

# ***UNIVERGE*<sup>®</sup> SV9300**

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## **SIP Trunk Service Configuration Guide for IntelPeer**



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**NEC Corporation of America  
3929 W. John Carpenter Freeway  
Irving, TX 75063-9406**

Communications Technology Group



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# *Configuring NEC SV9300 for SIP Trunking*

## **SECTION 1      NEC SV9300 SETUP GUIDE**

### **1.1      This Guide and Related Documents**

This guide was created to assist knowledgeable vendors with configuring the NEC SV9300 Communication Server and a SIP Trunking service. It provides sample entries for the required fields. The actual data is provided by your SIP trunk provider when service is activated. Questions about software and hardware installation or other PBX configuration issues should be directed to NEC's National Technical Assistance Center (NTAC).

For complete details on using SIP trunks with the SV9300, refer to the SV9300 System Manual.

For complete details on using DID features, refer to the DID feature in the SV9300 Features and Specifications Manual.

For details about related hardware, refer to the SV9300 System Hardware Manual.

These manuals can be downloaded from NEC's National Technical Assistance Center (NTAC) web site. You must have a valid dealer ID to access the documents.

### **1.2      SIP Trunk Account Information**

Contact your SIP trunk provider representative.

### **1.3      SV9300 System Software**

The SV9300 requires system software **V3.1.0** or higher.

## 1.4 Requirements

With the SV9300, a VoIP gateway daughter board is required in addition to licensing for IP (SIP) trunks.

A minimum of four IP (SIP) trunks are required due to the NEC Communications Server infrastructure setup.

The system software for the NEC Communications Server should be version **V3.1.0** or higher.

NEC recommends that the requirements and programming are completed with as much information as possible before scheduling an activation appointment with your SIP trunk provider.

## 1.5 Limitations

The following limitations apply:

- UNIVERGE SV9300 supports T.38 or G.711 pass-through faxing. Supported fax protocol is determined by SIP trunk provider. If SIP trunk provider only supports best-effort, SIP trunk faxing may be unreliable.
- SIP diversion header is not supported – Call forwarding to 8xx numbers
- SIP Privacy – Cannot mark the calling party number as private or restricted
- Secondary SIP server for failover is not supported

## SECTION 2      **NEC PBX CONFIGURATION**

This section provides information to NEC's solution providers and NEC Associates for configuring an NEC UNIVERGE SV9300 to connect to a SIP Trunk service provider.

### **2.1 Prerequisites**

Before you configure the UNIVERGE SV9300, you must have the following information available.

#### 2.1.1      SIP Trunking Information from SIP trunk provider

- Primary SIP Proxy Server IP Address and SIP account information.
- Number Plan, if applicable for the Point-to-Point Connection
- Trunking DID(s)  
The DID(s) are forwarded to the Public WAN IP address(s), DNS or DNS SRV records of the PBX.

#### 2.1.2      NEC UNIVERGE SV9300

- SV9300 CPU software version **V2.4.1** or higher
- VOIPDB (PZ-64IPLC-A, PZ-128IPLC-A, GPZ-64IPLD or GPZ-128IPLD)
- SIP Trunk Port Licenses
- Digital, IP and TDM Telephones

#### 2.1.3      Installation Worksheet

Use the worksheet to record the information needed for setting up the SIP Trunking service.

**Table 1 Installation Worksheet**

<b>WAN Side:</b>	
Internet Access Type and Speed:	
WAN IP Address:	
WAN Subnet Mask:	
WAN Gateway IP Address:	

<b>LAN Side:</b>	
LAN IP Address for SIParator or EdgeMarc:	
LAN Subnet Mask:	
LAN IP Address for SV9300:	
VLAN ID:	

<b>PBX Information:</b>	
Model:	
Firmware Version:	
Number of SIP Trunk Licenses:	
Add-on Software Applications:	
Number of Users:	
Number of Concurrent Calls:	

<b>Notes:</b>

## SECTION 3 SV9300 PROGRAMMING

The following commands must be changed for SIP trunking service.

### 3.1 System Version and License Check

**Values shown are for example purposes only. Your actual IP values will be determined by your local LAN administrator.**

After connecting, check the SV9300 software version and license values using CM F88.

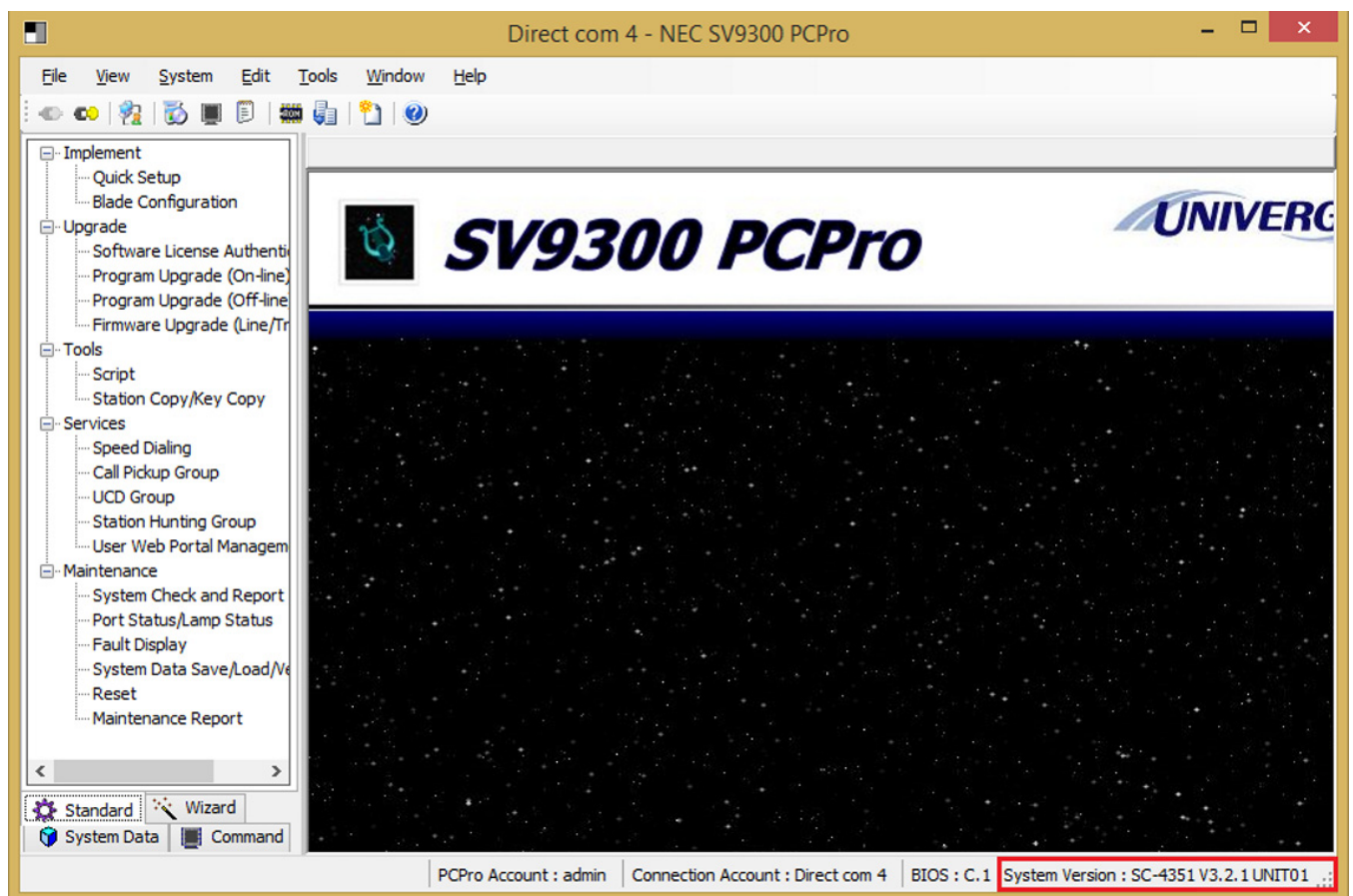


Figure 1 System Version

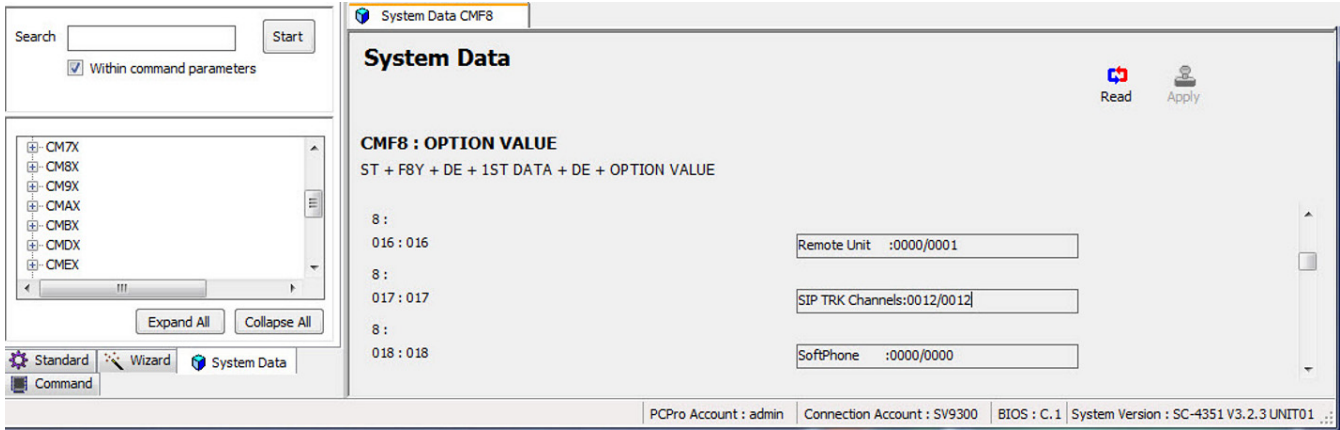
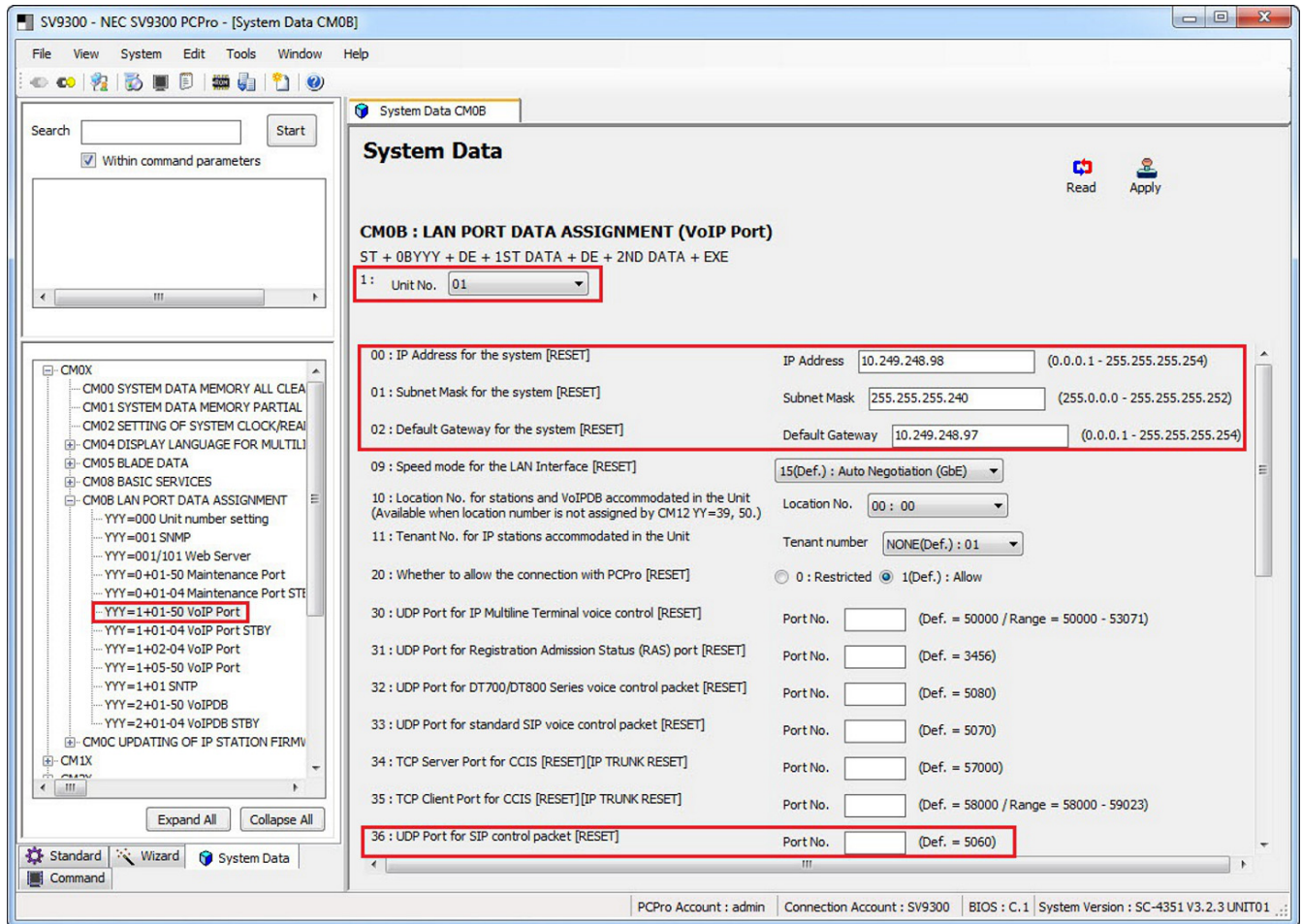


Figure 2 CM F88 SIP Trunk Port Licenses

## 3.2 CC-CP00 Network Setup

*Values shown are for example purposes only. Your actual IP values will be determined by your local LAN administrator.*



**Figure 3 CM 0B1xx Network Setup**

1. Select **SV9300 Main/Remote Unit No.** accommodating SIP Trunk Channels, then click **Read** to get the current data settings.
2. **FD=00** Enter SV9300 VoIPDB IP Address.  
**FD=01** Enter SV9300 VoIPDB Subnet Mask.  
**FD=02** Enter SV9300 VoIPDB Default Gateway Address.
3. **FD=10** Set VoIPDB location number.

*Location number is used for SIP trunk T.38 fax service. NEC is unable to support best effort faxing do to unreliable fax communications.*

4. **FD=36** Leave **Blank** to use default port 5060 for SIP trunk control packets.
5. Click **Apply**.

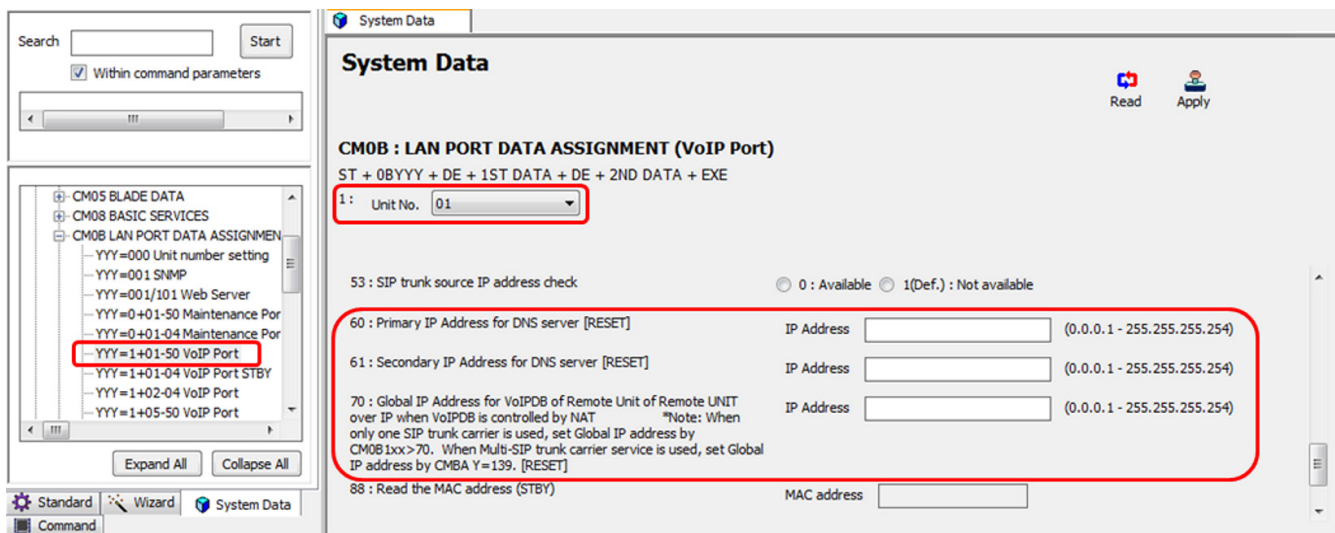
#### Command Line Example: Unit 01

```

CM 0B101>00>172.24.142.55           (Unit 01 VoIP Address)
CM 0B101>01>255.255.255.0         (Unit 01 VoIP Subnet)
CM 0B101>02>172.24.142.1         (Unit 01 VoIP Default GW)
CM 0B101>10>NONE                  (Default: Location 00)
CM 0B101>36>NONE                  (Default: SIP Trunk Port 5060)

```

**The SV9300 must be reset in order for the change to take effect.**



**Figure 4 CM 0B1xx Network Setup (continued)**

1. Select **SV9300 Main/Remote Unit No.** accommodating SIP Trunk Channels, then click **Read** to get the current data settings.
2. **FD=60** Enter primary DNS server IP Address (optional).  
**FD=61** Enter secondary DNS server IP Address (optional).  
**FD=70** Enter global IP Address (optional).

*If more than 1 profile is used enter global IP address in CM BA139.*



3. Click **Apply**.

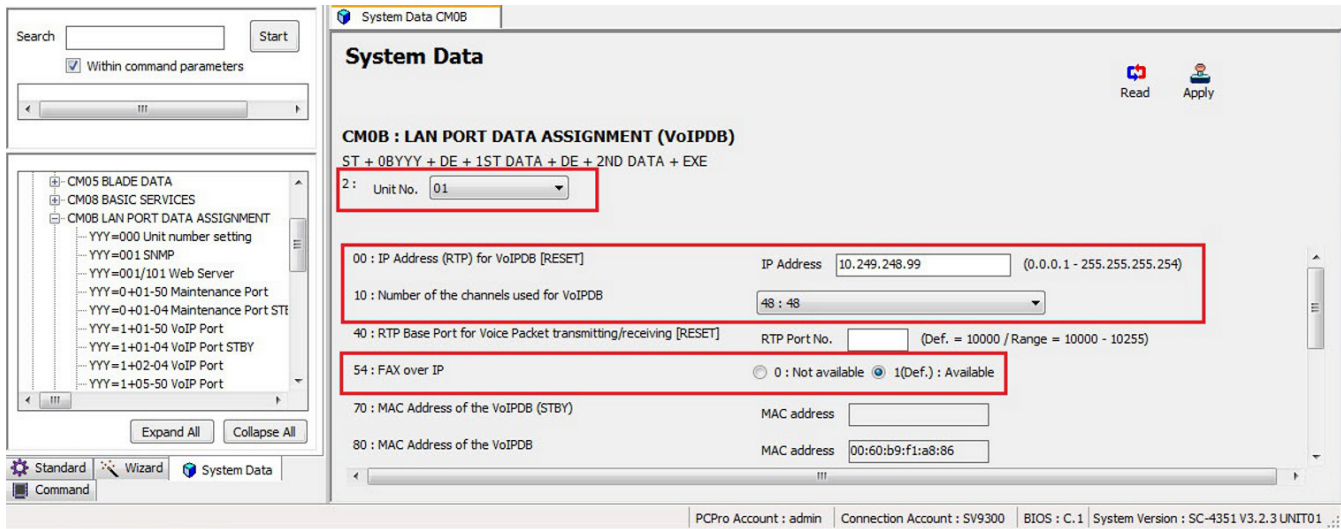
**Command Line Example: Unit 01**

CM 0B101>60>151.164.1.8	(Unit 01 Primary DNS Server Address)
CM 0B101>61>151.164.11.201	(Unit 01 Secondary DNS Server Address)
CM 0B101>02>172.24.142.1	(Unit 01 Global IP Address)

**The SV9300 must be reset in order for the change to take effect.**

### 3.3 IP PAD Network Settings

*Values shown are for example purposes only. Actual IP values will be determined by your local LAN administrator.*



**Figure 5 CM 0B2xx IP PAD Network Settings**

1. Select **SV9300 Main/Remote Unit No.** accommodating SIP Trunk Channels, then click **Read** to get the current data settings.
2. **FD=00** Enter VoIP IPPAD IP address.  
**FD=10** Select number of VoIP IPPAD channels.
3. **FD=54** Select 1(Def.) : Available (to allow Fax over IP).
4. Click **Apply**.

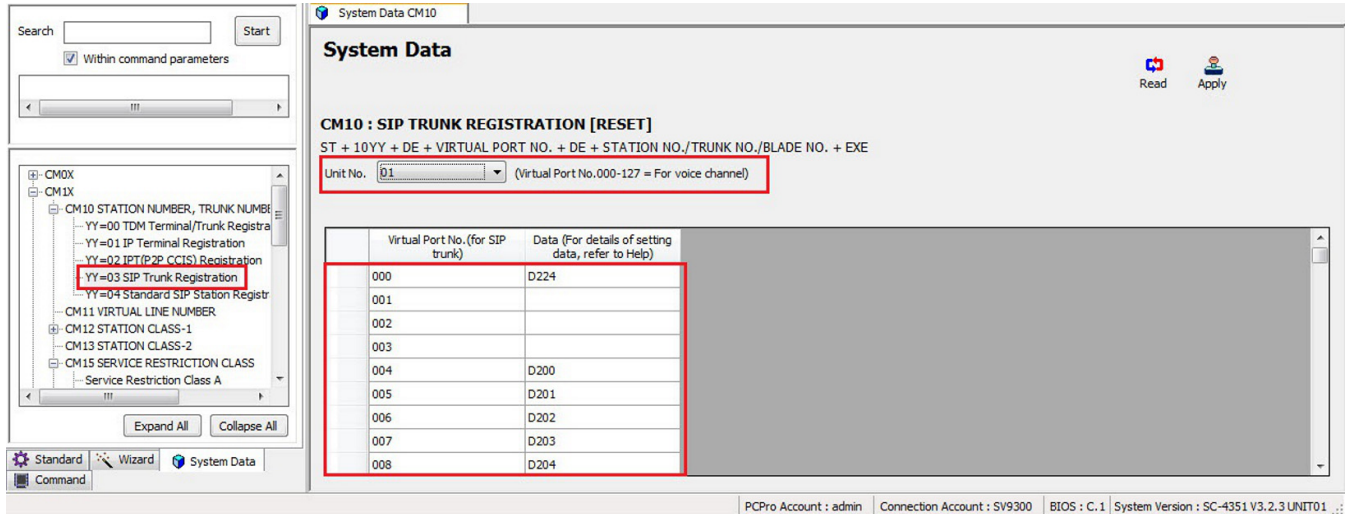
#### Command Line Example: Unit 01

```
CM 0B201>00>172.24.142.56          (Unit 01 VoIP IPPAD Address)
CM 0B201>10>32                    (Unit 01 VoIP IPPAD Channels)
CM 0B201>54>1                    (Unit 01 Allow Fax over IP)
```

**The SV9300 must be reset in order for the change to take effect.**

### 3.4 SIP Trunk Port Allocation

*All values shown are for example purposes only. Your actual values will be determined by your implementation team.*



**Figure 6 CM 1003 SIP Trunk Port Allocation**

1. Select **SV9300 Main/Remote Unit No.** accommodating SIP Trunk Channels, then click **Read** to get the current data settings.
2. Enter **Trunk Numbers** used for the voice channels.
3. Click **Apply**.

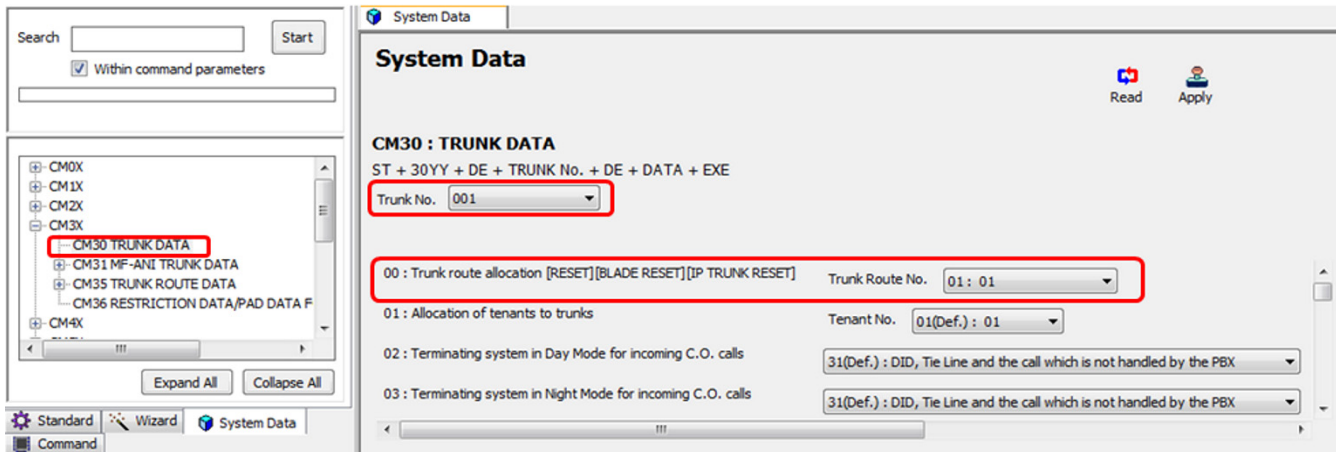
**Command Line Example: Unit 01**

```


CM 1003>01000>D001           (Unit 01 SIP Trunk Channel 1)
CM 1003>01001>D002           (Unit 01 SIP Trunk Channel 2)
CM 1003>01002>D003           (Unit 01 SIP Trunk Channel 3)
CM 1003>01003>D004           (Unit 01 SIP Trunk Channel 4)
    
```

### 3.5 SIP Trunk Port Settings

*All values shown are for example purposes only. Your actual values will be determined by your implementation team.*



**Figure 7 CM 30 SIP Trunk Port Settings**

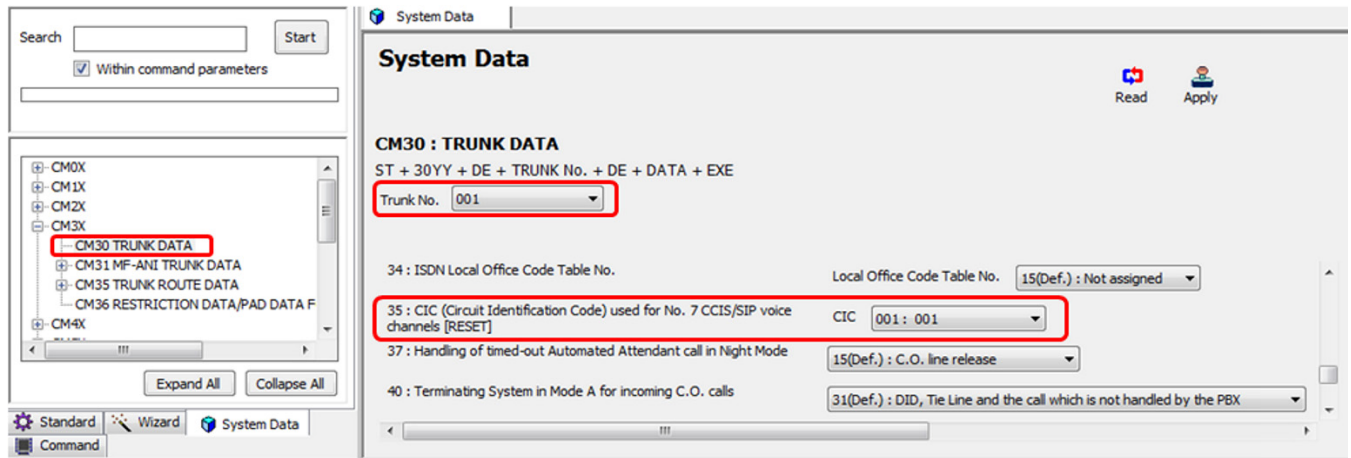
1. Select each **Voice Channel** and click the **Read** button to get the current data settings.
2. **YY=00** Assign the same **Trunk Route Number** to each voice channel.
  -  *If multiple SIP trunk servers are in service, separate routes must be used for each server.*
3. Click **Apply**.

**Command Line Example: Route 01**

```

CM 3000>001>01           (Voice Trunk Route Number 01)
CM 3000>002>01           (Voice Trunk Route Number 01)
CM 3000>003>01           (Voice Trunk Route Number 01)
CM 3000>004>01           (Voice Trunk Route Number 01)

```



**Figure 8 CM 30 SIP Trunk Port Settings (continued)**

1. Select each **Voice Channel** and click the **Read** button to get the current data settings.
2. **YY=35** Assign **CIC** number to each voice trunk.

*CICs should be assigned in order of voice trunks (i.e. trunk 001= CIC 001, trunk 002=CIC 002 ...).*

*For each SIP trunk server CICs will start at 001 (i.e. SIP trunk server 1 uses CICs 001, 002, ... and SIP trunk server 2 will use CICs 001, 002, ...).*

3. Click **Apply**.

**Command Line Example:**

```

CM 3035>001>001           (Assign CIC to Channel 1)
CM 3035>002>002           (Assign CIC to Channel 2)
CM 3035>003>003           (Assign CIC to Channel 3)
CM 3035>004>004           (Assign CIC to Channel 4)
    
```

## 3.6 SIP Trunk Route Settings

*All values shown are for example purposes only. Your actual values will be determined by your implementation team.*

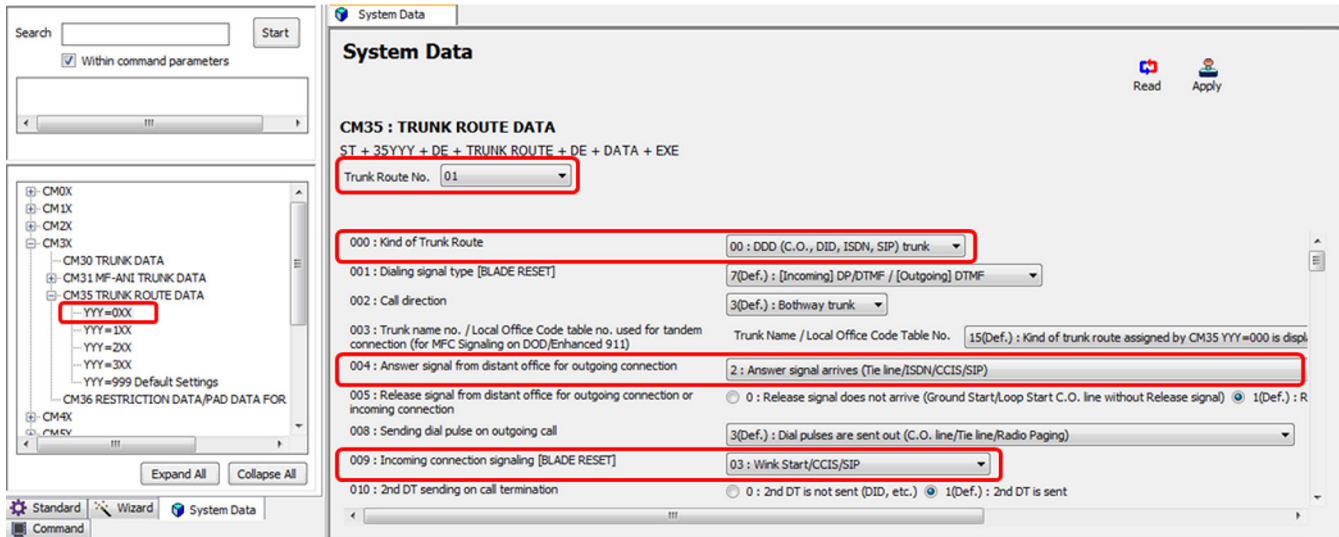


Figure 9 CM 35 SIP Trunk Route Settings

1. Select the **Trunk Route Number** assigned to voice channels and click the **Read** button to get current data settings.
2. **YYY=000** Select **00** for SIP trunk service.
3. **YYY=004** Select **2** for SIP trunk service.
4. **YYY=009** Select **03** for SIP trunk service.
5. Click **Apply**.

### Command Line Example:

```

CM 35000>01>00          (SIP Trunk Route Data: Provide SIP Service)
CM 35004>01>2          (SIP Trunk Route Data: Provide SIP Service)
CM 35009>01>03        (SIP Trunk Route Data: Provide SIP Service)

```

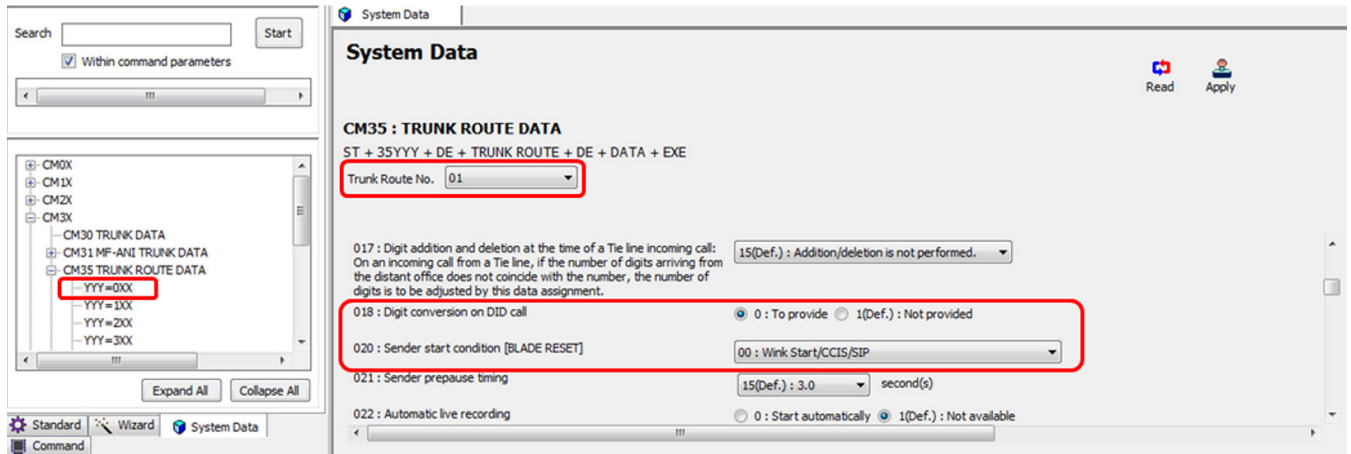


Figure 10 CM 35 SIP Trunk Route Settings (continued)

1. Select the **Trunk Route Number** assigned to voice channels and click the **Read** button to get current data settings.
2. **YYY=018** Select **0** for DID digit conversion.  
**YYY=020** Select **00** for SIP trunk service.
3. Click **Apply**.

**Command Line Example:**

CM 35018>01>0 (SIP Trunk Route Data: Provide DID Digit Service)  
 CM 35020>01>00 (SIP Trunk Route Data: Provide SIP Service)

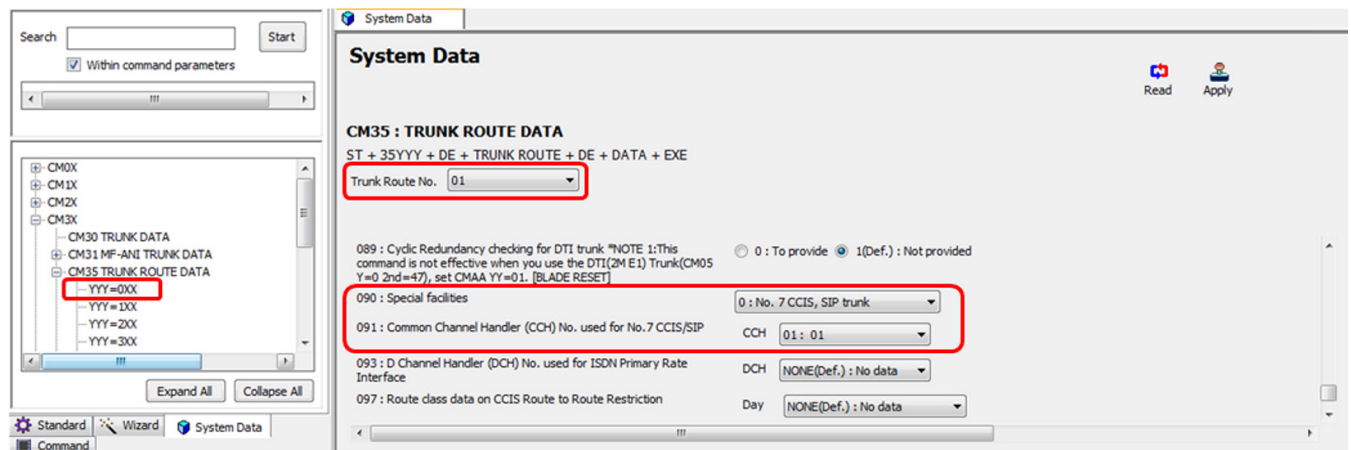




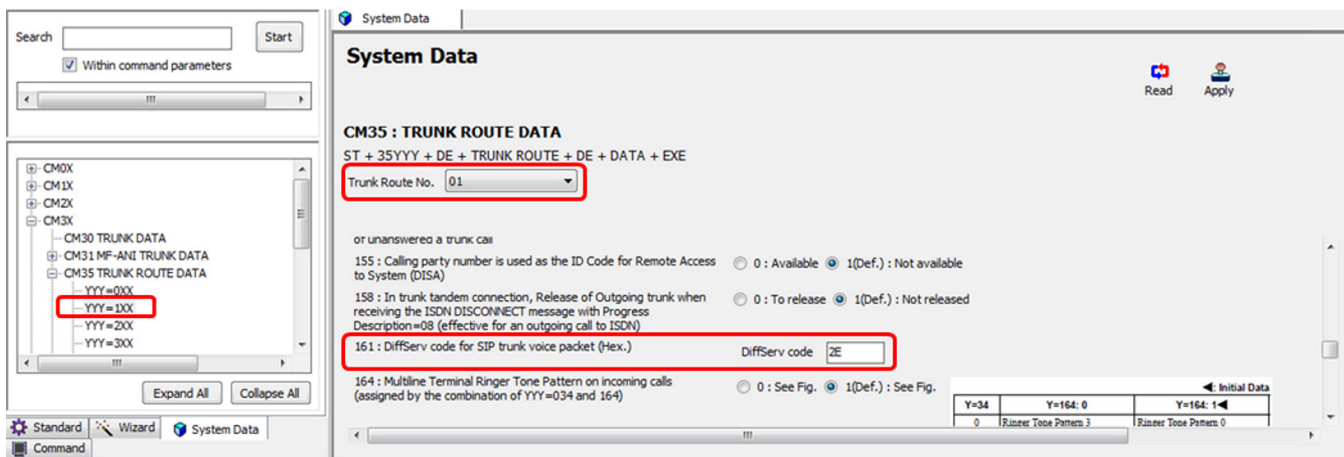
Figure 11 CM 35 SIP Trunk Route Settings (continued)

1. Select the **Trunk Route Number** assigned to voice channels and click the **Read** button to get current data settings.
2. **YYY=090** Select **0** for SIP trunk service.  
**YYY=091** Select **CCH** used for SIP trunk.
  -  *CCH 00 should not be assigned for SIP trunk; P-P CCIS must use CCH 00.*
  -  *Assign a different CCH to each SIP trunk server voice route.*
3. Click **Apply**.

**Command Line Example:**

CM 35090>01>0 (SIP Trunk Route Data: Provide SIP Service)

CM 35091>01>01 (SIP Trunk Route Data: Assign CCH Number)



**Figure 12 CM 35 SIP Trunk Route Settings (continued)**

1. Select the **Trunk Route Number** assigned to voice channels and click the **Read** button to get current data settings.
2. **YYY=161** Enter DiffServ code in hexadecimal for SIP trunk voice packets (RTP stream).

**Example:** 2E = Expedited Forwarding

3. Click **Apply**.

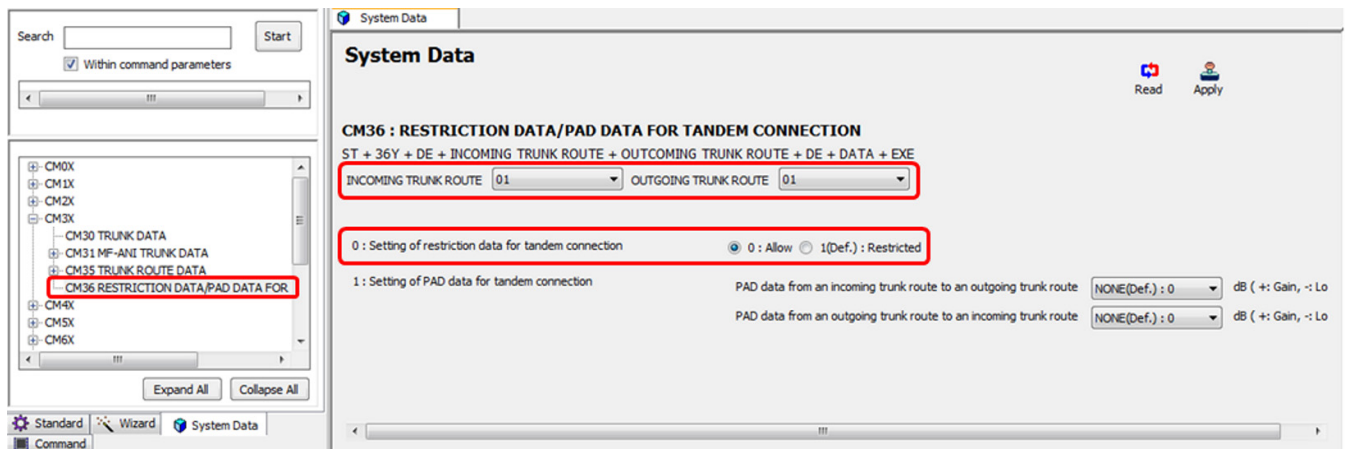
**Command Line Example:**

CM 35161>01>2E (SIP Trunk Route Data: SIP Control QoS DiffServ EF)




### 3.7 Route to Route Connection Settings

*All values shown are for example purposes only. Your actual values will be determined by your implementation team.*



**Figure 13 CM 36 Route to Route Connection Settings**

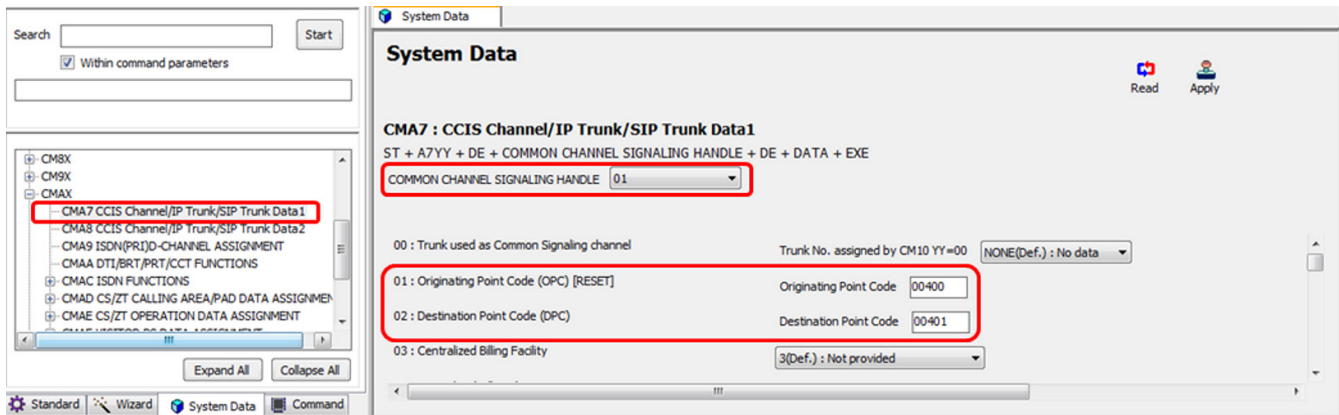
1. Select **Incoming Trunk Route**.
2. Select **Outgoing Trunk Route** and click the **Read** button to get current data settings.
3. Select **0** to allow route to route connection.
  -  *Allow route to route connection (i.e. SIP route to PRI route, PRI route to SIP route, and SIP route to SIP route).*
4. Click **Apply**.

**Command Line Example:**

CM 360>0101>0 (Route to Route Connection)

### 3.8 SIP Trunk Control Channel Settings

*All values shown are for example purposes only. Your actual values will be determined by your implementation team.*

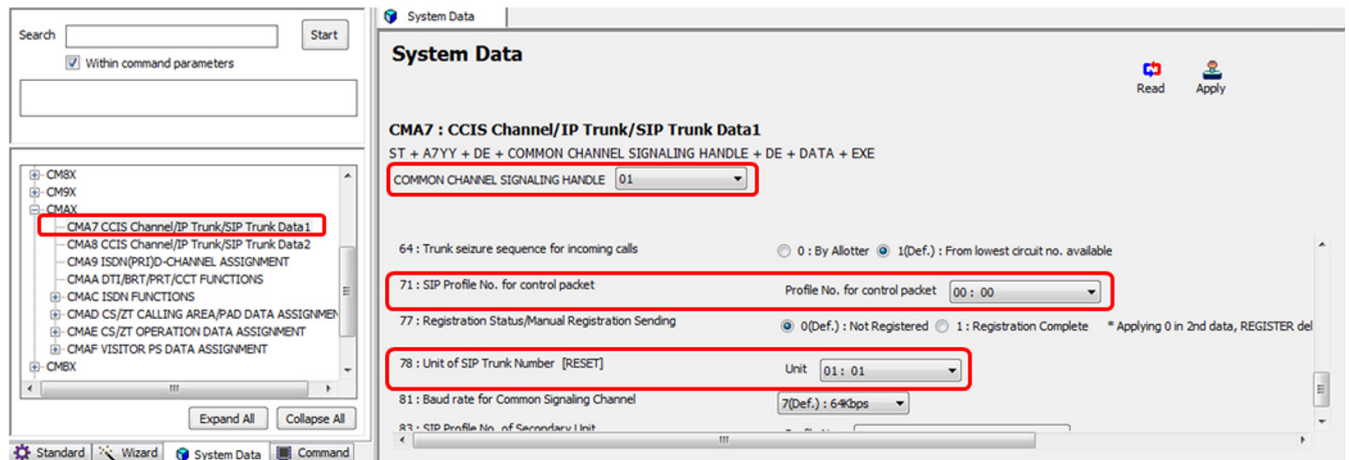


**Figure 14 CM A7 SIP Trunk Control Channel Settings**

1. Select **CCH** assigned to SIP trunk and click the **Read** button to get current data settings.
2. **YY=01** Assign an arbitrary **Originating Point Code**.
  - The same originating point code can be used for each SIP trunk server.*
3. **YY=02** Assign an arbitrary **Destination Point Code**.
  - Different destination point code must be used for each SIP trunk server.*
4. Click **Apply**.

**Command Line Example:**

CM A701>01>00400 (Arbitrary Origination Point Code)  
 CM A702>01>00401 (Arbitrary Destination Point Code)



**Figure 15 CM A7 SIP Trunk Control Channel Settings (continued)**

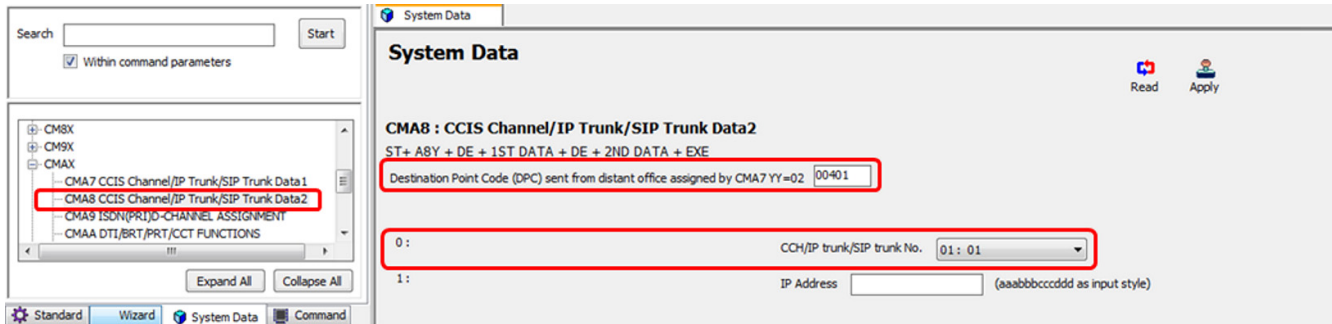
1. Select **CCH** assigned to SIP trunk and click the **Read** button to get current data settings.
2. **YY=71** Select an unused **SIP Trunk Profile Number**.
3. **YY=78** Select **Unit No.** accommodating SIP trunk channels.
4. Click **Apply**.

**Command Line Example:**

CM A771>01>00 (SIP Trunk Profile 00)  
 CM A778>01>01 (Main Site Unit 01)

### 3.9 SIP Trunk Destination Point Code Settings

*All values shown are for example purposes only. Your actual values will be determined by your implementation team.*



**Figure 16 CM A8 SIP Trunk Destination Point Code Settings**

1. Enter **Destination Point Code** assigned by CMA7 YY=02 and click the **Read** button to get current data settings.
2. **Y=0** Select **CCH** assigned to destination point code in CMA7 YY=02.
3. Click **Apply**.

**Command Line Example:**

CM A80>00401>01

(Destination Point Code 00401 & CCH 01)

### 3.10 SIP Trunk Profile Settings

*All values shown are for example purposes only. Your actual values will be determined by your implementation team.*

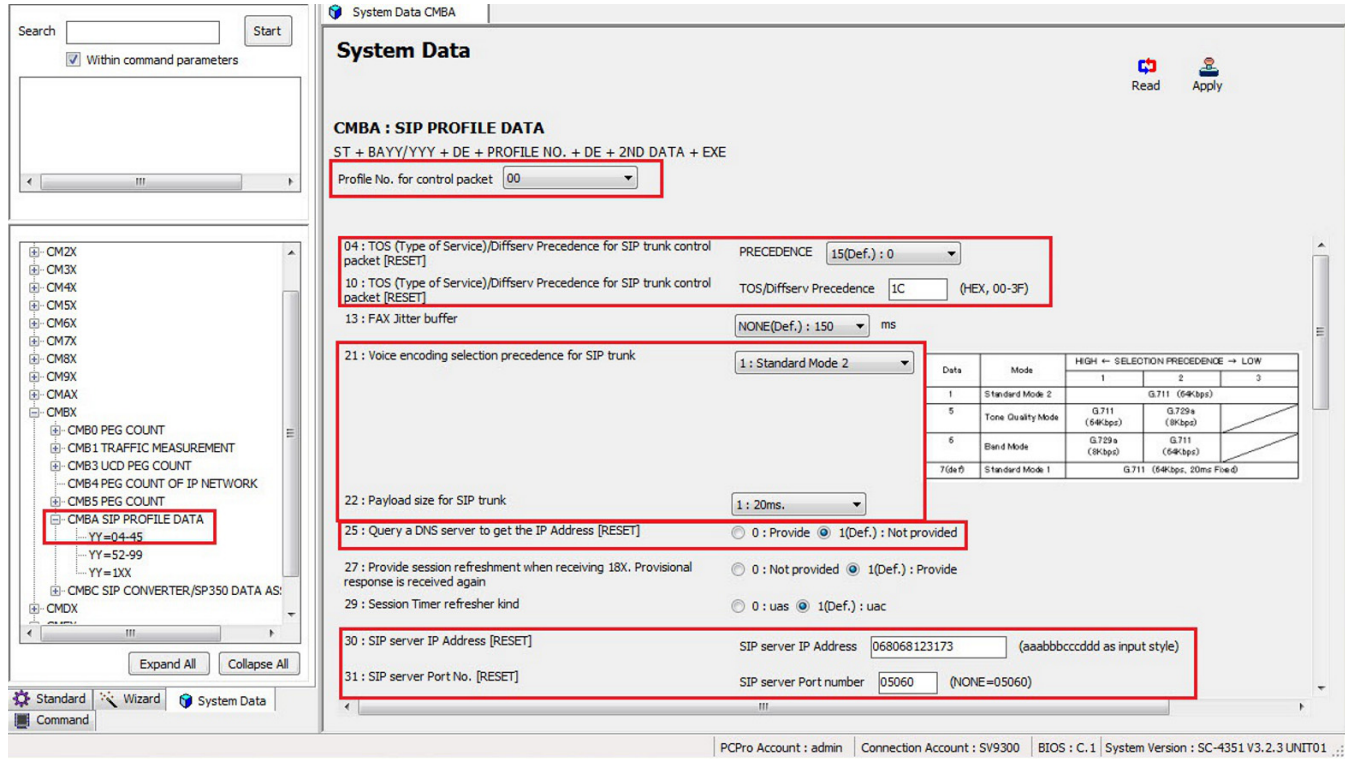


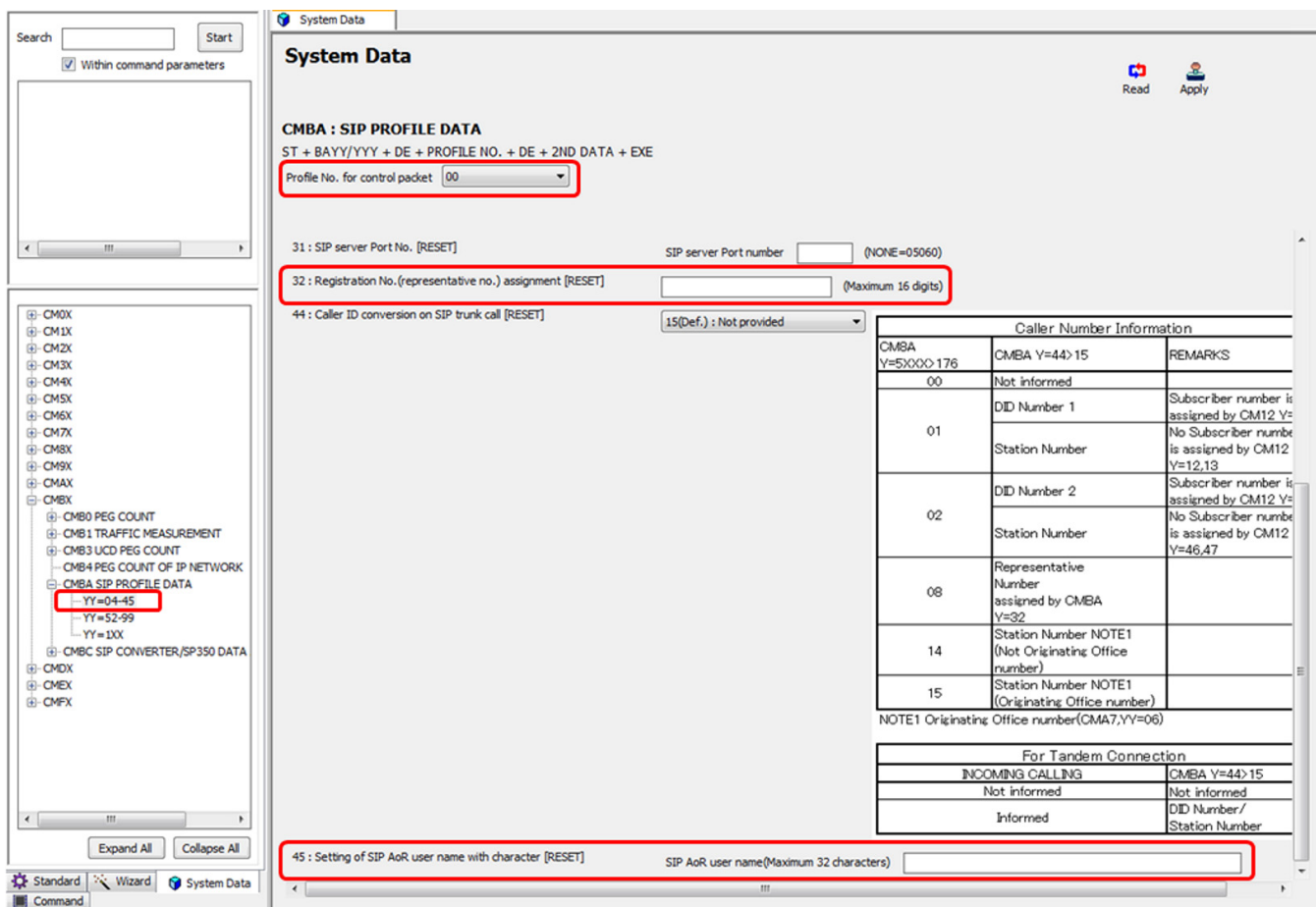
Figure 17 CM BA SIP Trunk Profile Settings

1. Select **SIP Trunk Profile Number** assigned by CM35 YYY=091 and click the **Read** button to get current data settings.
2. **YY=04/10** Enter ToS/DiffServ code in hexadecimal for SIP trunk control (SIP packets).  
**Example:** 1C = Assured Forwarding 32
3. **YY=21** Select SIP trunk **CODEC List**.  
**YY=22** Select SIP trunk **Payload Size of 20ms for IntelPeer Tel SIP Trunk**.
4. **YY=25** Select DNS server query option. (Not required for Charter Business)
5. **YY=30** Enter the **IP address** of the **LAN side**.  
**YY=31** Enter the SIP trunk server port number. (05060)

6. Click **Apply**.

**Command Line Example: DiffServ AF32/No DNS Query/Programmable CODEC List/20ms payload/Port 5060**

CM BA04>00>15 (Default: QoS assigned by CM BA YY=10)  
 CM BA10>00>1C (DiffServ AF32)  
 CM BA21>00>0 (Programmable CODEC List)  
 CM BA22>00>1 (20ms. Payload)  
 CM BA25>00>1 (Default: DNS Query not Provided)  
 CM BA30>00>172.245.36.25 (Example: SIP Server IP Address)  
 CM BA31>00>05060 (SIP Server Port 5060)



**Figure 18 CM BA SIP Trunk Profile Settings (continued)**

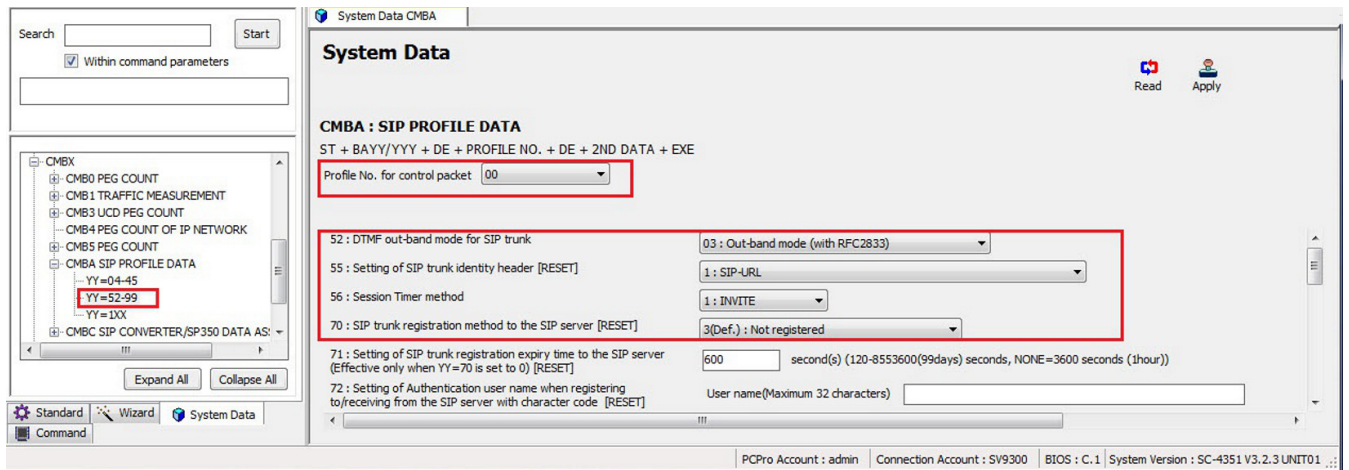
1. Select **SIP Trunk Profile Number** assigned by CM35 YYY=091 and click the **Read** button to get current data settings.
2. **YY=32** Enter SIP account main DID number.

3. **YY=44** Select 01 to send CID to SIP trunk and set 8A Y=5XXX>176 accordingly.
4. **YY=45** Set the Address of Registration (AoR) with the BTN/OTG of the IntelPeer tel SIP Trunk Group. In this case 8088881900 is the BTN of the test trunk group
5. Click **Apply**.

**Command Line Example: Main DID 2145551212**

```

CM BA32>00>2145551212           (Main DID Number)
CM BA44>00>01                   (To send CID to SIP Trunk)
CM BA45>00>2145551212           (Main DID Number)
CM 8A5XXX>176>15                (Default Toll restriction pattern)
    
```



**Figure 19 CM BA SIP Trunk Profile Settings (continued)**

1. Select **SIP Trunk Profile Number** assigned by CM35 YYY=091 and click the **Read** button to get current data settings.
2. **YY=52** Select 03: Out-band mode (with RFC 2833)  
**YY=55** Select 1 for SIP-URL calling party number sending.  
**YY=56** Select 1 for INVITE Session Timer method.  
**YY=70** Select 3 for No SIP registration.
3. **YY=72** Set Authentication of user name when registering with BTN/OTG of the IntelPeer tel SIP Trunk group.
4. **YY=74** Set Authentication of password when registering with BTN/OTG of the IntelPeer tel SIP Trunk group.
5. **YY=83** Session Timer Providing should be set to 0.



6. **YY=86** Set to 0 : P-Asserted-Identity.
7. Click **Apply**.

**Command Line Example:**

```

CM BA52>00>03           (Out-Band Mode - with RFC 2833)
CM BA55>00>1           (SIP-URL Identity Header)
CM BA56>00>1           (INVITE Session Timer Mode)
CM BA70>00>3           (Registration Not Required)
CM BA72>00>2145551212 (username)
CM BA74>00>2145551212 (Password)
CM BA86>00>0           (IP-Asserted-Identity)

```

The screenshot displays the 'System Data CMBA' configuration window. The left sidebar shows a tree view of system data categories, with 'CMBA SIP PROFILE DATA' expanded. The main area is titled 'System Data' and contains the following settings:

- CMBA : SIP PROFILE DATA**  
ST + BAYY/YYY + DE + PROFILE NO. + DE + 2ND DATA + EXE
- Profile No. for control packet: 00
- 85: IP Address used for SIP-URI [RESET]
  - 0 : IP Address of VoIP CM0B YYY=1xx>00(xx=01-50)
  - 1(Def.) : IP Address of SIP Profile CMBA30
- 86: Identity header of SIP Trunk [RESET]
  - 0 : P-Asserted-Identity
  - 1(Def.) : P-Preferred-Identity
- 87: Stop no-answer timer when receiving first response (100 Trying)
  - 0 : Not Stopped
  - 1(Def.) : Stop Timer
- 88: Session Timer setting: 120 (1-8553600 : 1second(s)-8553600seconds(99days), NONE=1800 seconds)
- 90: Timer of response waiting for calling (INVITE transaction time-out timer): 31(Def.) : 32 seconds
- 91: Provisional response code when the system receives the incoming call, and starts to call the stations: 7(Def.) : 180 Ringing (without SDP)
- 92: Setting of the display name/user name for From Header [RESET]: 3(Def.) : Display name: Caller ID following CMBA YY=44, User name: Caller ID following CMBA YY=44
- 93: Setting of the Fully Qualified Domain Name (FQDN) for SIP server with character [RESET]: Domain name(Maximum 128 characters)
- 97: Error response code when the system receives the incoming call, but all SIP trunks are busy: 1 : 486 Busy Here

**Figure 20 CM BA SIP Trunk Profile Settings (continued)**

1. Select **SIP Trunk Profile Number** assigned by CM35 YYY=091 and click the **Read** button to get current data settings.
2. **YY=85** Select 1(Def.) :IP Address of SIP Profile CMBA30  
**YY=86** Select 0 for P-Asserted identity header format.
3. **YY=88** Set Session Timer for 120 seconds.  
**YY=90** Set SIP INVITE response timer to 31(Def.) : 32 seconds  
**YY=91** Select 7(Def.) :180 Ringing (without SDP).  
**YY=92** Select 3 for From Header format.

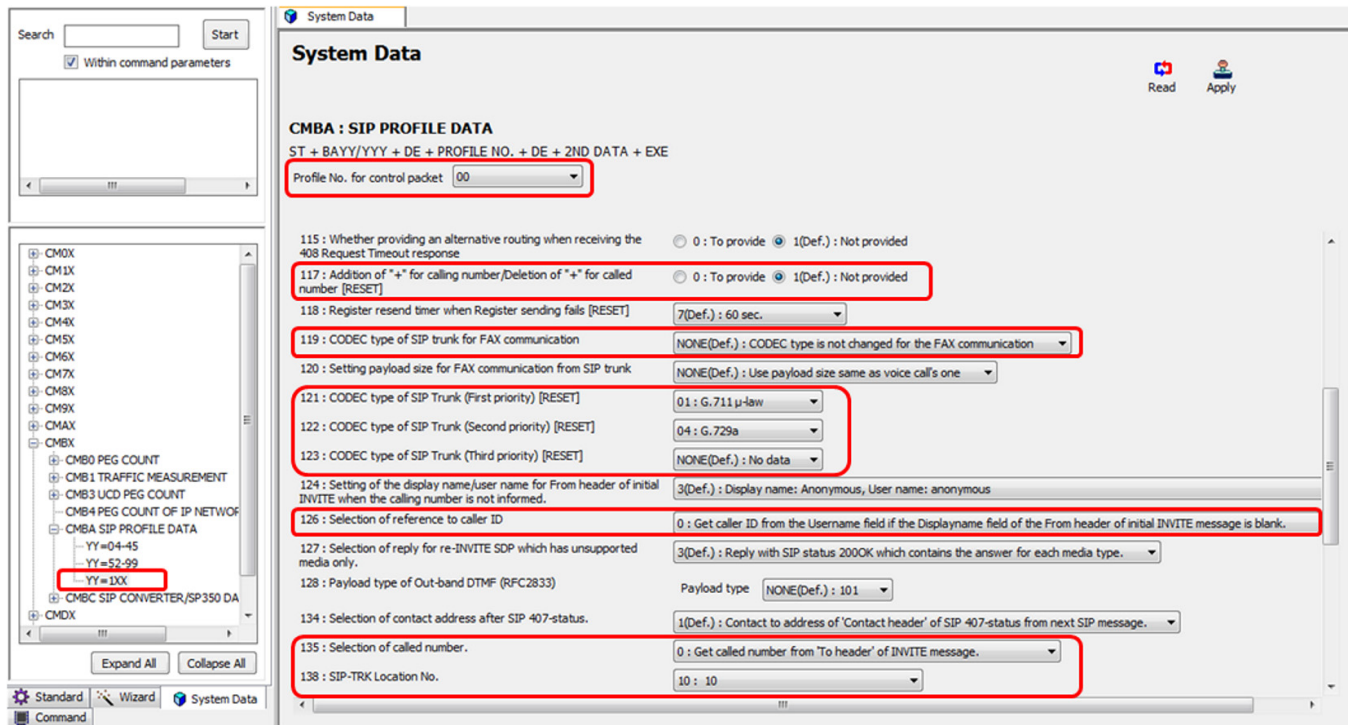


4. **YY=97** Select 486 Busy Here response message when all trunks are busy.
5. Click **Apply**.

**Command Line Example:**


```

CM BA85>00>1      (IP Address of SIP Profile CMBA30)
CM BA86>00>0      (SIP Identity Header Format P-Asserted)
CM BA88>00>120    (120 second Session Timer)
CM BA90>00>31     (SIP Response Timer 32 Seconds)
CM BA91>00>1      (SIP INVITE response for early media: 180 Ringing w/ SDP)
CM BA92>00>3      (From Header Format)
CM BA97>00>1      (SIP response when all trunks are busy: 488 Busy Here)
    
```



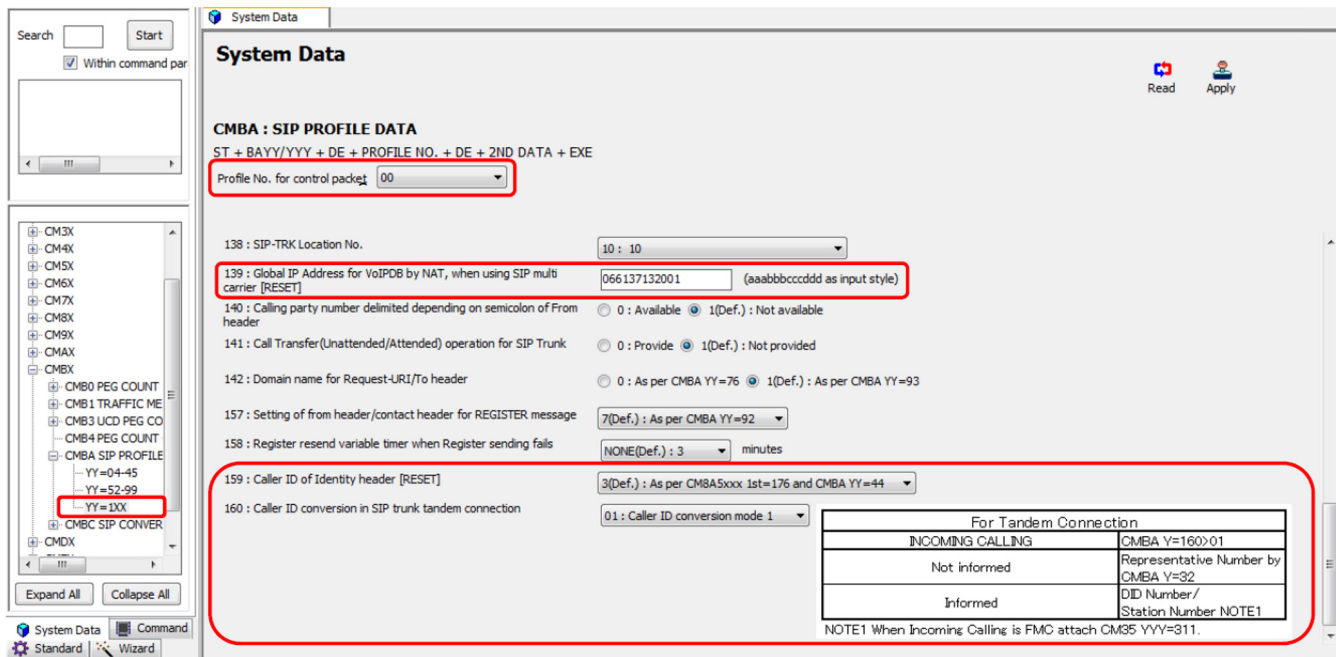
**Figure 21 CM BA SIP Trunk Profile Settings (continued)**

1. Select **SIP Trunk Profile Number** assigned by CM35 **YYY=091** and click the **Read** button to get current data settings.
2. **YY=117** Set + digit addition/deletion dialing to 1 (Not Provided).
3. **YY=119** Only set when using T.38 faxing.
4. **YY=121~123** Set desired CODEC list when using programmable list. (CM BA YY=21)

5. **YY=126** Select **0** to receive CID from the username field if the display name field is blank in the initial invite.
6. **YY=135** Select **0** to receive called party number from the 'to header' SIP invite.  
**YY=138** Select SIP trunk profile location number.  
 *Location number is used for SIP trunk T38 fax service.*
7. Click **Apply**.

**Command Line Example:**

CM BA119>00>NONE (Default: G.711 Pass-Through Fax. Only set when using T.38 Fax)  
 CM BA121>00>01 (CODEC List First Priority: G.711)  
 CM BA122>00>04 (CODEC List First Priority: G.729a)  
 CM BA126>00>0 (Receiving Caller ID Reference)  
 CM BA135>00>0 (Called Number Reference Location)  
 CM BA138>00>10 (SIP Trunk Location Number: Used for T.38 Fax)



**System Data**

**CMBA : SIP PROFILE DATA**  
 ST + BAYY/YYY + DE + PROFILE NO. + DE + 2ND DATA + EXE

Profile No. for control packet: 00

138 : SIP-TRK Location No. 10 : 10

139 : Global IP Address for VoIPDB by NAT, when using SIP mult carrier [RESET] 066137132001 (aaabbbccddd as input style)

140 : Calling party number delimited depending on semicolon of From header  0 : Available  1(Def.) : Not available

141 : Call Transfer(Unattended/Attended) operation for SIP Trunk  0 : Provide  1(Def.) : Not provided

142 : Domain name for Request-URI/To header  0 : As per CMBA YY=76  1(Def.) : As per CMBA YY=93

157 : Setting of from header/contact header for REGISTER message 7(Def.) : As per CMBA YY=92

158 : Register resend variable timer when Register sending fails NONE(Def.) : 3 minutes

159 : Caller ID of Identity header [RESET] 3(Def.) : As per CMBA5xxxx 1st=176 and CMBA YY=44

160 : Caller ID conversion in SIP trunk tandem connection 01 : Caller ID conversion mode 1


For Tandem Connection	
INCOMING CALLING	CMBA Y=160>01
Not informed	Representative Number by CMBA Y=32
Informed	DID Number/ Station Number NOTE1

NOTE1 When Incoming Calling is FMC attach CM35 YYY=311.

**Figure 22 CM BA SIP Trunk Profile Settings (continued)**

1. Select **SIP Trunk Profile Number** assigned by CM35 YYY=091 and click the **Read** button to get current data settings.

2. **YY=139** Enter global IP address when more than 1 SIP trunk profile is used.

 *If only one SIP trunk profile is used, enter global IP Address in CM0B YY=101>70.*

3. **YY=159** Select identity header caller ID selection.
4. **YY=160** Select Caller ID format for SIP trunk tandem connection.
5. Click **Apply**.

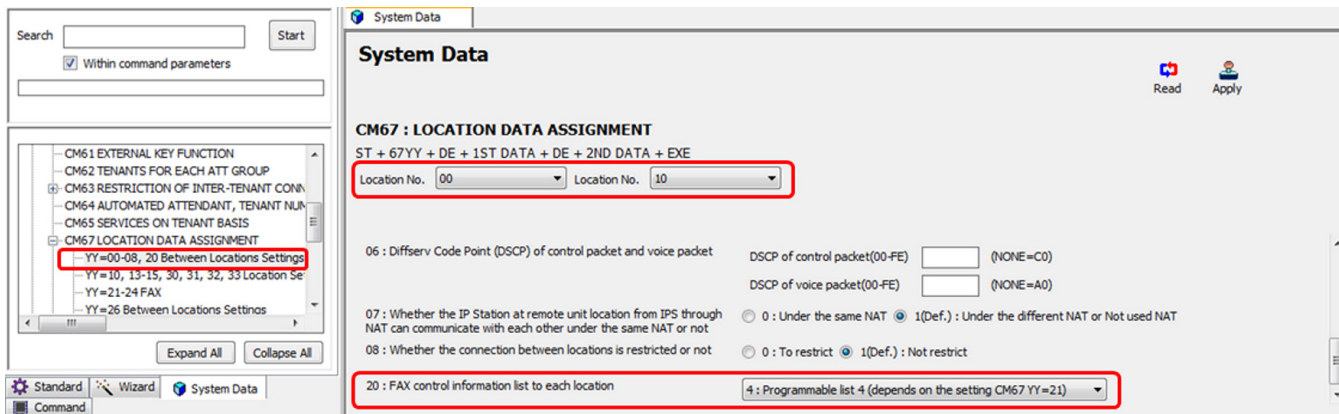
**Command Line Example:**

CM BA139>00>066137132001	(Global IP Address)
CM BA159>00>3	(Default: Calling Party Number Sending Option)
CM BA160>00>01	(Tandem Conversion Mode 1)

### 3.11 T38 Fax Settings

*All values shown are for example purposes only. Your actual values will be determined by your implementation team.*

*T.38 faxing is not supported by IntelePeer Telecom.*



**Figure 23 CM 67 T38 Fax Settings**

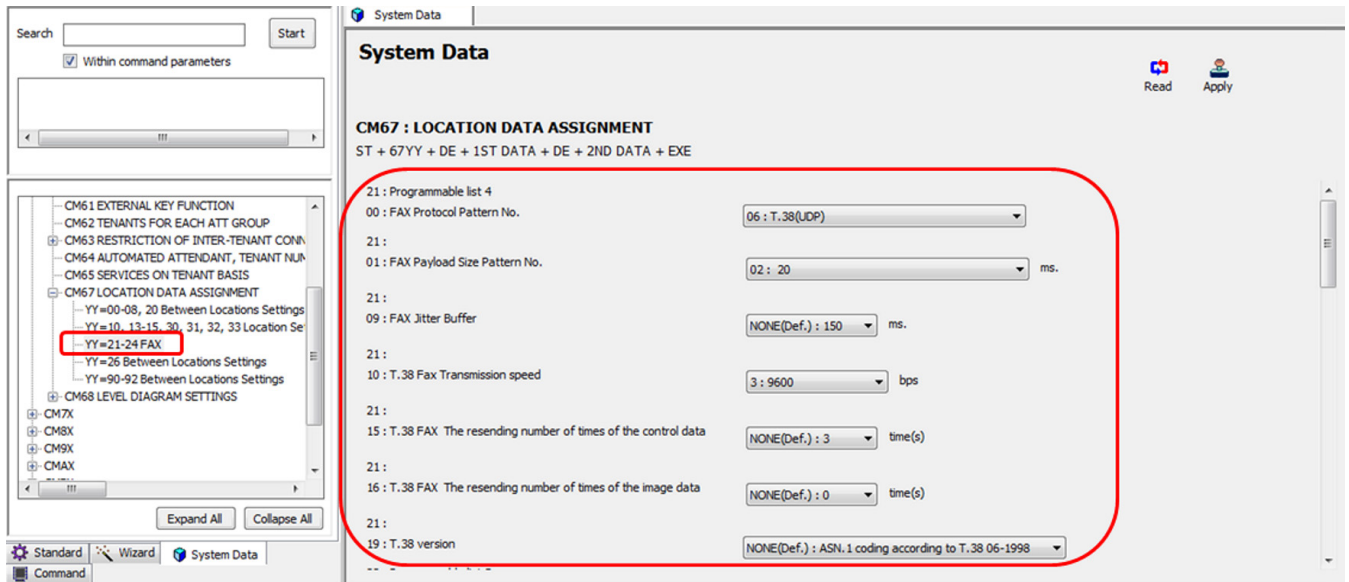
1. Select **Originating Location Number** and **Destination Location Number** and click the **Read** button to get current data settings.
2. **YY=20** Select **4** Programmable list for T38 fax settings.
3. Click **Apply**. When location number for SIP trunk profile and VoIPDB is different you must also set this command for reverse direction.

**Command Line Example:**

```

CM 6720>0010>4           (Programmable Fax List: Only used for T.38 Fax)
CM 6720>1000>4          (Programmable Fax List: Only used for T.38 Fax)
CM 6720>1010>4          (Programmable Fax List: Only used for T.38 Fax)

```



**Figure 24 CM 6721 T38 Fax Settings (continued)**

1. Click the **Read** button to get current data settings.
2. **FD=00** Select **06** for T38 fax service.  
**FD=01** Set fax payload size.  
**FD=09** Set fax jitter buffer size.  
**FD=10** Set T.38 fax transmission speed.  
**FD=15** Set resending for control data.  
**FD=16** Set resending for image data.  
**FD=19** Set T.38 version.
3. Click **Apply**.

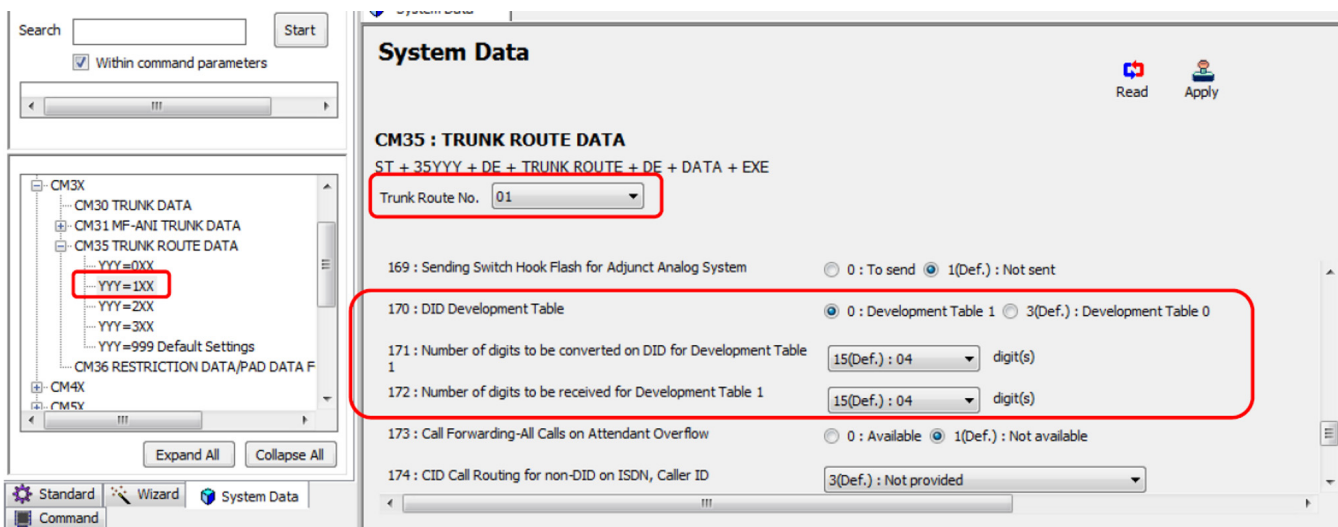
**Command Line Example:**

```

CM 6721>00>06                (T.38 Fax)
CM 6721>01>02                (T.38 20ms Payload Size)
CM 6721>09>NONE              (Default: T.38 150ms jitter buffer)
CM 6721>10>3                 (9600 T.38 fax transmission speed)
CM 6721>15>NONE              (Default: T.38 resend control data 3 times)
CM 6721>16>NONE              (Default: T.38 resend image data 0 times)
CM 6721>19>NONE              (Default: T.38 fax version)
    
```

### 3.12 DID Digit Conversion Settings

*All values shown are for example purposes only. Your actual values will be determined by your implementation team.*



**Figure 25 CM 35 YYY=170~172 DID Digit Conversion Settings**

1. Select the Trunk Route Number assigned to voice channels and click the **Read** button to get current data settings.
2. **YYY=170** Select **0** to use DID Development Table 1.  
**YYY=171** Select the number of digits to be converted.  
**YYY=172** Select the number of digits received.
3. Click **Apply**.

**Command Line Example:**

```

CM 35170>01>0                               (DID Development Table 1)
CM 35171>01>15                              (Default: 04 Digits)
CM 35172>01>15                              (Default: 04 Digits)

```

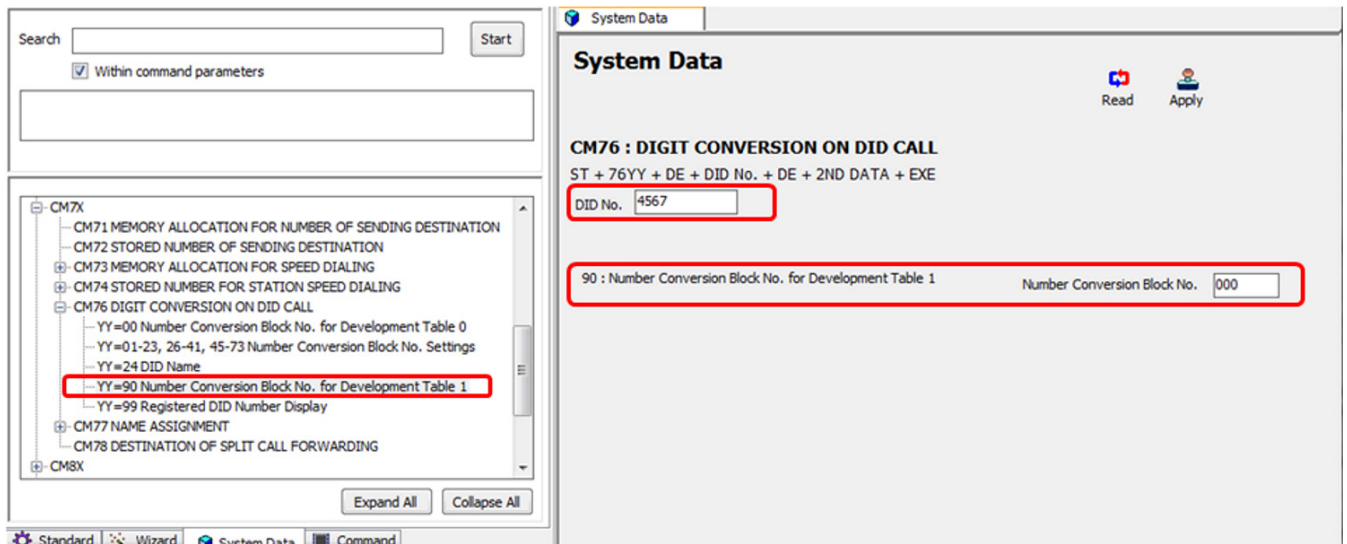


Figure 26 CM 7690 DID Digit Conversion Settings (continued)

1. Enter DID digits to be converted and click the **Read** button to get current data settings.
2. Enter DID conversion block number.
3. Click **Apply**.

**Command Line Example: DID 214-555-4567**

CM 7690>4567>000 (DID 214-555-4567/Conversion Block 000)

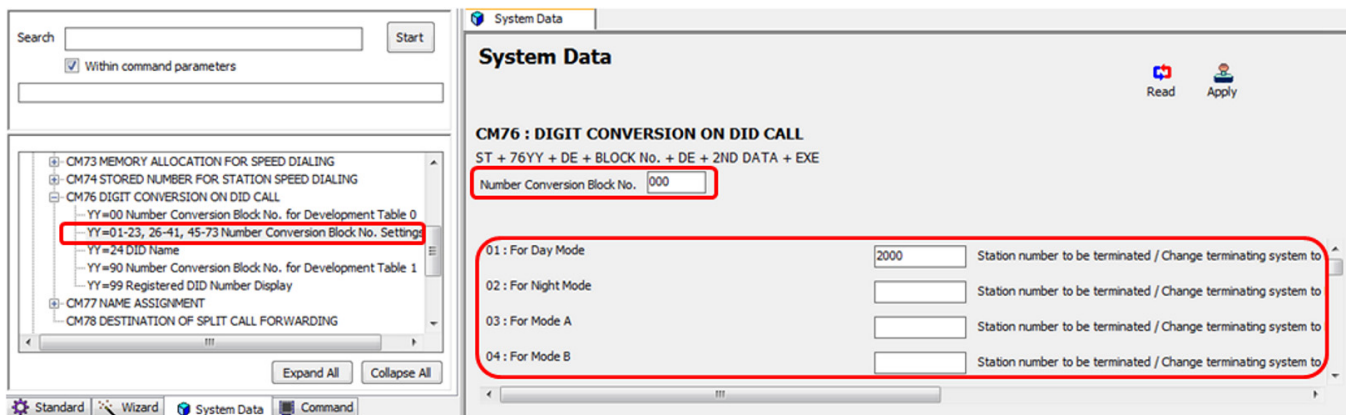


Figure 27 CM 76 DID Digit Conversion Settings (continued)

1. Enter DID conversion block number and click the **Read** button to get current data settings.

2. **YY=01~04** Enter DID destination for the required system modes.
3. Click **Apply**.

**Command Line Example: Day Mode/Destination Str. 2000**

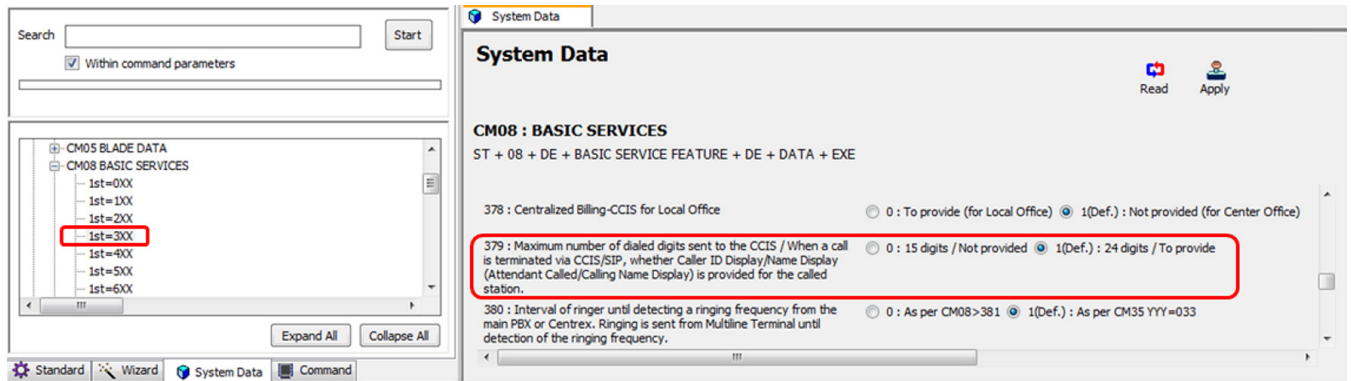
CM 7601>000>2000

(Conversion Block 000/Destination Str. 2000)



### 3.13 Caller ID Display

*All values shown are for example purposes only. Your actual values will be determined by your implementation team.*

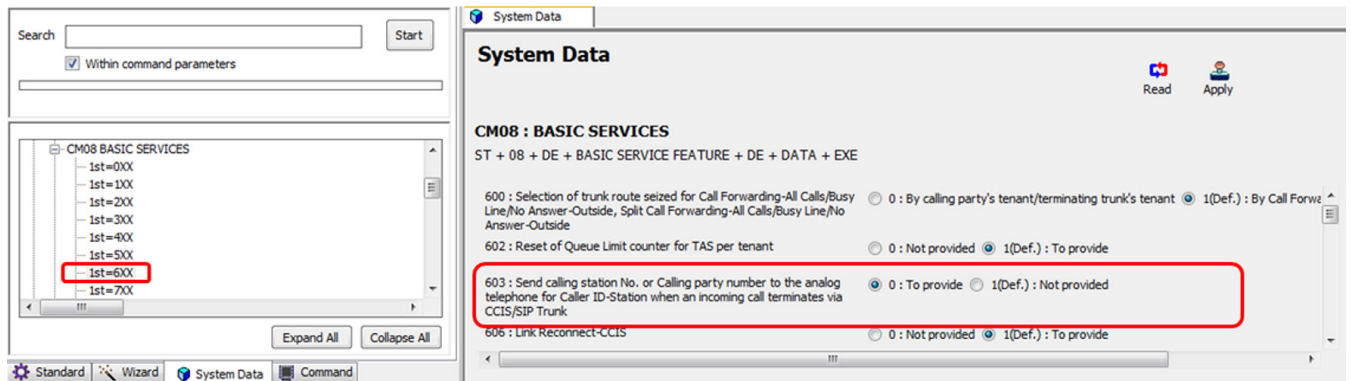


**Figure 28 CM 08 Basic Services – Caller ID Display**

1. Click the **Read** button to get the current settings.
2. **FD=379** Select **1** to provide Caller ID display.
3. Click **Apply**.

**Command Line Example:**

CM 08>379>1 (Default: Provide Caller ID Display)



**Figure 29 CM 08 Basic Services – Caller ID Display (continued)**

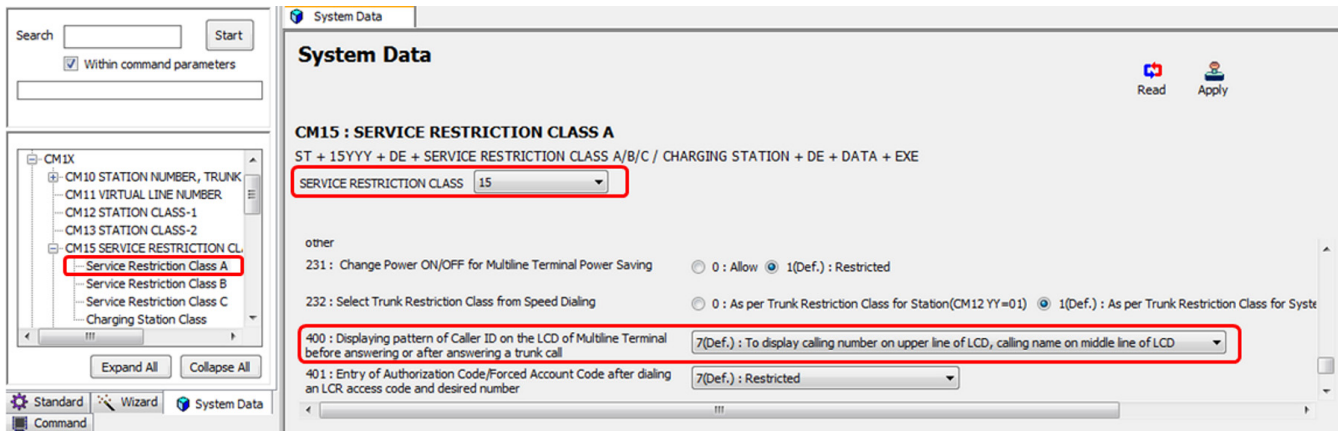
1. Click the **Read** button to get the current settings.
2. **FD=603** Select **0** to provide Caller ID display.

3. Click **Apply**.

**Command Line Example:**

CM 08>603>0

(Caller ID Display on Analog Terminal)



**Figure 30 CM 15 Service Restriction Class A – Caller ID Display (continued)**

1. Select station **Service Restriction Class A** and click **Read** to get the current data settings.
2. **YYY=400** Select **1** or **7** to display both name and number simultaneously.
3. Click **Apply**.

**Command Line Example:**

CM 15400>15>7 (Default: Caller ID Number on Upper Line/Name on Middle Line)

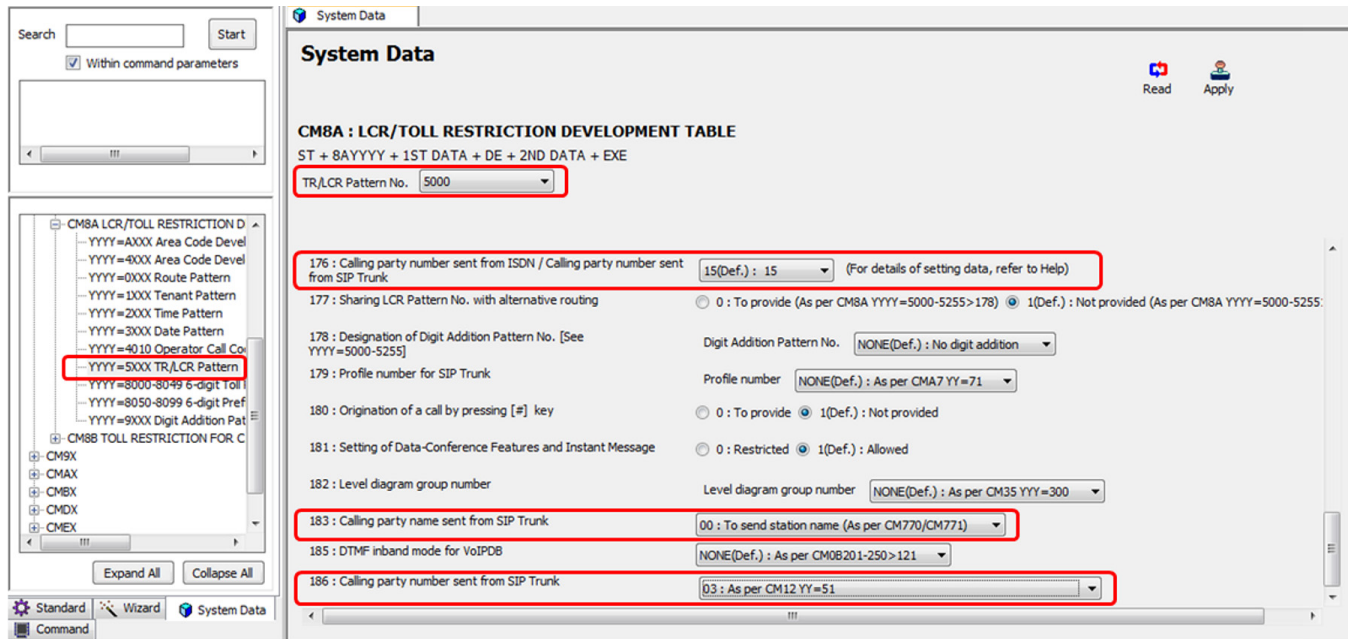


Figure 31 CM 8A LCR Development Table – Caller ID Display (continued)

1. Select station **SIP Trunk LCR Pattern No.** and click **Read** to get the current data settings.
2. **FD=176** Select **15** to follow CM 8A5xxx>186 setting.
3. **FD=183** Select **00** to send calling party name.
4. **FD=186** Select calling party number sending option.
5. Click **Apply**.

**Command Line Example:**


CM 8A5000>176>15            (Default: Follow CM 8Axxx>186 Setting)  
 CM 8A5000>183>00        (Send Calling Party Name Assigned to CM77 Y=1)  
 CM 8A5000>186>03        (Send Calling Party Number Assigned to CM12 YY=51)

---

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## SECTION 4 INITIAL TESTING AND TROUBLESHOOTING

To confirm that the system is correctly set, perform the following tests:

 *If you run into an issue with any of these tests, refer to [Table 2 Troubleshooting Guide](#). Test an outgoing call to a local number. Check for ringback, 2-way audio and quality.*

1. Test an outgoing call to a long distance number. Check for ringback, 2-way audio and quality.
2. Test an outgoing call to an international number. Check for ringback, 2-way audio and quality.
3. Test an outgoing call lasting more than 15 minutes.
4. Test multiple call concurrences on outgoing calls. Setup multiple calls to PSTN.
5. Test an outgoing call to an Operator '0'.
6. Test an outgoing call to directory assistance '411'.
7. Test a 911 call.



***Identify to the operator that this is a TEST!***

8. Test an incoming call to an internal DID. Check for ringback, 2-way audio and quality.
9. Test an incoming call to an auto-attendant. Check DTMF and audio quality.
10. Test transferring calls off-site.
11. Test an outgoing call to an auto-attendant and verify DTMF.

**Table 2 Troubleshooting Guide**

Issue	Cause	Remedy
<b>No Calls IN/Out</b>	○ Router Configuration	○ Check Router Configuration
	○ NEC Configuration	○ Check NEC Configuration
	○ Unqualified IP Address	○ Note WAN IP Address and Contact Provider
<b>No Calls Out</b>	○ NEC Configuration	○ Check NEC Configuration
	○ Unqualified IP Address	○ Note WAN IP Address and Contact Provider
<b>No Calls In</b>	○ NEC Configuration	○ Check NEC Configuration
	○ Unqualified IP Address	○ Note WAN IP Address and Contact Provider
<b>One-Way Audio</b>	○ NEC Configuration	○ Check NEC Configuration
<b>Echo</b>	○ Excessive Delay	○ Check LAN and WAN for high latency
	○ Echo Cancellation Issue	○ Check Echo settings and/or consult your SIP trunk provider
<b>Call Dropping</b>	○ Internet Access Issues	○ Call Internet Access Provider
	○ Extreme Latency on LAN	○ Check Latency on LAN
	○ SIP issue	○ Contact Provider
<b>Static or HUM on Phones</b>	○ Power issue	○ Check power if using AC, should not be issue in PoE
<b>Missing Parts of Words</b>	○ Packet Loss or Latency on LAN	○ Check LAN
	○ Packet Loss or Latency on WAN	○ Check with Internet Access Provider
	○ Jitter Buffer Configuration	○ Check with NEC

**Command Line Example:**

CM 0B101>00>172.24.142.55	(Unit 01 VoIP Address)
CM 0B101>01>255.255.255.0	(Unit 01 VoIP Subnet)
CM 0B101>02>172.24.142.1	(Unit 01 VoIP Default GW)
CM 0B101>10>NONE	(Default: Location 00)
CM 0B101>36>NONE	(Default: SIP Trunk Port 5060)
CM 0B101>60>151.164.1.8	(Unit 01 Primary DNS Server Address)
CM 0B101>61>151.164.11.201	(Unit 01 Secondary DNS Server Address)
CM 0B101>70>66.137.132.162	(Unit 01 Global IP Address)
CM 0B201>00>172.24.142.56	(Unit 01 VoIP IPPAD Address)
CM 0B101>10>32	(Unit 01 VoIP IPPAD Channels)
CM 0B101>50>1	(Unit 01 Allow Fax over IP)
CM 1003>01000>D001	(Unit 01 SIP Trunk Channel 1)
CM 1003>01001>D002	(Unit 01 SIP Trunk Channel 2)
CM 1003>01002>D003	(Unit 01 SIP Trunk Channel 3)
CM 1003>01003>D004	(Unit 01 SIP Trunk Channel 4)
CM 3000>001>01	(Voice Trunk Route Number 01)
CM 3000>002>01	(Voice Trunk Route Number 01)
CM 3000>003>01	(Voice Trunk Route Number 01)
CM 3000>004>01	(Voice Trunk Route Number 01)
CM 3035>001>001	(Assign CIC to Channel 1)
CM 3035>002>002	(Assign CIC to Channel 2)
CM 3035>003>003	(Assign CIC to Channel 3)
CM 3035>004>004	(Assign CIC to Channel 4)
CM 35000>01>00	(SIP Trunk Route Data: Provide SIP Service)
CM 35004>01>2	(SIP Trunk Route Data: Provide SIP Service)
CM 35009>01>03	(SIP Trunk Route Data: Provide SIP Service)
CM 35018>01>0	(SIP Trunk Route Data: Provide DID Digit Conversion)
CM 35020>01>00	(SIP Trunk Route Data: Provide SIP Service)
CM 35090>01>0	(SIP Trunk Route Data: Provide SIP Service)
CM 35091>01>01	(SIP Trunk Route Data: Assign CCH Number)
CM 35161>01>2E	(SIP Trunk Route Data: SIP Control QoS DiffServ EF)
CM 35170>01>0	(DID Development Table 1)
CM 35171>01>15	(Default: 04 Digits)
CM 35172>01>15	(Default: 04 Digits)
CM 360>0101>0	(Route to Route Connection)
CM A701>01>00400	(Arbitrary Origination Point Code)
CM A702>01>00401	(Arbitrary Destination Point Code)
CM A771>01>00	(Assign SIP Trunk Profile Number)
CM A778>01>01	(Assign SV9300 Unit Number with SIP Trunk Channels)

CM A80>00401>01	(Destination Point Code 00401 & CCH 01)
CM BA04>00>15	(Default: QoS assigned by CM BA YY=10)
CM BA10>00>1C	(DiffServ AF32)
CM BA21>00>0	(Programmable CODEC List)
CM BA22>00>1	(20ms. payload)
CM BA25>00>1	(Default: DNS query not provided)
CM BA30>00>172.245.36.25	(Example: SIP server IP address)
CM BA31>00>05060	(SIP server port 5060)
CM BA32>00>2145551212	(Main DID Number)
CM BA45>00>2145551212	(Main DID Number)
CM BA52>00>NONE	(In-Band DTMF)
CM BA55>00>1	(SIP-URL Identity Header)
CM BA56>00>1	(INVITE Session Timer Method)
CM BA70>00>1	(Registration Not Required)
CM BA85>00>0	(IP Address for SIP-URI is IP Address of VoIPDB)
CM BA86>00>0	(SIP Identity Header Format)
CM BA88>00>120	(120 second Session Timer)
CM BA90>00>01	(SIP Response Timer 1-2 Seconds)
CM BA91>00>1	(SIP INVITE response for early media: 180 Ringing w/ SDP)
CM BA92>00>3	(From Header Format)
CM BA97>00>1	(SIP response when all trunks are busy: 488 Busy Here)
CM BA117>00>1	(Default: + Digit Addition/Deletion Not Provided)
CM BA119>00>NONE	(Default: G.711 Pass-Through Fax. Only set when using T.38 Fax)
CM BA121>00>01	(CODEC List First Priority: G.711)
CM BA122>00>04	(CODEC List First Priority: G.729a)
CM BA126>00>0	(Receiving Caller ID Reference)
CM BA135>00>0	(Called Number Reference Location)
CM BA138>00>10	(SIP Trunk Location Number: Used for T.38 Fax)
CM BA139>00>066137132001	(Global IP Address)
CM BA159>00>3	(Default: Calling Party Number Sending Option)
CM BA160>00>01	(Tandem Conversion Mode 1)
CM 6720>0010>4	(Programmable Fax List: Only used for T.38 Fax)
CM 6720>1000>4	(Programmable Fax List: Only used for T.38 Fax)
CM 6720>1010>4	(Programmable Fax List: Only used for T.38 Fax)
CM 6721>00>06	(T.38 Fax)
CM 6721>01>02	(T.38 20ms Payload Size)
CM 6721>09>NONE	(Default: T.38 150ms jitter buffer)
CM 6721>10>3	(9600 T.38 fax transmission speed)
CM 6721>15>NONE	(Default: T.38 resend control data 3 times)
CM 6721>16>NONE	(Default: T.38 resend image data 0 times)
CM 6721>19>NONE	(Default: T.38 fax version)
CM 7690>4567>000	(DID 214-555-4567/Conversion Block 000)

CM 7601>000>2000	(Conversion Block 000/Destination Stn.2000)
CM 08>379>1	(Default: Provide Caller ID Display)
CM 08>603>0	(Caller ID Display on Analog Terminal)
CM 15400>15>7	(Default: Caller ID Number on Upper Line/ Name on Middle Line)
CM 8A5000>176>15	(Default: Follow CM 8A5xxx>186 Setting)
CM 8A5000>183>00	(Send Calling Party Name Assigned To CM77 Y=1)
CM 8A5000>186>03	(Send Calling Party Number Assigned to CM12 YY=51)