Technical white paper

Out-of-Band PC Management with the Kensington Manageability Dongle (K38295) on HP Business Notebooks

Commercial Managed IT

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Introduction

This whitepaper describes the capabilities and instructions for enabling the Kensington Manageability Dongle (Part Number: K38295) on supported HP Business Notebooks. The Kensington Manageability Dongle enables AMD PRO Manageability functionality. AMD PRO Manageability uses standards-based management technologies for remote management and monitoring of PC systems that were previously unattainable. The DMTF (formerly known as the Distributed Management Task Force) organization created the DASH (Desktop and mobile Architecture for System Hardware) standard for secure out-of-band and remote management of systems. This paper will also focus on the Realtek RealManage/DASH implementation, since the Kensington Manageability Dongle utilizes a Realtek USB to RJ45 NIC.

Target audience: This white paper is intended for IT staff.

HP's Vision of Remote Management & AMD PRO Manageability

AMD PRO Manageability is based on a set of industry standard protocols (e.g. DASH) that allows system and network administrators to perform essential management tasks on HP's business class PCs, regardless of their power state or operating system state. AMD PRO Manageability enabled systems achieves smarter, efficient control of your business. HP has shipped millions of AMD PRO Manageability enabled business class desktops and notebooks to our customers. HP Notebooks today feature AMD PRO Manageability, certified for DASH 1.0 specification but have implemented most of DASH 1.1 profiles as well.

Note
For more information go to the DMTF Learning Center at: **http://www.dmtf.org/education/**

AMD PRO Manageability is designed to assist in the remote management of common PC infrastructure tasks, such as deploying new operating systems, monitoring of computer system health, power control and power state monitoring, and asset inventory report. As new hardware technologies are introduced, or additional requirements are placed on the IT infrastructure, AMD PRO Manageability will continue to scale and enable new functionality.

AMD PRO Manageability based on DASH standards has been designed to solve many of the pitfalls and constraints of previous management standards by leveraging well-proven technologies from the Service Oriented Architecture domain, advancements in security standards, and extensive modeling of management components, configuration data and relationships first introduced in the server management domain.

DASH is a web services-based management protocol and relies on security and network routing concepts familiar to web site and web services administrators.

Key Features of AMD PRO Manageability

- Service availability without the requirement of an installed operating system and/or system power states
- Enables interoperability between various AMD PRO devices as well as 3rd party DASH compatible devices Descriptive data model allowing for the discovery of iterative specification
- Well understood transport level security (HTTPS basic and digest authentication models with optional TLS client/server certificate support)
- AMD PRO Manageability ecosystem can coexist with legacy Alert Standard Format (ASF) infrastructure
- Monitor the inventory of the HW of the managed clients.

Management Profiles

A management profile is a specification that defines a normative set of behaviors and characteristics for addressing a specific management domain.

A profile consists of the following information:

- A data model representing the problem domain that consists of objects, properties and methods exposed by the profile

- Use cases to be addressed by the profile
- Steps required to traverse the data model and derive results

When a substantive block of new profiles become available, or fundamental changes are introduced to the AMD PRO Manageability ecosystem, the AMD PRO Manageability Implementation Requirements document is updated to reflect a new version of the standard. Profiles are continually being developed by the DMTF and AMD PRO Manageability is designed to support them as they become available.

Note
DASH profile specification source material can be found at: **http://www.dmtf.org/standards/profiles/**

System requirements and prerequisites

For HP platforms supported with AMD PRO Manageability, you must have latest System BIOS, Realtek LAN network firmware and associated Realtek network driver and agent on your platforms.

Minimum versions of driver and firmware required

Table 1. Minimum versions of driver and firmware of Realtek NIC required

Realtek NIC - AMD PRO Manageability FW	System BIOS	Realtek NIC Driver - Win 10
5.0.25-4753fe1d	G8: 01.02.01 Rev.A or newer G7: 01.05.00 Rev.A or newer	10.45.308.2021

Supported platforms

Notebooks supported with the Kensington Manageability Dongle

Table 2.

HP EliteBook 855 G8 Notebook PC
HP EliteBook 845 G8 Notebook PC
HP EliteBook 835 G8 Notebook PC
HP EliteBook 855 G7 Notebook PC
HP EliteBook 845 G7 Notebook PC
HP EliteBook 835 G7 Notebook PC

Supported profiles with the Kensington Manageability Dongle

Table 3. The following table outlines AMD PRO Manageability profile level support that is available with the Kensington Manageability Dongle on supported HP platforms.

Manageability Profile	G7 Onwards HP EliteBook with Kensington Manageability Dongle
Profile Registration	✓
Role Based Authorization[1]	✓
Simple Identity Management	✓
WS-Management Specification	✓
WS-Management CIM Binding Spec	
WS-CIM Mapping Specification	✓
Battery[2]	✓
BIOS Management	✓
Boot Control	✓
CPU	✓
DHCP Client	✓
DNS Client	
Ethernet Port	
Host Lan Network Port	✓
IP Interface[3]	✓
Fan	✓
Indications	✓
KVM Redirection	
Media Redirection	
OS Status	✓
Physical Asset	✓
Power State Management	✓
Power Supply	✓
Sensors	✓
Software Inventory	✓
Software Update	✓
System Memory	✓
Text Console Redirection	✓
USB Redirection	✓
Record Log	✓
Web GUI/Embedded Web Server	✓
PLDM/MCTP Interfaces for Health Monitoring	✓
Graceful / Soft Shutdown	✓
Wake on Lan (Magic Packet) Support	

Footnotes:

[1] Only one User Account and Role (Admin) is supported with the Kensington Manageability Dongle.

[2] A reading of the Sensor Profile is required for updated Battery Status information.

[3] When the OS NIC Driver is active, it may override any IP Settings configured with out-of-band DASH tools.

Using AMD PRO Manageability functions on HP Notebooks with the Kensington Manageability Dongle

HP notebooks that support AMD PRO Manageability but are not equipped with a RJ-45 Ethernet connector require the Kensington Manageability Dongle to support manageability functions.

DASH Support for Notebooks & Desktops Prior to G7

Please reference the whitepaper titled: "Implementing Out-Of-Band PC Management with AMD PRO Manageability on HP Business Systems with AMD Chipset" for Notebooks & Desktops Prior to G7, which do not require the Kensington Manageability Dongle.

Any HP Business Notebook which has an on-board RJ45 connector, does not support the Kensington Manageability Dongle.

DASH Support for HP Notebooks G8 and newer (no RJ45 connector)

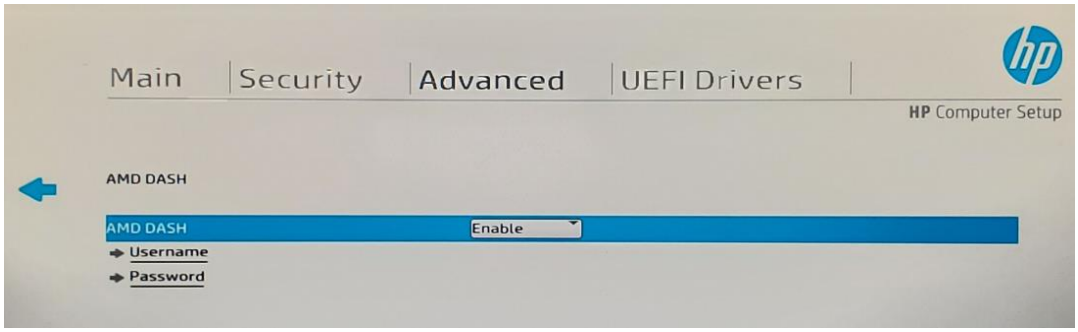
Any HP Business Notebook which features an AMD PRO Processor, and does not have an on-board RJ45 connector, must use the Kensington Manageability Dongle to support Manageability functions.

On January 1st, 2020, California Senate Bill 327 will become effective. In compliance with this law, the default account/password from the AMD PRO Manageability enablement process has been removed in 2020 or later HP platforms. The change will now require the end user to create an account/password prior to enabling AMD PRO Manageability. In order to provide better security, a credential check will be required for each account/password change. HP highly recommends you set the BIOS administrator password to prevent unauthorized access to system BIOS configuration options.

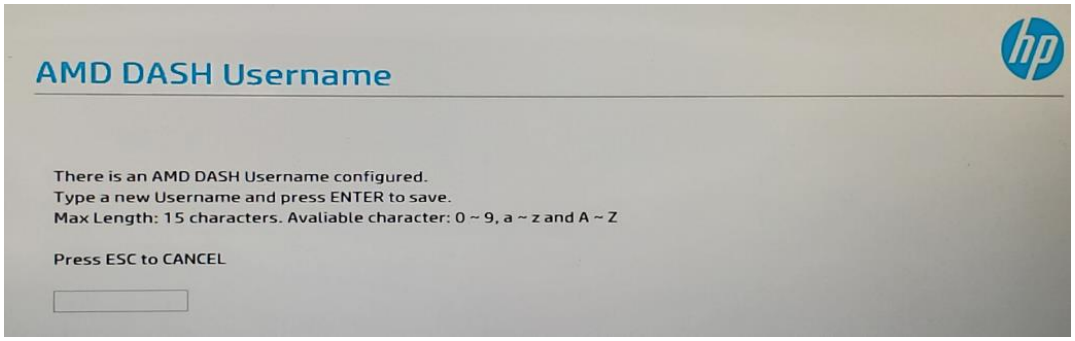
HP Notebooks are shipped with the "AMD DASH" setting in BIOS disabled, and the end user must enable the AMD PRO Manageability functionality by enabling the "AMD DASH" setting in BIOS, and configuring a User and Password for Manageability in the BIOS Menu.

First-Time Manageability provisioning in BIOS

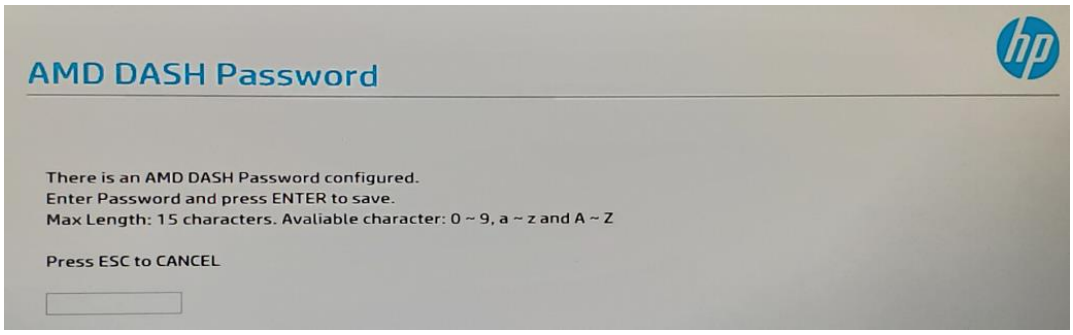
- Press "F10" during post to boot into BIOS setup menu, select "Advanced" page, and "System Options" option.
- Select "AMD DASH" option and set "Enable" in the Drop Down Box.



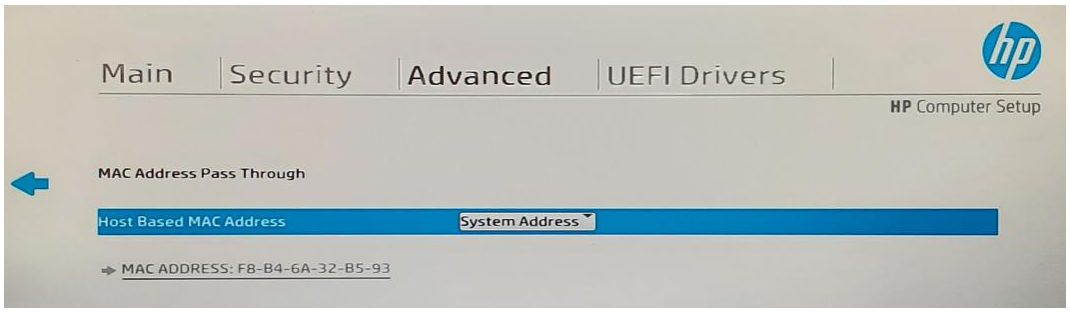
- Only one Manageability/DASH User Account can be configured for use with the Kensington Manageability Dongle. Select the "Username" option and fill in an appropriate username which will be used for DASH Manageability.



- Select the “Password” option and fill in an appropriate password which will be used for DASH Manageability.

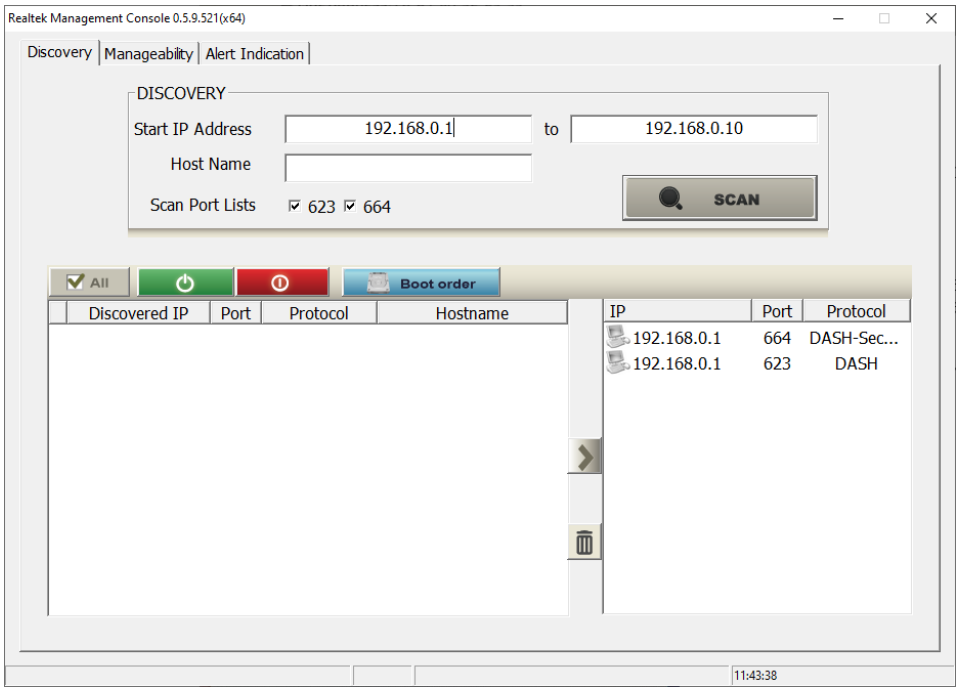


- <Optional> Select “Advanced” page, and “MAC Address Pass Through” option to configure a custom MAC or to enable the Host Based MAC Address.



Manageability using the Realtek Management Console Software

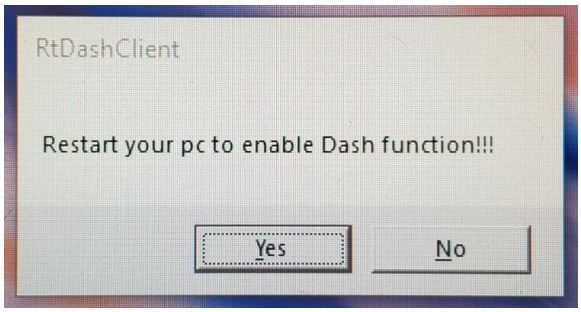
- The Kensington Manageability Dongle is based on a Realtek NIC, and the Realtek Management Console is used throughout this document. The Realtek Management Console software can be downloaded from Realtek’s website at the link below.



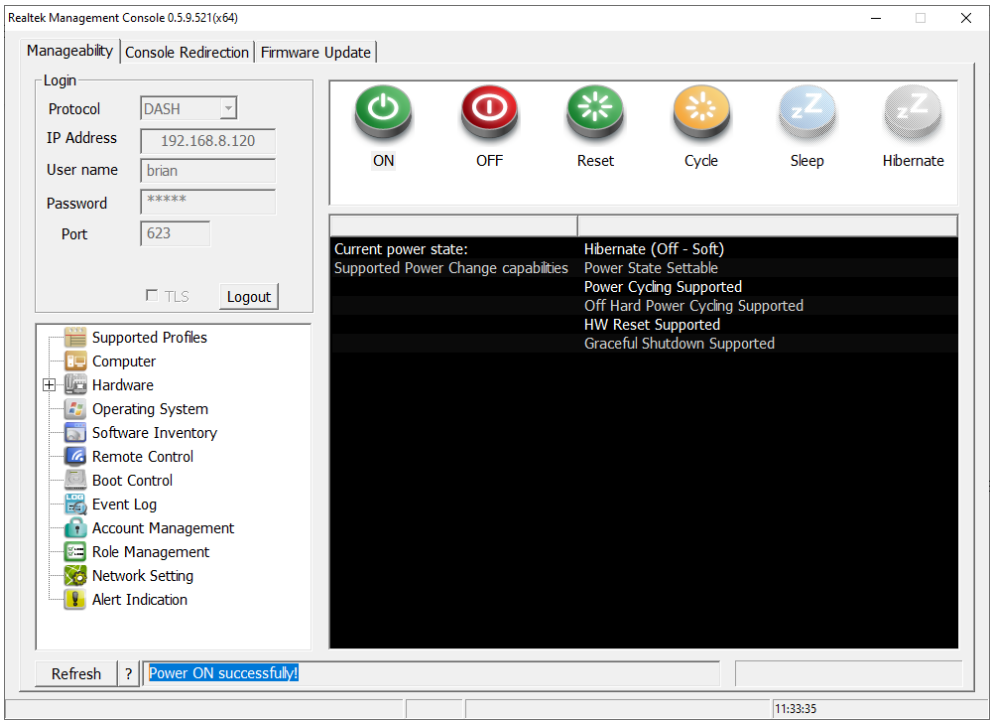
- Realtek Management Console

Functional Differences with the Kensington Manageability Dongle

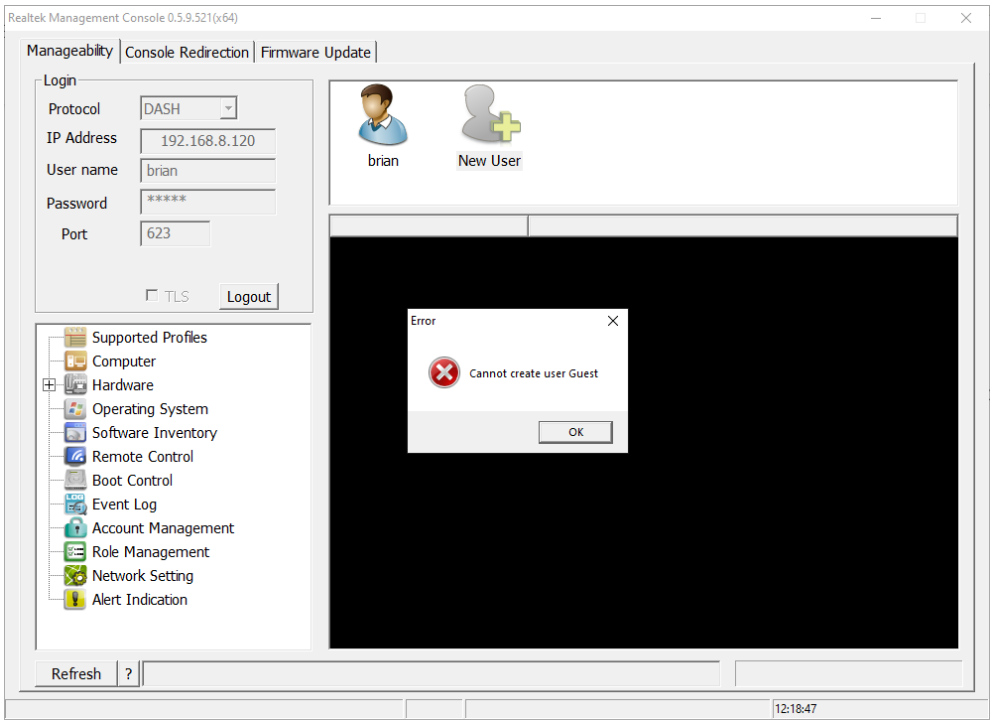
- The Kensington Manageability Dongle must be connected to the system prior to booting to enable Manageability functions. If the Kensington Manageability Dongle is connected to the system when the OS is already booted, it will require one reboot cycle to enable Manageability functions.
- If the Realtek DASH Client Utility is installed on the OS, a popup message will be displayed to the user when the Kensington Manageability Dongle is connected, to indicate that a reboot is required to support the Manageability functions.



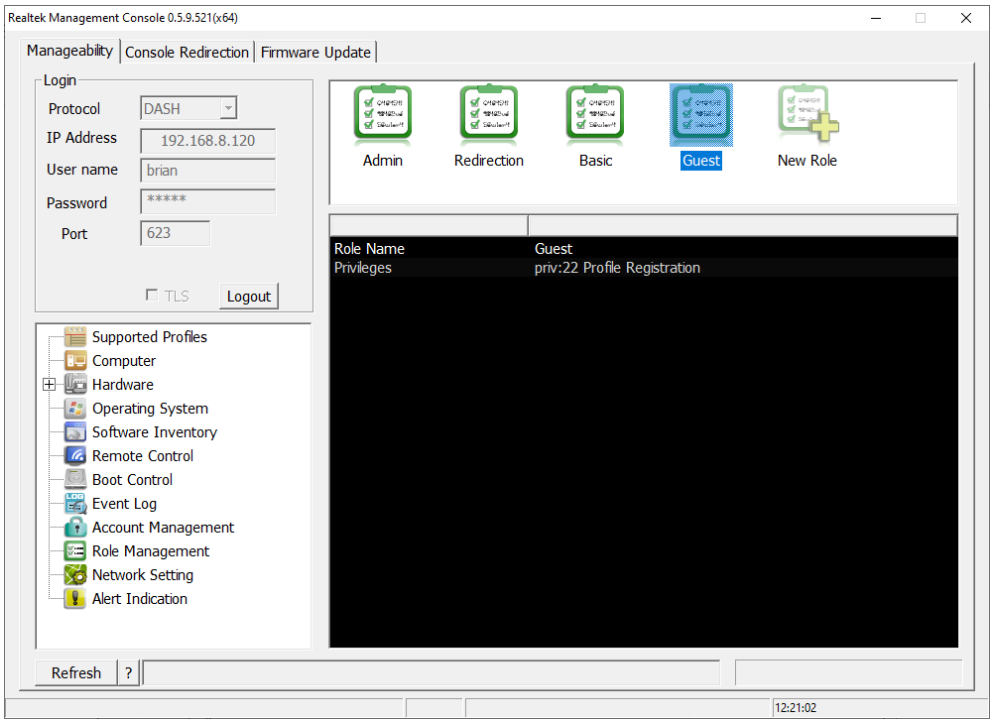
- When the Notebook is not connected to AC Power (i.e. on Battery), the DASH "Remote Power On" feature is not supported when the system is in a Shutdown (S5) state. The Remote Power Control is functional when the system is in Sleep (i.e. Modern Standby) when on Battery. Note that DASH connectivity is still available when the system is in Shutdown (S5), however if a Remote Power ON is attempted when the Notebook is in Shutdown state while on Battery, the Realtek Management Console will have a "Power ON successfully!" message, however this only indicates that the command was processed, and the system will not power on. The "Current power state:" field will remain as "Hibernate (Off – Soft)" state.



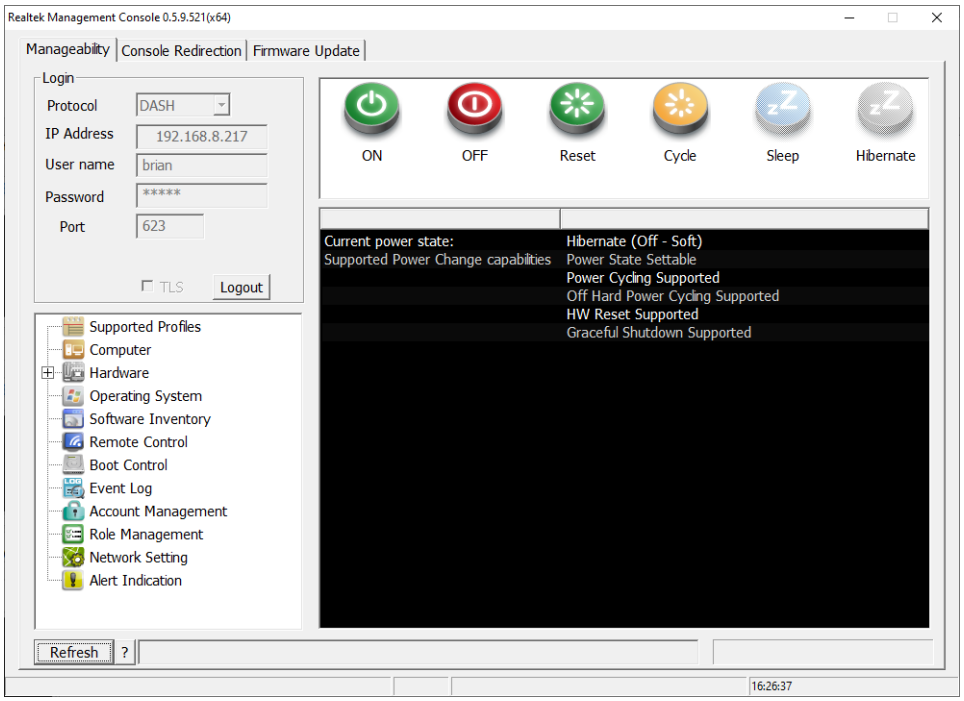
- Only one Manageability/DASH User Account and Password can be configured for use with the Kensington Manageability Dongle. Adding Users in the Realtek Manageability Console is not support, and an error message will popup if a user is addition is attempted.



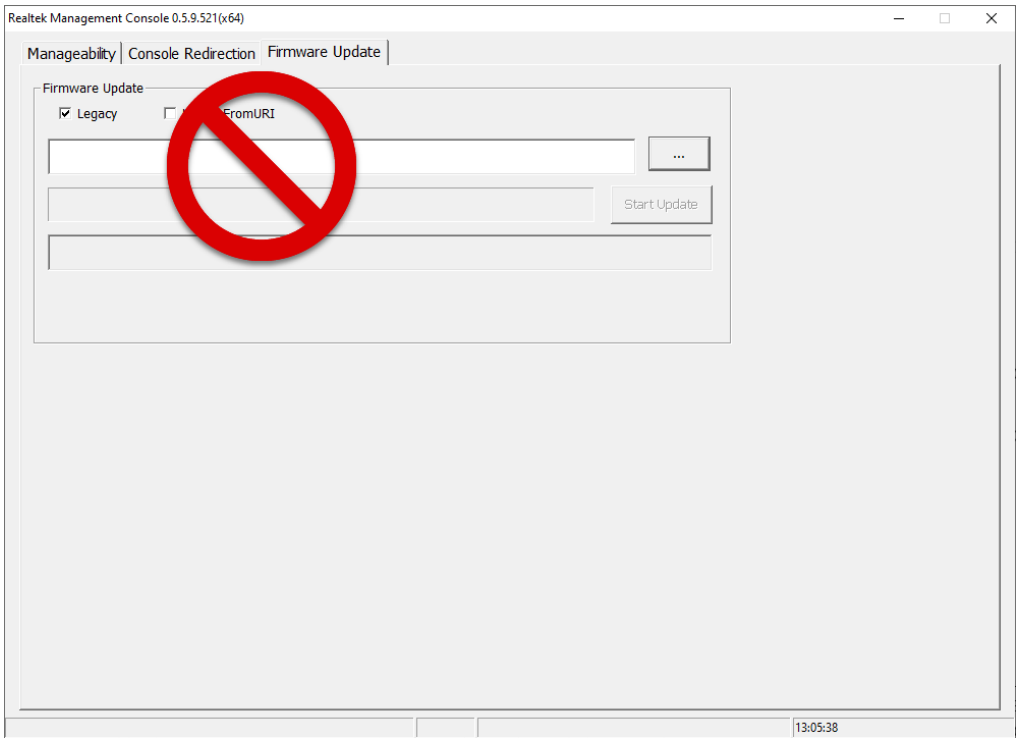
- Only the "Admin" role is supported with the Kensington Manageability Dongle. If Roles are added in the Realtek Manageability Console, they will not persist though a reboot cycle, and they cannot be applied to a user, so they are ineffective.



- DASH does not define “Modern Standby” as a power state, therefore the power state displayed will be “Off - Soft” when the system is in sleep/modern standby.



- Realtek FW Updates are only provided through the Kensington One Click FW Update Tool, and not available through the Realtek Management Console.



HP works closely with management console vendors and partners to ensure that an ecosystem of supporting products is available to help you realize the full potential of AMD PRO Manageability in your environment.

Some of the different consoles and software available today are list below. For more details, please visit the vendor website.

- **AMD PRO Manageability Plug-in for Microsoft Systems Center 2007**
- **Realtek Management Console**
- **AMD Management**

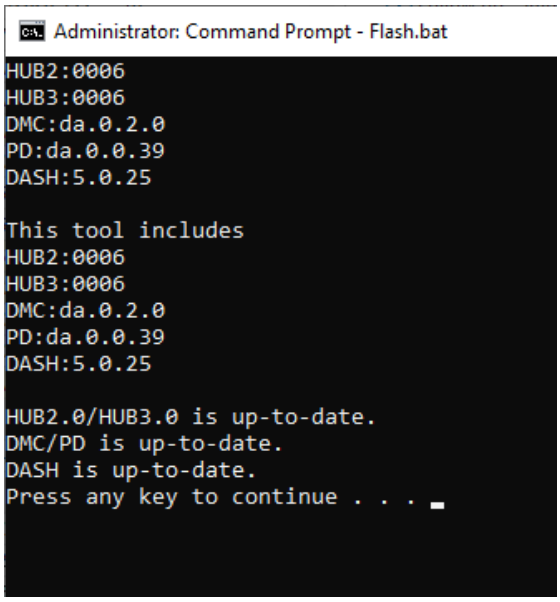
Kensington Firmware Updates using Command Line Flash Tool

Firmware updates for the Kensington Manageability Dongle are provided through the Kensington Command Line Update Tool "K38295.exe". This tool requires administrator access in a command line environment. This tool updates the appropriate devices in the Kensington Manageability Dongle, including the Realtek NIC, Cypress PD and DMC Controller, and USB Hub. In addition to the README.txt file, there are example command batch files "List.bat" – to list the current FW versions, and "Flash.bat" – to flash the latest firmware. AC Power is required to update the Dongle. Do not remove the Dongle during the Firmware update process. A log file is created for debugging any failures during the firmware update process. The Kensington Update tool can be downloaded at the link below:

- https://customer.kensington.com/us/us/s/k38295ww/managed_usb_c_to_2_5g_ethernet__pxe_boot_and_dash__adapter__k38295ww_#sw

README.txt

```
1  (Below command requires administrator in cmd.exe)
2
3  Usage: K38295.exe [options]
4
5  options:
6                      Display current FW version number if no options.
7  /?                  Display this help message.
8  /flash              Flash new FW into device if current FW version is different.
9
```



HP Client Management Web View

In addition to managing the AMD PRO Manageability-enabled PC through a management console, HP provides a convenient method to access out-of-band management functions through a web browser.

The HP Client management Web View is a web browser-based interface for limited remote system management. The web view is only functional once the management controller has been provisioned for AMD PRO Manageability management and an Administrator account has been enabled. The HP Client management Web View is accessible using any modern browser.

Management functions accessible from the web-based user interface include:

- Access to hardware inventory information for system, processors, and memory
- Visibility to system power state and remote power control operations
- Network configuration settings

The following steps outline connecting to the out-of-band management service from the embedded web server included on the Realtek Ethernet controller. This interface provides an alternative control mechanism for utilizing the AMD PRO Manageability functionality without requiring an AMD PRO Manageability enabled management console.

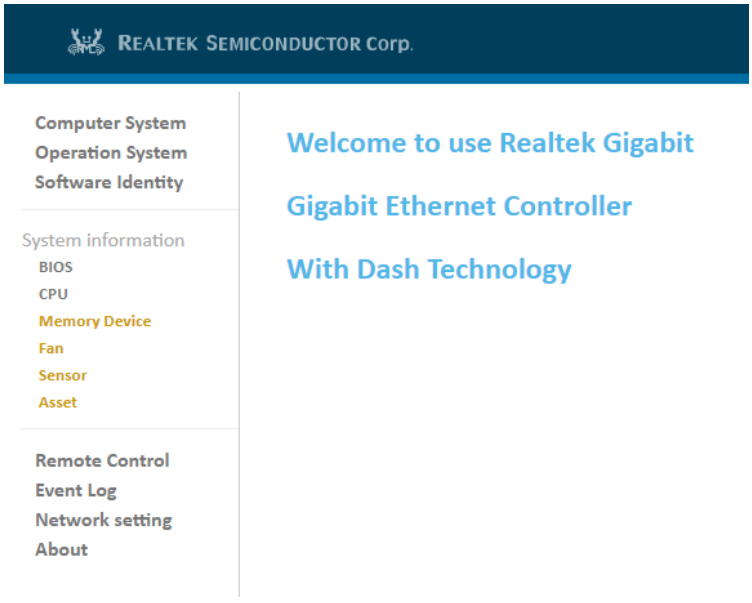
Using your web browser of choice from a separate computer system on the same network, connect to the IP address and AMD PRO Manageability management port of the remote system than you wish to manage.

Table 6. AMD PRO Manageability Management Ports

TCP Port	Purpose	Example
623	WS-Man over HTTP	http://172.16.2.17:623
664	WS-Man over HTTPS	http://172.16.2.17:664

These are the well-known IANA ports reserved for AMD PRO Manageability management traffic. By default, the Realtek Ethernet controller will use these ports for AMD PRO Manageability traffic.

- The web browser makes a connection to the HP Client management Web View but will require authentication to grant access to the web page.
- Enter the username and password to use for authentication. If you have not created any additional accounts, you can connect with predefined “Administrator” account.
- Once your access has been authenticated, you will have access to a management portal similar to the figure below to do some simple management tasks.



Note
Please make sure that you have opened ports 623 and 664 in the Windows or any third-party firewall you might have installed. If these ports are blocked, you will not be able to communicate with the AMD PRO Manageability protocol to remotely manage the PC.

For more information

DMTF

https://www.dmtf.org/standards/dash

AMD Tools for AMD PRO Manageability

https://developer.amd.com/tools-for-dmtf-dash/

HP Client Management Solutions

https://www8.hp.com/us/en/ads/clientmanagement/overview.html

Realtek RealManage User Manual and all related documents and tools (including AMD PRO Manageability ConfigRT tool under - RTL8111DP/EP/FP AMD PRO Manageability console tool for Windows 7/8/10)
https://www.kensington.com/p/products/device-docking-connectivity-products/usb-connectivity/managed-usb-c-to-22.5g-ethernet-pxe-boot-and-dash-adapter-1/

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