Avaya Solution & Interoperability Test Lab

Application Notes for Extron DMP 128 Plus C V with Avaya IP Office Server Edition - Issue 1.0

Abstract

These Application Notes describe the configuration steps required to integrate Extron DMP 128 Plus C V with Avaya IP Office Server Edition. The Extron DMP 128 Plus C V is a digital matrix processor suitable for conferencing applications. Extron DMP 128 Plus C V registers to Avaya IP Office Server Edition as a SIP endpoint. These Application Notes also apply to the Extron DMP 128 Plus C V AT (although not explicitly tested), which only differs in that it provides DANTE support.

Readers should pay attention to **Section 2**, in particular the scope of testing as outlined in **Section 2.1** as well as the observations noted in **Section 2.2**, to ensure that their own use cases are adequately covered by this scope and results.

Information in these Application Notes has been obtained through DevConnect compliance testing and additional technical discussions. Testing was conducted via the DevConnect Program at the Avaya Solution and Interoperability Test Lab.

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1. Introduction

These Application Notes describe the configuration steps required to integrate Extron DMP 128 Plus C V with Avaya IP Office Server Edition. The Extron DMP 128 Plus C V is a digital matrix processor suitable for conferencing applications. Configuration is performed via the Extron DSP Configurator, which provides a GUI for easy visualization of all the signal paths within a single window and the ability to adjust all input levels, DSP processing parameters, mixing points, and output levels. Extron DMP 128 Plus C V registers to Avaya IP Office Server Edition as a SIP endpoint. These Application Notes also apply to the Extron DMP 128 Plus C V AT (although not explicitly tested), which only differs in that it provides DANTE support. Throughout these Application Notes, the Extron DMP 128 Plus C V will also be referred to as simply DMP 128 Plus.

The Extron DMP Plus Series also includes the products detailed in **Attachment 1**. Since the products share the same firmware version, these Application Notes also apply to them.

2. General Test Approach and Test Results

The interoperability compliance test included feature and serviceability testing. The feature testing focused on establishing calls between DMP 128 Plus and Avaya SIP/H.323 desk phones and exercising basic telephony features, such as hold, mute, and conference. Additional telephony features, such as call forward, follow me, and call pickup were also verified using Avaya IP Office Short Codes.

The serviceability testing focused on verifying that DMP 128 Plus returned to service after re-connecting the Ethernet cable or rebooting DMP 128 Plus.

DevConnect Compliance Testing is conducted jointly by Avaya and DevConnect members. The jointly-defined test plan focuses on exercising APIs and/or standards-based interfaces pertinent to the interoperability of the tested products and their functionalities. DevConnect Compliance Testing is not intended to substitute full product performance or feature testing performed by DevConnect members, nor is it to be construed as an endorsement by Avaya of the suitability or completeness of a DevConnect member's solution.

Avaya recommends our customers implement Avaya solutions using appropriate security and encryption capabilities enabled by our products. The testing referenced in this DevConnect Application Note included the enablement of supported encryption capabilities in the Avaya products. Readers should consult the appropriate Avaya product documentation for further information regarding security and encryption capabilities supported by those Avaya products.

Support for these security and encryption capabilities in any non-Avaya solution component is the responsibility of each individual vendor. Readers should consult the appropriate vendor-supplied product documentation for more information regarding those products.

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For the testing associated with these Application Notes, the interface between Avaya systems and Extron DMP 128 Plus C V did not include use of any specific encryption features as requested by Extron.

2.1. Interoperability Compliance Testing

Interoperability compliance testing covered the following features and functionality:

- SIP registration of DMP 128 Plus with Avaya IP Office Server Edition and Avaya IP Office 500 V2 Expansion.
- Calls between DMP 128 Plus and Avaya SIP/H.323 deskphones with Direct Media Path disabled.
- Calls between DMP 128 Plus and the PSTN.
- UDP transport protocol.
- Support of G.711μ-law and G.729 codecs.
- Proper recognition of DTMF tones.
- Basic telephony features, including hold, mute, redial, multiple calls, conference, and long duration calls.
- Extended telephony features using Avaya IP Office Short Codes for Call Forward, Follow Me, Call Unpark, and Call Pickup.
- Proper system recovery after a restart of DMP 128 Plus and loss of IP connectivity.

2.2. Test Results

All test cases passed with the following observations noted:

- During the compliance test, the Phone Dialer tool, available through the Extron DSP Configurator, was used for placing and answering calls. The Phone Dialer is designed for basic test purposes only. Typically, customers would use the Extron CCI Pro 700 TouchLink Pro Conference Room Control Interface, or one of Extron's many other customizable touchpanel devices, which provides a more robust experience and audio tone feedback for each call.
- For this solution, Direct Media Path should be disabled for calls to the DMP 128 Plus. Currently, DMP 128 Plus doesn't support receiving a re-INVITE without SDP, which could have adverse effects on shuffled calls and various hold scenarios.
- DMP 128 Plus does not support call transfer.
- DMP 128 Plus supported conferencing by configuring the DSP to automatically mix audio from all active call appearances.
- Only one codec should be configured on DMP 128 Plus for compatibility with IP Office to prevent calls from terminating when an Avaya IP telephone answers the call.

2.3. Support

For technical support on the Extron DMP 128 Plus C V, contact the Extron Support Hotline via phone or website.

- **Phone:** +1 (800) 633-9876
- **Web:** https://www.extron.com/company/contactus.aspx

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3. Reference Configuration

Figure 1 illustrates a sample configuration consisting of Extron DMP 128 Plus C V with Avaya IP Office Server Edition and Avaya IP Office 500 V2 (Expansion System). The DMP 128 Plus registered with Avaya IP Office Server Edition via SIP. Avaya 96x1 Series H.323 Deskphones, Avaya J129 SIP Deskphones, and an Avaya 1120E and 1220 SIP Deskphones were used for placing and receiving calls.

Figure 1: Extron DMP 128 Plus C V with Avaya IP Office Server Edition

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4. Equipment and Software Validated

The following equipment and software were used for the sample configuration provided:

Equipment/Software	Release/Version
Avaya IP Office Server Edition	11.0.4.2.0 build 58
Avaya IP Office 500 V2 (Expansion System)	11.0.4.2.0 build 58
Avaya 96x1 Series IP Deskphone (H.323)	6.8304 (H.323)
Avaya J129 SIP Deskphone	4.0.3.1.4
Avaya 1120E Series SIP Deskphone	04.04.26.0
Avaya 1220 Series SIP Deskphone	04.04.26.0
Extron DMP 128 Plus C V	v1.06.0001-b001
Extron DSP Configurator	2.23.1.42

Note: Compliance Testing is applicable when the tested solution is deployed with a standalone IP Office 500 V2 and also when deployed with IP Office Server Edition in all configurations.

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5. Configure Avaya IP Office Server Edition

This section provides the procedures for configuring Avaya IP Office Edition. The procedures include the following areas:

- Obtain LAN IP address
- Administer SIP registrar
- Administer SIP extension for DMP 128 Plus C V
- Administer SIP user for DMP 128 Plus C V

Note: This section covers the configuration of Avaya IP Office Server Edition, but the configuration of Avaya IP Office 500 V2 would be similar.

5.1. Obtain LAN IP Address

From the configuration tree in the left pane, select **System** to display the **System** screen for the IP Office Server Edition in the right pane. Select the **LAN1** tab, followed by the **LAN Settings** sub-tab in the right pane. Make a note of the **IP Address**, which will be used later to configure DMP 128 Plus.

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5.2. Administer SIP Registrar

Select the **VoIP** sub-tab. Ensure that **SIP Registrar Enable** is checked and enter a valid **SIP Domain Name**. In the compliance testing, the **SIP Domain Name** field was set to *avaya.com*. For the **Layer 4 Protocol**, enable **UDP** to use it as the transport between DMP 128 Plus and IP Office.

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5.3. Administer SIP Extension for Extron DMP 128 Plus C V

From the configuration tree in the left pane, right-click on **Extension** and select **New → SIP Extension** (not shown) from the pop-up list to add a new SIP extension. Enter the desired extension for the **Base Extension** field as shown below. In this example, DMP 128 Plus was assigned extension *41510*. This is the extension that DMP 128 Plus used to register with IP Office Server Edition.

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Select the **VoIP** tab and retain the default values in the all fields. During the compliance test, DMP 128 Plus was tested using G.711µ-law and G.729 codecs. Disable **Re-Invite Supported** and **Allow Direct Media Path**. Set the **Media Security** field to *Disabled*.

Note: Refer to bullet item on **Direct Media Path** in **Section 2.2**.

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5.4. Administer SIP User for Extron DMP 128 Plus C V

From the configuration tree in the left pane, right-click on **User** and select **New** from the pop-up list (not shown). Enter desired values for the **Name** and **Full Name** fields. For the **Extension** field, enter the SIP extension created above.

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Select the **Voicemail** tab and disable **Voicemail On** as shown below.

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Select the **Telephony** tab followed by the **Call Settings** sub-tab. Note the settings below for the user. Enable **Call Waiting On** so that multiple calls could be delivered from IP Office to DMP 128 Plus; otherwise, only one call would be delivered to DMP 128 Plus and any subsequent calls would result in IP Office responding with a busy signal.

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Select the **Supervisor Settings** sub-tab and enter a desired **Login Code**. The **Login Code** is the password that was used by DMP 128 Plus to register with IP Office.

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Note that in the **Button Programming** tab, only one call appearance was configured for DMP 128 Plus even it was configured to handle up to four calls. Configuring multiple call appearances for a 3rd party SIP phone is not required on IP Office; however, call waiting should be enabled, as shown on previous page, so that multiple calls could be delivered to DMP 128. When all of the call appearances configured on DMP 128 Plus are in-use, the next incoming call would get busy treatment.

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6. Configure Extron DMP 128 Plus C V

This section provides the procedures for configuring DMP 128 Plus. The procedures fall into the following areas:

- Launch Web Interface
- Administer Network Settings
- Administer SIP Settings
- Configure the DSP

6.1. Launch Web Interface

DMP 128 Plus was configured via the web interface by using the URL "https://ip-address/www/voip.html" in an Internet browser window, where "ip-address" is the DMP 128 Plus IP address. The web page displayed in the following section is displayed.

6.2. Administer Network Settings

To configure IP network settings, navigate to **Network → Interface** and configure the **LAN 1** settings. For the compliance test, a static IP address, *192.168.100.230*, was assigned to DMP 128 Plus as shown below. Alternatively, DHCP may be used. Click **Apply**.

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6.3. Administer SIP Settings

To configure SIP settings, select the **Network** tab followed by the **Transport** sub-tab. Click **Configuration** and then select the **SIP** tab. Configure the following fields:

- **Transport** — Specify the *UDP* transport protocol.
- **Listening Port** — Specify port 5060.
- **Use Secure RTP (AES CTR)** — Disable SRTP.

Click **Apply**.

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Navigate to **Line 1** tab to configure the SIP registration settings. Configure the following fields:

- **User Name** — Specify the SIP extension configured on IP Office.
- **Authentication User Name** — Specify a user name.
- **Authentication Password** — Specify the SIP password used to register with IP Office. This field must match the **Login Code** Configured for the SIP user on IP Office.
- **Display Name** — Provide a display name.
- **Primary Proxy Name/IP** — Specify the IP Office IP address (*10.64.102.90*).
- **Primary Proxy Port** — Specify SIP port *5060*.

Click **Apply** to submit the changes and then click the **Register** button to register DMP 128 Plus with IP Office after all the configuration is in place.

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In the **Audio** sub-tab, specify the desired codec, G.711 and G.729, but not both. Refer to the note on codec negotiation in **Section 2.2**. Click **Apply**.

In the **Dialing** sub-tab, accept the default settings shown below.

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6.4. Configure the DSP

Although the DSP configuration is outside the scope of these Application Notes, the following information is provided for informational purposes only.

Launch the **DSP Configurator**, select **Connect…** in the drop-down field, and click **OK**.

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In the **Connect to device…** window shown below, enter the DMP 128 Plus IP address in the **Hostname or IP Address** field and click **OK**.

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Once connected to DMP 128 Plus, the **DSP Configurator** is displayed as shown below. The following displays the top portion of the screen.

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Scrolling down shows that four call appearances were configured for the SIP line and that the audio call appearances were mixed together. This results in all calls being conferenced together automatically.

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Scrolling to the right displays the rest of the screen.

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Calls were originated and answered using the **Phone Dialer** accessible from the **DSP Configurator** menu (i.e., **Tools → Phone Dialer**). Typically, the **Extron CCI Pro 700 TouchLink Pro Conference Room Control Interface** or another Extron customizable touchpanel device would be used by customers for this purpose, which would provide audio tone feedback for each call.

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7. Verification Steps

This section provides the tests that can be performed to verify proper configuration of Avaya IP Office Server Edition and Extron DMP 128 Plus C V.

1. Verify that DMP 128 Plus has successfully registered with IP Office Server Edition. In **IP Office System Status**, select the extension of DMP 128 Plus in the left pane and verify that the **Current State** is *Idle* as shown below.

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2. Alternatively, the registration status may be viewed on the DMP 128 Plus web interface in the **Registration** tab or in the **Phone Dialer** shown on the next page.

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3. Verify basic telephony features by establishing calls between DMP 128 Plus and local phones.

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8. Conclusion

These Application Notes described the configuration steps required to integrate Extron DMP 128 Plus C V with Avaya IP Office Server Edition. Extron DMP 128 Plus C V was able to establish calls with H.323 stations, SIP stations, and the PSTN. In addition, basic telephony features were verified. All feature and serviceability test cases were completed successfully with observations noted in **Section 2.2**.

9. Additional References

This section references the Avaya and Extron documentation relevant to these Application Notes. The Avaya product documentation is available at http://support.avaya.com and the Extron documentation is available at https://www.extron.com.

[1] *Administering Avaya IP Office Platform with Web Manager*, Release 11.0, February 2019.
[2] *Extron DMP 128 Plus User Guide*, 68-2826-01 Rev. H, 12 19.
[3] *Extron DMP 128 Plus Series Avaya Configuration Guide*, Revision 1.2, March 27, 2020.

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