

Configuration Note

VX Configuration for Microsoft Unified Communications (Upstream Deployment)

Release 1.0

Reference Number: 550-0230-00 Rev A



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About This Document

Document Overview

The purpose of this document is to provide a step by step procedure to deploy a VX gateway in the following scenario:

A PSTN gateway in a Microsoft Unified Communications environment, in front of an existing PBX (Upstream deployment).

Typically, the VX gateway is connected to Unified Communications (OCS R2) with a SIP-trunk (SIP TCP, G711 A-Law codec), to the PBX using ISDN link, and to PSTN using ISDN link.

This document describes the following two steps:

- General parameters configuration using Greenfield config note 550-0210-00
- Customization of the configuration to add PBX trunk-group

Audience

Any user wanting to deploy a VX gateway with Microsoft Unified Communications (OCS).

Assumptions and Prerequisites

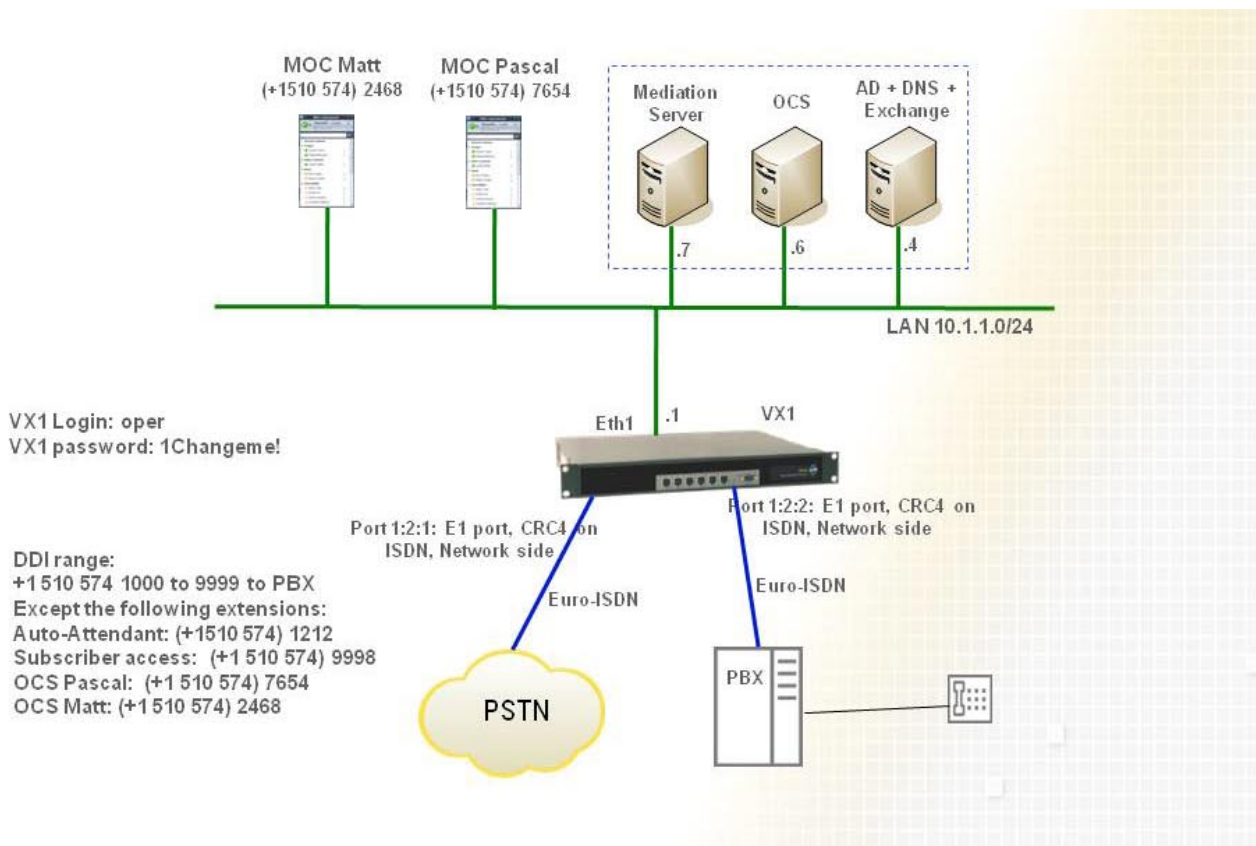
This procedure is designed assuming the following steps have already been covered:

- the user of this procedure has been trained on NET equipment
- the OCS environment is running R2 version
- the VX gateway is running R4.7 or later
- the VX gateway is initialized as per product documentation
- the user has installed VXwatch and VXbuilder management software on their PC/laptop to match the software version of the VX



Note: VX Software versions earlier than R4.7 cannot be used for this functionality against OCS version R2.

Solution Illustration



VX Configuration

For the configuration of the VX gateway, refer to Config Note 55-210-00 describing the configuration of a VX Gateway for Greenfield deployment (VX directly connected to PSTN, and using SIP for OCS communications).


Customizing the Configuration

Ensure that the VX gateway has been set with the proper time:

- From telnet session: show time to verify
- From telnet session: set time hh:mm:ss to set a new time

The wizard application in VXbuilder configured the VX node with the required setup.

This section allows you to understand and customize this configuration:

	<p>Note: The VX gateway configuration can handle user friendly names for a large amount of parameters. It is strongly recommended you populate these fields with “tuned” description that will help to better understand the overall config of the VX gateway.</p>
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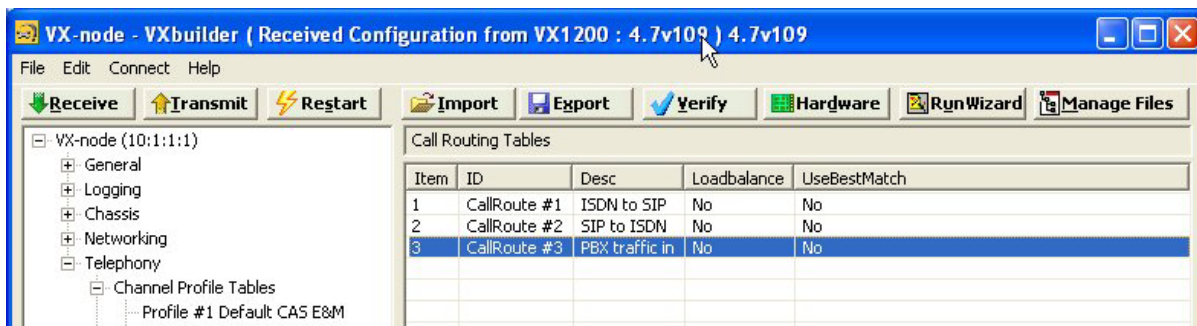
The following steps describe the necessary changes in the configuration to support the PBX connection:

- Receive Existing Configuration from the VX Gateway
- Adding a New Call Route
- Adding a New Name/Number Translation Table
- Adding a New Trunk Group
- Re-configure One of the E1 Ports for PBX Connection
- Transmit New Configuration to VX Gateway

Receive Existing Configuration from the VX Gateway

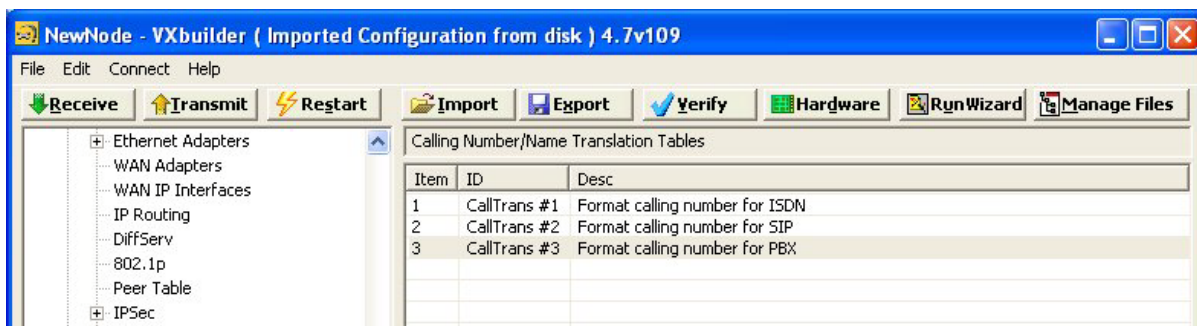
Adding a New Call Route

In telephony/Call routing, insert a new Call route.



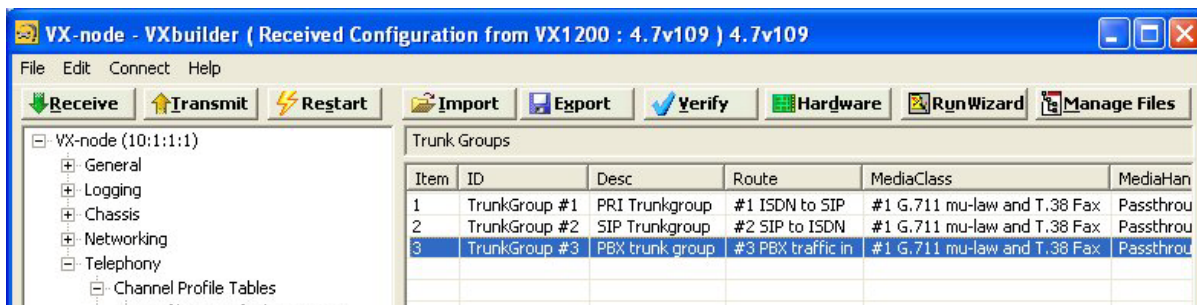
Adding a New Name/Number Translation Table

In telephony/Calling number/name translation table, insert a new table.



Adding a New Trunk Group

In telephony/trunk-groups, insert a new trunk-group.



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About the trunk-group setup:

- Must have a friendly name (PBX trunkgroup in our example)
- Must use new call route
- Must use the new Calling name/number translation table OUTBOUND
- Must use a suitable Media-Class

Re-configure One of the E1 Ports for PBX Connection

In our example, we use port 1:2:2

Edit Slot 2 Port 2

[Unchanged] Disabled Enabled

Port Number: 2

Desc: PBX port

Port Type: ISDN

TrunkGroup: #3 PBX trunk group

NumChannels: 31 Custom Timeslots

Channel Profile: #2 Default ISDN

Physical Boards Only

Line Type: E1

Coding: HDB3

Framing: G.703 wo/CRC-4

Buildout: long haul 0.0 dB

Equalizer: Unused

Clocking: Master

Audio Law: A-Law

T3 Framing: Unused

ISDN Only

ISDN Protocol: Euro ISDN (ETSI 300-102)

Side: Network [NT]

ISDN Disconnect Tunneling

OK Cancel

About the Port setup:

- Must have a friendly name (PSTN port in our example)
- Must be allocated to trunk-group 3 (PBX trunk group in our example)
- Must be set for NETWORK [NT], to emulate PSTN side for the PBX
- Must have CRC4 properly set to match PBX setup
- Must have clocking set for Master in order to provide clock to PBX

Transmit New Configuration to VX Gateway

Note that due to the modification of the E1 port, a VX restart will be required

Where to Look in the VXbuilder Application Tree to Understand the Configuration

General Menu

- VX Clock Reference is set for the first E1 port of the first E1 card (1:2:1 on VX1200, 1:1:1 on VX1800)



Note: In most cases, VX node has to collect a clock reference from Public PSTN. This is achieved in 2 steps:

- In the General Menu, ensure that minimum one port (connected to PSTN) is configured as clock reference
- For every port connected to PSTN, ensure that clocking is set for slave
- For every port connected to PBX, ensure that clocking is set for master

- SIP -> default SIP setup has been configured

Logging Menu

- Trace Logging Enabled: VX will capture a permanent full debug trace and store it on the hard-disk

Chassis Menu

- Virtual Slot has been installed (Slot 15)
- Virtual port for UC/mediation server traffic has been installed with 31 circuits
- All available cards have been installed and enabled
- All E1 ports have been installed as ISDN (Euro ISDN, User side [TE], with CRC4 ON in our example)
 - These parameters have to match with PBX setup in order to bring up the E1 link. Incorrect setup for ISDN protocol and side, framing and clocking could generate E1/T1 failure.
 - It is also recommended to disable all the unused ports
- E1 port 1:2:2 has been re-configured for PBX connection
- Default USA Tone Table is set for the E1/T1 card, and needs to be changed based on country requirements

Networking Menu

- Peer Table has been configured to ensure Link Quality Management (LOM) for the UC/Mediation server
- DNS IP Address has been configured

Telephony Menu

- **Trunk Groups:** 3 Trunk Groups have been configured:
 - 1 Trunk Group for PSTN connection
 - 1 Trunk Group for Mediation server SIP TCP connection
 - 1 Trunk Group for PBX has been manually added
- **Call Routes:** 3 Call Route Tables have been configured
 - 1 Call route for Trunk-group 1 for incoming PSTN traffic.
 - This table takes care of PSTN traffic sent to mediation server, or PBX.
 - It is important to match in the input rule the dialing format of the PSTN
 - DDI numbers (*most of the time, 4 digits*).
 - For output rule, it is important to match with the expected dialing format on UC/Mediation server side (*most of the time E164 format*), and also PBX format (*most of time 4 digits*). This Call route table will have to route DDI numbers either to UC/Mediation server, or PBX.
 - 1 Call route for Trunk-group 2 for incoming UC/Mediation server traffic. This table takes care of UC/Mediation traffic sent to PSTN or PBX.
 - It is important to match in the input rule the dialing format of UC/Mediation server (*most of time, E164 format*)
 - For the output rule, it is important to match with the expected dialing format on PSTN side (*most of time international, national and country specific short numbers formats*) and with the PBX format dialing plan (*most of time 4 digits for PBX extension*)
 - 1 Call route for Trunk-group 3 (*manually added*) for incoming PBX traffic. This table takes care of PBX traffic sent to PSTN or UC/Mediation server.
 - It is important to match in the input rule the dialing format of the PBX for call to OCS extensions (*most of time, 4 digit format*), and for call to Public PSTN (*most of time international, national and country specific short numbers formats*).
 - For the output rule, it is important to match with the expected dialing format on PSTN side (*most of time international, national and country specific short numbers formats*), and on the UC/Mediation server side (*most of time, E164 format*)

- **SIP Inbound Call Routing:** 1 Default Route pointing to SIP Trunk Group 2
- **Calling Number/Name Translation:** 3 Tables for re-formatting calling numbers
 - Table 1 is allocated to trunk-group 1 OUTBOUND

This table will ensure that Calling number provided by VX gateway will match the PSTN expected format, and must be configured accordingly.
 - Table 2 is allocated to trunk-group 2 OUTBOUND

This table will ensure that Calling number provided by VX gateway will match the OCS expected format, and must be configured accordingly.
 - Table 3 is allocated to trunk-group 3 OUTBOUND

This table will ensure that Calling number provided by VX gateway will match the PBX expected format, and must be configured accordingly.
- **Media Class:** 1 Media Class is available with G711 & T.38 Fax codecs. This Media class is allocated at Trunk-group level.

NOTE: The default Wizard setup uses G711 Mu-Law codec. It is recommended to change it to A-Law for all countries outside USA and Japan.

IMPORTANT: For better granularity for codec handling, it is also possible to allocate Media-class at Call route table, line by line.

External Equipment

Within Office Communications Server, ensure that the telephony configuration (Dial plan, dialing formats...etc.) is matching with the VX gateway configuration.

Reference Material

- PBX Compatibility testing – the VX gateway has been extensively tested for interoperability with a number of PBX's – for the most up to date list of certification results visit:
<http://www.net.com/Pages/MicrosoftUC.aspx?pgid=217>
- VX Customer Documentation, R4.7

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