



Interoperability Guide

Integrating NetVanta Enterprise Communications Server with EasyRun EPICAcce for Call Centers

This interoperability guide provides instructions for integrating NetVanta Enterprise Communications Server (ECS) with EasyRun EPICAcce to provide call center support. It provides an overview and instructions for the integration. Also, this guide provides lists of the required equipment and equipment connections for the integration, the features supported by the integration, and the verified functionality of the integration.

This guide consists of the following sections:

- *EasyRun EPICAcce Call Center Integration Overview on page 2*
- *Hardware and Software Requirements and Limitations on page 3*
- *Supported Features and Exceptions on page 4*
- *Verified Functionality on page 5*

EasyRun EPICAcce Call Center Integration Overview

Because NetVanta ECS products have limited automatic call distribution (ACD) functionality, a third-party call center product must be integrated with NetVanta ECS to meet demanding call center requirements. EasyRun provides several call center products that can meet these requirements; however, EasyRun call centers require a computer telephony integration (CTI) link to connect an external private branch exchange (PBX). Since NetVanta ECS does not have a CTI link with which to connect an external PBX, EasyRun EPICAcce, which has an embedded Asterisk PBX (FreePBX), is the best candidate for integration with NetVanta ECS.

EasyRun EPICAcce is typically deployed as a standalone Linux-based appliance. To reduce cost and increase flexibility, ADTRAN suggests installing EPICAcce within a Linux VMware environment. With this approach, only the EPICAcce software is required from EasyRun.

Deployment Overview

In general, a typical NetVanta ECS deployment would consist a NetVanta ECS server computer, one or more public switched telephone network (PSTN) gateways, and phones. However, to provide full interworking between phones on the EPICAcce and NetVanta ECS systems, an ADTRAN Operating System (AOS) session border controller (SBC) is required. Assisted transfers from a NetVanta ECS phone to another NetVanta ECS phone, where the originating caller is on EPICAcce, require an SBC. ADTRAN SBC capability can be used to interconnect NetVanta ECS and EPICAcce as shown in the diagrams below. It is important that the SBC function exists; however, the PSTN gateway and SBC functions do not have to be combined in the same device. Both setups illustrated in the diagrams below will provide this call transfer functionality:

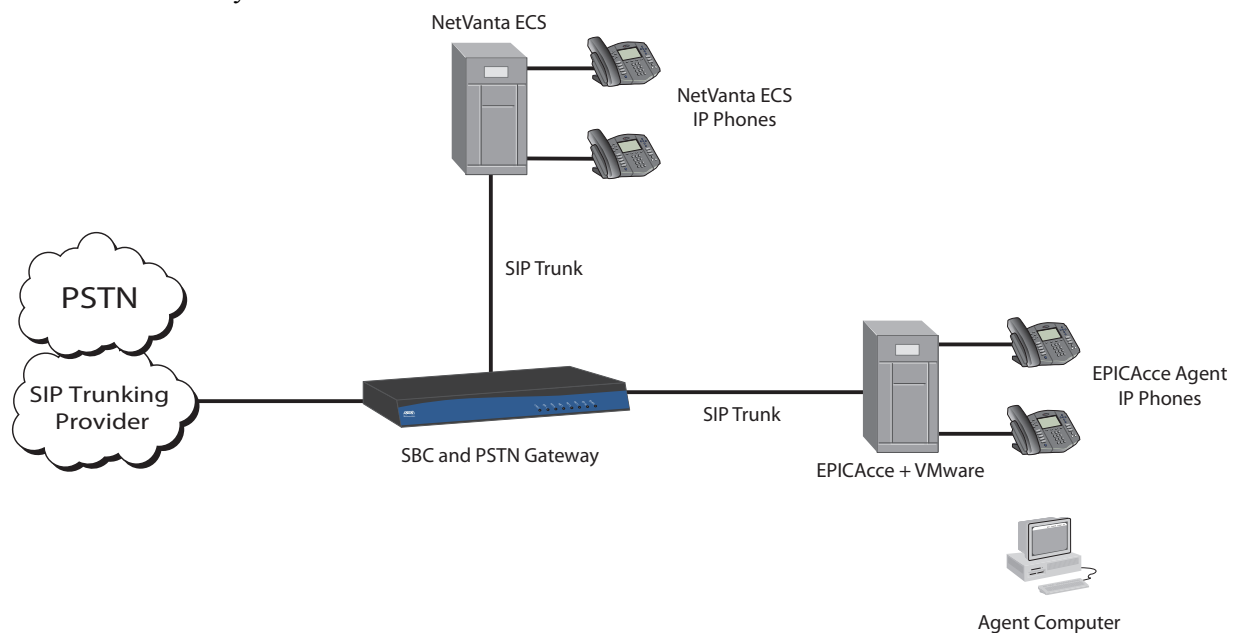


Figure 1. Combined PSTN Gateway and SBC Functions

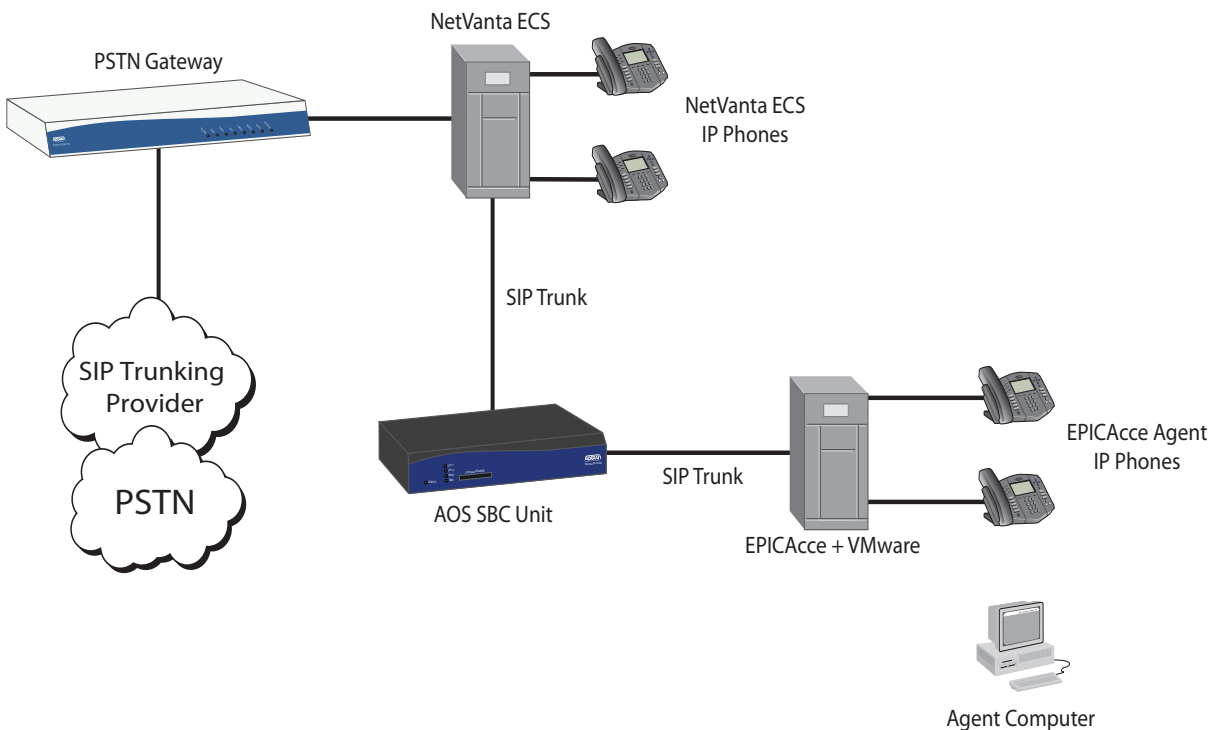


Figure 2. Separate PSTN Gateway and SBC Functions

Required Equipment Connections

Connections via Session Initiation Protocol (SIP) trunk between the following equipment are required:

1. PSTN gateway and NetVanta ECS server computer
2. NetVanta ECS server computer and AOS SBC unit
3. AOS SBC unit and EPICAcce computer

Hardware and Software Requirements and Limitations

NetVanta ECS software version 4.6.4 or later is required for integration with EasyRun EPICAcce. However, functionality of NetVanta ECS integration with EasyRun EPICAcce has only been verified using NetVanta ECS software version 5.1.0.

AOS version R10.1.0 or later is required for the AOS SBC unit. Additionally, the AOS SBC unit must have the SBC feature pack. For more information on which units are SBC capable, refer to the *AOS Feature Matrix* available from the ADTRAN Support Community (<https://supportforums.adtran.com>)

EPICAcce Client 6.00.14.0017 (patch) or later is required for integration with NetVanta ECS.

FreePBX 2.4.0.0 or later is required for the integrated PBX used with EasyRun EPICAcce.

Conventions

Below is a list of naming conventions used in this document. The first example shows the naming convention used for the first occurrence; the second example shows the naming convention used for subsequent occurrences.

Type	Convention Example
Client Software	NetVanta Unified Communications Client software or NetVanta UC Client software
Server Software	NetVanta Unified Communications Server software or NetVanta UC Server software
Hardware	NetVanta Unified Communications Server computer or NetVanta UC Server computer - the computer on which the server software is installed.
NetVanta Unified Communication Products	NetVanta Enterprise Communications Server or NetVanta ECS

Supported Features and Exceptions

The following sections provide information on the supported features and exceptions of the NetVanta ECS and EPICAcce integration. The features listed in the *Supported Features* section below are the only features you can expect to function with the configuration provided in this guide.

Supported Features

The following features are supported by the NetVanta ECS and EPICAcce integration:

- Incoming PSTN calls for EPICAcce agents are directed to the EPICAcce. If an agent phone answers the call, then the agent can perform all types of transfers back to NetVanta ECS, including transfers to NetVanta ECS phones and the PSTN.
- EPICAcce agents can originate calls to NetVanta ECS users or the PSTN.
- EPICAcce agent-to-agent calls can be transferred to NetVanta ECS users or the PSTN.
- Voicemail for EPICAcce agents is provided by NetVanta ECS. This is accomplished by redirecting voicemail calls on EPICAcce to the NetVanta ECS voicemail service.
- All standard NetVanta ECS functions are provided to NetVanta ECS users.
- All standard EPICAcce functions are provided to EPICAcce agents, including the PC-based agent software.
- A redundant NetVanta ECS configuration is supported. This requires that the primary and secondary NetVanta ECS servers have routes to the EPICAcce.
- While in failover mode, the system will maintain basic call functionality.

Exceptions

The NetVanta ECS and EPICAcce integration has the following exceptions:

- NetVanta ECS functions, other than voicemail, will not be provided to agents.
- EPICAcce agent phones are not registered on or managed by NetVanta ECS.
- NetVanta ECS phones are not registered on or managed by EPICAcce.
- NetVanta ECS does not provide redundancy for EPICAcce.
- Transfers between NetVanta ECS and EPICAcce are not supported while in failover mode.

Verified Functionality

Tests were performed to verify functionality using the following software versions:

- NetVanta ECS version 5.1.0.7882
- NetVanta 6240 with AOS version R10.1.0 (used as a combined PSTN gateway and SBC)
- EPICAcce Client version 6.00.14.0017

The following functions have been verified:

- Basic call handling
- Call holding
- Blind transfers
- Supervised transfers
- Call redirect to voicemail and unconditional forwarding

Integrating EPICAcce with NetVanta ECS

After EPICAcce and NetVanta ECS are set up, only a few additional configuration steps are required to integrate EPICAcce with NetVanta ECS for call center functionality. Specifically, SIP trunks must be established between the NetVanta UC Server computer, the AOS SBC unit, and EPICAcce, and appropriate dial plans must be configured to route SIP traffic between the units. Additionally, the call forwarding behavior of EPICAcce needs to be configured so that voicemail calls are redirected to NetVanta ECS.

Additional Configurations for NetVanta ECS

To configure NetVanta ECS for integration with EPICAcce, follow these steps:

1. *Log in to the NetVanta UC Client Software as an Administrator on page 5*
2. *Add the AOS SBC unit as a PSTN Gateway in NetVanta UC Server on page 6*
3. *Add a Dial Plan Entry for EPICAcce Call Center Agents on page 8*

Step 1: Log in to the NetVanta UC Client Software as an Administrator

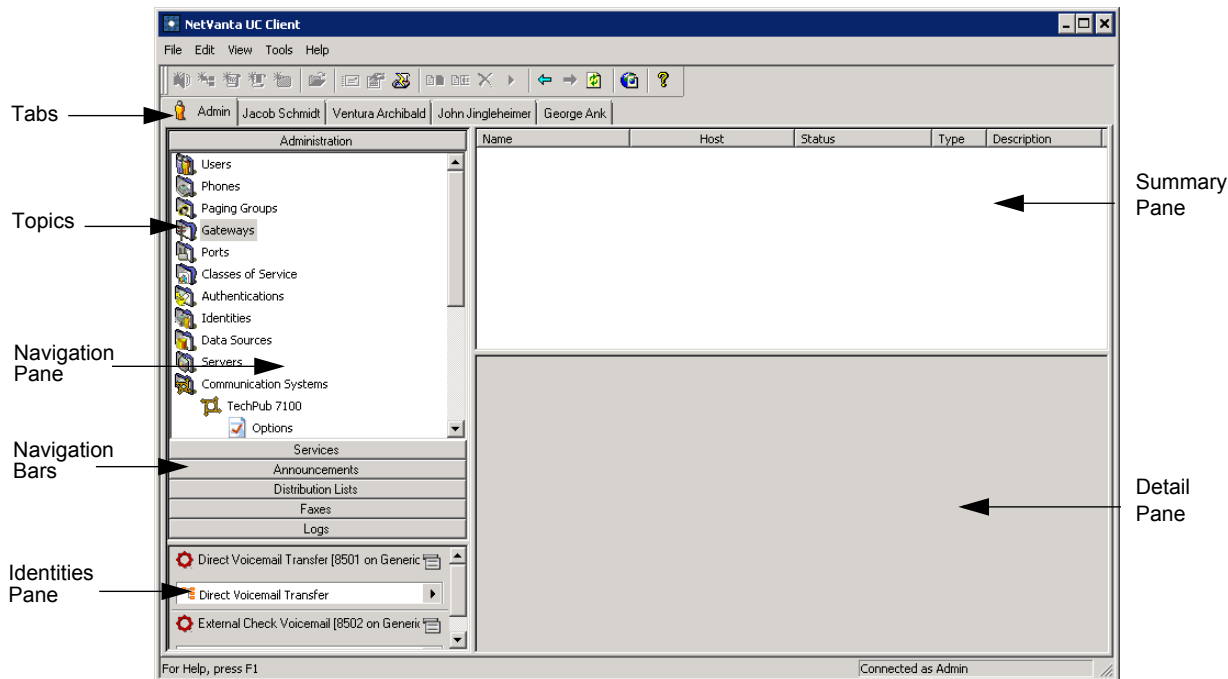
To log in to the NetVanta UC Client software as an administrator, follow these steps:

1. Navigate to **Start > Programs > ADTRAN > NetVanta UC Server > NetVanta UC Client** to open the NetVanta UC Client program.
2. Log in to NetVanta UC Client using the administrator **User name** and **Password**. The NetVanta UC Client program will appear.

Step 2: Add the AOS SBC unit as a PSTN Gateway in NetVanta UC Server

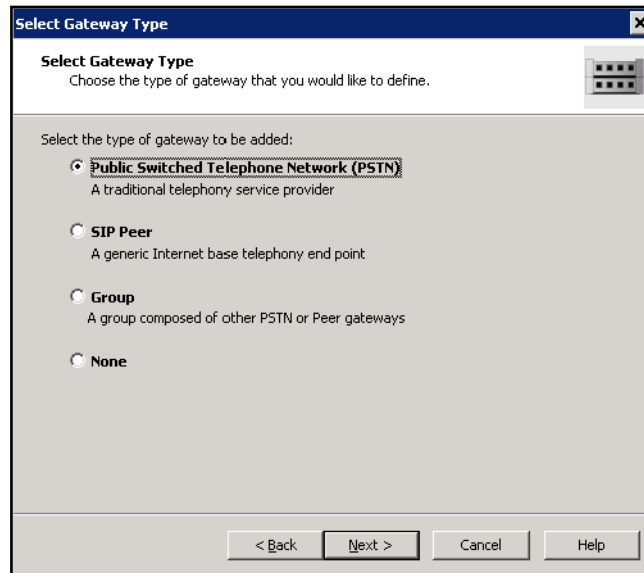
To route calls between the NetVanta ECS and the AOS SBC unit, the AOS SBC unit must be added as a PSTN gateway using the NetVanta UC Client software. To add the AOS SBC unit as a PSTN gateway, follow these steps:

1. On the **Admin** tab, select the **Administration** navigation bar, then select the **Gateways** topic from the navigation pane.



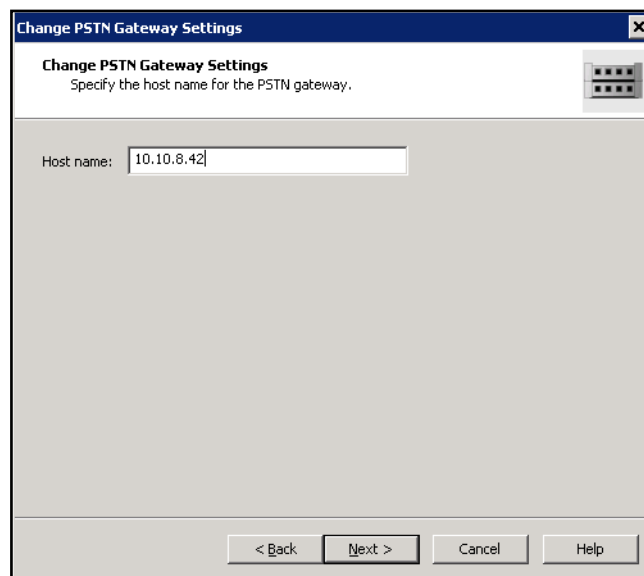
2. Right click in the **Gateways** summary pane, and select **New Gateway** from the drop-down menu that appears. The **Add Gateway** wizard welcome window appears.

3. Select **Next**. The **Select Gateway Type** window appears.
4. In the **Select Gateway Type** window, select the **Public Switched Telephone Network (PSTN)** radio button, and select **Next**. The **Change PSTN Gateway Settings** window appears.



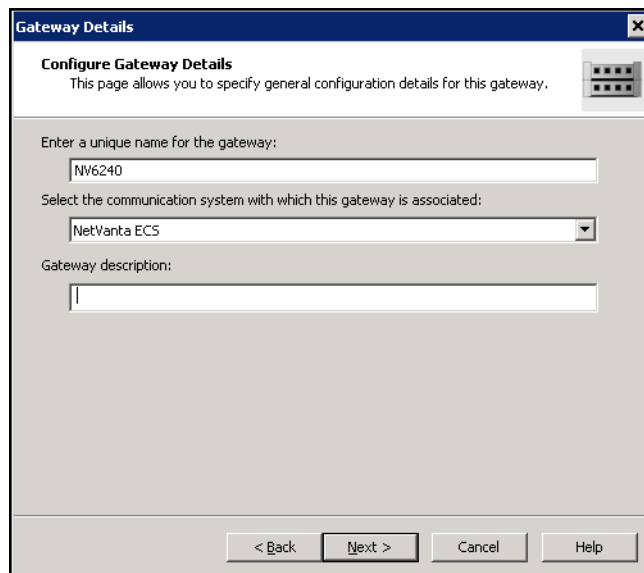
The screenshot shows a dialog box titled "Select Gateway Type". The main heading is "Select Gateway Type" with a subtitle "Choose the type of gateway that you would like to define." Below this, the instruction "Select the type of gateway to be added:" is followed by four radio button options: "Public Switched Telephone Network (PSTN)" (selected), "SIP Peer", "Group", and "None". Each option has a brief description: "A traditional telephony service provider", "A generic Internet base telephony end point", "A group composed of other PSTN or Peer gateways", and "None". At the bottom, there are four buttons: "< Back", "Next >", "Cancel", and "Help".

5. In the **Change PSTN Gateway Settings** window, enter the IP address of the AOS SBC unit in the **Host name** field, and select **Next**. The **Gateway Details** window appears.



The screenshot shows a dialog box titled "Change PSTN Gateway Settings". The main heading is "Change PSTN Gateway Settings" with a subtitle "Specify the host name for the PSTN gateway." Below this, there is a text input field labeled "Host name:" containing the IP address "10.10.8.42". At the bottom, there are four buttons: "< Back", "Next >", "Cancel", and "Help".

6. In the **Gateway Details** window, use the provided field to enter a name for the gateway. This name is used to identify the gateway and differentiate it from other gateways configured on the system.



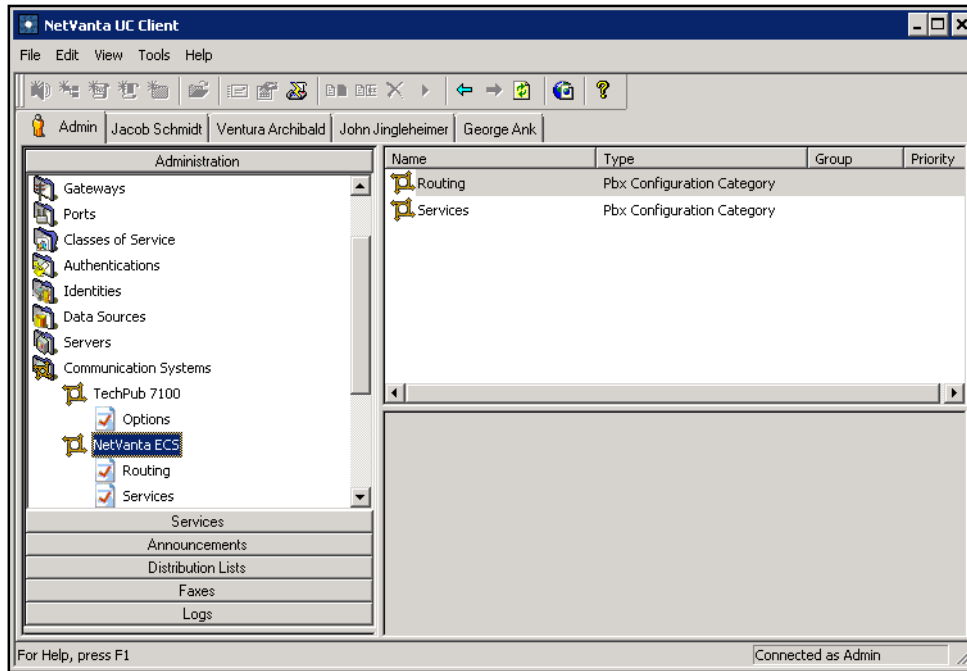
The screenshot shows a window titled "Gateway Details" with a close button (X) in the top right corner. Below the title bar, the text "Configure Gateway Details" is displayed, followed by a sub-header: "This page allows you to specify general configuration details for this gateway." To the right of this text is a small icon of a server rack. The main content area contains three input fields: 1. A text box labeled "Enter a unique name for the gateway:" containing the text "NV6240". 2. A dropdown menu labeled "Select the communication system with which this gateway is associated:" with "NetVanta ECS" selected. 3. A text box labeled "Gateway description:" which is currently empty. At the bottom of the window, there are four buttons: "< Back", "Next >", "Cancel", and "Help".


7. Use the drop-down menu to select **NetVanta ECS**. This associates the NetVanta ECS communication system with the AOS SBC unit.
8. Use the **Gateway description** field to enter an optional description for the gateway, and select **Next**. The **Summary** window will appear.
9. In the **Summary** window, ensure that the gateway properties are correct and select **Submit**. The wizard will create the SBC gateway instance with the configured properties.
10. Once the gateway has been created, select **Next** to exit the **Add Gateway** wizard.

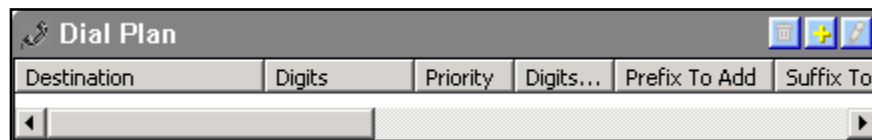
Step 3: Add a Dial Plan Entry for EPICAcce Call Center Agents

To successfully route calls from NetVanta ECS to EPICAcce call center agents, a dial plan entry must be added to the NetVanta ECS communication system for extensions used by the EPICAcce call center agents. To configure the NetVanta ECS dial plan, follow these steps:

1. On the **Admin** tab of the NetVanta UC Client, select the **Administration** navigation bar, then select the **NetVanta ECS** topic under the **Communication Systems** topic in the navigation pane.



2. In the summary pane, double-click routing. The existing **Dial Plan** and **Toll Restrictions** will appear.
3. In the **Dial Plan** menu, select the  button to add a new entry in the dial plan. The **Dial Plan Entry** window appears.



4. In the **Original digits** field in the **Dial Plan Entry** window, enter the matching rule for the extensions used by the EPICAcce call center agents. In this field, a regular expression can be used to match a group of consecutive numbers. For example, the regular expression **5[0-9]{3}** matches all numbers from 5000

to 5999. *Table 1 on page 10* describes the operators used to create regular expressions.

Table 1. Regular Expressions

Operator	Description
[abc]	Matches any character in the set a, b, or c.
[^abc]	Matches any character not in the set a, b, or c.
[a-z]	Matches any character within a range. Use a hyphen to indicate a range. You can create a range such as: "one through 8" [1-8] or a set such as: "3, 6, or 9" [369].
.	Matches any single character.
,	Matches the minimum specified characters or more.
\d	Matches any decimal digit.
\D	Matches any non-digit.
\s	Matches any whitespace character.
\S	Matches any non-whitespace character.
\w	Matches any word (alphanumeric) character.
\W	Matches any non-word (alphanumeric) character.
(abc)	Matches whatever the expression abc would match, and saves it as a variable that can be used in later expressions. Also used for grouping.
\$	The \$ symbol is used to refer to expressions that have been stored using the () expression noted above. Variables are numbered according to the order that they appear. For example, \$1 refers to the first variable stored, and \$2 refers to the second variable stored.

Table 1. Regular Expressions

Operator	Description
a b	Matches whatever the expression a would match, or whatever the expression b would match.
+	Matches the preceding expression one or more times.
?	If the preceding is just a digit, allow that digit to be optional; if the preceding is inside brackets, then that sequence is optional.
*	Matches the null string or any number of repetitions of the preceding expression.
{m}	Matches exactly m repetitions of the one-character expression.
{m,n}	Matches between m and n repetitions of the preceding expression, inclusive.
{m,}	Matches m or more repetitions of the preceding expression.

- In the **Description** field, enter a description for the dial plan entry.
- Select the **Gateway** radio button, and use the adjacent drop-down menu to select the gateway created in *Add the AOS SBC unit as a PSTN Gateway in NetVanta UC Server on page 6*. This configures all calls to numbers matching the **Original digits** rule (for example, the EPICAcce call center agent extensions) to be forwarded to the AOS SBC unit.
- Select **OK** to create the dial plan entry.

Additional Configurations for the AOS SBC unit

To configure the AOS SBC unit to route calls to NetVanta ECS users and EPICAcce call center agents, follow these steps:

- Log in to the AOS SBC unit on page 11*
- Add SIP Trunks for NetVanta UC Server and EPICAcce to the AOS SBC unit on page 12*
- Configure Dial Plans for the NetVanta UC Server and EPICAcce SIP Trunks on page 13*
- Enable Media Anchoring on the AOS SBC unit on page 14*

Step 1: Log in to the AOS SBC unit

To log in to the AOS SBC unit, follow these steps:

- Boot up the unit.
- Telnet to the unit (**telnet <ip address>**), for example:

telnet 10.10.10.1.



If during the unit's setup process you have changed the default IP address (10.10.10.1), use the configured IP address.

3. Enter your user name and password at the prompt.



*The AOS default user name is **admin** and the default password is **password**. If your product no longer has the default user name and password, contact your system administrator for the appropriate user name and password.*

4. Enable your unit by entering **enable** at the prompt as follows:

```
>enable
```

5. If configured, enter your Enable mode password at the prompt.

6. Enter the unit's Global Configuration mode as follows:

```
#configure terminal  
(config)#
```

Step 2: Add SIP Trunks for NetVanta UC Server and EPICAcce to the AOS SBC unit

SIP trunks for both NetVanta UC Server and EPICAcce must be configured on the AOS SBC unit to allow SIP traffic to flow between the two systems. To configure the SIP trunks for the NetVanta UC Server and EPICAcce, follow these steps:

1. To create a SIP trunk and enter the Voice SIP Trunk Configuration mode, enter the **voice trunk** *<Txx>* **type sip** command from the Global Configuration mode. The *<Txx>* variable specifies the trunk identity in the format Txx, where xx is the trunk ID number between 01 and 99 (for example, **T01**). For example:

```
(config)#voice trunk t01 type sip  
(config-t01)#
```

2. Use the **description** *<text>* command from the Voice SIP Trunk Configuration mode to enter a description for the trunk. The *<text>* variable identifies the trunk with a string of up to **80** alphanumeric characters. For example:

```
(config-t01)#description ECS
```

3. Use the **sip-server primary** *<value>* command from the Voice SIP Trunk Configuration mode to enter the IP address of the SIP server used for the trunk being configured. The *<value>* variable is the IP address of either the NetVanta UC Server or EPICAcce (depending on which SIP trunk you are currently configuring). For example:

```
(config-t01)#sip-server primary 10.10.8.50
```

4. If you are configuring the NetVanta UC Server SIP trunk, use the **transfer-mode network** command from the Voice SIP Trunk Configuration mode to specify that call transfers on this trunk are controlled by the NetVanta UC Server software instead of locally by the unit. This step is not necessary when configuring the EPICAcce SIP trunk. For example:

```
(config-t01)#transfer-mode network
```

5. Repeat the steps above (omitting Step 4 if you are configuring the EPICAcce SIP trunk) for the other SIP trunk using appropriate values for that trunk.

Step 3: Configure Dial Plans for the NetVanta UC Server and EPICAcce SIP Trunks

To appropriately route calls to the SIP trunks configured for the NetVanta UC Server and the EPICAcce, the trunks must be assigned to trunk groups with dial plans. The dial plan entries ensure that calls destined for the users of each system are accepted and directed out the appropriate trunk. To assign trunks groups to the NetVanta UC Server and EPICAcce SIP trunks and configure the dial plans, follow these steps:

1. To create a trunk group and enter the Voice Trunk Group Configuration mode, enter the **voice grouped-trunk** command from the Global Configuration mode. For example:

```
(config)#voice grouped-trunk ECS
(config-ECS)#
```

2. To add a trunk to the trunk group (either the NetVanta UC Server or EPICAcce SIP trunk), use the **trunk <Txx>** command from the Voice Trunk Group Configuration mode. The **<Txx>** variable specifies the trunk identity in the format Txx, where xx is the trunk ID number between 01 and 99 (for example, **T01**). For example:

```
(config-ECS)#trunk t01
```

3. To add accepted numbers to the trunk group's dial plan, use the **accept <pattern>** command. Accepted numbers are the numbers that can be routed out of the trunk(s) in the trunk group. The **<pattern>** variable specifies the dialing pattern of the accepted number. You can enter a complete number or wildcards to define accepted numbers. When configuring a trunk group for the NetVanta UC Server SIP trunk, **accept** entries should be created for all extensions used by NetVanta ECS users. Similarly, when configuring a trunk group for the EPICAcce SIP trunk, **accept** entries should be created for all extensions used by EPICAcce call center agents. The following example accepts all numbers from **1000** to **1999**:

```
(config-ECS)#accept 1XXX
```

Wildcard Descriptions:

0-9 = Match exact digit only.

M = Any digit 1 to 8.

X = Any single digit (0 to 9).

N = Any digit 2 to 9.

[123] = Any digit contained in the bracketed list.



Do not use dashes, commas, spaces, etc., inside the brackets. Commas are implied between numbers in the brackets.

The special characters (), -, + are always ignored.

- Examples:**
- 1) 555-81xx matches 555-8100 to 555-8199.
 - 2) 555-812[012] matches 555-8120 to 555-8122.
 - 3) 1-800\$ matches any 1-800 calls.
 - 4) Nxx-xxxx matches 7 digit local.
 - 5) 1-Nxx-Nxx-xxxx matches long distance calls in North America.

4. Repeat the steps above for the other trunk group using appropriate values for that trunk group.

Step 4: Enable Media Anchoring on the AOS SBC unit

If the SBC is handling SIP trunks from NetVanta UC Server and EPICAcce that cannot be routed on the network, media anchoring must be enabled on the AOS SBC unit. To enable media anchoring on the AOS SBC unit, use the **ip rtp media-anchoring** command from the Global Configuration mode as follows:

```
(config)#ip rtp media-anchoring
```



For more information on media anchoring, refer to [Configuring Media Anchoring in AOS](https://supportforums.adtran.com) available from the ADTRAN Support Community (<https://supportforums.adtran.com>)

Additional Configurations for EasyRun EPICAcce

In order to integrate EasyRun EPICAcce with NetVanta ECS, several configurations must be made in EPICAcce. Refer to the documentation provided by EasyRun for information on performing the following configurations:

1. The EasyRun EPICAcce software must be installed in a Linux VMware environment.
2. A SIP trunk to the AOS SBC unit must be created on EPICAcce. This SIP trunk must have dial plan entries for routing calls to and from the PSTN and calls to and from NetVanta ECS users.
3. The voicemail for EPICAcce call center agents must be forwarded to NetVanta ECS.