserve             Unknown
  Port 7                        <Enabled>
  Hot Plug                      <Disabled>
  Configured as eSATA           Hot Plug supported
  External                      <Disabled>
  Spin Up Device                <Disabled>
  SATA Device Type              <Hard Disk Drive>
  Topology                      <Unknown>
  SATA Port 7 DevSlp            <Disabled>
  DITO Configuration            <Disabled>
```

```
  DITO Value                    [625]
  DM Value                      [15]

(press ESC)

USB Configuration (Enter to expand)

XHCI Compliance Mode            <Disabled>
xDCI Support                    <Disabled>
USB2 PHY Sus Well Power Gating  <Enabled>

USB Overcurrent                 <Enabled>
USB Overcurrent Lock            <Enabled>

USB Port Disable Override       <Select Per-Pin>

USB SS Physical Connector #0    <Enabled>
USB SS Physical Connector #1    <Enabled>
USB SS Physical Connector #2    <Enabled>
USB SS Physical Connector #3    <Enabled>
USB SS Physical Connector #4    <Enabled>
USB SS Physical Connector #5    <Enabled>
USB SS Physical Connector #6    <Enabled>
USB SS Physical Connector #7    <Enabled>
USB SS Physical Connector #8    <Enabled>
USB SS Physical Connector #9    <Enabled>
USB HS Physical Connector #0    <Enabled>
USB HS Physical Connector #1    <Enabled>
USB HS Physical Connector #2    <Enabled>
USB HS Physical Connector #3    <Enabled>
USB HS Physical Connector #4    <Enabled>
USB HS Physical Connector #5    <Enabled>
USB HS Physical Connector #6    <Enabled>
USB HS Physical Connector #7    <Enabled>
USB HS Physical Connector #8    <Enabled>
USB HS Physical Connector #9    <Enabled>
USB HS Physical Connector #10   <Enabled>
USB HS Physical Connector #11   <Enabled>
USB HS Physical Connector #12   <Enabled>
USB HS Physical Connector #13   <Enabled>

(press ESC)

Security Configuration (Enter to expand)

RTC Lock                        <Enabled>
BIOS Lock                       <Enabled>
Force unlock on all GPIO pads   <Disabled>

(press ESC)

SerialIo Configuration (Enter to expand)

I2C0 Controller                 <Disabled>
I2C1 Controller                 <Disabled>
I2C2 Controller                 <Disabled>
I2C3 Controller                 <Disabled>
SPI0 Controller                 <Disabled>
SPI1 Controller                 <Disabled>
SPI2 Controller                 <Disabled>
UART0 Controller                <Disabled>
UART1 Controller                <Disabled>
UART2 Controller                <Disabled>
GPIO IRQ Route                  <IRQ14>

WITT/MITT Test Device           <Disabled>
UART Test Device                <Disabled>
Additional Serial IO devices    [ ]
SerialIO timing parameters      [ ]

(press ESC)

SCS Configuration (Enter to expand)

SDCard 3.0 Controller           <Disabled>
SDCard Write Protect Pin Enable <Enabled>

(press ESC)

ISH Configuration (Enter to expand)

ISH Controller                  <Disabled>
```

```
(press ESC)

Pch Thermal Throttling Control (Enter to expand)

Thermal Throttling Level        <Suggested Setting>
DMI Thermal Setting             <Suggested Setting>
SATA Thermal Setting            <Suggested Setting>

(press ESC)

EFI Network                     <Disabled>
PCH LAN Controller              No GbE Region
DeepSx Power Policies           <Disabled>
Wake on WLAN and BT Enable      <Disabled>
Disable DSX ACPRESENT PullDown  <Disabled>
PXE ROM                         <Disabled>
CLKRUN# logic                   <Enabled>
Serial IRQ Mode                 <Quiet>
State After AC Power Loss       <Power On>

{The SE and HMC will use "Power On", the TKE will use "Last State".  This
determines what the machine will do when input power is restored.}

Port 80h Redirection            <LPC Bus>
Enhance Port 80h LPC Decoding   <Enabled>
Compatible Revision ID          <Disabled>
Legacy IO Low Latency           <Disabled>
PCH Cross Throttling            <Enabled>
PCH Energy Reporting            <Enabled>
Enable TCO Timer                <Disabled>
Pcie PII SSC                    <Auto>
IOAPIC 24-119 Entries           <Enabled>
Flash Protection Range Registers (FPRR) <Enabled>
SPD Write Disable               <True>
LGMR                            <Disabled>
Teton Glacier Mode              <Disabled>
RST Driver Select               <Auto>

(press ESC)

Server ME Configuration (Enter to expand)

Operational Firmware Version    10:5.1.4.204
Backup Firmware Version         N/A
Recovery Firmware Version       10:5.1.4.204
ME Firmware Features            (SiEn) (PECIProxy) (ICC)
                                (MeStorageServices) (BootGuard)
                                (PmBusProxy) (HSIO) (PCHDebug)
                                (PCHThermalSensorInit) (DeepSx)
                                (DirectMeUpdate) (MctpInfrastructure)
                                (TelemetryHub)
ME Firmware Status #1           0x00000245
ME Firmware Status #2           0x89112027
 Current State                  Operational
 Error Code                     No Error
 Recovery Cause                 N/A
Altitude                        [0x8000]
MCTP Bus Owner                  [0x0]

Power Supply Units Status
  PSU #1                        N/A
  PSU #2                        N/A
  PSU #3                        N/A
  PSU #4                        N/A

Power Supply Units Configuration
  PSU #1                        [0xB0]
  PSU #2                        [0xB2]
  PSU #3                        [0x0]
  PSU #4                        [0x0]

(press ESC)

Server ME Debug Configuration (Enter to expand)

Server ME General Configuration (Enter to expand)

ME Init Complete Timeout        [10000]
DRAM Init Done Enable           <Enabled>
  DRAM Initialization Status    <Auto - true status>
HMRFP0_LOCK Message             <Enabled>
```

```
HMRFP0_ENABLE Message           <Enabled>
END_OF_POST Message             <Enabled>
HECI-1 Enable                   <Enabled>
HECI-2 Enable                   <Enabled>
HECI-3 Enable                   <Auto>

(press ESC)

NM Configuration (Enter to expand)

Boot Mode Override              [ ]
  Boot Mode                     <Performance Optimized>
Cores Disable Override          [ ]
  Cores To Disable              [0x0]
Power Measurement Override      <Disabled>
Hardware Change Override        <no>

(press ESC twice)

Thermal Configuration (Enter to expand)

CPU Thermal Configuration (Enter to expand)

DTS SMM                         <Disabled>
Tcc Activation Offset           [0]
Tcc Offset Time Window          <Disabled>
Tcc Offset Clamp Enable         <Disabled>
Tcc Offset Lock Enable          <Disabled>
Bi-directional PROCHOT#         <Enabled>
Disable PROCHOT# Output         <Enabled>
Disable VR Thermal Alert        <Disabled>
PROCHOT Response                <Disabled>
PROCHOT Lock                    <Disabled>
ACPI T-States                   [ ]
PECI Reset                      <Disabled>
PECI C10 Reset                  <Disabled>

(press ESC)

Platform Thermal Configuration (Enter to expand)

Automatic Thermal Reporting     <Disabled>
Critical Trip Point             <119C (POR)>
Active Trip Point 0             <71 C>
Active Trip Point 0 Fan Speed   [100]
Active Trip Point 1             <55 C>
Active Trip Point 1 Fan Speed   [75]
Passive Trip Point              <95 C>
  Passive TC1 Value             [1]
  Passive TC2 Value             [5]
  Passive TSP Value             [10]

Active Trip Points              <Enabled>
Passive Trip Points             <Disabled>
Critical Trip Points            <Enabled>

PCH Temp Read                   [X]
CPU Energy Read                 [X]
CPU Temp Read                   [X]
Alert Enable Lock               <Disabled>
CPU Temp                        [72]
CPU Fan Speed                   [65]

(press ESC)

DPTF Configuration (Enter to expand)

(press ESC)

Hardware Health Monitor (Enter to expand)

Thermal Sensor 1 Temp           <0.0 C>
Thermal Sensor 2 Temp           <0.0 C>
Thermal Sensor 3 Temp           <0.0 C>
Thermal Sensor 4 Temp           <0.1 C>
Thermal Sensor 5 Temp           <0.0 C>
CPU Fan Speed                   <0 rpm>
PCH DTS Temp from PCH           <-6 C>

(press ESC twice)

ACPI D3Cold settings (Enter to expand)
```

```
ACPI D3Cold Support                     <Enabled>

VR Ramp up delay                        [16]
PCIE Slot 5 Device Power-on delay in ms [100]
Audio Delay                             [200]
SensorHub                               [68]
TouchPad                                [68]
TouchPanel                              [68]
P-state Capping                         <Disabled>
USB Port 1                              <Disabled>
USB Port 2                              <Disabled>
ZPODD                                   <Disabled>
WWAN                                    <D0/L1.2>
Sata Port 0                             <Disabled>
Sata Port 1                             <Disabled>
Sata Port 2                             <Disabled>
Sata Port 3                             <Disabled>
Sata Port 4                             <Disabled>
Sata Port 5                             <Disabled>
PCIe Remapped CR1                       <Disabled>
PCIe Remapped CR2                       <Disabled>
PCIe Remapped CR3                       <Disabled>

(press ESC)

SIO AST2500/2520 (Enter to expand)

Serial Port A                   <AUTO>

(press ESC)

Trenton Systems (Enter to expand)

BIOS Info:
Platform                        BIOS_MBC8290
Version                         Main.047.005
State                           release

SMBIOS OEM Strings:
Trenton BIOS version: BIOS_MBC8290.Main.047.005.release
Insyde  BIOS version: CoffeeLake.05.23.04.0047
Trenton Notes: Mainline

SPI OEM Contents:
SPI                             SYSFLASH_MBC8290.Main.045.001.release
BIOS                            BIOS_MBC8290.Main.045.001.release
ME                              sps_e3_05.01.04.204.0_b0_kn3_r

(press ESC)

Ipmi Sensor Control (Enter to expand)

Per-Sensor Enables
FAN1 Enable             <Disabled>      {Enabled for TKE}
FAN2 Enable             <Enabled>
FAN3 Enable             <Enabled>
FAN4 Enable             <Enabled>
FAN5 Enable             <Disabled>      {Enabled for TKE}

(press ESC)

Console Redirection (Enter to expand)

Console Serial Redirect         <Enabled>
Terminal Type                   <VT_100>
Baud Rate                       <115200>
Data Bits                       <8 Bits>
Parity                          <None>
Stop Bits                       <1 Bit>
Flow Control                    <None>
Information Wait Time           < 5 Second>
C.R. After Legacy Boot          <Yes>
Text Mode Resolution            <Limit 128x40>
Auto Refresh                    <Enabled>
Auto adjust Terminal resolution <Enabled>

COM_A (Enter to expand)

PortEnable                      <Enabled>
UseGlobalSetting                <Enabled>
```

```
(press ESC)

Enable VT-100, 115200, N81


ISA_UART (COMB) (Enter to expand)

PortEnable                      <Disabled>
UseGlobalSetting                <Enabled>

(press ESC)

Disable VT-100, 115200, N81

ISA_UART (COMC) (Enter to expand)

PortEnable                      <Disabled>
UseGlobalSetting                <Enabled>

(press ESC)

Disable VT-100, 115200, N81

(press ESC)

H2O IPMI Configuration (Enter to expand)

IPMI Support                    <Enabled>

BMC Warm Up Time                [45]
System Interface Type           KCS
IPMI Base Address for OS        CA2/CA3
IPMI Base Address for POST      CA2/CA3
IPMI Base Address for SMM       CA2/CA3

BMC Status                      OK
BMC Firmware Version            3.53
IPMI Specification Version      2.0
BMC MAC Address                 00:10:6F:23:73:B4       {varies}

BMC Warmup Time                 [45]
ACPI SPMI Table                 <Enabled>
Boot Option Support             <Enabled>
Set BIOS version to BMC         <Disabled>

BMC Configuration (Enter to expand)

Watchdog Timer Support          <Enabled>
Who halts BMC Watchdog after BIOS Boots?                <BIOS>
Watchdog Timer Timeout          [4]
Watchdog Timer Action           <Hard Reset>

Power Cycle Time Support        <Disabled>
Power Cycle Time                [10]

Power Button                    <Enabled>
Reset Button                    <Enabled>
NMI Button                      <Enabled>

LAN Channel Number              [1]
IPv4 Source                     <IPV4>          {varies}
IPv4 IP Address                 9.6.24.226      {varies}
IPv4 Subnet Mask                255.255.255.0   {varies}
IPv4 Gateway Address            0.0.0.0 {varies}

IPv6 Mode                       <Disabled>
IPv6 Prefix Length              [64]
IPv6 IP Address                 0:0:0:0:0:0:0:0
IPv6 Gateway Address            0:0:0:0:0:0:0:0

(press ESC)

SDR List (Enter to expand)

SDR List Support                <Disabled>

(press ESC)

Execute H2O IPMI Utility

LOAD IPMI OPTIMAL DEFAULT
```

```
(press ESC)

H2oUve Configuration (Enter to expand)

H2OUVE Support                  <Enabled>

(press ESC)

[Security Tab]

Current TPM Device                      <TPM 2.0 (DTPM)>
TPM State                               All Hierarchies Enabled, Owned  {varies}
TPM Active PCR Hash Algorithm           SHA256
TPM Hardware Supported Hash Algorithm   SHA1, SHA256
BIOS Supported Hash Algorithm           SHA1, SHA256, SM3_256
TrEE Protocol Version                   <1.1>
TPM Availability                        <Available>
TPM Operation                           <No Operation>
Clear TPM                               [ ]

Supervisor Password                     Not Installed
User Password                           Not Installed

Set Supervisor Password
Set User Password
Set All Hdd Password
Set All Master Hdd Password

Storage Password Setup Page (Enter to expand)

ST2000NM000A-2J2100 (Enter to expand)

Device Name:            [ST2000NM000A-2J2100]

Security Mode:          No Accessed

Set Storage Password
Set Master Hdd Password

(press ESC twice)

[Power Tab]

Wake on PME             <Enabled>
Wake on Modem Ring      <Disabled>
Auto Wake on S5         <Disabled>
S5 Long Run Test        <Disabled>

[Boot Tab]

Boot Type                       <UEFI Boot Type>
Quick Boot                      <Enabled>
Quiet Boot                      <Enabled>
Network Stack                   <Enabled>
PXE Boot capability             <UEFI:IPv4>
Power Up In Standby Support     <Disabled>
Add Boot Options                <Auto>
ACPI Selection                  <Acpi5.0>
USB Boot                        <Enabled>
EFI Device First                <Enabled>
UEFI OS Fast Boot               <Disabled>
Timeout                         [10]
Automatic Failover              <Enabled>

EFI (Enter to expand)

BOOT_EMBEDDED (ST2000NM000A-2J1100)     [X]     {This list will vary}
EFI Hard Drive (ST2000NM000A-2J2100)    [X]
EFI PXE LAN1  for IPv4                  [X]
(00-10-6F-23-73-AC)
EFI PXE LAN2  for IPv4                  [X]
(00-10-6F-23-73-AD)
EFI PXE LAN3  for IPv4                  [X]
(00-10-6F-23-73-AE)
EFI PXE LAN4  for IPv4                  [X]
(00-10-6F-23-73-AF)
EFI PXE LAN5  for IPv4                  [X]
(00-10-6F-23-73-B0)
EFI PXE LAN6  for IPv4                  [X]
(00-10-6F-23-73-B1)
EFI PXE LAN7  for IPv4                  [X]
(00-10-6F-23-73-B2)
```

```
EFI PXE LAN8  for IPv4                  [X]
(00-10-6F-23-73-B3)
Internal EFI Shell                      [X]

(press ESC)

Per-port boot filer (Enter to expand)

Rear Port1 Enable       <Enabled>
Rear Port2 Enable       <Enabled>
Rear Port3 Enable       <Enabled>
Rear Port4 Enable       <Enabled>
Rear Port5 Enable       <Enabled>
Rear Port6 Enable       <Enabled>
Front Port1 Enable      <Enabled>
Front Port2 Enable      <Enabled>

(press ESC)

[Exit Tab]

Exit Saving Changes
Save Change Without Exit
Exit Discarding Changes
Load Optimal Defaults
Load Custom Defaults
Save Custom Defaults
Discard Changes

(end of BIOS Setup values)
```

END OF PROCEDURE

Hardware Management Appliance 2461-VA3 configuration

Use the information in this section if you are directed to verify the configuration for the 2461 Hardware Management Appliance (2461-VA3).

The following is a list of the configuration settings for the Hardware Management Appliance (2461-VA3).

```
InsydeH20 Version    KabyLake.05.12.09.0049
Processor Type        Intel(R) Xeon(R) CPU E3-1275 v6 @ 3.80GHz
System Bus Speed    100 MHz
System Memory Speed    2133 MHz
Cache RAM         1024 KB
Total Memory         65536 MB
Channel A
DIMM 0             16384 MB
DIMM 1             16384 MB
Channel B
DIMM 0             16384 MB
DIMM 1             16384 MB
Platform Configuration
CPUID:             0x506E3 (SKYLAKE DT HALO)
CPU Speed:         3300 MHz
CPU Stepping:         03 (R0/S0/N0 Stepping)
L1 Data Cache:         32 KB
L1 Instruction Cache:    32 KB
L2 Cache:         256 KB
L3 Cache:         8192 KB
Number of Processors:    4 Core(s) / 4 Thread(s)
Microcode Rev:         000000C2
GT Info:         Unknown (0xFF)
SMX/TXT:         Supported
PCH Rev / SKU         31 (D1 Stepping) / SKL PCH-H C236
GOP Ver:         9.0.1069
EC Ver:             N/A
Board ID:         Zumba Beach Server Crb
FAB ID:             0
Intel ME Version / SKU    UnKnow
LAN PHY Revision    Unknown
Language         <English>
System Time         {varies}
System Date         {varies}

(press right arrow)

[Advanced Tab]

Platform Variable Revision    26
ME Setup Variable Revision    2
CPU Setup Variable Revision    11
SA Setup Variable Revision    9
PCH Setup Variable Revision    10
Boot Configuration (Enter to expand)

Numlock            <Off>

(press ESC)

Peripheral Configuration (Enter to expand)

Serial Port A         <Disabled>
Infrared Port         <Disabled>

(press ESC)

SATA Configuration (Enter to expand)

Serial ATA Port 0    [ST2000NM0008-2F3100]
Serial ATA Port 1    [Not Installed]
Serial ATA Port 2    [Not Installed]
Serial ATA Port 3    [Not Installed]
Serial ATA Port 4    [Not Installed]
Serial ATA Port 5    [Not Installed]
Serial ATA Port 6    [Not Installed]
Serial ATA Port 7    [Not Installed]

(press ESC)

Type C Support         <Disabled>
```

```
USB Configuration (Enter to expand)

USB BIOS Support        <Enabled>
Usb Legacy SMI bit Clean    <Disabled>

(press ESC)

Chipset Configuration (Enter to expand)

Setup Warning:
Setting items on this screen to incorrect values
may cause your system to malfunction!

(press ESC)

ACPI Settings (Enter to expand)

ACPI Settings (Enter to expand)

ACPI Version            5.0
Enable ACPI Auto Configuration    [X]

Native PCIE Enable        <Enabled>
Native ASPM            <Auto>
BDAT ACPI Table Support        <Disabled>

Low Power S0 Idle Capability    <Disabled>
Lpit Recidency Counter        <SLP S0>

Intel Ready Mode Technology    <Disabled>

SSDT table from file        <Disabled>

PCI Delay Optimization        <Disabled>

(press ESC)

FACP - RTC S4 Wakeup        <Enabled>
APIC - IO APIC Mode        <Enabled>
ACPI Memory Debug        <Disabled>

(press ESC)

CPU Configuration (Enter to expand)

Type                    Intel(R) Xeon(R) CPU E3-1275 v6 @ 3.80GHz
ID                    0x506E3
Speed                    3800 MHz
L1 Data Cache                32 KB x 4
L1 Instruction Cache            32 KB x 4
L2 Cache                256 KB x 4
L3 Cache                8 MB
L4 Cache                N/A
VMX                     Supported
SMX/TXT                     Supported

SW Guard Extensions (SGX)        <Software Controlled>
Select Owner EPOCH input type        <No Change in Owner EPOCHs>
PRMRR Size                <INVALID PRMRR>
CPU Flex Ratio Override            <Disabled>
CPU Flex Ratio Settings            [33]
Hardware Prefetcher            <Enabled>
Adjacent Cache Line Prefetch        <Enabled>
Intel (VMX) Virtualization Technology    <Enabled>
PECI                    <Enabled>
Active Processor Cores            <All>
BIST                    <Disabled>
JTAG C10 Power                <Disabled>
AP threads Idle Manner            <MWAIT Loop>
AP threads Handoff Manner        <MWAIT Loop>
AES                    <Enabled>
MachineCheck                <Enabled>
MonitorMWait                <Enabled>
BIOS Guard                <Disabled>
Flash Wear Out Protection        <Disabled>
Current Debug Interface Status        Disabled
Debug Interface                <Disabled>
Debug Interface Lock            <Enabled>
Processor trace memory allocation    <Disabled>
FCLK Frequency for Early Power On    <Normal (800Mhz)>
Three Strike Counter            <Enabled>
Voltage Optimization            <Auto>
```

```
(press ESC)

Power & Performance (Enter to expand)

CPU - Power Management Control (Enter to expand)

Boot performance mode            <Max Non-Turbo Performance>
Intel(R) SpeedStep(tm)            <Enabled>
Race To Halt (RTH)             <Enabled>
Intel(R) Speed Shift Technology        <Enabled>
HDC Control                 <Enabled>
  Turbo Mode                 <Enabled>
  View/Configure Turbo Options (Enter to expand)

Current Turbo Settings

Max Turbo Power Limit        4095.875
Min Turbo Power Limit        0.0
Package TDP Limit         80.0
Power Limit 1             80.0
Power Limit 2             100.0
1-core Turbo Ratio         37
2-core Turbo Ratio         36
3-core Turbo Ratio         35
4-core Turbo Ratio         34

Package Power Limit MSR Lock    <Disabled>
Power Limit 1 Override        <Disabled>
Power Limit 2 Override        <Enabled>
Power Limit 2             [0]
1-Core Ratio Limit Override    [37]
2-Core Ratio Limit Override    [36]
3-Core Ratio Limit Override    [35]
4-Core Ratio Limit Override    [34]
Energy Efficient Turbo        <Enabled>

(press ESC)

CPU VR Settings (Enter to expand)

PSYS Slope         [0]
PSYS Offset         [0]
PSYS PMax Power         [0]
Acoustic Noise Settings (Enter to expand)

Acoustic Noise Mitigation        <Disabled>

IA VR Domain
Disable Fast PKG C State Ramp for IA    <False>
Domain
Slow Slew Rate for IA Domain        <Fast/2>

GT VR Domain
Disable Fast PKG C State Ramp for GT    <False>
Domain
Slow Slew Rate for GT Domain        <Fast/2>

SA VR Domain
Disable Fast PKG C State Ramp for SA    <False>
Domain
Slow Slew Rate for SA Domain        <Fast/2>

(press ESC)

Core/IA VR Settings (Enter to expand)

VR Config Enable         <Enabled>
AC Loadline             [0]
DC Loadline             [0]
PS Current Threshold1         [0]
PS Current Threshold2         [0]
PS Current Threshold3         [0]
PS3 Enable             <Enabled>
PS4 Enable             <Enabled>
IMON Slope             [0]
IMON Offset             [0]
  IMON Prefix             <+>
VR Current Limit         [0]
VR Voltage Limit         [0]
TDC Enable             <Enabled>
TDC Current Limit         [0]
```

```
TDC Time Window            <1 ms>
TDC Lock            <Disabled>

(press ESC)

VR Mailbox Command options    [0]
Intersil VR Command        <Disabled>

(press ESC)

Platform PL1 Enable            <Disabled>
Platform PL2 Enable            <Disabled>
Power Limit 4 Override            <Disabled>
C states                 <Enabled>
  Enhanced C-states            <Enabled>
  C-State Auto Demotion           <C1 and C3>
  C-State Un-demotion           <C1 and C3>
  Package C-State Demotion        <Auto>
  Package C-State Un-demotion        <Auto>
CState Pre-Wake                <Enabled>
IO MWAIT Redirection            <Disabled>
Package C State Limit           <Auto>
C3 Latency Control (MSR 0x60A)
Time Unit                <1024 ns>
Latency                    [78]
C6/C7 Short Latency Control (MSR 0x60B)
Time Unit                <1024 ns>
Latency                    [118]
C6/C7 Long Latency Control (MSR 0x60C)
Time Unit                <1024 ns>
Latency                    [148]
Thermal Monitor              <Enabled>
Interrupt Redirection Mode Selection    <PAIR with Fixed Priority>
Timed MWAIT                <Disabled>
Custom P-state Table (Enter to expand)

Number of P states            [0]

(press ESC)

Energy Performance Gain           <Disabled>
EPG DIMM Idd3N                [26]
EPG DIMM Idd3P                [11]
Power Limit 3 Settings (Enter to expand)

Power Limit 3 Override            <Disabled>

(press ESC)

CPU Lock Configuration (Enter to expand)

CPG Lock                <Enabled>
Overclocking Lock            <Disabled>

(press ESC twice)

GT - Power Management Control (Enter to expand)

RC6(Render Standby)        <Enabled>
Maximum GT frequency        <Default Max Frequency>

(press ESC twice)

OverClocking Performance Menu (Enter to expand)

OverClocking Feature        <Disabled>
WDT Enable            <Enabled>

(press ESC)

Memory Configuration (Enter to expand)

Memory Thermal Configuration (Enter to expand)

Memory Power and Thermal Throttling (Enter to expand)

DDR PowerDown and idle counter        <BIOS>
For LPDDR Only: DDR PowerDown and idle    <BIOS>
counter
REFRESH_2X_MODE               <Disabled>
LPDDR Thermal Sensor           <Enabled>
SelfRefresh Enable           <Enabled>
```

```
SelfRefresh IdleTimer            [512]
Throttler CKEMin Defeature        <Disabled>
Throttler CKEMin Timer            [48]
Dram Power Meter (Enter to expand)

Use user provided power weights, scale    <Disabled>
factor, and channel power floor values
Energy Scale Factor            [4]

Idle Energy Ch0Dimm0            [10]
PowerDown Energy Ch0Dimm0        [6]
Activate Energy Ch0Dimm0        [172]
Read Energy Ch0Dimm0            [212]
Write Energy Ch0Dimm0            [221]

Idle Energy Ch0Dimm1            [10]
PowerDown Energy Ch0Dimm1        [6]
Activate Energy Ch0Dimm1        [172]
Read Energy Ch0Dimm1            [212]
Write Energy Ch0Dimm1            [221]

Idle Energy Ch1Dimm0            [10]
PowerDown Energy Ch1Dimm0        [6]
Activate Energy Ch1Dimm0        [172]
Read Energy Ch1Dimm0            [212]
Write Energy Ch1Dimm0            [221]

Idle Energy Ch1Dimm1            [10]
PowerDown Energy Ch1Dimm1        [6]
Activate Energy Ch1Dimm1        [172]
Read Energy Ch1Dimm1            [212]
Write Energy Ch1Dimm1            [221]

(press ESC)

Memory Thermal Reporting (Enter to expand)

Lock Thermal Management Registers    <Enabled>

Memory Thermal Reporting

Extern Therm Status            <Disabled>
Closed Loop Therm Manage        <Disabled>
Open Loop Therm Manage            <Disabled>

Thermal Threshold Settings

Warm Threshold Ch0 Dimm0        [255]
Warm Threshold Ch0 Dimm1        [255]
Hot Threshold Ch0 Dimm0            [255]
Hot Threshold Ch0 Dimm1            [255]
Warm Threshold Ch1 Dimm0        [255]
Warm Threshold Ch1 Dimm1        [255]
Hot Threshold Ch1 Dimm0            [255]
Hot Threshold Ch1 Dimm1            [255]

Thermal Throttle Budget Settings

Warm Budget Ch0 Dimm0            [255]
Warm Budget Ch0 Dimm1            [255]
Hot Budget Ch0 Dimm0            [255]
Hot Budget Ch0 Dimm1            [255]
Warm Budget Ch1 Dimm0            [255]
Warm Budget Ch1 Dimm1            [255]
Hot Budget Ch1 Dimm0            [255]
Hot Budget Ch1 Dimm1            [255]

(press ESC)

Memory RAPL (Enter to expand)

Rapl Power Floor Ch0        [0]
Rapl Power Floor Ch1        [0]

RAPL PL Lock            <Disabled>
RAPL PL 1 enable        <Disabled>
RAPL PL 1 Power            [0]
RAPL PL 1 WindowX        [0]
RAPL PL 1 WindowY        [0]

RAPL PL 2 enable        <Disabled>
RAPL PL 2 Power            [222]
```

```
RAPL PL 2 WindowX        [1]
RAPL PL 2 WindowY        [10]

(press ESC twice)

Memory Thermal Management    <Disabled>

(press ESC)

Memory Training Algorithms (Enter to expand)

Early Command Training            <Disabled>
SenseAmp Offset Training        <Enabled>
Early ReadMPR Timing Centering 2D    <Enabled>
Read MPR Training             <Enabled>
Receive Enable Training            <Enabled>
Jedec Write Levelling            <Enabled>
Early Write Time Centering 2D        <Enabled>
Early Write Drive Strength/Equalization    <Enabled>
Early Read Time Centering 2D        <Enabled>
Write Timing Centering 1D        <Enabled>
Write Voltage Centering 1D        <Enabled>
Read Timing Centering 1D        <Enabled>
Dimm ODT Training*            <Enabled>
  Max RTT_WR                <ODT Off>
DIMM RON Training*            <Enabled>
Write Drive Strength/Equalization 2D*    <Disabled>
Write Slew Rate Training*        <Enabled>
Read ODT Training*            <Enabled>
Read Equalization Training*        <Enabled>
Read Amplifier Training*        <Enabled>
Write Timing Centering 2D        <Enabled>
Read Timing Centering 2D        <Enabled>
Command Voltage Centering        <Enabled>
Write Voltage Centering 2D        <Enabled>
Read Voltage Centering 2D        <Enabled>
Late Command Training            <Enabled>
Round Trip Latency            <Enabled>
Turn Around Timing Training        <Enabled>
Rank Margin Tool            <Disabled>
Memory Test                <Disabled>
DIMM SPD Alias Test            <Enabled>
Receive Enable Centering 1D        <Enabled>
Retrain Margin Check            <Enabled>
Write Drive Strength Up/Dn independently<Disabled>
CMD Slew Rate Training            <Enabled>
CMD Drive Strength / Tx Equalization    <Enabled>
CMD Normalization            <Enabled>

(press ESC)

Memory Configuration

Memory RC Version            2.0.0.6
Memory Frequency             2133 MHz
Memory Timings (tCL-tRCD-tRP-tRAS)    15-15-15-35

Channel 0 Slot 0            Populated & Enabled
    Size                16384 MB (DDR4)
    Number of Ranks            2
    Manufacturer            Samsung {varies}
Channel 0 Slot 1            Populated & Enabled
    Size                16384 MB (DDR4)
    Number of Ranks            2
    Manufacturer            Samsung {varies}
Channel 1 Slot 0            Populated & Enabled
    Size                16384 MB (DDR4)
    Number of Ranks            2
    Manufacturer            Samsung {varies}
Channel 1 Slot 1            Populated & Enabled
    Size                16384 MB (DDR4)
    Number of Ranks            2
    Manufacturer            Samsung {varies}

Memory ratio/reference clock options moved to Overclock->Memory->Custom Profile menu
MRC ULT Safe Config            <Disabled>
Maximum Memory Frequency        <Auto>
HOB Buffer Size                <Auto>
ECC Support                <Enabled>
Max TOLUD                <Dynamic>
SA GV                    <Enabled>
SA GV Low Freq                <MRC default>
```

```
Retrain on Fast Fail            <Enabled>
Command Tristate            <Enabled>
Enable RH Prevention            <Enabled>
Row Hammer Solution            <Hardware RHP>
RH Activation Probability        <1/2^11>
Exit On Failure (MRC)            <Enabled>
MC Lock                     <Enabled>
Probless Trace                <Disabled>
Enable/Disable IED (Intel Enhanced Debug)<Disabled>
Ch Hash Support                <Enabled>
Ch Hash Mask                [0]
Ch Hash Interleaved Bit            <BIT8>
VC1 Read Metering            <Enabled>
VC1 RdMeter Time Window            [800]
VC1 RdMeter Threshold           [280]
Strong Weak Leaker            [7]
Memory Scrambler            <Enabled>
Force ColdReset               <Disabled>
Channel A DIMM Control            <Enable both DIMMs>
Channel B DIMM Control            <Enable both DIMMs>
Force Single Rank            <Disabled>
Memory Remap                <Enabled>
Time Measure                <Disabled>
Lpddr Mem WL Set            <Set B>
EV Loader                <Disabled>
EV Loader Delay                <Enabled>

(press ESC)

System Agent (SA) Configuration (Enter to expand)

SA PCIe Code Version        3.1.2.0
VT-d                Supported

Graphics Configuration (Enter to expand)

Skip Scaning of External Gfx Card    <Disabled>

Primary Display                <Auto>
Internal Graphics            <Auto>
GTT Size                <8MB>
Aperture Size                <256MB>
DVMT Pre-Allocated            <32M>
DVMT Total Gfx Mem            <256M>
Intel Graphics Pei Display Peim        <Disabled>
PM Support                <Enabled>
PAVP Enable                <Enabled>
Cdynmax Clamping Enable            <Enabled>
Cd Clock Frequency            <675 Mhz>
IUER Button Enable            <Disabled>

(press ESC)

DMI/OPI Configuration (Enter to expand)

DMI                    X4  Gen3

DMI Max Link Speed            <Auto>
DMI Gen3 Eq Phase 2            <Auto>
DMI Gen3 Eq Phase 3 Method        <Auto>
DMI Vc1 Control                <Disabled>
DMI Vcm Control                <Enabled>
Program Static Phase1 Eq        <Enabled>
Gen3 Root Port Preset value for each Lane (Enter to expand)

Lane 0        [4]
Lane 1        [4]
Lane 2        [4]
Lane 3        [4]

(press ESC)

Gen3 Endpoint Preset value for each Lane (Enter to expand)

Lane 0        [7]
Lane 1        [7]
Lane 2        [7]
Lane 3        [7]

(press ESC)

Gen3 Endpoint Hint value for each Lane (Enter to expand)
```

```
Lane 0        [2]
Lane 1        [2]
Lane 2        [2]
Lane 3        [2]

(press ESC)

Gen3 RxCTLE Control (Enter to expand)

Bundle0        [3]
Bundle1        [3]

(press ESC)

DMI Link ASPM Control        <L1>
DMI Extended Sync Control    <Disabled>
DMI De-emphasis Control        <-3.5 dB>
DMI IOT                <Disabled>

(press ESC)

PEG Port Configuration (Enter to expand)

PEG 0:1:0            Not Present
  Enable Root Port        <Auto>
  Max Link Speed        <Auto>
  PEG0 Slot Power Limit Value    [75]
  PEG0 Slot Power Limit Scale    <1.0x>
  PEG0 Physical Slot Number    [1]
PEG 0:1:1            x4  Gen2
  Enable Root Port        <Auto>
  Max Link Speed        <Auto>
  Max Link Width        <Auto>
  Power Down Unused Lanes    <Auto>
  Gen3 Eq Phase 2        <Auto>
  Gen3 Eq Phase 3 Method    <Auto>
  ASPM                <Auto>
  De-emphasis Control        <-3.5 dB>
  OBFF                <Enabled>
  LTR                <Enabled>
  PEG1 Slot Power Limit Value    [75]
  PEG1 Slot Power Limit Scale    <1.0x>
  PEG1 Physical Slot Number    [2]
  Max Link Width        <Auto>
  Power Down Unused Lanes    <Auto>
  Gen3 Eq Phase 2        <Auto>
  Gen3 Eq Phase 3 Method    <Auto>
  ASPM                <Auto>
  De-emphasis Control        <-3.5 dB>
  OBFF                <Enabled>
  LTR                <Enabled>
  PEG2 Slot Power Limit Value    [75]
  PEG2 Slot Power Limit Scale    <1.0x>
  PEG2 Physical Slot Number    [3]
PEG1 Max Payload size        <Auto>
PEG2 Max Payload size        <Auto>

Program PCIe ASPM after OpROM    <Disabled>
Program Static Phase1 Eq    <Enabled>
Gen3 Root Port Preset value for each Lane (Enter to expand)

Lane 0        [7]
Lane 1        [7]
Lane 2        [7]
Lane 3        [7]
Lane 4        [7]
Lane 5        [7]
Lane 6        [7]
Lane 7        [7]
Lane 8        [7]
Lane 9        [7]
Lane 10        [7]
Lane 11        [7]
Lane 12        [7]
Lane 13        [7]
Lane 14        [7]
Lane 15        [7]

(press ESC)

Gen3 Endpoint Preset value for each Lane (Enter to expand)
```

```
Lane 0        [7]
Lane 1        [7]
Lane 2        [7]
Lane 3        [7]
Lane 4        [7]
Lane 5        [7]
Lane 6        [7]
Lane 7        [7]
Lane 8        [7]
Lane 9        [7]
Lane 10        [7]
Lane 11        [7]
Lane 12        [7]
Lane 13        [7]
Lane 14        [7]
Lane 15        [7]

(press ESC)

Gen3 Endpoint Hint value for each Lane (Enter to expand)

Lane 0        [2]
Lane 1        [2]
Lane 2        [2]
Lane 3        [2]
Lane 4        [2]
Lane 5        [2]
Lane 6        [2]
Lane 7        [2]
Lane 8        [2]
Lane 9        [2]
Lane 10        [2]
Lane 11        [2]
Lane 12        [2]
Lane 13        [2]
Lane 14        [2]
Lane 15        [2]

(press ESC)

Gen3 RxCTLE Control (Enter to expand)

Bundle0        [0]
Bundle1        [0]
Bundle2        [0]
Bundle3        [0]
Bundle4        [0]
Bundle5        [0]
Bundle6        [0]
Bundle7        [0]
RxCTLE Override    <Disabled>

(press ESC)

Gen3 Adaptive Software Equalization
  Always Attempt SW EQ        <Disabled>
  Number of Presets to test    <Auto>
  Allow PERST# GPIO Usage    <Enabled>
  SW EQ Enable VOC        <Auto>
  Jitter Dwell Time        [3000]
  Jitter Error Target        [2]
  VOC Dwell Time        [10000]
  VOC Error Target        [2]
Generate BDAT PEG Margin Data    <Disabled>
PCIe Rx CEM Test Mode        <Disabled>
PCIe Spread Spectrum Clocking    <Enabled>

(press ESC)

Stop Grant Configuration    <Auto>
VT-d                <Enabled>
CHAP Device (B0:D7:F0)        <Disabled>
Thermal Device (B0:D4:F0)    <Disabled>
GMM Device (B0:D8:F0)        <Enabled>
CRID Support            <Disabled>
Above 4GB MMIO BIOS assignment    <Disabled>
X2APIC Opt Out            <Disabled>

(press ESC)

PCH-IO Configuration (Enter to expand)
```

```
PCI Express Configuration (Enter to expand)

PCI Express Clock Gating    <Enabled>
Legacy IO Low Latency        <Disabled>
DMI Link ASPM Control        <Enabled>
PCIE Port assigned to LAN    Disabled
Port8xh Decode             <Disabled>
Peer Memory Write Enable    <Disabled>
Compliance Test Mode        <Disabled>
PCIe-USB Glitch W/A         <Disabled>
PCIe function swap         <Enabled>
PCI Express Gen3 Eq Lanes (Enter to expand)

PCIE1  Cm    [6]
PCIE1  Cp    [2]
PCIE2  Cm    [6]
PCIE2  Cp    [2]
PCIE3  Cm    [6]
PCIE3  Cp    [2]
PCIE4  Cm    [6]
PCIE4  Cp    [2]
PCIE5  Cm    [6]
PCIE5  Cp    [2]
PCIE6  Cm    [6]
PCIE6  Cp    [2]
PCIE7  Cm    [6]
PCIE7  Cp    [2]
PCIE8  Cm    [6]
PCIE8  Cp    [2]
PCIE9  Cm    [6]
PCIE9  Cp    [2]
PCIE10 Cm    [6]
PCIE10 Cp    [2]
PCIE11 Cm    [6]
PCIE11 Cp    [2]
PCIE12 Cm    [6]
PCIE12 Cp    [2]
PCIE13 Cm    [6]
PCIE13 Cp    [2]
PCIE14 Cm    [6]
PCIE14 Cp    [2]
PCIE15 Cm    [6]
PCIE15 Cp    [2]
PCIE16 Cm    [6]
PCIE16 Cp    [2]
PCIE17 Cm    [6]
PCIE17 Cp    [2]
PCIE18 Cm    [6]
PCIE18 Cp    [2]
PCIE19 Cm    [6]
PCIE19 Cp    [2]
PCIE20 Cm    [6]
PCIE20 Cp    [2]

Override SW EQ settings    <Disabled>

(press ESC)

PCI Express Root Port 1 (Enter to expand)

PCI Express Root Port 1        <Enabled>
  Topology            <Unknown>
ASPM                <Auto>
L1 Substrates            <L1.1 & L1.2>
Gen3 Eq Phase3 Method        <Software Search>
UPTP                [5]
DPTP                [7]
ACS                <Enabled>
  URR                <Disabled>
  FER                <Disabled>
  NFER                <Disabled>
  CER                <Disabled>
  CTO                <Disabled>
  SEFE                <Disabled>
  SENFE                <Disabled>
  SECE                <Disabled>
  PME SCI            <Enabled>
  Hot Plug            <Disabled>
  Advanced Error Reporting    <Enabled>
PCIe Speed            <Auto>
  Transmitter Half Swing    <Disabled>
```

```
Detect Timeout            [0]
Extra Bus Reserved        [0]
Reserved Memory           [10]
Reserved I/O            [4]

PCH PCIe LTR Configuration
PCH PCIE1 LTR           <Enabled>
  Snoop Latency Override    <Auto>
  Non Snoop Latency Override    <Auto>
  Force LTR Override        <Disabled>

PCIE1 LTR Lock            <Disabled>

PCH PCIe CLKREQ# Configuration
PCIE1 CLKREQ Mapping Override    <Default>

(press ESC)

PCI Express Root Port 5 (Enter to expand)

PCI Express Root Port 5        <Enabled>
  Topology            <Unknown>
ASPM                <Auto>
L1 Substrates           <L1.1 & L1.2>
Gen3 Eq Phase3 Method        <Software Search>
UPTP                [5]
DPTP                [7]
ACS                <Enabled>
  URR                <Disabled>
  FER                <Disabled>
  NFER                <Disabled>
  CER                <Disabled>
  CTO                <Disabled>
  SEFE                <Disabled>
  SENFE                <Disabled>
  SECE                <Disabled>
  PME SCI            <Enabled>
  Hot Plug            <Disabled>
  Advanced Error Reporting    <Enabled>
PCIe Speed            <Auto>
  Transmitter Half Swing    <Disabled>
Detect Timeout            [0]
Extra Bus Reserved        [0]
Reserved Memory           [10]
Reserved I/O            [4]

PCH PCIe LTR Configuration
PCH PCIE5 LTR           <Enabled>
  Snoop Latency Override    <Auto>
  Non Snoop Latency Override    <Auto>
  Force LTR Override        <Disabled>

PCIE5 LTR Lock            <Disabled>

PCH PCIe CLKREQ# Configuration
PCIE5 CLKREQ Mapping Override    <Default>

(press ESC)

PCI Express Root Port 6 (Enter to expand)

PCI Express Root Port 6        <Enabled>
  Topology            <Unknown>
ASPM                <Auto>
L1 Substrates           <L1.1 & L1.2>
Gen3 Eq Phase3 Method        <Software Search>
UPTP                [5]
DPTP                [7]
ACS                <Enabled>
  URR                <Disabled>
  FER                <Disabled>
  NFER                <Disabled>
  CER                <Disabled>
  CTO                <Disabled>
  SEFE                <Disabled>
  SENFE                <Disabled>
  SECE                <Disabled>
  PME SCI            <Enabled>
  Hot Plug            <Disabled>
  Advanced Error Reporting    <Enabled>
PCIe Speed            <Auto>
  Transmitter Half Swing    <Disabled>
```

```
Detect Timeout            [0]
Extra Bus Reserved        [0]
Reserved Memory           [10]
Reserved I/O            [4]

PCH PCIe LTR Configuration
PCH PCIE6 LTR           <Enabled>
  Snoop Latency Override    <Auto>
  Non Snoop Latency Override    <Auto>
  Force LTR Override        <Disabled>

PCIE6 LTR Lock            <Disabled>

PCH PCIe CLKREQ# Configuration
PCIE6 CLKREQ Mapping Override    <Default>

(press ESC)

PCI Express Root Port 7 (Enter to expand)

PCI Express Root Port 7        <Enabled>
  Topology            <Unknown>
ASPM                <Auto>
L1 Substrates           <L1.1 & L1.2>
Gen3 Eq Phase3 Method        <Software Search>
UPTP                [5]
DPTP                [7]
ACS                <Enabled>
  URR                <Disabled>
  FER                <Disabled>
  NFER                <Disabled>
  CER                <Disabled>
  CTO                <Disabled>
  SEFE                <Disabled>
  SENFE                <Disabled>
  SECE                <Disabled>
  PME SCI            <Enabled>
  Hot Plug            <Disabled>
  Advanced Error Reporting    <Enabled>
PCIe Speed            <Auto>
  Transmitter Half Swing    <Disabled>
Detect Timeout            [0]
Extra Bus Reserved        [7]
Reserved Memory           [17]
Reserved I/O            [16]

PCH PCIe LTR Configuration
PCH PCIE7 LTR           <Enabled>
  Snoop Latency Override    <Auto>
  Non Snoop Latency Override    <Auto>
  Force LTR Override        <Disabled>

PCIE7 LTR Lock            <Disabled>

PCH PCIe CLKREQ# Configuration
PCIE7 CLKREQ Mapping Override    <Default>

(press ESC)

PCI Express Root Port 8 (Enter to expand)

PCI Express Root Port 8        <Enabled>
  Topology            <Unknown>
ASPM                <Auto>
L1 Substrates           <L1.1 & L1.2>
Gen3 Eq Phase3 Method        <Software Search>
UPTP                [5]
DPTP                [7]
ACS                <Enabled>
  URR                <Disabled>
  FER                <Disabled>
  NFER                <Disabled>
  CER                <Disabled>
  CTO                <Disabled>
  SEFE                <Disabled>
  SENFE                <Disabled>
  SECE                <Disabled>
  PME SCI            <Enabled>
  Hot Plug            <Disabled>
  Advanced Error Reporting    <Enabled>
PCIe Speed            <Auto>
  Transmitter Half Swing    <Disabled>
```

```
Detect Timeout            [0]
Extra Bus Reserved        [7]
Reserved Memory            [17]
Reserved I/O            [8]

PCH PCIe LTR Configuration
PCH PCIE8 LTR            <Enabled>
  Snoop Latency Override    <Auto>
  Non Snoop Latency Override    <Auto>
  Force LTR Override        <Disabled>

PCIE8 LTR Lock            <Disabled>

PCH PCIe CLKREQ# Configuration
PCIE8 CLKREQ Mapping Override    <Default>

(press ESC)

PCI Express Root Port 9 (Enter to expand)

PCI Express Root Port 9        <Enabled>
  Topology            <M2>
ASPM                <Auto>
L1 Substrates            <L1.1 & L1.2>
Gen3 Eq Phase3 Method        <Software Search>
UPTP                [5]
DPTP                [7]
ACS                <Enabled>
  URR                <Disabled>
  FER                <Disabled>
  NFER                <Disabled>
  CER                <Disabled>
  CTO                <Disabled>
  SEFE                <Disabled>
  SENFE                <Disabled>
  SECE                <Disabled>
  PME SCI            <Enabled>
  Hot Plug            <Disabled>
  Advanced Error Reporting    <Enabled>
PCIe Speed            <Auto>
  Transmitter Half Swing    <Disabled>
Detect Timeout            [0]
Extra Bus Reserved        [0]
Reserved Memory            [10]
Reserved I/O            [4]

PCH PCIe LTR Configuration
PCH PCIE9 LTR            <Enabled>
  Snoop Latency Override    <Auto>
  Non Snoop Latency Override    <Auto>
  Force LTR Override        <Disabled>

PCIE9 LTR Lock            <Disabled>

PCH PCIe CLKREQ# Configuration
PCIE9 CLKREQ Mapping Override    <Default>

(press ESC)

PCI Express Root Port 10 (Enter to expand)

PCI Express Root Port 10    <Enabled>
  Topology            <Unknown>
ASPM                <Auto>
L1 Substrates            <L1.1 & L1.2>
Gen3 Eq Phase3 Method        <Software Search>
UPTP                [5]
DPTP                [7]
ACS                <Enabled>
  URR                <Disabled>
  FER                <Disabled>
  NFER                <Disabled>
  CER                <Disabled>
  CTO                <Disabled>
  SEFE                <Disabled>
  SENFE                <Disabled>
  SECE                <Disabled>
  PME SCI            <Enabled>
  Hot Plug            <Disabled>
  Advanced Error Reporting    <Enabled>
PCIe Speed            <Auto>
  Transmitter Half Swing    <Disabled>
```

```
Detect Timeout            [0]
Extra Bus Reserved        [0]
Reserved Memory            [10]
Reserved I/O            [4]

PCH PCIe LTR Configuration
PCH PCIE10 LTR            <Enabled>
  Snoop Latency Override    <Auto>
  Non Snoop Latency Override    <Auto>
  Force LTR Override        <Disabled>

PCIE10 LTR Lock            <Disabled>

PCH PCIe CLKREQ# Configuration
PCIE10 CLKREQ Mapping Override    <Default>

(press ESC)

PCI Express Root Port 11 (Enter to expand)

PCI Express Root Port 11    <Enabled>
  Topology            <Unknown>
ASPM                <Auto>
L1 Substrates            <L1.1 & L1.2>
Gen3 Eq Phase3 Method        <Software Search>
UPTP                [5]
DPTP                [7]
ACS                <Enabled>
  URR                <Disabled>
  FER                <Disabled>
  NFER                <Disabled>
  CER                <Disabled>
  CTO                <Disabled>
  SEFE                <Disabled>
  SENFE                <Disabled>
  SECE                <Disabled>
  PME SCI            <Enabled>
  Hot Plug            <Disabled>
  Advanced Error Reporting    <Enabled>
PCIe Speed            <Auto>
  Transmitter Half Swing    <Disabled>
Detect Timeout            [0]
Extra Bus Reserved        [0]
Reserved Memory            [10]
Reserved I/O            [4]

PCH PCIe LTR Configuration
PCH PCIE11 LTR            <Enabled>
  Snoop Latency Override    <Auto>
  Non Snoop Latency Override    <Auto>
  Force LTR Override        <Disabled>

PCIE11 LTR Lock            <Disabled>

PCH PCIe CLKREQ# Configuration
PCIE11 CLKREQ Mapping Override    <Default>

(press ESC)

PCI Express Root Port 12 (Enter to expand)

PCI Express Root Port 12    <Enabled>
  Topology            <Unknown>
ASPM                <Auto>
L1 Substrates            <L1.1 & L1.2>
Gen3 Eq Phase3 Method        <Software Search>
UPTP                [5]
DPTP                [7]
ACS                <Enabled>
  URR                <Disabled>
  FER                <Disabled>
  NFER                <Disabled>
  CER                <Disabled>
  CTO                <Disabled>
  SEFE                <Disabled>
  SENFE                <Disabled>
  SECE                <Disabled>
  PME SCI            <Enabled>
  Hot Plug            <Disabled>
  Advanced Error Reporting    <Enabled>
PCIe Speed            <Auto>
  Transmitter Half Swing    <Disabled>
```

```
Detect Timeout            [0]
Extra Bus Reserved        [0]
Reserved Memory           [10]
Reserved I/O            [4]

PCH PCIe LTR Configuration
PCH PCIE12 LTR            <Enabled>
  Snoop Latency Override    <Auto>
  Non Snoop Latency Override    <Auto>
  Force LTR Override        <Disabled>

PCIE12 LTR Lock           <Disabled>

PCH PCIe CLKREQ# Configuration
PCIE12 CLKREQ Mapping Override    <Default>

(press ESC)

PCI Express Root Port 13 (Enter to expand)

PCI Express Root Port 13    <Enabled>
  Topology            <Unknown>
ASPM                <Auto>
L1 Substrates           <L1.1 & L1.2>
Gen3 Eq Phase3 Method        <Software Search>
UPTP                [5]
DPTP                [7]
ACS                <Enabled>
  URR                <Disabled>
  FER                <Disabled>
  NFER                <Disabled>
  CER                <Disabled>
  CTO                <Disabled>
  SEFE                <Disabled>
  SENFE                <Disabled>
  SECE                <Disabled>
  PME SCI            <Enabled>
  Hot Plug            <Disabled>
  Advanced Error Reporting    <Enabled>
PCIe Speed            <Auto>
  Transmitter Half Swing    <Disabled>
Detect Timeout            [0]
Extra Bus Reserved        [0]
Reserved Memory           [10]
Reserved I/O            [4]

PCH PCIe LTR Configuration
PCH PCIE13 LTR            <Enabled>
  Snoop Latency Override    <Auto>
  Non Snoop Latency Override    <Auto>
  Force LTR Override        <Disabled>

PCIE13 LTR Lock           <Disabled>

PCH PCIe CLKREQ# Configuration
PCIE13 CLKREQ Mapping Override    <Default>

(press ESC)

PCI Express Root Port 17 (Enter to expand)

PCI Express Root Port 17    <Enabled>
  Topology            <Unknown>
ASPM                <Auto>
L1 Substrates           <L1.1 & L1.2>
Gen3 Eq Phase3 Method        <Software Search>
UPTP                [5]
DPTP                [7]
ACS                <Enabled>
  URR                <Disabled>
  FER                <Disabled>
  NFER                <Disabled>
  CER                <Disabled>
  CTO                <Disabled>
  SEFE                <Disabled>
  SENFE                <Disabled>
  SECE                <Disabled>
  PME SCI            <Enabled>
  Hot Plug            <Disabled>
  Advanced Error Reporting    <Enabled>
PCIe Speed            <Auto>
  Transmitter Half Swing    <Disabled>
```

```
Detect Timeout            [0]
Extra Bus Reserved        [0]
Reserved Memory           [10]
Reserved I/O            [4]

PCH PCIe LTR Configuration
PCH PCIE17 LTR            <Enabled>
  Snoop Latency Override    <Auto>
  Non Snoop Latency Override    <Auto>
  Force LTR Override        <Disabled>

PCIE17 LTR Lock           <Disabled>

PCH PCIe CLKREQ# Configuration
PCIE17 CLKREQ Mapping Override    <Default>

(press ESC)

PCI Express Root Port 21 (Enter to expand)

PCI Express Root Port 21    <Enabled>
  Topology            <Unknown>
ASPM                <Auto>
L1 Substrates           <L1.1 & L1.2>
Gen3 Eq Phase3 Method        <Software Search>
UPTP                [5]
DPTP                [7]
ACS                <Enabled>
  URR                <Disabled>
  FER                <Disabled>
  NFER                <Disabled>
  CER                <Disabled>
  CTO                <Disabled>
  SEFE                <Disabled>
  SENFE                <Disabled>
  SECE                <Disabled>
  PME SCI            <Enabled>
  Hot Plug            <Disabled>
  Advanced Error Reporting    <Enabled>
PCIe Speed            <Auto>
  Transmitter Half Swing    <Disabled>
Detect Timeout            [0]
Extra Bus Reserved        [0]
Reserved Memory           [10]
Reserved I/O            [4]

PCH PCIe LTR Configuration
PCH PCIE21 LTR            <Enabled>
  Snoop Latency Override    <Auto>
  Non Snoop Latency Override    <Auto>
  Force LTR Override        <Disabled>

PCIE21 LTR Lock           <Disabled>

PCH PCIe CLKREQ# Configuration
PCIE20 CLKREQ Mapping Override    <Default>

(press ESC)

PCI Express Root Port 22 (Enter to expand)

PCI Express Root Port 22    <Enabled>
  Topology            <Unknown>
ASPM                <Auto>
L1 Substrates           <L1.1 & L1.2>
Gen3 Eq Phase3 Method        <Software Search>
UPTP                [5]
DPTP                [7]
ACS                <Enabled>
  URR                <Disabled>
  FER                <Disabled>
  NFER                <Disabled>
  CER                <Disabled>
  CTO                <Disabled>
  SEFE                <Disabled>
  SENFE                <Disabled>
  SECE                <Disabled>
  PME SCI            <Enabled>
  Hot Plug            <Disabled>
  Advanced Error Reporting    <Enabled>
PCIe Speed            <Auto>
  Transmitter Half Swing    <Disabled>
```

```
Detect Timeout            [0]
Extra Bus Reserved        [0]
Reserved Memory           [10]
Reserved I/O            [4]

PCH PCIe LTR Configuration
PCH PCIE22 LTR            <Enabled>
  Snoop Latency Override    <Auto>
  Non Snoop Latency Override    <Auto>
  Force LTR Override        <Disabled>

PCIE22 LTR Lock           <Disabled>

PCH PCIe CLKREQ# Configuration
PCIE20 CLKREQ Mapping Override    <Default>

(press ESC)

PCI Express Root Port 23 (Enter to expand)

PCI Express Root Port 23    <Enabled>
  Topology            <Unknown>
ASPM                <Auto>
L1 Substrates           <L1.1 & L1.2>
Gen3 Eq Phase3 Method        <Software Search>
UPTP                [5]
DPTP                [7]
ACS                <Enabled>
  URR                <Disabled>
  FER                <Disabled>
  NFER                <Disabled>
  CER                <Disabled>
  CTO                <Disabled>
  SEFE                <Disabled>
  SENFE                <Disabled>
  SECE                <Disabled>
  PME SCI            <Enabled>
  Hot Plug            <Disabled>
  Advanced Error Reporting    <Enabled>
PCIe Speed            <Auto>
  Transmitter Half Swing    <Disabled>
Detect Timeout            [0]
Extra Bus Reserved        [0]
Reserved Memory           [10]
Reserved I/O            [4]

PCH PCIe LTR Configuration
PCH PCIE23 LTR            <Enabled>
  Snoop Latency Override    <Auto>
  Non Snoop Latency Override    <Auto>
  Force LTR Override        <Disabled>

PCIE23 LTR Lock           <Disabled>

PCH PCIe CLKREQ# Configuration
PCIE20 CLKREQ Mapping Override    <Default>

(press ESC)

PCI Express Root Port 24 (Enter to expand)

PCI Express Root Port 24    <Enabled>
  Topology            <Unknown>
ASPM                <Auto>
L1 Substrates           <L1.1 & L1.2>
Gen3 Eq Phase3 Method        <Software Search>
UPTP                [5]
DPTP                [7]
ACS                <Enabled>
  URR                <Disabled>
  FER                <Disabled>
  NFER                <Disabled>
  CER                <Disabled>
  CTO                <Disabled>
  SEFE                <Disabled>
  SENFE                <Disabled>
  SECE                <Disabled>
  PME SCI            <Enabled>
  Hot Plug            <Disabled>
  Advanced Error Reporting    <Enabled>
PCIe Speed            <Auto>
  Transmitter Half Swing    <Disabled>
```

```
Detect Timeout            [0]
Extra Bus Reserved        [0]
Reserved Memory            [10]
Reserved I/O           [4]

PCH PCIe LTR Configuration
PCH PCIE24 LTR            <Enabled>
  Snoop Latency Override    <Auto>
  Non Snoop Latency Override    <Auto>
  Force LTR Override        <Disabled>

PCIE24 LTR Lock            <Disabled>

PCH PCIe CLKREQ# Configuration
PCIE20 CLKREQ Mapping Override    <Default>

(press ESC twice)

SATA and RST Configuration (Enter to expand)

SATA Controller(s)        <Enabled>
SATA Mode Selection        <AHCI>
SATA Test Mode            <Disabled>
Software Feature Mask Configuration (Enter to expand)

HDD Unlock            <Enabled>
LED Locate            <Enabled>

(press ESC)

Aggressive LPM Support        <Enabled>

Serial ATA Port 0        ST2000NM0008-2 (4000.7GB)
  Software Preserve         SUPPORTED
  Port 0            <Enabled>
  Hot Plug            <Disabled>
  Configured as eSATA         Hot Plug supported
  Spin Up Device        <Disabled>
  SATA Device Type        <Hard Disk Drive>
  Topology            <Flex>
  SATA Port 0 DevSlp        <Disabled>
  DITO Configuration        <Disabled>
  DITO Value            [625]
  DM Value            [15]
Serial ATA Port 1         Empty
  Software Preserve         Unknown
  Port 1            <Enabled>
  Hot Plug            <Disabled>
  Configured as eSATA         Hot Plug supported
  Spin Up Device        <Disabled>
  SATA Device Type        <Hard Disk Drive>
  Topology            <Direct Connect>
  SATA Port 1 DevSlp        <Disabled>
  DITO Configuration        <Disabled>
  DITO Value            [625]
  DM Value            [15]
Serial ATA Port 2         Empty
  Software Preserve         Unknown
  Port 2            <Enabled>
  Hot Plug            <Disabled>
  Configured as eSATA         Hot Plug supported
  Spin Up Device        <Disabled>
  SATA Device Type        <Hard Disk Drive>
  Topology            <Unknown>
  SATA Port 2 DevSlp        <Disabled>
  DITO Configuration        <Disabled>
  DITO Value            [625]
  DM Value            [15]
Serial ATA Port 3         Empty
  Software Preserve         Unknown
  Port 2            <Enabled>
  Hot Plug            <Disabled>
  Configured as eSATA         Hot Plug supported
  Spin Up Device        <Disabled>
  SATA Device Type        <Hard Disk Drive>
  Topology            <Unknown>
  SATA Port 3 DevSlp        <Disabled>
  DITO Configuration        <Disabled>
  DITO Value            [625]
  DM Value            [15]
Serial ATA Port 4         Empty
  Software Preserve         Unknown
```

```
  Port 2            <Enabled>
  Hot Plug            <Disabled>
  Configured as eSATA        Hot Plug supported
  Spin Up Device        <Disabled>
  SATA Device Type        <Hard Disk Drive>
  Topology            <Unknown>
  SATA Port 4 DevSlp        <Disabled>
  DITO Configuration        <Disabled>
  DITO Value            [625]
  DM Value            [15]
Serial ATA Port 5        Empty
  Software Preserve        Unknown
  Port 2            <Enabled>
  Hot Plug            <Disabled>
  Configured as eSATA        Hot Plug supported
  Spin Up Device        <Disabled>
  SATA Device Type        <Hard Disk Drive>
  Topology            <M2>
  SATA Port 5 DevSlp        <Disabled>
  DITO Configuration        <Disabled>
  DITO Value            [625]
  DM Value            [15]
Serial ATA Port 6        Empty
  Software Preserve        Unknown
  Port 2            <Enabled>
  Hot Plug            <Disabled>
  Configured as eSATA        Hot Plug supported
  Spin Up Device        <Disabled>
  SATA Device Type        <Hard Disk Drive>
  Topology            <Unknown>
  SATA Port 6 DevSlp        <Disabled>
  DITO Configuration        <Disabled>
  DITO Value            [625]
  DM Value            [15]
Serial ATA Port 7        Empty
  Software Preserve        Unknown
  Port 2            <Enabled>
  Hot Plug            <Disabled>
  Configured as eSATA        Hot Plug supported
  Spin Up Device        <Disabled>
  SATA Device Type        <Hard Disk Drive>
  Topology            <Unknown>
  SATA Port 7 DevSlp        <Disabled>
  DITO Configuration        <Disabled>
  DITO Value            [625]
  DM Value            [15]

(press ESC)

USB Configuration (Enter to expand)

XHCI Disable Compliance Mode    <False>

xDCI Support            <Disabled>

USB Port Disable Override    <Disable>

(press ESC)

Security Configuration (Enter to expand)

RTC Lock            <Enabled>
BIOS Lock            <Enabled>

(press ESC)

SerialIo Configuration (Enter to expand)

I2C0 Controller            <Enabled>
I2C1 Controller            <Enabled>
I2C2 Controller            <Disabled>
I2C3 Controller            <Disabled>
SPI0 Controller            <Disabled>
SPI1 Controller            <Disabled>
UART0 Controller        <Enabled>
UART1 Controller        <Disabled>
UART2 Controller        <for debug only>
GPIO Controller            <Enabled>

Serial IO I2C0 Settings (Enter to expand)

I2C IO Voltage Select        <3.3V>
```

```
Connected device        <Disabled>

(press ESC)

Serial IO I2C1 Settings (Enter to expand)

I2C IO Voltage Select        <3.3V>

Connected device        <Disabled>

(press ESC)

Serial IO UART0 Settings (Enter to expand)

Bluetooth Device        <Disabled>
Wireless Charging Mode        <WC Disabled>
Hardware Flow Control        <Enabled>

(press ESC)

Serial IO GPIO Settings (Enter to expand)

GPIO IRQ Route            <IRQ14>

(press ESC)

WITT/MITT Test Device        <Disabled>
UART Test Device        <Disabled>
Additional Serial IO devices    [ ]
SerialIO timing parameters (Enter to expand)

SerialIO timing parameters    [ ]

(press ESC)

UCSI/UCMC device        <Disabled>

(press ESC)

TraceHub Configuration Menu (Enter to expand)

TraceHub Enable Mode        <Disable>
MemRegion 0 Buffer Size        <1MB>
MemRegion 1 Buffer Size        <1MB>

(press ESC)

Pch Thermal Throttling Control (Enter to expand)

Thermal Throttling Level    <Suggested Setting>
DMI Thermal Setting        <Suggested Setting>
SATA Thermal Setting        <Suggested Setting>

(press ESC)

DCI enable (HDCIEN)        <Disabled>
Debug Port Selection        <Legacy UART>
GNSS                <Disabled>
PCH LAN Controller        No GbE Region
DeepSx Power Policies        <Disabled>
LAN Wake From DeepSx        <Enabled>
Wake on WLAN and BT Enable    <Disabled>
Disable DSX ACPRESENT PullDown    <Disabled>
CLKRUN# logic            <Enabled>
Serial IRQ Mode            <Quiet>
Port 61h Bit-4 Emulation    <Enabled>
State After G3            <S0 State>
Port 80h Redirection        <LPC Bus>
Enhance Port 80h LPC Decoding    <Enabled>
Compatible Revision ID        <Disabled>
PCH Cross Throttling        <Enabled>
Disable Energy Reporting    <False>
Enable TCO Timer        <Disabled>
Pcie PII SSC            <Auto>
IOAPIC 24-119 Entries        <Enabled>
Unlock PCH P2SB            <Disabled>
Flash Protection Range Registers (FPRR) <Enabled>
SPD Write Disable        <True>
ChipsetInit HECI Message    [X]
Bypass ChipsetInit sync reset    <Disabled>
```

```
(press ESC)

PCH-FW Configuration (Enter to expand)

ME Firmware Version        0.0.0.0
ME Firmware Mode        ME Failed
ME Firmware SKU            Unidentified
ME File System Integrity Value    0
ME Firmware Status 1        0x000F0345
ME Firmware Status 2        0x8A116006
NFC Support            Disabled

ME State            <Enabled>
Comms Hub Support        <Disabled>
JHI Support            <Disabled>
Core Bios Done Message        <Enabled>

Firmware Update Configuration (Enter to expand)

Me FW Image Re-Flash        <Disabled>

(press ESC)

PTT Configuration (Enter to expand)

PTT Capability / State        0 / 0

PTP aware OS            <PTP Aware>

(press ESC)

ME Debug Configuration (Enter to expand)

HECI Timeouts            [X]

Force ME DID Init Status    <Disabled>
CPU Replaced Polling Disable    <Disabled>
ME DID Message            <Enabled>
HECI Retry Disable        <Disabled>
HECI Message check Disable    <Disabled>
MBP HOB Skip            <Disabled>
HECI2 Interface Communication    [ ]
KT Device            [X]
IDER Device            [X]
End Of Post Message        <Send in DXE>
DOI3 Setting for HECI Disable    <Disabled>

(press ESC twice)

Thermal Configuration (Enter to expand)

CPU Thermal Configuration (Enter to expand)

DTS SMM                <Disabled>
Tcc Activation Offset        [0]
Tcc Offset Time Window        <Disabled>
Tcc Offset Clamp Enable        <Disabled>
Tcc Offset Lock Enable        <Disabled>
Bi-directional PROCHOT#        <Enabled>
Disable PROCHOT# Output        <Enabled>
Disable VR Thermal Alert    <Disabled>
PROCHOT Response        <Disabled>
PROCHOT Lock            <Disabled>
ACPI T-States            [ ]
PECI Reset            <Disabled>
PECI C10 Reset            <Disabled>

(press ESC)

Platform Thermal Configuration (Enter to expand)

Automatic Thermal Reporting    <Disabled>
Critical Trip Point        <119C (POR)>
Active Trip Point 0        <71 C>
Active Trip Point 0 Fan Speed    [100]
Active Trip Point 1        <55 C>
Active Trip Point 1 Fan Speed    [75]
Passive Trip Point        <95 C>
  Passive TC1 Value        [1]
  Passive TC2 Value        [5]
  Passive TSP Value        [10]
```

```
Active Trip Points        <Enabled>
Passive Trip Points        <Disabled>
Critical Trip Points        <Enabled>

PCH Thermal Device        <Enabled in PCI mode>
PCH Temp Read            [X]
CPU Energy Read            [X]
CPU Temp Read            [X]
Alert Enable Lock        <Disabled>
CPU Temp            [0]
CPU Fan Speed            [65]

(press ESC)

DPTF Configuration (Enter to expand)

(press ESC)

Hardware Health Monitor (Enter to expand)

Thermal Sensor 1 Temp        <0 C>
Thermal Sensor 2 Temp        <0 C>
Thermal Sensor 3 Temp        <0 C>
Thermal Sensor 4 Temp        <0 C>
Thermal Sensor 5 Temp        <0 C>
Thermal Sensor 6 Temp        <0 C>
Thermal Sensor 7 Temp        <0 C>
Thermal Sensor 8 Temp        <0 C>
Thermal Thermistor 1 Temp    <0 raw>
Thermal Thermistor 2 Temp    <0 raw>
Thermal Thermistor 3 Temp    <0 raw>
Thermal Thermistor 4 Temp    <0 raw>
Thermal Thermistor 5 Temp    <0 raw>
Thermal Thermistor 6 Temp    <0 raw>
CPU Fan Speed            <0 rpm>
PCH DTS Temp from PCH        <0 C>

(press ESC twice)

Platform Settings (Enter to expand)

UCSI Retry Workaround        <Disabled>
PS2 Keyboard and Mouse        <Enabled>

(press ESC)

RTD3 settings (Enter to expand)

RTD3 Support            <Enabled>

VR Staggering delay            [16]
VR Ramp up delay            [16]
PCIE Slot 5 Device Power-on delay in ms    [100]
PCIE Slot 5 Device Power-off dealy in ms[10]
Audio Delay                [200]
I2C0 Controller                [0]
SensorHub                [68]
I2C1 Controller                [0]
TouchPad                [68]
TouchPanel                [68]
P-state Capping                <Disabled>
USB Port 1                <Disabled>
USB Port 2                <Disabled>
I2C0 Sensor Hub                <Enabled>
WWAN                    <Enabled>
Sata Port 1                <Disabled>
Sata Port 2                <Disabled>
RST Raid Volumes            <Enabled>

(press ESC)

Thunderbolt Device (Enter to expand)

Thunderbolt(TM) Support        <Disabled>
Thunderbolt(TM) PCIe Support    <Disabled>

(press ESC)

Server ME Configuration (Enter to expand)

Operational Firmware Version    4.1.4.54
Backup Firmware Version        0.0.0.0
```

```
Recovery Firmware Version    4.1.4.54
Server ME SKU            Silicon Enabling
ME Firmware Status #1        0x000F0345
ME Firmware Status #2        0x8A116006
Current State            Operational
Error Code           No Error

(press ESC)

Intel ICC (Enter to expand)

ICC/OC Watchdog Timer        <Disabled>
ICC Locks after EOP        <Default>
ICC Profile            [0]

(press ESC)

SIO AST2400 (Enter to expand)

Serial Port A            <AUTO>

(press ESC)

Trenton Systems (Enter to expand)

BIOS Info:
Platform            BIOS_MBC8272
Version               Main.001.012
State                release

SMBIOS OEM Strings:
Trenton BIOS version: BIOS_MBC8272.Main.001.012.release
Insyde  BIOS version: KabyLake.05.12.09.0049
Trenton Notes: Mainline

SPI OEM Contents:
SPI                SYSFLASH_MBC8272.Main.001.006
BIOS                BIOS_MBC8272.Main.001.004.release
ME               SPS_E3_04.01.04.054.0

(press ESC)

Ipmi Sensor Control (Enter to expand)

Per-Sensor Enables
FAN1 Enable        <Disabled>
FAN2 Enable        <Enabled>
FAN3 Enable        <Enabled>
FAN4 Enable        <Enabled>
FAN5 Enable        <Disabled>

(press ESC)

H2O IPMI Configuration (Enter to expand)

IPMI Support            <Enabled>

System Interface Type        KCS
IPMI Base Address for OS    CA2/CA3
IPMI Base Address for POST    CA2/CA3
IPMI Base Address for SMM    CA2/CA3

BMC Status            OK
BMC Firmware Version        3.03
IPMI Specification Version    2.0
BMC MAC Address            00:10:6F:23:73:B4    {varies}

BMC Warmup Time            [240]
ACPI SPMI Table            <Enabled>
Boot Option Support        <Disabled>
Set BIOS version to BMC        <Disabled>

BMC Configuration (Enter to expand)

Watchdog Timer Support        <Disabled>
Watchdog Timer Timeout        [5]
Watchdog Timer Action        <Hard Reset>

Power Cycle Time Support    <Disabled>
Power Cycle Time        [10]

Power Button            <Enabled>
```

```
Reset Button            <Enabled>
NMI Button            <Enabled>

Lan Port Configuration        <Dedicated>

LAN Channel Number        [1]
IPv4 Source            <DHCP>        {varies}
IPv4 IP Address            9.60.15.239    {varies}
IPv4 Subnet Mask        255.255.255.0    {varies}
IPv4 Gateway Address        9.60.15.254    {varies}

IPv6 Mode            <Disabled>
IPv6 AutoConfig            <Enabled>
IPv6 Prefix Length        [0]
IPv6 IP Address            0:0:0:0:0:0:0:0
IPv6 Gateway Address        0:0:0:0:0:0:0:0

(press ESC)

SDR List (Enter to expand)

SDR List Support        <Disabled>

(press ESC)

Execute H2O IPMI Utility

LOAD IPMI OPTIMAL DEFAULT

(press ESC)

Console Redirection (Enter to expand)

Console Serial Redirect        <Enabled>
Terminal Type            <VT_100>
Baud Rate            <115200>
Data Bits            <8 Bits>
Parity                <None>
Stop Bits            <1 Bit>
Flow Control            <None>
Information Wait Time        < 5 Second>
C.R. After Post            <Yes>
Text Mode Resolution        <AUTO>
AutoRefresh            <Enabled>
FailSafeBaudRate        <Disabled>
COMA (Enter to expand)

PortEnable            <Enabled>
UseGlobalSetting        <Enabled>

(press ESC)

Enable VT-100, 115200, N81

(press ESC)

H2oUve Configuration (Enter to expand)

H2OUVE Support            <Enabled>

(press ESC)

Diagnostics and System Tester (Enter to expand)

H2ODST Tool

(press ESC)

[Security Tab]

Current TPM Device            <TPM 2.0 (DTPM)>
TPM State                All Hierarchies Enabled, UnOwned    {varies}
TPM Active PCR Hash Algorithm        SHA1, SHA256
TPM Hardware Supported Hash Algorithm    SHA1, SHA256
TrEE Protocol Version            <1.1>
TPM Availability            <Available>
TPM Operation                <No Operation>
Clear TPM                [ ]

Supervisor Password            Not Installed
User Password                Not Installed
```

```
Set Supervisor Password
Set User Password
Set All Hdd Password
Set All Master Hdd Password

Storage Password Setup Page (Enter to expand)

ST2000NM0008-2F3100 (Enter to expand)

Device Name:        [ST2000NM0008-2F3100]

Security Mode:        No Accessed

Set Storage Password
Set Master Hdd Password

(press ESC twice)

[Power Tab]

ACPI S3            <Enabled>
Wake on PME        <Enabled>
Wake on Modem Ring    <Disabled>
Auto Wake on S5        <Disabled>
S5 long run test    <Disabled>

[Boot Tab]

Boot Type            <UEFI Boot Type>
Quick Boot            <Enabled>
Quiet Boot            <Enabled>
Network Stack            <Enabled>
PXE Boot capability        <UEFI:IPv4>
Power Up In Standby Support    <Disabled>
Add Boot Options        <Auto>
ACPI Selection            <Acpi5.0>
USB Boot            <Enabled>
EFI Device First        <Enabled>
UEFI OS Fast Boot        <Enabled>
  USB Hot Key Support        <Disabled>
Timeout                [10]
Automatic Failover        <Enabled>

EFI (Enter to expand)

BOOT_EMBEDDED (ST2000NM0008-2F3100)    {This list will vary}
EFI Hard Drive (ST2000NM0008-23F3100)
EFI Network LAN8  for IPv4 (00-10-6F-23-73-B3)
EFI Network LAN7  for IPv4 (00-10-6F-23-73-B2)
EFI Network LAN6  for IPv4 (00-10-6F-23-73-B1)
EFI Network LAN5  for IPv4 (00-10-6F-23-73-B0)
EFI Network LAN4  for IPv4 (00-10-6F-23-73-AF)
EFI Network LAN3  for IPv4 (00-10-6F-23-73-AE)
EFI Network LAN2  for IPv4 (00-10-6F-23-73-AD)
EFI Network LAN1  for IPv4 (00-10-6F-23-73-AC)
Internal EFI Shell

(press ESC)

Per-port boot filer (Enter to expand)

Rear Port1 Enable    <Enabled>
Rear Port2 Enable    <Enabled>
Rear Port3 Enable    <Enabled>
Rear Port4 Enable    <Enabled>
Rear Port5 Enable    <Enabled>
Rear Port6 Enable    <Enabled>
Front Port1 Enable    <Enabled>
Front Port2 Enable    <Enabled>

(press ESC)

[Exit Tab]

Exit Saving Changes
Save Change Without Exit
Exit Discarding Changes
Load Optimal Defaults
Load Custom Defaults
Save Custom Defaults
Discard Changes
```

```
(end of BIOS Setup values)
```

END OF PROCEDURE

Hardware Management Appliance 2461-SE4 configuration

Use the information in this section if you are directed to verify the configuration for the 2461 Hardware Management Appliance (2461-SE4).

The following is a list of the configuration settings for the Hardware Management Appliance (2461-SE4).

```
InsydeH20 Version       CFL.05.23.04.0047
Processor Type          Intel(R) Xeon(R) E-2226GE CPU @ 3.40GHz
System Bus Speed        100 MHz
System Memory Speed     2667 MHz
Cache RAM               1536 KB
Total Memory            65536 MB
Channel A
DIMM 0                  16384 MB
DIMM 1                  16384 MB
Channel B
DIMM 0                  16384 MB
DIMM 1                  16384 MB
Platform Configuration
CPUID:                  0x906EA (CoffeeLake DT)
CPU Speed:              3400 MHz
CPU Stepping:           906EA (U0 Stepping)
L1 Data Cache:          32 KB
L1 Instruction Cache:   32 KB
L2 Cache:               256 KB
L3 Cache:               12288 KB
Number of Processors:   6 Core(s) / 6 Thread(s)
Microcode Rev:          000000EA
GT Info:                GT4 (0xFFFF)
SMX/TXT:                Supported
PCH Rev / SKU           10 (B0 Stepping) / CNL PCH-H C246
GOP Ver:                9.0.1107
EC Ver:                 N/A
Board ID:               Moss Beach Server
FAB ID:                 0
Language                <English>
System Time             {varies}
System Date             {varies}

(press right arrow)

[Advanced Tab]

Boot Configuration (Enter to expand)

Numlock                 <Off>

(press ESC)

Peripheral Configuration (Enter to expand)

Serial Port A           <Disabled>
Infrared Port           <Disabled>

(press ESC)

SATA Configuration (Enter to expand)

Serial ATA Port 0       [ST2000NM000A-2J2100 ]
Serial ATA Port 1       [Not Installed]
Serial ATA Port 2       [Not Installed]
Serial ATA Port 3       [Not Installed]
Serial ATA Port 4       [Not Installed]
Serial ATA Port 5       [Not Installed]
Serial ATA Port 6       [Not Installed]
Serial ATA Port 7       [Not Installed]

(press ESC)

USB Configuration (Enter to expand)

USB BIOS Support                <Enabled>
Usb Legacy SMI bit Clean        <Disabled>

(press ESC)

Chipset Configuration (Enter to expand)
```

```
Setup Warning:
Setting items on this screen to incorrect values
may cause your system to malfunction!

(press ESC)

Debug Settings (Enter to expand)

Kernel Debug Serial Port        <Legacy UART>
Platform Debug Consent          <Disabled>
Advanced Debug Settings (Enter to expand)

USB3 Type-C UFP2DFP Kernel/Platform     <No Change>
Debug Support
PCH Trace Hub Enable Mode               <Disabled>
Processor trace memory allocation       <Disabled>
JTAG C10 Power Gate                     <Enabled>
Three Strike Counter                    <Enabled>
CrashLog Feature                        <Enabled>
CrashLog On All Reset                   <Disabled>
PMC Debug Message Enable                <Disabled>
CPU Wakeup Timer                        <Enabled>
Delayed Authentication Mode             <Disabled>

(press ESC twice)

Type C Support                  <Platform-POR>

ACPI Table/Features Control (Enter to expand)

ACPI Settings (Enter to expand)

ACPI Version                    5.0
Enable ACPI Auto Configuration  [ ]

Enable Hibernation              [X]
PTID Support                    [X]
PECI Access Method              <Direct I/O>
ACPI S3 Support                 <Disabled>
Native PCIE Enable              <Enabled>
Native ASPM                     <Auto>

ACPI Debug                      <Disabled>
Low Power S0 Idle Capability    <Disabled>

SSDT table from file            <Disabled>

PCI Delay Optimization          <Disabled>
MSI enabled                     <Enabled>

(press ESC)

FACP - RTC S4 Wakeup            <Enabled>
APIC - IO APIC Mode             <Enabled>

(press ESC)

CPU Configuration (Enter to expand)

Type                                    Intel(R) Xeon(R) E-2226GE CPU @ 3.40GHz
ID                                      0x906EA
Speed                                   3400 MHz
L1 Data Cache                           32 KB x 6
L1 Instruction Cache                    32 KB x 6
L2 Cache                                256 KB x 6
L3 Cache                                12 MB
L4 Cache                                N/A
VMX                                     Supported
SMX/TXT                                 Supported

C6DRAM                                  <Enabled>
Software Guard Extensions (SGX) <Software Controlled>
Select Owner EPOCH input type   <No Change in Owner EPOCHS>
CPU Flex Ratio Override                 <Disabled>
CPU Flex Ratio Settings                 [34]
Hardware Prefetcher                     <Enabled>
Adjacent Cache Line Prefetch            <Enabled>
Intel (VMX) Virtualization Technology   <Enabled>
PECI                                    <Enabled>
Active Processor Cores                  <All>
BIST                                    <Disabled>
```

```
AP threads Idle Manner                  <MWAIT Loop>
AES                                     <Enabled>
MachineCheck                            <Enabled>
MonitorMWait                            <Enabled>
Intel Trusted Execution Technology      <Disabled>
Alias Check Request                     <Disabled>
DPR Memory Size (MB)                    [4]
Reset AUX Content                       <no>
FCLK Frequency for Early Power On       <Normal (800Mhz)>
Voltage Optimization                    <Auto>

(press ESC)

Connectivity Configuration (Enter to expand)

CNVi present                    No
CNVi Configuration
 CNVi Mode                      <Disable Integrated>

Coexistence Manager             <Disabled>

Preboot BLE                     <Disabled>

Discrete Bluetooth Module       <Disabled>

Advanced settings               <Disabled>

WWAN Configuration (Enter to expand)

WWAN Device                     <Disabled>
WWAN Reset Workaround           <Enabled>

(press ESC twice)

Power & Performance (Enter to expand)

CPU - Power Management Control (Enter to expand)

Boot performance mode                   <Max Non-Turbo Performance>
Intel(R) SpeedStep(tm)                  <Enabled>
Race To Halt (RTH)                      <Enabled>
Intel(R) Speed Shift Technology         <Disabled>
HDC Control                             <Enabled>
Turbo Mode                              <Enabled>
  View/Configure Turbo Options (Enter to expand)

Current Turbo Settings

Max Turbo Power Limit           4095.875
Min Turbo Power Limit           0.0
Package TDP Limit               80.0
Power Limit 1                   80.0
Power Limit 2                   112.0
1-core Turbo Ratio              46
2-core Turbo Ratio              45
3-core Turbo Ratio              44
4-core Turbo Ratio              43
5-core Turbo Ratio              42
6-core Turbo Ratio              41

Power Limit 1 Override          <Disabled>
Power Limit 2 Override          <Enabled>
Power Limit 2                   [0]
Energy Efficient Turbo          <Enabled>

(press ESC)

CPU VR Settings (Enter to expand)

VR Power Delivery Design        <CFL_S_95_WATT_8_2>
PSYS Slope                      [0]
PSYS Offset                     [0]
PSYS PMax Power                 [0]
Acoustic Noise Settings (Enter to expand)

Acoustic Noise Mitigation               <Disabled>
Pre Wake Time                           [0]
Ramp Up Time                            [0]
Ramp Down Time                          [0]

IA VR Domain
Disable Fast PKG C State Ramp for IA    <False>
```

```
Domain
Slow Slew Rate for IA Domain            <Fast/2>

GT VR Domain
Disable Fast PKG C State Ramp for GT    <False>
Domain
Slow Slew Rate for GT Domain            <Fast/2>

SA VR Domain
Disable Fast PKG C State Ramp for SA    <False>
Domain
Slow Slew Rate for SA Domain            <Fast/2>

VccIn VR Domain
Disable Fast PKG C State Ramp for VccIn <False>
Domain
Slow Slew Rate for VccIn Domain         <Fast/2>

(press ESC)

Core/IA VR Settings (Enter to expand)

VR Config Enable                <Enabled>
AC Loadline                     [160]
DC Loadline                     [160]
PS Current Threshold1           [80]
PS Current Threshold2           [20]
PS Current Threshold3           [4]
PS3 Enable                      <Enabled>
PS4 Enable                      <Enabled>
IMON Slope                      [0]
IMON Offset                     [0]
  IMON Prefix                   <+>
VR Current Limit                [772]
VR Voltage Limit                [1520]
TDC Enable                      <Enabled>
TDC Current Limit               [1200]
TDC Time Window                 <1 ms>
TDC Lock                        <Disabled>

(press ESC)

Intersil VR Command             <Disabled>

(press ESC)

Platform PL1 Enable                     <Disabled>
Platform PL2 Enable                     <Disabled>
Power Limit 4 Override                  <Disabled>
C states                                <Enabled>
  Enhanced C-states                     <Enabled>
  C-State Auto Demotion                 <C1 and C3>
  C-State Un-demotion                   <C1 and C3>
  Package C-State Demotion              <Disabled>
  Package C-State Un-demotion           <Disabled>
CState Pre-Wake                         <Enabled>
IO MWAIT Redirection                    <Disabled>
Package C State Limit                   <Auto>
C3 Latency Control (MSR 0x60A)
Time Unit                               <1024 ns>
Latency                                 [78]
C6/C7 Short Latency Control (MSR 0x60B)
Time Unit                               <1024 ns>
Latency                                 [118]
C6/C7 Long Latency Control (MSR 0x60C)
Time Unit                               <1024 ns>
Latency                                 [148]
C8 Latency Control (MSR 0x633)
Time Unit                               <1024 ns>
Latency                                 [250]
C9 Latency Control (MSR 0x634)
Time Unit                               <1024 ns>
Latency                                 [332]
C10 Latency Control (MSR 0x635)
Time Unit                               <1024 ns>
Latency                                 [1010]
Thermal Monitor                         <Enabled>
Interrupt Redirection Mode Selection    <PAIR with Fixed Priority>
Timed MWAIT                             <Disabled>
Custom P-state Table (Enter to expand)

Number of P states                      [0]
```

```
(press ESC)

Energy Performance Gain                 <Disabled>
EPG DIMM Idd3N                          [26]
EPG DIMM Idd3P                          [11]
Power Limit 3 Settings (Enter to expand)

Power Limit 3 Override                  <Disabled>

(press ESC)

CPU Lock Configuration (Enter to expand)

CPG Lock                                <Enabled>
Overclocking Lock                       <Disabled>

(press ESC twice)

GT - Power Management Control (Enter to expand)

RC6(Render Standby)             <Enabled>
Maximum GT frequency            <Default Max Frequency>
Disable Turbo GT frequency      <Disabled>

(press ESC twice)

OverClocking Performance Menu (Enter to expand)

OverClocking Feature            <Disabled>
WDT Enable                      <Enabled>

(press ESC)

Memory Configuration (Enter to expand)

Memory Thermal Configuration (Enter to expand)

Memory Power and Thermal Throttling (Enter to expand)

DDR PowerDown and idle counter          <BIOS>
For LPDDR Only: DDR PowerDown and idle  <BIOS>
counter
REFRESH_2X_MODE                         <Disabled>
LPDDR Thermal Sensor                    <Enabled>
SelfRefresh Enable                      <Enabled>
SelfRefresh IdleTimer                   [512]
Throttler CKEMin Defeature              <Disabled>
Throttler CKEMin Timer                  [48]
Dram Power Meter (Enter to expand)

Use user provided power weights, scale  <Disabled>
factor, and channel power floor values
Energy Scale Factor                     [4]

Idle Energy Ch0Dimm0                    [10]
PowerDown Energy Ch0Dimm0               [6]
Activate Energy Ch0Dimm0                [172]
Read Energy Ch0Dimm0                    [212]
Write Energy Ch0Dimm0                   [221]

Idle Energy Ch0Dimm1                    [10]
PowerDown Energy Ch0Dimm1               [6]
Activate Energy Ch0Dimm1                [172]
Read Energy Ch0Dimm1                    [212]
Write Energy Ch0Dimm1                   [221]

Idle Energy Ch1Dimm0                    [10]
PowerDown Energy Ch1Dimm0               [6]
Activate Energy Ch1Dimm0                [172]
Read Energy Ch1Dimm0                    [212]
Write Energy Ch1Dimm0                   [221]

Idle Energy Ch1Dimm1                    [10]
PowerDown Energy Ch1Dimm1               [6]
Activate Energy Ch1Dimm1                [172]
Read Energy Ch1Dimm1                    [212]
Write Energy Ch1Dimm1                   [221]

(press ESC)

Memory Thermal Reporting (Enter to expand)
```

```
Lock Thermal Management Registers       <Enabled>

Memory Thermal Reporting

Extern Therm Status                     <Disabled>
Closed Loop Therm Manage                <Disabled>
Open Loop Therm Manage                  <Disabled>

Thermal Threshold Settings

Warm Threshold Ch0 Dimm0                [255]
Warm Threshold Ch0 Dimm1                [255]
Hot Threshold Ch0 Dimm0                 [255]
Hot Threshold Ch0 Dimm1                 [255]
Warm Threshold Ch1 Dimm0                [255]
Warm Threshold Ch1 Dimm1                [255]
Hot Threshold Ch1 Dimm0                 [255]
Hot Threshold Ch1 Dimm1                 [255]

Thermal Throttle Budget Settings

Warm Budget Ch0 Dimm0                   [255]
Warm Budget Ch0 Dimm1                   [255]
Hot Budget Ch0 Dimm0                    [255]
Hot Budget Ch0 Dimm1                    [255]
Warm Budget Ch1 Dimm0                   [255]
Warm Budget Ch1 Dimm1                   [255]
Hot Budget Ch1 Dimm0                    [255]
Hot Budget Ch1 Dimm1                    [255]

(press ESC)

Memory RAPL (Enter to expand)

Rapl Power Floor Ch0            [0]
Rapl Power Floor Ch1            [0]

RAPL PL Lock                    <Disabled>
RAPL PL 1 enable                <Disabled>
RAPL PL 1 Power                 [0]
RAPL PL 1 WindowX               [0]
RAPL PL 1 WindowY               [0]

RAPL PL 2 enable                <Disabled>
RAPL PL 2 Power                 [222]
RAPL PL 2 WindowX               [1]
RAPL PL 2 WindowY               [10]

(press ESC twice)

Memory Thermal Management       <Disabled>

(press ESC)

Memory Training Algorithms (Enter to expand)

Early Command Training                    <Enabled>
SenseAmp Offset Training                  <Enabled>
Early ReadMPR Timing Centering 2D         <Enabled>
Read MPR Training                         <Enabled>
Receive Enable Training                   <Enabled>
Jedec Write Levelling                     <Enabled>
Early Write Time Centering 2D             <Enabled>
Early Read Time Centering 2D              <Enabled>
Write Timing Centering 1D                 <Enabled>
Write Voltage Centering 1D                <Enabled>
Read Timing Centering 1D                  <Enabled>
Dimm ODT Training*                        <Enabled>
  Max RTT_WR                              <ODT Off>
DIMM RON Training*                        <Enabled>
Write Drive Strength/Equalization 2D*     <Disabled>
Write Slew Rate Training*                 <Enabled>
Read ODT Training*                        <Enabled>
Read Equalization Training*               <Enabled>
Read Amplifier Training*                  <Enabled>
Write Timing Centering 2D                 <Enabled>
Read Timing Centering 2D                  <Enabled>
Command Voltage Centering                 <Enabled>
Write Voltage Centering 2D                <Enabled>
Read Voltage Centering 2D                 <Enabled>
Late Command Training                     <Enabled>
```

```
Round Trip Latency                          <Enabled>
Turn Around Timing Training                 <Enabled>
Rank Margin Tool                            <Disabled>
Memory Test                                 <Disabled>
DIMM SPD Alias Test                         <Enabled>
Receive Enable Centering 1D                 <Enabled>
Retrain Margin Check                        <Enabled>
Write Drive Strength Up/Dn independently    <Disabled>

(press ESC)

Memory Configuration

Memory RC Version                           0.7.1.121
Memory Frequency                            2667 MHz
Memory Timings (tCL-tRCD-tRP-tRAS)          19-19-19-43

Channel 0 Slot 0                            Populated & Enabled
    Size                                    16384 MB (DDR4)
    Number of Ranks                         2
    Manufacturer                            Transcend {varies}
Channel 0 Slot 1                            Not Populated / Disabled
Channel 1 Slot 0                            Populated & Enabled
    Size                                    16384 MB (DDR4)
    Number of Ranks                         2
    Manufacturer                            Transcend {varies}
Channel 1 Slot 1                            Not Populated / Disabled

{The HMA will have Ch0 Sl1 and Ch1 Sl1 populated with 16GB DIMMs}

Memory ratio/reference clock options moved to Overclock->Memory->Custom Profile menu
MRC ULT Safe Config                         <Disabled>
LPDDR DqDqs Re-Training                     <Enabled>
Safe Mode Support                           <Disabled>
Memory Test on Warm Boot                    <Enabled>
Maximum Memory Frequency                    <2667>
HOB Buffer Size                             <Auto>
ECC Support                                 <Enabled>
Max TOLUD                                   <Dynamic>
SA GV                                       <Enabled>
SA GV Low Freq                              <MRC default>
Retrain on Fast Fail                        <Enabled>
BER Support                                 <Enabled>
Enable RH Prevention                        <Enabled>
Row Hammer Solution                         <Hardware RHP>
RH Activation Probability                   <1/2^11>
Exit On Failure (MRC)                       <Enabled>
MC Lock                                     <Enabled>
Probless Trace                              <Disabled>
Enable/Disable IED (Intel Enhanced Debug)   <Disabled>
Ch Hash Support                             <Enabled>
Ch Hash Mask                                [0]
Ch Hash Interleaved Bit                     <BIT8>
VC1 Read Metering                           <Enabled>
Strong Weak Leaker                          [7]
Memory Scrambler                            <Enabled>
Force ColdReset                             <Disabled>
Channel A DIMM Control                      <Enable both DIMMs>
Channel B DIMM Control                      <Enable both DIMMs>
Force Single Rank                           <Disabled>
Memory Remap                                <Enabled>
Time Measure                                <Disabled>
Fast Boot                                   <Enabled>
Train On Warm Boot                          <Disabled>
Rank Margin Tool Per Task                   <Disabled>
Training Tracing                            <Disabled>
Lpddr Mem WL Set                            <Set B>
BDAT ACPI Table Support                     <Disabled>
BDAT Memory Test Type                       <Rank Margin Tool Rank>
Rank Margin Tool Loop Count                 [0]
Lpddr Dram Odt                              <Auto>
DDR4 Skip Refresh Enable                    <Enabled>
Late Command Training Relaxed Reset         <Disabled>

(press ESC)

System Agent (SA) Configuration (Enter to expand)

SA PCIe Code Version            7.0.118.48
VT-d                            Supported

Graphics Configuration (Enter to expand)
```

```
Skip Scaning of External Gfx Card       <Disabled>

Primary Display                         <Auto>
Select PCIE Card                        <Auto>
Internal Graphics                       <Disabled>
GTT Size                                <8MB>
Aperture Size                           <256MB>
PSMI SUPPORT                            <Disabled>
DVMT Pre-Allocated                      <32M>
DVMT Total Gfx Mem                      <256M>
Intel Graphics Pei Display Peim         <Disabled>
PM Support                              <Enabled>
PAVP Enable                             <Enabled>
Cdynmax Clamping Enable                 <Enabled>
Cd Clock Frequency                      <675 Mhz>
Skip CD Clock Init in S3 resume         <Disabled>
IUER Button Enable                      <Disabled>

(press ESC)

DMI/OPI Configuration (Enter to expand)

DMI                                     X4  Gen3

DMI Max Link Speed                      <Auto>
DMI Gen3 Eq Phase 2                     <Auto>
DMI Gen3 Eq Phase 3 Method              <Auto>
Program Static Phase1 Eq                <Enabled>
Gen3 Root Port Preset value for each Lane (Enter to expand)

Lane 0          [4]
Lane 1          [4]
Lane 2          [4]
Lane 3          [4]

(press ESC)

Gen3 Endpoint Preset value for each Lane (Enter to expand)

Lane 0          [7]
Lane 1          [7]
Lane 2          [7]
Lane 3          [7]

(press ESC)

Gen3 Endpoint Hint value for each Lane (Enter to expand)

Lane 0          [2]
Lane 1          [2]
Lane 2          [2]
Lane 3          [2]

(press ESC)

Gen3 RxCTLE Control (Enter to expand)

Bundle0         [0]
Bundle1         [0]

(press ESC)

DMI Link ASPM Control           <L0sL1>
DMI Extended Sync Control       <Disabled>
DMI De-emphasis Control         <-3.5 dB>
DMI IOT                         <Disabled>

(press ESC)

PEG Port Configuration (Enter to expand)

PEG 0:1:0                       Not Present
  Enable Root Port              <Auto>
  Max Link Speed                <Auto>
  PEG0 Slot Power Limit Value   [75]
  PEG0 Slot Power Limit Scale   <1.0x>
  PEG0 Physical Slot Number     [1]
PEG 0:1:1                       x4  Gen2
  Enable Root Port              <Auto>
  Max Link Speed                <Auto>
  Max Link Width                <Auto>
```

```
  Power Down Unused Lanes       <Auto>
  Gen3 Eq Phase 2               <Auto>
  Gen3 Eq Phase 3 Method        <Auto>
  ASPM                          <Auto>
  De-emphasis Control           <-3.5 dB>
  OBFF                          <Enabled>
  LTR                           <Enabled>
  PEG1 Slot Power Limit Value   [75]
  PEG1 Slot Power Limit Scale   <1.0x>
  PEG1 Physical Slot Number     [2]
  Max Link Width                <Auto>
  Power Down Unused Lanes       <Auto>
  Gen3 Eq Phase 2               <Auto>
  Gen3 Eq Phase 3 Method        <Auto>
  ASPM                          <Auto>
  De-emphasis Control           <-3.5 dB>
  OBFF                          <Enabled>
  LTR                           <Enabled>
  PEG2 Slot Power Limit Value   [75]
  PEG2 Slot Power Limit Scale   <1.0x>
  PEG2 Physical Slot Number     [3]
  PEG3 Slot Power Limit Value   [75]
  PEG3 Slot Power Limit Scale   <1.0x>
  PEG3 Physical Slot Number     [3]

Program PCIe ASPM after OpROM   <Disabled>
Program Static Phase1 Eq        <Enabled>
Gen3 Root Port Preset value for each Lane (Enter to expand)

Lane 0          [7]
Lane 1          [7]
Lane 2          [7]
Lane 3          [7]
Lane 4          [7]
Lane 5          [7]
Lane 6          [7]
Lane 7          [7]
Lane 8          [7]
Lane 9          [7]
Lane 10         [7]
Lane 11         [7]
Lane 12         [7]
Lane 13         [7]
Lane 14         [7]
Lane 15         [7]

(press ESC)

Gen3 Endpoint Preset value for each Lane (Enter to expand)

Lane 0          [7]
Lane 1          [7]
Lane 2          [7]
Lane 3          [7]
Lane 4          [7]
Lane 5          [7]
Lane 6          [7]
Lane 7          [7]
Lane 8          [7]
Lane 9          [7]
Lane 10         [7]
Lane 11         [7]
Lane 12         [7]
Lane 13         [7]
Lane 14         [7]
Lane 15         [7]

(press ESC)

Gen3 Endpoint Hint value for each Lane (Enter to expand)

Lane 0          [2]
Lane 1          [2]
Lane 2          [2]
Lane 3          [2]
Lane 4          [2]
Lane 5          [2]
Lane 6          [2]
Lane 7          [2]
Lane 8          [2]
Lane 9          [2]
Lane 10         [2]
```

```
Lane 11         [2]
Lane 12         [2]
Lane 13         [2]
Lane 14         [2]
Lane 15         [2]

(press ESC)

Gen3 RxCTLE Control (Enter to expand)

Bundle0                 [0]
Bundle1                 [0]
Bundle2                 [0]
Bundle3                 [0]
Bundle4                 [0]
Bundle5                 [0]
Bundle6                 [0]
Bundle7                 [0]
PEG10 RxCTLE Override   <Disabled>
PEG11 RxCTLE Override   <Disabled>
PEG12 RxCTLE Override   <Disabled>
DMI RxCTLE Override     <Disabled>

(press ESC)

Gen3 Adaptive Software Equalization
  Always Attempt SW EQ          <Disabled>
  Number of Presets to test     <Auto>
  Allow PERST# GPIO Usage       <Enabled>
  SW EQ Enable VOC              <Auto>
  Jitter Dwell Time             [3000]
  Jitter Error Target           [2]
  VOC Dwell Time                [10000]
  VOC Error Target              [2]
Generate BDAT PEG Margin Data   <Disabled>
PCIe Rx CEM Test Mode           <Disabled>
PCIe Spread Spectrum Clocking   <Enabled>

(press ESC)

Display setup menu (Enter to expand)

Display Configuration

(press ESC)

Stop Grant Configuration        <Auto>
VT-d                            <Enabled>
CHAP Device (B0:D7:F0)          <Disabled>
Thermal Device (B0:D4:F0)       <Disabled>
GNA Device (B0:D8:F0)           <Enabled>
CRID Support                    <Disabled>
Above 4GB MMIO BIOS assignment  <Disabled>
X2APIC Opt Out                  <Disabled>
IPU Device (B0:D5:F0)           <Disabled>

(press ESC)

PCH-IO Configuration (Enter to expand)

PCI Express Configuration (Enter to expand)

PCI Express Clock Gating        <Enabled>
DMI Link ASPM Control           <Auto>
PCIE Port assigned to LAN       Disabled
Port8xh Decode                  <Disabled>
Peer Memory Write Enable        <Disabled>
Compliance Test Mode            <Disabled>
PCIe-USB Glitch W/A             <Disabled>
PCIe function swap              <Enabled>
PCI Express Gen3 Eq Lanes (Enter to expand)

PCIE1  Cm       [6]
PCIE1  Cp       [2]
PCIE2  Cm       [6]
PCIE2  Cp       [2]
PCIE3  Cm       [6]
PCIE3  Cp       [2]
PCIE4  Cm       [6]
PCIE4  Cp       [2]
PCIE5  Cm       [6]
PCIE5  Cp       [2]
```

```
PCIE6  Cm       [6]
PCIE6  Cp       [2]
PCIE7  Cm       [6]
PCIE7  Cp       [2]
PCIE8  Cm       [6]
PCIE8  Cp       [2]
PCIE9  Cm       [6]
PCIE9  Cp       [2]
PCIE10 Cm       [6]
PCIE10 Cp       [2]
PCIE11 Cm       [6]
PCIE11 Cp       [2]
PCIE12 Cm       [6]
PCIE12 Cp       [2]
PCIE13 Cm       [6]
PCIE13 Cp       [2]
PCIE14 Cm       [6]
PCIE14 Cp       [2]
PCIE15 Cm       [6]
PCIE15 Cp       [2]
PCIE16 Cm       [6]
PCIE16 Cp       [2]
PCIE17 Cm       [6]
PCIE17 Cp       [2]
PCIE18 Cm       [6]
PCIE18 Cp       [2]
PCIE19 Cm       [6]
PCIE19 Cp       [2]
PCIE20 Cm       [6]
PCIE20 Cp       [2]
PCIE21 Cm       [6]
PCIE21 Cp       [2]
PCIE22 Cm       [6]
PCIE22 Cp       [2]
PCIE23 Cm       [6]
PCIE23 Cp       [2]
PCIE24 Cm       [6]
PCIE24 Cp       [2]

Override SW EQ settings <Disabled>

(press ESC)

IMR Configuration (Press Enter to exand)

PCIe IMR                <Disabled>

(press ESC)

PCI Express Root Port 1 (Enter to expand)

PCI Express Root Port 1         <Enabled>
Disable Gen2 PII Shutdown and L1<Disabled>
Controller Power gating
  Topology                      <Board specific>
Connection Type                 <Slot>
ASPM 0                          <Auto>
L1 Substrates                   <L1.1 & L1.2>
Gen3 Eq Phase3 Method           <Hardware>
UPTP                            [5]
DPTP                            [7]
ACS                             <Enabled>
PTM                             <Enabled>
DPC                             <Enabled>
EDPC                            <Enabled>
  URR                           <Disabled>
  FER                           <Disabled>
  NFER                          <Disabled>
  CER                           <Disabled>
  CTO                           <Disabled>
  SEFE                          <Disabled>
  SENFE                         <Disabled>
  SECE                          <Disabled>
  PME SCI                       <Enabled>
  Hot Plug                      <Disabled>
  Advanced Error Reporting      <Enabled>
PCIe Speed                      <Auto>
  Transmitter Half Swing        <Disabled>
Detect Timeout                  [0]
Extra Bus Reserved              [0]
Reserved Memory                 [10]
Reserved I/O                    [4]
```

```
PCH PCIe LTR Configuration
LTR                           <Enabled>
  Snoop Latency Override      <Auto>
  Non Snoop Latency Override  <Auto>
  Force LTR Override          <Disabled>

LTR Lock                      <Disabled>

(press ESC)

PCI Express Root Port 2       Shadowed by x2/x4 port
PCI Express Root Port 3       Shadowed by x2/x4 port
PCI Express Root Port 4       Shadowed by x2/x4 port
PCI Express Root Port 5 (Enter to expand)

PCI Express Root Port 5       <Enabled>
Disable Gen2 PII Shutdown and L1<Disabled>
Controller Power gating
  Topology                    <Board specific>
Connection Type               <Slot>
ASPM 4                        <Auto>
L1 Substrates                 <L1.1 & L1.2>
Gen3 Eq Phase3 Method         <Hardware>
UPTP                          [5]
DPTP                          [7]
ACS                           <Enabled>
PTM                           <Enabled>
DPC                           <Enabled>
EDPC                          <Enabled>
  URR                         <Disabled>
  FER                         <Disabled>
  NFER                        <Disabled>
  CER                         <Disabled>
  CTO                         <Disabled>
  SEFE                        <Disabled>
  SENFE                       <Disabled>
  SECE                        <Disabled>
  PME SCI                     <Enabled>
  Hot Plug                    <Disabled>
  Advanced Error Reporting    <Enabled>
PCIe Speed                    <Auto>
  Transmitter Half Swing      <Disabled>
Detect Timeout                [0]
Extra Bus Reserved            [0]
Reserved Memory               [10]
Reserved I/O                  [4]

PCH PCIe LTR Configuration
LTR                           <Enabled>
  Snoop Latency Override      <Auto>
  Non Snoop Latency Override  <Auto>
  Force LTR Override          <Disabled>

LTR Lock                      <Disabled>

(press ESC)

PCI Express Root Port 6 (Enter to expand)

PCI Express Root Port 6       <Enabled>
Disable Gen2 PII Shutdown and L1<Disabled>
Controller Power gating
  Topology                    <Board specific>
Connection Type               <Slot>
ASPM 5                        <Auto>
L1 Substrates                 <L1.1 & L1.2>
Gen3 Eq Phase3 Method         <Hardware>
UPTP                          [5]
DPTP                          [7]
ACS                           <Enabled>
PTM                           <Enabled>
DPC                           <Enabled>
EDPC                          <Enabled>
  URR                         <Disabled>
  FER                         <Disabled>
  NFER                        <Disabled>
  CER                         <Disabled>
  CTO                         <Disabled>
  SEFE                        <Disabled>
  SENFE                       <Disabled>
  SECE                        <Disabled>
```

```
  PME SCI                       <Enabled>
  Hot Plug                      <Disabled>
  Advanced Error Reporting      <Enabled>
PCIe Speed                      <Auto>
  Transmitter Half Swing        <Disabled>
Detect Timeout                  [0]
Extra Bus Reserved              [0]
Reserved Memory                 [10]
Reserved I/O                    [4]

PCH PCIe LTR Configuration
LTR                             <Enabled>
  Snoop Latency Override        <Auto>
  Non Snoop Latency Override    <Auto>
  Force LTR Override            <Disabled>

LTR Lock                        <Disabled>

(press ESC)

PCI Express Root Port 7 (Enter to expand)

PCI Express Root Port 7         <Enabled>
Disable Gen2 PII Shutdown and L1<Disabled>
Controller Power gating
  Topology                      <Board specific>
Connection Type                 <Slot>
ASPM 6                          <Auto>
L1 Substrates                   <L1.1 & L1.2>
Gen3 Eq Phase3 Method           <Hardware>
UPTP                            [5]
DPTP                            [7]
ACS                             <Enabled>
PTM                             <Enabled>
DPC                             <Enabled>
EDPC                            <Enabled>
  URR                           <Disabled>
  FER                           <Disabled>
  NFER                          <Disabled>
  CER                           <Disabled>
  CTO                           <Disabled>
  SEFE                          <Disabled>
  SENFE                         <Disabled>
  SECE                          <Disabled>
  PME SCI                       <Enabled>
  Hot Plug                      <Disabled>
  Advanced Error Reporting      <Enabled>
PCIe Speed                      <Auto>
  Transmitter Half Swing        <Disabled>
Detect Timeout                  [0]
Extra Bus Reserved              [0]
Reserved Memory                 [10]
Reserved I/O                    [4]

PCH PCIe LTR Configuration
LTR                             <Enabled>
  Snoop Latency Override        <Auto>
  Non Snoop Latency Override    <Auto>
  Force LTR Override            <Disabled>

LTR Lock                        <Disabled>

(press ESC)

PCI Express Root Port 8 (Enter to expand)

PCI Express Root Port 8         <Enabled>
Disable Gen2 PII Shutdown and L1<Disabled>
Controller Power gating
  Topology                      <Board specific>
Connection Type                 <Slot>
ASPM 7                          <Auto>
L1 Substrates                   <L1.1 & L1.2>
Gen3 Eq Phase3 Method           <Hardware>
UPTP                            [5]
DPTP                            [7]
ACS                             <Enabled>
PTM                             <Enabled>
DPC                             <Enabled>
EDPC                            <Enabled>
  URR                           <Disabled>
  FER                           <Disabled>
```

```
  NFER                          <Disabled>
  CER                           <Disabled>
  CTO                           <Disabled>
  SEFE                          <Disabled>
  SENFE                         <Disabled>
  SECE                          <Disabled>
  PME SCI                       <Enabled>
  Hot Plug                      <Disabled>
  Advanced Error Reporting      <Enabled>
PCIe Speed                      <Auto>
  Transmitter Half Swing        <Disabled>
Detect Timeout                  [0]
Extra Bus Reserved              [0]
Reserved Memory                 [10]
Reserved I/O                    [4]

PCH PCIe LTR Configuration
LTR                             <Enabled>
  Snoop Latency Override        <Auto>
  Non Snoop Latency Override    <Auto>
  Force LTR Override            <Disabled>

LTR Lock                        <Disabled>

(press ESC)

PCI Express Root Port 9 (Enter to expand)

PCI Express Root Port 9         <Enabled>
Disable Gen2 PII Shutdown and L1<Disabled>
Controller Power gating
  Topology                      <Board specific>
Connection Type                 <Slot>
ASPM 8                          <Auto>
L1 Substrates                   <L1.1 & L1.2>
Gen3 Eq Phase3 Method           <Hardware>
UPTP                            [5]
DPTP                            [7]
ACS                             <Enabled>
PTM                             <Enabled>
DPC                             <Enabled>
EDPC                            <Enabled>
  URR                           <Disabled>
  FER                           <Disabled>
  NFER                          <Disabled>
  CER                           <Disabled>
  CTO                           <Disabled>
  SEFE                          <Disabled>
  SENFE                         <Disabled>
  SECE                          <Disabled>
  PME SCI                       <Enabled>
  Hot Plug                      <Disabled>
  Advanced Error Reporting      <Enabled>
PCIe Speed                      <Auto>
  Transmitter Half Swing        <Disabled>
Detect Timeout                  [0]
Extra Bus Reserved              [0]
Reserved Memory                 [10]
Reserved I/O                    [4]

PCH PCIe LTR Configuration
LTR                             <Enabled>
  Snoop Latency Override        <Auto>
  Non Snoop Latency Override    <Auto>
  Force LTR Override            <Disabled>

LTR Lock                        <Disabled>

(press ESC)

PCI Express Root Port 10        Shadowed by x2/x4 port
PCI Express Root Port 11        Shadowed by x2/x4 port
PCI Express Root Port 12        Shadowed by x2/x4 port
PCI Express Root Port 13        Lane configured as USB/SATA
PCI Express Root Port 14        Lane configured as USB/SATA
PCI Express Root Port 15        Lane configured as USB/SATA
PCI Express Root Port 16        Lane configured as USB/SATA
PCI Express Root Port 17        Lane configured as USB/SATA
PCI Express Root Port 18        Shadowed by x2/x4 port
PCI Express Root Port 19        Shadowed by x2/x4 port
PCI Express Root Port 20        Shadowed by x2/x4 port
PCI Express Root Port 21 (Enter to expand)
```

```
PCI Express Root Port 21        <Enabled>
Disable Gen2 PII Shutdown and L1<Disabled>
Controller Power gating
  Topology                      <Board specific>
Connection Type                 <Slot>
ASPM 20                         <Auto>
L1 Substrates                   <L1.1 & L1.2>
Gen3 Eq Phase3 Method           <Hardware>
UPTP                            [5]
DPTP                            [7]
ACS                             <Enabled>
PTM                             <Enabled>
DPC                             <Enabled>
EDPC                            <Enabled>
  URR                           <Disabled>
  FER                           <Disabled>
  NFER                          <Disabled>
  CER                           <Disabled>
  CTO                           <Disabled>
  SEFE                          <Disabled>
  SENFE                         <Disabled>
  SECE                          <Disabled>
  PME SCI                       <Enabled>
  Hot Plug                      <Disabled>
  Advanced Error Reporting      <Enabled>
PCIe Speed                      <Auto>
  Transmitter Half Swing        <Disabled>
Detect Timeout                  [0]
Extra Bus Reserved              [0]
Reserved Memory                 [10]
Reserved I/O                    [4]

PCH PCIe LTR Configuration
LTR                             <Enabled>
  Snoop Latency Override        <Auto>
  Non Snoop Latency Override    <Auto>
  Force LTR Override            <Disabled>

LTR Lock                        <Disabled>

(press ESC)

PCI Express Root Port 22 (Enter to expand)

PCI Express Root Port 22        <Enabled>
Disable Gen2 PII Shutdown and L1<Disabled>
Controller Power gating
  Topology                      <Board specific>
Connection Type                 <Slot>
ASPM 21                         <Auto>
L1 Substrates                   <L1.1 & L1.2>
Gen3 Eq Phase3 Method           <Hardware>
UPTP                            [5]
DPTP                            [7]
ACS                             <Enabled>
PTM                             <Enabled>
DPC                             <Enabled>
EDPC                            <Enabled>
  URR                           <Disabled>
  FER                           <Disabled>
  NFER                          <Disabled>
  CER                           <Disabled>
  CTO                           <Disabled>
  SEFE                          <Disabled>
  SENFE                         <Disabled>
  SECE                          <Disabled>
  PME SCI                       <Enabled>
  Hot Plug                      <Disabled>
  Advanced Error Reporting      <Enabled>
PCIe Speed                      <Auto>
  Transmitter Half Swing        <Disabled>
Detect Timeout                  [0]
Extra Bus Reserved              [0]
Reserved Memory                 [10]
Reserved I/O                    [4]

PCH PCIe LTR Configuration
LTR                             <Enabled>
  Snoop Latency Override        <Auto>
  Non Snoop Latency Override    <Auto>
  Force LTR Override            <Disabled>
```

```
LTR Lock                        <Disabled>

(press ESC)

PCI Express Root Port 23 (Enter to expand)

PCI Express Root Port 23        <Enabled>
Disable Gen2 PII Shutdown and L1<Disabled>
Controller Power gating
  Topology                      <Board specific>
Connection Type                 <Slot>
ASPM 22                         <Auto>
L1 Substrates                   <L1.1 & L1.2>
Gen3 Eq Phase3 Method           <Hardware>
UPTP                            [5]
DPTP                            [7]
ACS                             <Enabled>
PTM                             <Enabled>
DPC                             <Enabled>
EDPC                            <Enabled>
  URR                           <Disabled>
  FER                           <Disabled>
  NFER                          <Disabled>
  CER                           <Disabled>
  CTO                           <Disabled>
  SEFE                          <Disabled>
  SENFE                         <Disabled>
  SECE                          <Disabled>
  PME SCI                       <Enabled>
  Hot Plug                      <Disabled>
  Advanced Error Reporting      <Enabled>
PCIe Speed                      <Auto>
  Transmitter Half Swing        <Disabled>
Detect Timeout                  [0]
Extra Bus Reserved              [0]
Reserved Memory                 [10]
Reserved I/O                    [4]

PCH PCIe LTR Configuration
LTR                             <Enabled>
  Snoop Latency Override        <Auto>
  Non Snoop Latency Override    <Auto>
  Force LTR Override            <Disabled>

LTR Lock                        <Disabled>

(press ESC)

PCI Express Root Port 24 (Enter to expand)

PCI Express Root Port 24        <Enabled>
Disable Gen2 PII Shutdown and L1<Disabled>
Controller Power gating
  Topology                      <Board specific>
Connection Type                 <Slot>
ASPM 23                         <Auto>
L1 Substrates                   <L1.1 & L1.2>
Gen3 Eq Phase3 Method           <Hardware>
UPTP                            [5]
DPTP                            [7]
ACS                             <Enabled>
PTM                             <Enabled>
DPC                             <Enabled>
EDPC                            <Enabled>
  URR                           <Disabled>
  FER                           <Disabled>
  NFER                          <Disabled>
  CER                           <Disabled>
  CTO                           <Disabled>
  SEFE                          <Disabled>
  SENFE                         <Disabled>
  SECE                          <Disabled>
  PME SCI                       <Enabled>
  Hot Plug                      <Disabled>
  Advanced Error Reporting      <Enabled>
PCIe Speed                      <Auto>
  Transmitter Half Swing        <Disabled>
Detect Timeout                  [0]
Extra Bus Reserved              [0]
Reserved Memory                 [10]
Reserved I/O                    [4]
```

```
PCH PCIe LTR Configuration
LTR                             <Enabled>
  Snoop Latency Override        <Auto>
  Non Snoop Latency Override    <Auto>
  Force LTR Override            <Disabled>

LTR Lock                        <Disabled>

(press ESC)

PCIE clocks (Press Enter to expand)

Clock0 assignment       <Platform-POR>
ClkReq for Clock0       <Platform-POR>
Clock1 assignment       <Platform-POR>
ClkReq for Clock1       <Platform-POR>
Clock2 assignment       <Platform-POR>
ClkReq for Clock2       <Platform-POR>
Clock3 assignment       <Platform-POR>
ClkReq for Clock3       <Platform-POR>
Clock4 assignment       <Platform-POR>
ClkReq for Clock4       <Platform-POR>
Clock5 assignment       <Platform-POR>
ClkReq for Clock5       <Platform-POR>
Clock6 assignment       <Platform-POR>
ClkReq for Clock6       <Platform-POR>
Clock7 assignment       <Platform-POR>
ClkReq for Clock7       <Platform-POR>
Clock8 assignment       <Platform-POR>
ClkReq for Clock8       <Platform-POR>
Clock9 assignment       <Platform-POR>
ClkReq for Clock9       <Platform-POR>
Clock10 assignment      <Platform-POR>
ClkReq for Clock10      <Platform-POR>
Clock11 assignment      <Platform-POR>
ClkReq for Clock11      <Platform-POR>
Clock12 assignment      <Platform-POR>
ClkReq for Clock12      <Platform-POR>
Clock13 assignment      <Platform-POR>
ClkReq for Clock13      <Platform-POR>
Clock14 assignment      <Platform-POR>
ClkReq for Clock14      <Platform-POR>
Clock15 assignment      <Platform-POR>
ClkReq for Clock15      <Platform-POR>

(press ESC twice)

SATA and RST Configuration (Enter to expand)

SATA Controller(s)              <Enabled>
SATA Mode Selection             <AHCI>
SATA Test Mode                  <Disabled>
Software Feature Mask Configuration (Enter to expand)

HDD Unlock                      <Enabled>
LED Locate                      <Enabled>

(press ESC)

Aggressive LPM Support          <Enabled>

Serial ATA Port 0               ST2000NM000A-2 (2000.3GB)
  Software Preserve             SUPPORTED
  Port 0                        <Enabled>
  Hot Plug                      <Disabled>
  Configured as eSATA           Hot Plug supported
  External                      <Disabled>
  Spin Up Device                <Disabled>
  SATA Device Type              <Hard Disk Drive>
  Topology                      <Unknown>
  SATA Port 0 DevSlp            <Disabled>
  DITO Configuration            <Disabled>
  DITO Value                    [625]
  DM Value                      [15]
Serial ATA Port 1               Empty
  Software Preserve             Unknown
  Port 1                        <Enabled>
  Hot Plug                      <Disabled>
  Configured as eSATA           Hot Plug supported
  External                      <Disabled>
  Spin Up Device                <Disabled>
```

```
  SATA Device Type              <Hard Disk Drive>
  Topology                      <Unknown>
  SATA Port 1 DevSlp            <Disabled>
  DITO Configuration            <Disabled>
  DITO Value                    [625]
  DM Value                      [15]
Serial ATA Port 2               Empty
  Software Preserve             Unknown
  Port 2                        <Enabled>
  Hot Plug                      <Disabled>
  Configured as eSATA           Hot Plug supported
  External                      <Disabled>
  Spin Up Device                <Disabled>
  SATA Device Type              <Hard Disk Drive>
  Topology                      <Unknown>
  SATA Port 2 DevSlp            <Disabled>
  DITO Configuration            <Disabled>
  DITO Value                    [625]
  DM Value                      [15]
Serial ATA Port 3               Empty
  Software Preserve             Unknown
  Port 3                        <Enabled>
  Hot Plug                      <Disabled>
  Configured as eSATA           Hot Plug supported
  External                      <Disabled>
  Spin Up Device                <Disabled>
  SATA Device Type              <Hard Disk Drive>
  Topology                      <Unknown>
  SATA Port 3 DevSlp            <Disabled>
  DITO Configuration            <Disabled>
  DITO Value                    [625]
  DM Value                      [15]
Serial ATA Port 4               Empty
  Software Preserve             Unknown
  Port 4                        <Enabled>
  Hot Plug                      <Disabled>
  Configured as eSATA           Hot Plug supported
  External                      <Disabled>
  Spin Up Device                <Disabled>
  SATA Device Type              <Hard Disk Drive>
  Topology                      <Unknown>
  SATA Port 4 DevSlp            <Disabled>
  DITO Configuration            <Disabled>
  DITO Value                    [625]
  DM Value                      [15]
Serial ATA Port 5               Empty
  Software Preserve             Unknown
  Port 5                        <Enabled>
  Hot Plug                      <Disabled>
  Configured as eSATA           Hot Plug supported
  External                      <Disabled>
  Spin Up Device                <Disabled>
  SATA Device Type              <Hard Disk Drive>
  Topology                      <Unknown>
  SATA Port 5 DevSlp            <Disabled>
  DITO Configuration            <Disabled>
  DITO Value                    [625]
  DM Value                      [15]
Serial ATA Port 6               Empty
  Software Preserve             Unknown
  Port 6                        <Enabled>
  Hot Plug                      <Disabled>
  Configured as eSATA           Hot Plug supported
  External                      <Disabled>
  Spin Up Device                <Disabled>
  SATA Device Type              <Hard Disk Drive>
  Topology                      <Unknown>
  SATA Port 6 DevSlp            <Disabled>
  DITO Configuration            <Disabled>
  DITO Value                    [625]
  DM Value                      [15]
Serial ATA Port 7               Empty
  Software Preserve             Unknown
  Port 7                        <Enabled>
  Hot Plug                      <Disabled>
  Configured as eSATA           Hot Plug supported
  External                      <Disabled>
  Spin Up Device                <Disabled>
  SATA Device Type              <Hard Disk Drive>
  Topology                      <Unknown>
  SATA Port 7 DevSlp            <Disabled>
  DITO Configuration            <Disabled>
```

```
  DITO Value                    [625]
  DM Value                      [15]

(press ESC)

USB Configuration (Enter to expand)

XHCI Compliance Mode            <Disabled>
xDCI Support                    <Disabled>
USB2 PHY Sus Well Power Gating  <Enabled>

USB Overcurrent                 <Enabled>
USB Overcurrent Lock            <Enabled>

USB Port Disable Override       <Select Per-Pin>

USB SS Physical Connector #0    <Enabled>
USB SS Physical Connector #1    <Enabled>
USB SS Physical Connector #2    <Enabled>
USB SS Physical Connector #3    <Enabled>
USB SS Physical Connector #4    <Enabled>
USB SS Physical Connector #5    <Enabled>
USB SS Physical Connector #6    <Enabled>
USB SS Physical Connector #7    <Enabled>
USB SS Physical Connector #8    <Enabled>
USB SS Physical Connector #9    <Enabled>
USB HS Physical Connector #0    <Enabled>
USB HS Physical Connector #1    <Enabled>
USB HS Physical Connector #2    <Enabled>
USB HS Physical Connector #3    <Enabled>
USB HS Physical Connector #4    <Enabled>
USB HS Physical Connector #5    <Enabled>
USB HS Physical Connector #6    <Enabled>
USB HS Physical Connector #7    <Enabled>
USB HS Physical Connector #8    <Enabled>
USB HS Physical Connector #9    <Enabled>
USB HS Physical Connector #10   <Enabled>
USB HS Physical Connector #11   <Enabled>
USB HS Physical Connector #12   <Enabled>
USB HS Physical Connector #13   <Enabled>

(press ESC)

Security Configuration (Enter to expand)

RTC Lock                        <Enabled>
BIOS Lock                       <Enabled>
Force unlock on all GPIO pads   <Disabled>

(press ESC)

SerialIo Configuration (Enter to expand)

I2C0 Controller                 <Disabled>
I2C1 Controller                 <Disabled>
I2C2 Controller                 <Disabled>
I2C3 Controller                 <Disabled>
SPI0 Controller                 <Disabled>
SPI1 Controller                 <Disabled>
SPI2 Controller                 <Disabled>
UART0 Controller                <Disabled>
UART1 Controller                <Disabled>
UART2 Controller                <Disabled>
GPIO IRQ Route                  <IRQ14>

WITT/MITT Test Device           <Disabled>
UART Test Device                <Disabled>
Additional Serial IO devices    [ ]
SerialIO timing parameters      [ ]

(press ESC)

SCS Configuration (Enter to expand)

SDCard 3.0 Controller           <Disabled>
SDCard Write Protect Pin Enable <Enabled>

(press ESC)

ISH Configuration (Enter to expand)

ISH Controller                  <Disabled>
```

```
(press ESC)

Pch Thermal Throttling Control (Enter to expand)

Thermal Throttling Level        <Suggested Setting>
DMI Thermal Setting             <Suggested Setting>
SATA Thermal Setting            <Suggested Setting>

(press ESC)

EFI Network                     <Disabled>
PCH LAN Controller              No GbE Region
DeepSx Power Policies           <Disabled>
Wake on WLAN and BT Enable      <Disabled>
Disable DSX ACPRESENT PullDown  <Disabled>
PXE ROM                         <Disabled>
CLKRUN# logic                   <Enabled>
Serial IRQ Mode                 <Quiet>
State After AC Power Loss       <Power On>

{The SE and HMC will use "Power On", the TKE will use "Last State".  This
determines what the machine will do when input power is restored.}

Port 80h Redirection            <LPC Bus>
Enhance Port 80h LPC Decoding   <Enabled>
Compatible Revision ID          <Disabled>
Legacy IO Low Latency           <Disabled>
PCH Cross Throttling            <Enabled>
PCH Energy Reporting            <Enabled>
Enable TCO Timer                <Disabled>
Pcie PII SSC                    <Auto>
IOAPIC 24-119 Entries           <Enabled>
Flash Protection Range Registers (FPRR) <Enabled>
SPD Write Disable               <True>
LGMR                            <Disabled>
Teton Glacier Mode              <Disabled>
RST Driver Select               <Auto>

(press ESC)

Server ME Configuration (Enter to expand)

Operational Firmware Version    10:5.1.4.204
Backup Firmware Version         N/A
Recovery Firmware Version       10:5.1.4.204
ME Firmware Features            (SiEn) (PECIProxy) (ICC)
                                (MeStorageServices) (BootGuard)
                                (PmBusProxy) (HSIO) (PCHDebug)
                                (PCHThermalSensorInit) (DeepSx)
                                (DirectMeUpdate) (MctpInfrastructure)
                                (TelemetryHub)
ME Firmware Status #1           0x00000245
ME Firmware Status #2           0x89112027
 Current State                  Operational
 Error Code                     No Error
 Recovery Cause                 N/A
Altitude                        [0x8000]
MCTP Bus Owner                  [0x0]

Power Supply Units Status
  PSU #1                        N/A
  PSU #2                        N/A
  PSU #3                        N/A
  PSU #4                        N/A

Power Supply Units Configuration
  PSU #1                        [0xB0]
  PSU #2                        [0xB2]
  PSU #3                        [0x0]
  PSU #4                        [0x0]

(press ESC)

Server ME Debug Configuration (Enter to expand)

Server ME General Configuration (Enter to expand)

ME Init Complete Timeout        [10000]
DRAM Init Done Enable           <Enabled>
  DRAM Initialization Status    <Auto - true status>
HMRFP0_LOCK Message             <Enabled>
```

```
HMRFP0_ENABLE Message           <Enabled>
END_OF_POST Message             <Enabled>
HECI-1 Enable                   <Enabled>
HECI-2 Enable                   <Enabled>
HECI-3 Enable                   <Auto>

(press ESC)

NM Configuration (Enter to expand)

Boot Mode Override              [ ]
  Boot Mode                     <Performance Optimized>
Cores Disable Override          [ ]
  Cores To Disable              [0x0]
Power Measurement Override      <Disabled>
Hardware Change Override        <no>

(press ESC twice)

Thermal Configuration (Enter to expand)

CPU Thermal Configuration (Enter to expand)

DTS SMM                         <Disabled>
Tcc Activation Offset           [0]
Tcc Offset Time Window          <Disabled>
Tcc Offset Clamp Enable         <Disabled>
Tcc Offset Lock Enable          <Disabled>
Bi-directional PROCHOT#         <Enabled>
Disable PROCHOT# Output         <Enabled>
Disable VR Thermal Alert        <Disabled>
PROCHOT Response                <Disabled>
PROCHOT Lock                    <Disabled>
ACPI T-States                   [ ]
PECI Reset                      <Disabled>
PECI C10 Reset                  <Disabled>

(press ESC)

Platform Thermal Configuration (Enter to expand)

Automatic Thermal Reporting     <Disabled>
Critical Trip Point             <119C (POR)>
Active Trip Point 0             <71 C>
Active Trip Point 0 Fan Speed   [100]
Active Trip Point 1             <55 C>
Active Trip Point 1 Fan Speed   [75]
Passive Trip Point              <95 C>
  Passive TC1 Value             [1]
  Passive TC2 Value             [5]
  Passive TSP Value             [10]

Active Trip Points              <Enabled>
Passive Trip Points             <Disabled>
Critical Trip Points            <Enabled>

PCH Temp Read                   [X]
CPU Energy Read                 [X]
CPU Temp Read                   [X]
Alert Enable Lock               <Disabled>
CPU Temp                        [72]
CPU Fan Speed                   [65]

(press ESC)

DPTF Configuration (Enter to expand)

(press ESC)

Hardware Health Monitor (Enter to expand)

Thermal Sensor 1 Temp           <0.0 C>
Thermal Sensor 2 Temp           <0.0 C>
Thermal Sensor 3 Temp           <0.0 C>
Thermal Sensor 4 Temp           <0.1 C>
Thermal Sensor 5 Temp           <0.0 C>
CPU Fan Speed                   <0 rpm>
PCH DTS Temp from PCH           <-6 C>

(press ESC twice)

ACPI D3Cold settings (Enter to expand)
```

```
ACPI D3Cold Support                     <Enabled>

VR Ramp up delay                        [16]
PCIE Slot 5 Device Power-on delay in ms [100]
Audio Delay                             [200]
SensorHub                               [68]
TouchPad                                [68]
TouchPanel                              [68]
P-state Capping                         <Disabled>
USB Port 1                              <Disabled>
USB Port 2                              <Disabled>
ZPODD                                   <Disabled>
WWAN                                    <D0/L1.2>
Sata Port 0                             <Disabled>
Sata Port 1                             <Disabled>
Sata Port 2                             <Disabled>
Sata Port 3                             <Disabled>
Sata Port 4                             <Disabled>
Sata Port 5                             <Disabled>
PCIe Remapped CR1                       <Disabled>
PCIe Remapped CR2                       <Disabled>
PCIe Remapped CR3                       <Disabled>

(press ESC)

SIO AST2500/2520 (Enter to expand)

Serial Port A                   <AUTO>

(press ESC)

Trenton Systems (Enter to expand)

BIOS Info:
Platform                        BIOS_MBC8290
Version                         Main.047.005
State                           release

SMBIOS OEM Strings:
Trenton BIOS version: BIOS_MBC8290.Main.047.005.release
Insyde  BIOS version: CoffeeLake.05.23.04.0047
Trenton Notes: Mainline

SPI OEM Contents:
SPI                             SYSFLASH_MBC8290.Main.045.001.release
BIOS                            BIOS_MBC8290.Main.045.001.release
ME                              sps_e3_05.01.04.204.0_b0_kn3_r

(press ESC)

Ipmi Sensor Control (Enter to expand)

Per-Sensor Enables
FAN1 Enable             <Disabled>      {Enabled for TKE}
FAN2 Enable             <Enabled>
FAN3 Enable             <Enabled>
FAN4 Enable             <Enabled>
FAN5 Enable             <Disabled>      {Enabled for TKE}

(press ESC)

Console Redirection (Enter to expand)

Console Serial Redirect         <Enabled>
Terminal Type                   <VT_100>
Baud Rate                       <115200>
Data Bits                       <8 Bits>
Parity                          <None>
Stop Bits                       <1 Bit>
Flow Control                    <None>
Information Wait Time           < 5 Second>
C.R. After Legacy Boot          <Yes>
Text Mode Resolution            <Limit 128x40>
Auto Refresh                    <Enabled>
Auto adjust Terminal resolution <Enabled>

COM_A (Enter to expand)

PortEnable                      <Enabled>
UseGlobalSetting                <Enabled>
```

```
(press ESC)

Enable VT-100, 115200, N81


ISA_UART (COMB) (Enter to expand)

PortEnable                      <Disabled>
UseGlobalSetting                <Enabled>

(press ESC)

Disable VT-100, 115200, N81

ISA_UART (COMC) (Enter to expand)

PortEnable                      <Disabled>
UseGlobalSetting                <Enabled>

(press ESC)

Disable VT-100, 115200, N81

(press ESC)

H2O IPMI Configuration (Enter to expand)

IPMI Support                    <Enabled>

BMC Warm Up Time                [45]
System Interface Type           KCS
IPMI Base Address for OS        CA2/CA3
IPMI Base Address for POST      CA2/CA3
IPMI Base Address for SMM       CA2/CA3

BMC Status                      OK
BMC Firmware Version            3.53
IPMI Specification Version      2.0
BMC MAC Address                 00:10:6F:23:73:B4       {varies}

BMC Warmup Time                 [45]
ACPI SPMI Table                 <Enabled>
Boot Option Support             <Enabled>
Set BIOS version to BMC         <Disabled>

BMC Configuration (Enter to expand)

Watchdog Timer Support          <Enabled>
Who halts BMC Watchdog after BIOS Boots?          <BIOS>
Watchdog Timer Timeout          [4]
Watchdog Timer Action           <Hard Reset>

Power Cycle Time Support        <Disabled>
Power Cycle Time                [10]

Power Button                    <Enabled>
Reset Button                    <Enabled>
NMI Button                      <Enabled>

LAN Channel Number              [1]
IPv4 Source                     <IPV4>          {varies}
IPv4 IP Address                 9.6.24.226      {varies}
IPv4 Subnet Mask                255.255.255.0   {varies}
IPv4 Gateway Address            0.0.0.0 {varies}

IPv6 Mode                       <Disabled>
IPv6 Prefix Length              [64]
IPv6 IP Address                 0:0:0:0:0:0:0:0
IPv6 Gateway Address            0:0:0:0:0:0:0:0

(press ESC)

SDR List (Enter to expand)

SDR List Support                <Disabled>

(press ESC)

Execute H2O IPMI Utility

LOAD IPMI OPTIMAL DEFAULT
```

```
(press ESC)

H2oUve Configuration (Enter to expand)

H2OUVE Support                  <Enabled>

(press ESC)

[Security Tab]

Current TPM Device                      <TPM 2.0 (DTPM)>
TPM State                               All Hierarchies Enabled, Owned  {varies}
TPM Active PCR Hash Algorithm           SHA256
TPM Hardware Supported Hash Algorithm   SHA1, SHA256
BIOS Supported Hash Algorithm           SHA1, SHA256, SM3_256
TrEE Protocol Version                   <1.1>
TPM Availability                        <Available>
TPM Operation                           <No Operation>
Clear TPM                               [ ]

Supervisor Password                     Not Installed
User Password                           Not Installed

Set Supervisor Password
Set User Password
Set All Hdd Password
Set All Master Hdd Password

Storage Password Setup Page (Enter to expand)

ST2000NM000A-2J2100 (Enter to expand)

Device Name:            [ST2000NM000A-2J2100]

Security Mode:          No Accessed

Set Storage Password
Set Master Hdd Password

(press ESC twice)

[Power Tab]

Wake on PME             <Enabled>
Wake on Modem Ring      <Disabled>
Auto Wake on S5         <Disabled>
S5 Long Run Test        <Disabled>

[Boot Tab]

Boot Type                       <UEFI Boot Type>
Quick Boot                      <Enabled>
Quiet Boot                      <Enabled>
Network Stack                   <Enabled>
PXE Boot capability             <UEFI:IPv4>
Power Up In Standby Support     <Disabled>
Add Boot Options                <Auto>
ACPI Selection                  <Acpi5.0>
USB Boot                        <Enabled>
EFI Device First                <Enabled>
UEFI OS Fast Boot               <Disabled>
Timeout                         [10]
Automatic Failover              <Enabled>

EFI (Enter to expand)

BOOT_EMBEDDED (ST2000NM000A-2J1100)     [X]     {This list will vary}
EFI Hard Drive (ST2000NM000A-2J2100)    [X]
EFI PXE LAN1  for IPv4                  [X]
(00-10-6F-23-73-AC)
EFI PXE LAN2  for IPv4                  [X]
(00-10-6F-23-73-AD)
EFI PXE LAN3  for IPv4                  [X]
(00-10-6F-23-73-AE)
EFI PXE LAN4  for IPv4                  [X]
(00-10-6F-23-73-AF)
EFI PXE LAN5  for IPv4                  [X]
(00-10-6F-23-73-B0)
EFI PXE LAN6  for IPv4                  [X]
(00-10-6F-23-73-B1)
EFI PXE LAN7  for IPv4                  [X]
(00-10-6F-23-73-B2)
```

```
EFI PXE LAN8  for IPv4                  [X]
(00-10-6F-23-73-B3)
Internal EFI Shell                      [X]

(press ESC)

Per-port boot filer (Enter to expand)

Rear Port1 Enable       <Enabled>
Rear Port2 Enable       <Enabled>
Rear Port3 Enable       <Enabled>
Rear Port4 Enable       <Enabled>
Rear Port5 Enable       <Enabled>
Rear Port6 Enable       <Enabled>
Front Port1 Enable      <Enabled>
Front Port2 Enable      <Enabled>

(press ESC)

[Exit Tab]

Exit Saving Changes
Save Change Without Exit
Exit Discarding Changes
Load Optimal Defaults
Load Custom Defaults
Save Custom Defaults
Discard Changes

(end of BIOS Setup values)
```

END OF PROCEDURE

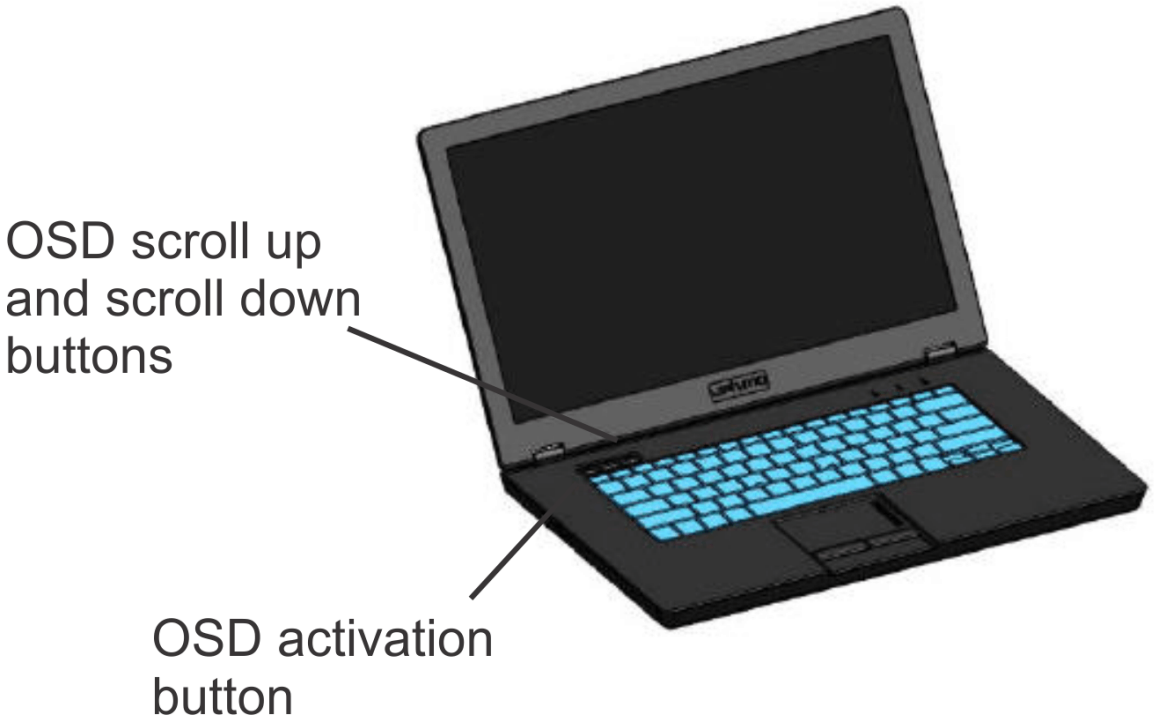
Appendix C. Operating the compact KMM console unit (keyboard/display)

The console unit (keyboard/display) includes a number of controls for launching, navigating, and managing the on-screen display (OSD).

Launching and navigating the on-screen display (OSD)

The on-screen display (OSD) provides access to the OSD menus, which can be used for displaying and managing settings and functions. To launch the on-screen display and navigate its menus, do the following.

__ 1. Press the **OSD activation** button, which is located on the compact keyboard/monitor/mouse (compact KMM), just above the keyboard. The main menu is displayed on the screen.



__ 2. To locate a menu item, scroll up or down by pressing the OSD scroll up or down button, which are located on the compact keyboard/monitor/mouse (compact KMM), just above the keyboard. The scroll up and down buttons are also used to adjust or change a function setting.

__ 3. To select a submenu or a function, scroll to that item and press the **OSD activation** button. A second level of menus is displayed.

To exit the **OSD** menu, do the following.

1. Press the scroll down button and locate the **Exit** function.
2. Press the **OSD activation** button to select the **Exit** function (and exit the OSD).

Understanding the on-screen display (OSD) sub-menus

The **OSD** menu provides sub-menus for the following settings and functions.

Auto configuration

Use the **Auto configuration** option to perform the following functions automatically:

Auto Level
Automatically adjusts the black and white levels of the screen.

Auto Position
Automatically adjusts the position of the screen.

Auto Phase
Automatically adjusts the phase.

Auto Clock
Automatically adjusts the output clock per line to match the input.

Brightness/Contrast

The **Brightness/Contrast** menu contains the following sub-options:

Brightness
Displays a slider bar for enabling the adjustment of the back light brightness.

Contrast
Displays a slider bar for enabling the adjustment of the screen contrast. Contrast adjustments are more discernible when the background is white.

Exit
Allows you to exit the **Brightness/Contrast** menu.

Image Control

The **Image Control** option contains the following sub-options:

Display Resolution Mode

Fill
Stretches the image to the full viewing area.

Aspect
Proportional relationship between width and height.

1:1
Displays the image in 1:1 (actual size) format.

Current mode
Uses settings that are determined by the current operating system.

Recommended mode
Supports maximum resolution.

Horizontal position
Displays a slider bar for enabling the adjustment of the screen's horizontal position.

The center of the bar is obtained from the factory-preset value for this option. At value=MIN, the selection of + positioning response might vary between XGA (Extended Graphics Array) and FHD (Full High Definition) panels. This is caused by physical limitations at MIN OSD placement.

Vertical position
Displays a slider bar for enabling the adjustment of the screen's vertical position. The center of the bar is obtained from the factory-preset value for this option.

Clock
Displays a slider bar for enabling the adjustment of the horizontal clocks.

Phase
Displays a slider bar for enabling the adjustment of the analog signals phase. DisplayPort is automatically displayed on the KVM console.

Input control

Use the **Input control** option to manually select graphics from one of the two sources. The following options are available from the **Input control** menu:

- **VGA**
- **DP** (DisplayPort)
- **Exit**

Note: DisplayPort has priority over VGA. So, if DisplayPort is hot plugged when VGA is running, DisplayPort takes priority and graphics from DisplayPort are automatically displayed on the console unit screen.

Advanced

The **Advanced** option contains the following sub-options:

OSD settings

Lock OSD settings
Locks or unlocks OSD settings. Specify **yes** or **no**.

Timeout
Displays a slider that enables you to adjust the OSD timeout value. The timeout ranges from 5 and 60 seconds, with one-second intervals. The default timeout is 10 seconds.

Vertical position
Displays a slider that enables you to move the OSD window up or down on the screen.

Horizontal position
Displays a slider that enables you to move the OSD window left or right on the screen.

Exit
Allows you to exit the **Advanced** menu.

Factory settings

Use the **Factory settings** option to reset the console unit options to their original factory settings. You can specify either of the following values:

- **Yes**
- **No**

Language

Use the **Language** option to specify the language in which the menu options are displayed. The following languages can be specified:

- **English**
- **Japanese**
- **Spanish**
- **French**
- **German**
- **Simple Chinese**

Information

Use the **Information** option to obtain information about the following topics:

- **Current or recommended solutions**
- **Console description**
  - **Console part number**
  - **Console serial number**
  - **Console UUID** (universally unique identifier)
  - **Exit**
- **Software version**
- **Exit**

Appendix D. Notices

This information was developed for products and services offered in the US.

IBM may not offer the products, services, or features discussed in this document in other countries. Consult your local IBM representative for information on the products and services currently available in your area. Any reference to an IBM product, program, or service is not intended to state or imply that only that IBM product, program, or service may be used. Any functionally equivalent product, program, or service that does not infringe any IBM intellectual property right may be used instead. However, it is the user's responsibility to evaluate and verify the operation of any non-IBM product, program, or service.

IBM may have patents or pending patent applications covering subject matter described in this document. The furnishing of this document does not grant you any license to these patents. You can send license inquiries, in writing, to:

IBM Director of Licensing
IBM Corporation
North Castle Drive, MD-NC119
Armonk, NY 10504-1785
US

INTERNATIONAL BUSINESS MACHINES CORPORATION PROVIDES THIS PUBLICATION "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF NON-INFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. Some jurisdictions do not allow disclaimer of express or implied warranties in certain transactions, therefore, this statement may not apply to you.

This information could include technical inaccuracies or typographical errors. Changes are periodically made to the information herein; these changes will be incorporated in new editions of the publication. IBM may make improvements and/or changes in the product(s) and/or the program(s) described in this publication at any time without notice.

Any references in this information to non-IBM websites are provided for convenience only and do not in any manner serve as an endorsement of those websites. The materials at those websites are not part of the materials for this IBM product and use of those websites is at your own risk.

IBM may use or distribute any of the information you provide in any way it believes appropriate without incurring any obligation to you.

Information concerning non-IBM products was obtained from the suppliers of those products, their published announcements or other publicly available sources. IBM has not tested those products and cannot confirm the accuracy of performance, compatibility or any other claims related to non-IBM products. Questions on the capabilities of non-IBM products should be addressed to the suppliers of those products.

Statements regarding IBM's future direction or intent are subject to change or withdrawal without notice, and represent goals and objectives only.

This information contains examples of data and reports used in daily business operations. To illustrate them as completely as possible, the examples include the names of individuals, companies, brands, and products. All of these names are fictitious and any similarity to actual people or business enterprise is entirely coincidental.

Trademarks

IBM, the IBM logo, and ibm.com® are trademarks or registered trademarks of International Business Machines Corporation, in the United States and/or other countries. Other product and service names might be trademarks of IBM or other companies. A current list of IBM trademarks is available on http://www.ibm.com/trademark.

Intel and Intel Xeon are trademarks or registered trademarks of Intel Corporation or its subsidiaries in the United States and other countries.

The registered trademark Linux® is used pursuant to a sublicense from the Linux Foundation, the exclusive licensee of Linus Torvalds, owner of the mark on a worldwide basis.

Microsoft and Windows are trademarks of Microsoft Corporation in the United States, other countries, or both.

Other product and service names might be trademarks of IBM or other companies.

Class A Notices

The following Class A statements apply to this IBM product. The statement for other IBM products intended for use with this product will appear in their accompanying manuals.

Federal Communications Commission (FCC) Statement

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.

Properly shielded and grounded cables and connectors must be used in order to meet FCC emission limits. IBM is not responsible for any radio or television interference caused by using other than recommended cables and connectors or by unauthorized changes or modifications to this equipment. Unauthorized changes or modifications could void the user's authority to operate the equipment.

This device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Industry Canada Compliance Statement

This Class A digital apparatus complies with Canadian ICES-003.

United Kingdom Notice

This product may cause interference if used in residential areas. Such use must be avoided unless the user takes special measures to reduce electromagnetic emissions to prevent interference to the reception of radio and television broadcasts.

Avis de conformité à la réglementation d'Industrie Canada

Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.

European Community Compliance Statement

This product is in conformity with the protection requirements of EU Council Directive 2014/30/EU on the approximation of the laws of the Member States relating to electromagnetic compatibility. IBM cannot accept responsibility for any failure to satisfy the protection requirements resulting from a non-recommended modification of the product, including the fitting of non-IBM option cards.

This product has been tested and found to comply with the limits for Class A Information Technology Equipment according to European Standard EN 55032. The limits for Class A equipment were derived for commercial and industrial environments to provide reasonable protection against interference with licensed communication equipment.

European Community contact:
IBM Deutschland GmbH
Technical Regulations, Department M372
IBM-Allee 1, 71139 Ehningen, Germany
Tele: +49 (0) 800 225 5423 or +49 (0) 180 331 3233
email: halloibm@de.ibm.com

Warning: This is a Class A product. In a domestic environment, this product may cause radio interference, in which case the user may be required to take adequate measures.

Japan Voluntary Control Council for Interference (VCCI) Notice

この装置は、クラス A 機器です。 この装置を住宅環境で使用すると電波妨害を引き起こすことがあります。 この場合には使用者が適切な対策を講ずるよう要求される ことがあります。 ＶＣＣＩ－Ａ

The following is a summary of the Japanese VCCI statement above:

This is a Class A product based on the standard of the VCCI Council. If this equipment is used in a domestic environment, radio interference may occur, in which case the user may be required to take corrective actions.

Japan Electronics and Information Technology Industries Association (JEITA) Notice

（一社）電子情報技術産業協会　高調波電流抑制対策実施
要領に基づく定格入力電力値：IBM Documentationの各製品の仕様ページ参照

This statement applies to products less than or equal to 20 A per phase.

高調波電流規格 JIS C 61000-3-2 適合品

These statements apply to products greater than 20 A, single-phase.

高調波電流規格 JIS C 61000-3-2 準用品

本装置は、「高圧又は特別高圧で受電する需要家の高調波抑制対策ガイドライン」対象機器（高調波発生機器）です。
回路分類：６（単相、ＰＦＣ回路付）
換算係数：０

These statements apply to products greater than 20 A per phase, three-phase.

高調波電流規格 JIS C 61000-3-2 準用品

本装置は、「高圧又は特別高圧で受電する需要家の高調波抑制対策ガイドライン」対象機器（高調波発生機器）です。
回路分類　：５（３相、ＰＦＣ回路付）
換算係数　：０

People's Republic of China Notice

警告:在居住环境中,运行此设备可能会造成无线电干扰。

Declaration: This is a Class A product. In a domestic environment, this product may cause radio interference, in which case the user may need to perform practical action.

Taiwan Notice

CNS 13438:

警告使用者：
此為甲類資訊技術設備，
於居住環境中使用時，
可能會造成射頻擾動，在此種情況下，
使用者會被要求採取某些適當的對策。

CNS 15936:

警告：為避免電磁干擾，本產品不應安裝或使用於住宅環境。

IBM Taiwan Contact Information:

台灣IBM 產品服務聯絡方式：
台灣國際商業機器股份有限公司
台北市松仁路7號3樓
電話：0800-016-888

Electromagnetic Interference (EMI) Statement - Korea

이 기기는 업무용(A급)으로 전자파적합등록을 한 기기이오니
판매자 또는 사용자는 이 점을 주의하시기 바라며, 가정외의
지역에서 사용하는 것을 목적으로 합니다.

Germany Compliance Statement

Deutschsprachiger EU Hinweis: Hinweis für Geräte der Klasse A EU-Richtlinie zur Elektromagnetischen Verträglichkeit

Dieses Produkt entspricht den Schutzanforderungen der EU-Richtlinie 2014/30/EU zur Angleichung der Rechtsvorschriften über die elektromagnetische Verträglichkeit in den EU-Mitgliedsstaaten und hält die Grenzwerte der EN 55032 Klasse A ein.

Um dieses sicherzustellen, sind die Geräte wie in den Handbüchern beschrieben zu installieren und zu betreiben. Des Weiteren dürfen auch nur von der IBM empfohlene Kabel angeschlossen werden. IBM übernimmt keine Verantwortung für die Einhaltung der Schutzanforderungen, wenn das Produkt ohne Zustimmung von IBM verändert bzw. wenn Erweiterungskomponenten von Fremdherstellern ohne Empfehlung von IBM gesteckt/eingebaut werden.

EN 55032 Klasse A Geräte müssen mit folgendem Warnhinweis versehen werden:

"Warnung: Dieses ist eine Einrichtung der Klasse A. Diese Einrichtung kann im Wohnbereich Funk-Störungen verursachen; in diesem Fall kann vom Betreiber verlangt werden, angemessene Maßnahmen zu ergreifen und dafür aufzukommen."

Deutschland: Einhaltung des Gesetzes über die elektromagnetische Verträglichkeit von Geräten

Dieses Produkt entspricht dem "Gesetz über die elektromagnetische Verträglichkeit von Geräten (EMVG)". Dies ist die Umsetzung der EU-Richtlinie 2014/30/EU in der Bundesrepublik Deutschland.

Zulassungsbescheinigung laut dem Deutschen Gesetz über die elektromagnetische Verträglichkeit von Geräten (EMVG) (bzw. der EMC EG Richtlinie 2014/30/EU) für Geräte der Klasse A

Dieses Gerät ist berechtigt, in Übereinstimmung mit dem Deutschen EMVG das EG-Konformitätszeichen - CE - zu führen.

Verantwortlich für die Einhaltung der EMV Vorschriften ist der Hersteller:
International Business Machines Corp.
New Orchard Road
Armonk, New York 10504
Tel: 914-499-1900

Der verantwortliche Ansprechpartner des Herstellers in der EU ist:
IBM Deutschland GmbH
Technical Regulations, Abteilung M372
IBM-Allee 1, 71139 Ehningen, Germany
Tel: +49 (0) 800 225 5423 or +49 (0) 180 331 3233
email: halloibm@de.ibm.com

Generelle Informationen:

Das Gerät erfüllt die Schutzanforderungen nach EN 55024 und EN 55032 Klasse A.

Electromagnetic Interference (EMI) Statement - Russia

ВНИМАНИЕ! Настоящее изделие относится к классу А.
В жилых помещениях оно может создавать радиопомехи, для снижения которых необходимы дополнительные меры

GC28-7022-01