Avaya Solution & Interoperability Test Lab

Application Notes for VoSKY Exchange Pro VIT1/E1 with Avaya Communication Manager – Issue 1.0

Abstract

These Application Notes describe the configuration required for VoSKY Exchange Pro VIT1/E1 to successfully interoperate with Avaya Communication Manager. Exchange Pro VIT1/E1 is a PBX to Skype™ gateway that connects to Avaya Communication Manager via an ISDN-PRI connection and is used to route calls between the enterprise and the Skype Voice over IP (VoIP) network.

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 required for VoSKY Exchange Pro VIT1/E1 to successfully interoperate with Avaya Communication Manager. Exchange Pro VIT1/E1 is a PBX to Skype™ gateway that connects to Avaya Communication Manager via an ISDN-PRI connection and is used to route calls between the enterprise and the Skype Voice over IP (VoIP) network.

1.1. Interoperability Compliance Testing

The interoperability compliance testing consisted of placing calls through the Exchange Pro and exercising common PBX features. Calls were placed between the Avaya Communication Manager endpoints and Internet users running a Skype client; as well as between the Avaya Communication Manager endpoints and the Skype-connected PSTN. Interoperability with all major enterprise phone types (analog, digital, H.323 and SIP) was tested. See **Section 6** for complete test results.

1.2. Support

Contact VoSKY technical support via the following methods:

Phone: 719-884-7417
On-Line: http://www.vosky.com/cms/index/support.php

2. Reference Configuration

Figure 1 illustrates the test configuration. The test configuration shows the Exchange Pro at the enterprise connected to an ISDN-PRI trunk on one side and the public Internet on the other. The public Internet connection provides access to the Skype service which allows the Exchange Pro to connect to other Skype users and the PSTN.

Located at the enterprise site is an Avaya SES and an Avaya S8300 Server running Avaya Communication Manager in an Avaya G700 Media Gateway. Avaya IA 770 Intuity Audix is also running on the Avaya S8300 Server. Endpoints include an Avaya 4600 Series IP Telephone (with SIP firmware), Avaya 9600 Series IP Telephones (with SIP and H.323 firmware), an Avaya one-X Desktop Edition, an Avaya 6408D Digital Telephone, and an Avaya 6210 Analog Telephone.

Skype users do not have phone numbers but instead are addressed via an alphanumeric Skype ID. In order for PBX endpoints to call these users, the Exchange Pro maps the Skype ID to a number that the PBX user can dial. This mapping is stored in the Exchange Pro phonebook. Similarly, inbound calls from Skype to Exchange Pro are addressed not by a number but by one of several Skype IDs/accounts assigned to the Exchange Pro. The Exchange Pro uses its Skype IDs as a pool of resources for all incoming calls. Calls to any of the Skype IDs can be answered by another if the addressed Skype ID is busy. All calls to any of the Skype IDs are directed to Avaya Communication Manager. Since Skype does not provide a destination phone number, all calls from Exchange Pro are directed to a single number on Avaya Communication Manager.

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This number is typically the number of an automated attendant or other IVR application. This number is configurable on Avaya Communication Manager. The Exchange Pro VIT1/E1 supports both T1 and E1 interfaces. However, only the T1 option was tested as part of the compliance test.

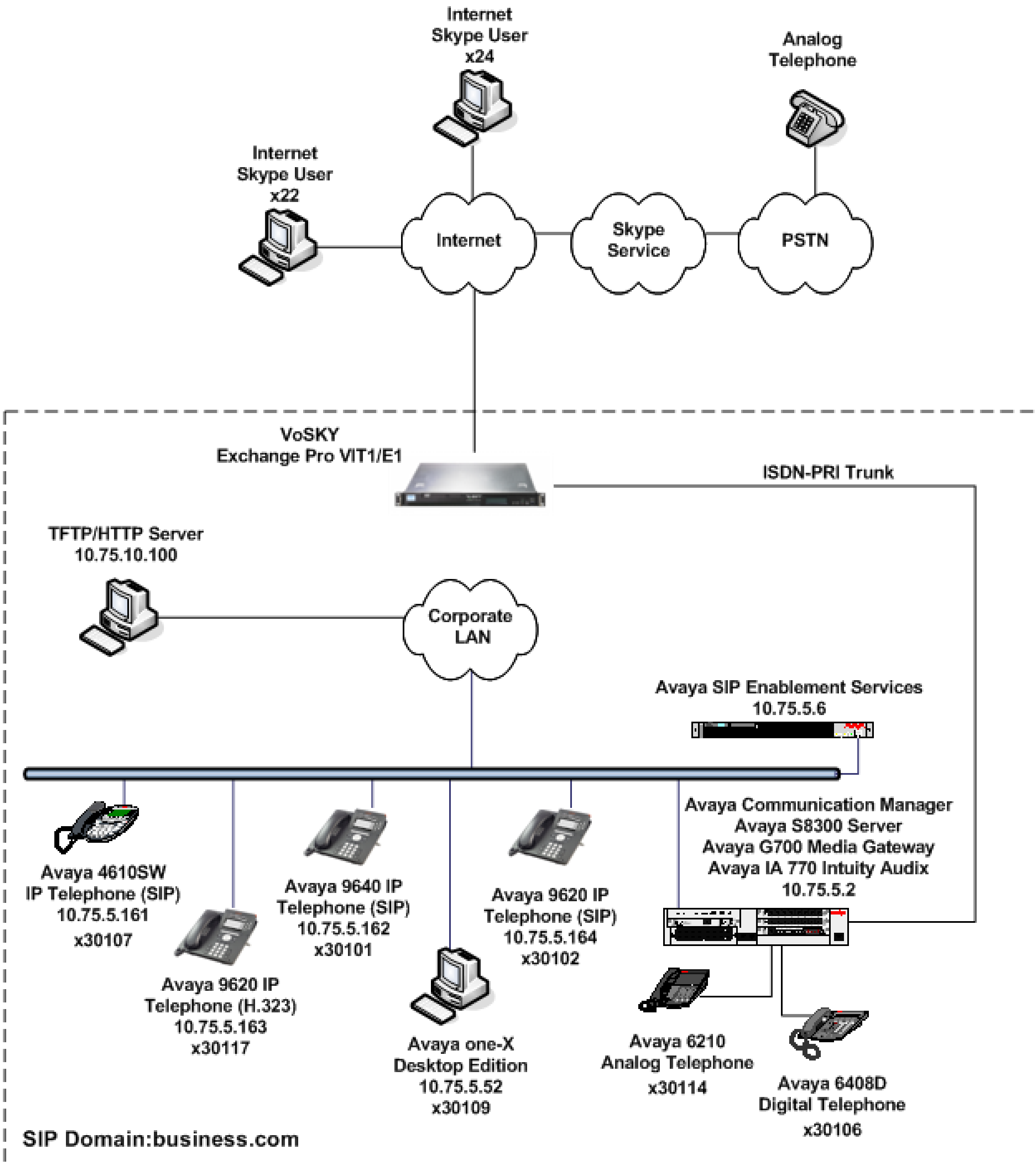

Figure 1: Exchange Pro VIT1/E1 Test Configuration

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3. Equipment and Software Validated

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

Equipment	Software/Firmware
Avaya S8300B Server	Avaya Communication Manager 5.1.1 Service Pack (01.1.415.16402) with Avaya IA 770 Intuity Audix
Avaya G700 Media Gateway	MGP: 28.18.0 VOIP: 76
Avaya S8500B Server	Avaya SIP Enablement Services (SES) 5.1.1
Avaya 9620 IP Telephone (H.323)	Avaya one-X Deskphone Edition 2.0
Avaya 4610SW IP Telephones (SIP)	2.2.2
Avaya 9620 IP Telephones (SIP) Avaya 9640 IP Telephones (SIP)	Avaya one-X Deskphone Edition SIP 2.0.5
Avaya one-X Desktop Edition (SIP)	2.1 Service Pack 2
Avaya 6408D Digital Telephone	-
Avaya 6210 Analog Telephone	-
Analog Telephone	-
Windows PC (TFTP/HTTP Server)	Windows XP Professional SP2
VoSKY Exchange Pro VIT1/E1	1.0

4. Configure Avaya Communication Manager

This section describes the Avaya Communication Manager configuration required to create the ISDN-PRI connection to the Exchange Pro and the associated routing. All other aspects of the network shown in **Figure 1** are assumed to already be in place.

The configuration of Avaya Communication Manager was performed using the System Access Terminal (SAT). After the completion of the configuration, perform a **save translation** command to make the changes permanent.

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Step	Description
1.	**DS1** The ISDN-PRI connection to the Exchange Pro makes use of a DS1 circuit pack in the Avaya Media Gateway. After selecting which circuit pack will be used for the connection to the Exchange Pro, use the **add ds1 *x*** command to add this circuit pack to the system. The ***x*** parameter indicates the cabinet/slot location of the circuit pack to be added. For the compliance test, the circuit pack in location 1v4 was used with the settings shown below to support the T1 option. The E1 option was not tested. ▪ Enter a descriptive name in the **Name** field. ▪ Set the **Line Coding** to ***b8zs***. This must match the T1 **Coding** field on the Exchange Pro in **Section 5**, **Step 12**. ▪ Set the **Framing Mode** to ***esf***. This must match the T1 **Framing** field on the Exchange Pro in **Section 5**, **Step 12**. ▪ Set the **Signaling Mode** to ***isdn-pri***. This must match the **Signaling** setting of ***pri-net*** on the Exchange Pro in **Section 5**, **Step 12**. ▪ Set the **Connect** field to ***network***. This value is typically used when connecting to a PSTN service provider. ▪ Set the **Country Protocol** to ***1***. The **Country Protocol** defines the country parameters. The value of 1 includes in the United States. The combination of the **Country Protocol** and the **Protocol Version** also defines the version of ISDN-PRI to be used. ▪ Set the **Protocol Version** to ***b***. The value of ***b*** further specifies the ISDN-PRI version as Bellcore TR-1268. This corresponds to a **Switchtype** setting of ***national*** on the Exchange Pro in **Section 5**, **Step 12**. ▪ Set the **Interface Companding** to ***mulaw***. For T1, companding is always set to ***mulaw***. ▪ Default values can be used for all other fields.

```
add ds1 1v4                                                     Page   1 of   2
                                DS1 CIRCUIT PACK

            Location: 001V4                            Name: 1v4 DS1
            Bit Rate: 1.544                     Line Coding: b8zs
   Line Compensation: 1                        Framing Mode: esf
      Signaling Mode: isdn-pri
             Connect: network
   TN-C7 Long Timers? n                    Country Protocol: 1
Interworking Message: PROGress             Protocol Version: b
Interface Companding: mulaw                            CRC? n
           Idle Code: 11111111
                              DCP/Analog Bearer Capability: 3.1kHz

                                             T303 Timer(sec): 4


      Slip Detection? n                 Near-end CSU Type: other

                                 Block Progress Indicator? n
```


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Step	Description

2.	**Signaling Group**
	Create a signaling group for the ISDN-PRI connection to the Exchange Pro by using the **add signaling-group *n*** command where ***n*** is the number of an unused signaling group. For the compliance test, signaling group 2 was used. Signaling group 2 was configured using the parameters highlighted below.
	
	▪ Set the **Group Type** to ***isdn-pri***.
	▪ Set the **Primary D-Channel** to ***001V424.*** This represents the cabinet/slot/port location of the signaling channel (D-channel) of the DS1 circuit pack added in the previous step. In the previous step, the DS1 circuit pack was shown to be in cabinet 001, slot V4. For T1, port 24 is used for signaling. Thus, the complete value for the location is ***001V424***.
	▪ The **Trunk Group for Channel Selection** field is initially left blank. It can not be configured until the trunk group is created (see **Step 3**). Once the trunk group is created, use the **change signaling-group** command to set this value to the value of the trunk group.
	▪ Default values can be used for all other fields.
	
	`add signaling-group 2                                              Page   1 of   5`
	`                                SIGNALING GROUP`
	
	` Group Number: 2              Group Type: isdn-pri`
	`                   Associated Signaling? y          Max number of NCA TSC: 0`
	`                      Primary D-Channel: 001V424     Max number of CA TSC: 0`
	`                                                   Trunk Group for NCA TSC:`
	`       Trunk Group for Channel Selection: 2`
	`      TSC Supplementary Service Protocol: a`

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Step	Description
3.	**Trunk Group** Create a trunk group for the ISDN-PRI connection to the Exchange Pro by using the **add trunk-group *n*** command where ***n*** is the number of an unused trunk group. For the compliance test, trunk group 2 was used. Trunk group 2 was configured using the parameters highlighted below. ▪ Set the **Group Type** to ***isdn***. ▪ Enter a descriptive name for the **Group Name**. ▪ Enter an available trunk access code (TAC) that is consistent with the existing dial plan in the **TAC** field. ▪ Set the **Carrier Medium** to ***PRI/BRI***. ▪ Set the **Service Type** field to ***tie***. ▪ Default values can be used for all other fields.

```
add trunk-group 2                                               Page   1 of  21
                                TRUNK GROUP

Group Number: 2                     Group Type: isdn          CDR Reports: y
  Group Name: PSTN                         COR: 1        TN: 1        TAC: 102
   Direction: two-way        Outgoing Display? n        Carrier Medium: PRI/BRI
 Dial Access? n              Busy Threshold: 255  Night Service:
Queue Length: 0
Service Type: tie                    Auth Code? n            TestCall ITC: rest
                         Far End Test Line No:
TestCall BCC: 4
```

Step	Description
4.	**Trunk Group – continued** On **Page 2**, set the **Disconnect Supervision – In** and **Out** fields to ***y***. This is required to allow outbound calls to Exchange Pro to be transferred to another user.

```
add trunk-group 2                                               Page   2 of  21
      Group Type: isdn

TRUNK PARAMETERS
         Codeset to Send Display: 6     Codeset to Send National IEs: 6
        Max Message Size to Send: 260   Charge Advice: none
  Supplementary Service Protocol: a     Digit Handling (in/out): enbloc/enbloc

            Trunk Hunt: cyclical
                                                   Digital Loss Group: 13
Incoming Calling Number - Delete:     Insert:                 Format:
              Bit Rate: 1200        Synchronization: async    Duplex: full
 Disconnect Supervision - In? y  Out? y
 Answer Supervision Timeout: 0
           Administer Timers? n        CONNECT Reliable When Call Leaves ISDN? n
```


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Step	Description
5.	**Trunk Group – continued** On **Page 3**: ▪ Set the **Send Name** and **Send Calling Number** fields to ***y***. This allows these values to be sent to the far-end. ▪ Set the **Numbering Format** field to ***public***. This field specifies the format of the calling party number sent to the far-end. ▪ Default values can be used for all other fields.

```
add trunk-group 2                                              Page   3 of  21
TRUNK FEATURES
          ACA Assignment? n            Measured: none      Wideband Support? n
                                 Internal Alert? n       Maintenance Tests? y
                               Data Restriction? n     NCA-TSC Trunk Member:
                                      Send Name: y      Send Calling Number: y
            Used for DCS? n                            Send EMU Visitor CPN? n
   Suppress # Outpulsing? n    Format: public
 Outgoing Channel ID Encoding: preferred     UUI IE Treatment: service-provider

                                                 Replace Restricted Numbers? n
                                                Replace Unavailable Numbers? n
                                                      Send Connected Number: n
                                                  Hold/Unhold Notifications? n
             Send UUI IE? y                     Modify Tandem Calling Number? n
               Send UCID? n
 Send Codeset 6/7 LAI IE? y                            Ds1 Echo Cancellation? n

    Apply Local Ringback? n              US NI Delayed Calling Name Update? n
 Show ANSWERED BY on Display? y
                             Network (Japan) Needs Connect Before Disconnect? n
```


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Step	Description
6.	**Trunk Group – continued** On **Page 5** in the **Port** Column of the **Group Member Assignments**, enter the port location of each port of the trunk used for the connection to the Exchange Pro. The **Code** column is filled in automatically. In the **Sig Grp** column, enter the corresponding signaling group for this connection from **Step 2**. In the case of the compliance test, all 23 bearer channels of the T1 trunk were used. Only the first 15 are shown in the example below.

```
add trunk-group 2                                               Page   5 of  21
                                 TRUNK GROUP
                                      Administered Members (min/max):   2/23
GROUP MEMBER ASSIGNMENTS                  Total Administered Members:  23

       Port    Code Sfx Name        Night            Sig Grp
  1: 001V401  MM710                                    2
  2: 001V402  MM710                                    2
  3: 001V403  MM710                                    2
  4: 001V404  MM710                                    2
  5: 001V405  MM710                                    2
  6: 001V406  MM710                                    2
  7: 001V407  MM710                                    2
  8: 001V408  MM710                                    2
  9: 001V409  MM710                                    2
 10: 001V410  MM710                                    2
 11: 001V411  MM710                                    2
 12: 001V412  MM710                                    2
 13: 001V413  MM710                                    2
 14: 001V414  MM710                                    2
 15: 001V415  MM710                                    2
```

Step	Description
7.	**Public Unknown Numbering** Public unknown numbering defines the calling party number to be sent to the far-end. Use the **display public-unknown-numbering** command to view the calling party entries. An entry was created for use by the trunk group defined in **Step 3**. In the example shown below, all calls originating from a 5-digit extension beginning with 3 and routed across any trunk group (**Trk Grp** column is blank) will be sent as a 5-digit calling number.

```
display public-unknown-numbering 0                              Page   1 of   2
                      NUMBERING - PUBLIC/UNKNOWN FORMAT
                                          Total
Ext Ext           Trk       CPN            CPN
Len Code          Grp(s)    Prefix         Len
                                                    Total Administered: 1
 5  3                                      5          Maximum Entries: 240
```


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Step	Description

8.	**Automatic Route Selection (ARS)**
	Automatic Route Selection (ARS) was used to route outbound calls to the PSTN via the Exchange Pro. To dial PSTN numbers, enterprise users would first dial the ARS access code followed by the PSTN number. PSTN numbers beginning with 1732 were used for the compliance test. Use the **change ars analysis** command to create an entry in the ARS Digit Analysis Table to route 11-digit numbers beginning with 1732 to route pattern 2. Route pattern 2 will direct the call to the Exchange Pro trunk group.
	
	`change ars analysis 1732                                 Page   1 of   2`
	`ARS DIGIT ANALYSIS TABLE`
	`Location:  all          Percent Full:    3`
	
	`Dialed          Total     Route     Call   Node  ANI`
	`String          Min  Max  Pattern   Type   Num   Reqd`
	`1732            11   11    2        fnpa         n`

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Step	Description
9.	**Route Pattern** Create a route pattern for use by ARS when routing calls to the PSTN via the Exchange Pro. The route pattern defines which trunk group will be used for the call and performs any necessary digit manipulation. Use the **change route-pattern n** command, where ***n*** is the number of an unused route pattern to configure the parameters in the following manner. The example below shows the values used for the compliance test. ▪ **Pattern Name**: Enter a descriptive name. ▪ **Grp No**: Enter the outbound trunk group for the Exchange Pro defined in **Step 3**. ▪ **FRL**: Set the Facility Restriction Level (**FRL**) field to a level that allows access to this trunk for all users that require it. The value of ***0*** is the least restrictive level. ▪ **Pfx Mrk**: Set the Prefix Mark to ***1***. This will prepend a 1 to any 10-digit numbers and leave numbers of any other length unchanged. This was not strictly necessary for the compliance test since only 11-digit PSTN dialing was tested. However, using a Prefix Mark of 1 is common practice when routing calls to the PSTN. ▪ **Inserted Digits**: ***00*** The Exchange Pro requires the prefix of 00 be inserted in front of the dialed number when directing a call to the PSTN. ▪ Default values can be used for all other fields.

```
change route-pattern 2                                          Page   1 of   3
                    Pattern Number: 2   Pattern Name: PSTN
                             SCCAN? n     Secure SIP? n
    Grp FRL NPA Pfx Hop Toll No.  Inserted                              DCS/ IXC
    No          Mrk Lmt List Del  Digits                                QSIG
                             Dgts                                       Intw
 1: 2    0       1                00                                     n   user
 2:                                                                      n   user
 3:                                                                      n   user
 4:                                                                      n   user
 5:                                                                      n   user
 6:                                                                      n   user

     BCC VALUE  TSC CA-TSC    ITC BCIE Service/Feature PARM  No. Numbering LAR
    0 1 2 M 4 W     Request                                 Dgts Format
                                                         Subaddress
 1: y y y y y n  n            rest                                          none
 2: y y y y y n  n            rest                                          none
 3: y y y y y n  n            rest                                          none
 4: y y y y y n  n            rest                                          none
 5: y y y y y n  n            rest                                          none
 6: y y y y y n  n            rest                                          none
```


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Step	Description
10.	**Automatic Alternate Routing (AAR)** Automatic Alternate Routing (AAR) was used to route outbound calls to Skype users via the Exchange Pro. To dial the Skype users, enterprise users would first dial the AAR access code followed by the number assigned to the Skype user. For the compliance test, 2-digit numbers beginning with 2 were assigned to the Skype users. Use the **change aar analysis** command to create an entry in the AAR Digit Analysis Table to route 2-digit numbers beginning with 2 to route pattern 21. Route pattern 21 will direct the call to the Exchange Pro trunk group.

```
change aar analysis 2                                          Page   1 of   2
                             AAR DIGIT ANALYSIS TABLE
                                   Location:  all          Percent Full:    3

          Dialed           Total      Route     Call   Node   ANI
          String          Min  Max  Pattern    Type   Num    Reqd
    2                     2    2     21        aar           n
```

Step	Description
11.	**Route Pattern** Create a route pattern for use by AAR when routing calls to the Skype users via the Exchange Pro. Create the route pattern in the same manner and using the same values as the route pattern configured in **Step 9** with the following exceptions. ▪ **Pattern Name**: Enter a unique name. ▪ **Pfx Mrk**: Leave the **Pfx Mrk** field blank. There is no need to set the Prefix Mark to 1 in this case since no 10-digit numbers will use this route pattern. ▪ **Inserted Digits**: Leave the **Inserted Digits** field blank. The Exchange Pro does not require any prefix be inserted in front of the dialed number of the Skype users. ▪ Default values can be used for all other fields.

```
change route-pattern 21                                          Page   1 of   3
                    Pattern Number: 21  Pattern Name: ExchangePro2
                             SCCAN? n     Secure SIP? n
    Grp FRL NPA Pfx Hop Toll No.  Inserted                             DCS/ IXC
    No          Mrk Lmt List Del  Digits                               QSIG
                             Dgts                                      Intw
 1: 2    0                                                              n   user
 2:                                                                     n   user
 3:                                                                     n   user
 4:                                                                     n   user
 5:                                                                     n   user
 6:                                                                     n   user

     BCC VALUE  TSC CA-TSC    ITC BCIE Service/Feature PARM  No. Numbering LAR
    0 1 2 M 4 W     Request                                 Dgts Format
                                                         Subaddress
 1: y y y y y n  n            rest                                          none
 2: y y y y y n  n            rest                                          none
 3: y y y y y n  n            rest                                          none
 4: y y y y y n  n            rest                                          none
```


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Step	Description

12.	**Inbound Calls**
	Since incoming Skype calls do not have a destination number, then all of these calls should be directed to a single number on Avaya Communication Manager. This number is typically configured to be the extension of an automated attendant or other IVR application. Use the **change inc-call-handling-trmt trunk-group 2** command to map all incoming dialed strings on trunk 2 to the extension of the auto-attendant 39100. The **Called Len** and **Called Number** fields are left blank which will match any dialed string. The **Del** field is set to ***11*** which will delete 11 digits of the dialed string which will be all the digits of any string of 11 digits or less. The **Insert** field is set to ***39100*** which is the extension of the auto-attendant.
	
	`change inc-call-handling-trmt trunk-group 2                     Page   1 of   3`
	`                       INCOMING CALL HANDLING TREATMENT`
	`Service/      Called    Called      Del Insert           Per Call Night`
	`Feature        Len      Number                         CPN/BN   Serv`
	`tie                                 11  39100`
	`tie`

13.	**Vector Directory Number (VDN)**
	Extension 39100 is a vector directory number (VDN) which invokes a vector which implements a simple automated attendant. In the case of the compliance test, VDN 39100 invokes vector 1. To create a VDN, use the **add vdn** command. Enter any descriptive name for the **Name*** field. In the **Vector Number** field, enter the vector number to be invoked (see **Step 14**).
	
	`add vdn 39100                                                    Page   1 of   3`
	`                            VECTOR DIRECTORY NUMBER`
	
	`                             Extension: 39100`
	`                                 Name*: AutoAttendant`
	`                         Vector Number: 1`
	
	`                  Meet-me Conferencing? n`
	`                    Allow VDN Override? n`
	`                                   COR: 1`
	`                                   TN*: 1`
	`                              Measured: none`
	
	`               Service Objective (sec): 20`
	
	`                            1st Skill*:`
	`                            2nd Skill*:`
	`                            3rd Skill*:`
	
	`* Follows VDN Override Rules`

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Step	Description
14.	**Automated Attendant Vector** Vector 1 was used to provide an automated attendant for incoming calls. The configuration of vector 1 is shown below. A vector can be created with the **change vector** command. • **Name**: Any descriptive name • Step **01**: Collect 5 digits. No announcement is played. • Step **02**: Route the calls to the extension collected in vector step 01 and if necessary proceed to coverage.

```
change vector 1                                                 Page   1 of   6
                                  CALL VECTOR

    Number: 1                Name: AutoAttendant
                                                 Meet-me Conf? n           Lock? n
     Basic? y   EAS? y   G3V4 Enhanced? y   ANI/II-Digits? y   ASAI Routing? n
 Prompting? y   LAI? y  G3V4 Adv Route? y   CINFO? y   BSR? y   Holidays? y
 Variables? n   3.0 Enhanced? y
01 collect      5    digits after announcement none
02 route-to     digits with coverage y
03
```


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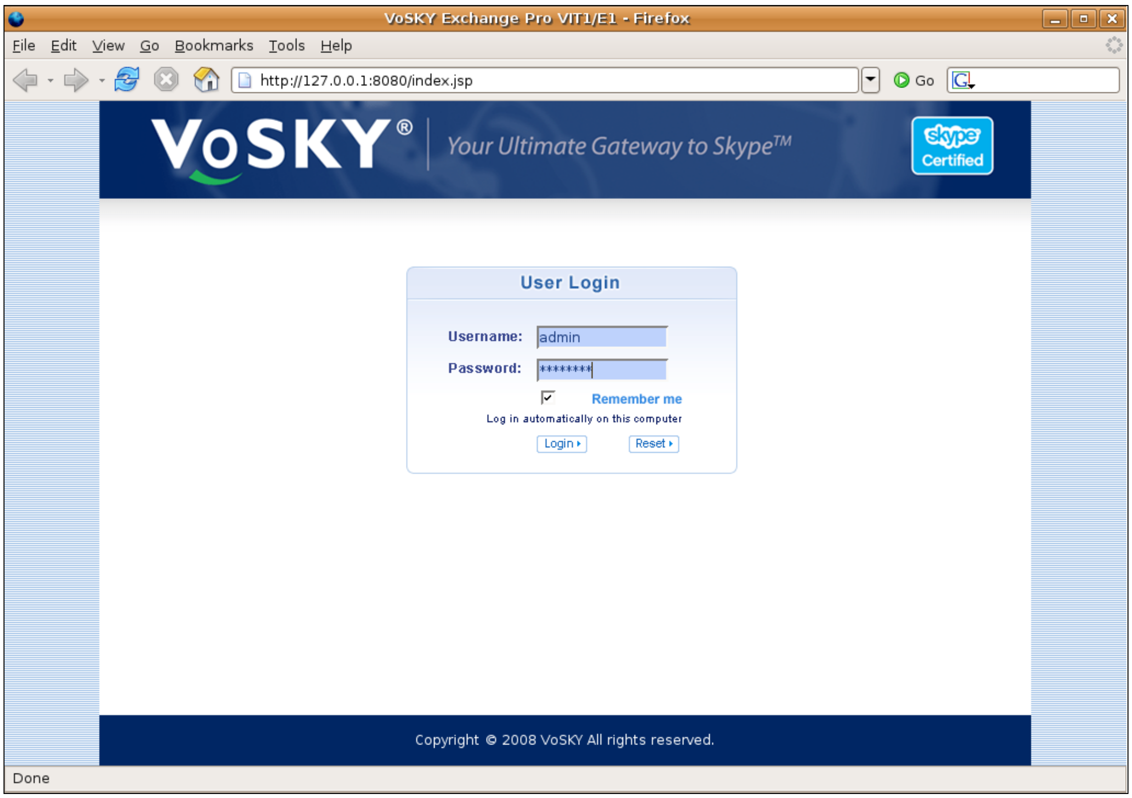
5. Configure Exchange Pro VIT1/E1

This section describes the configuration of the Exchange Pro. The Exchange Pro is configured via a web interface. On the Exchange Pro server, launch the Mozilla Firefox browser from the Linux GNOME desktop environment. The default home page opens to the login page.

Step	Description
1.	**Login** On the initial **Login** page, enter a proper **Username** and **Password**. Click **Login**. 

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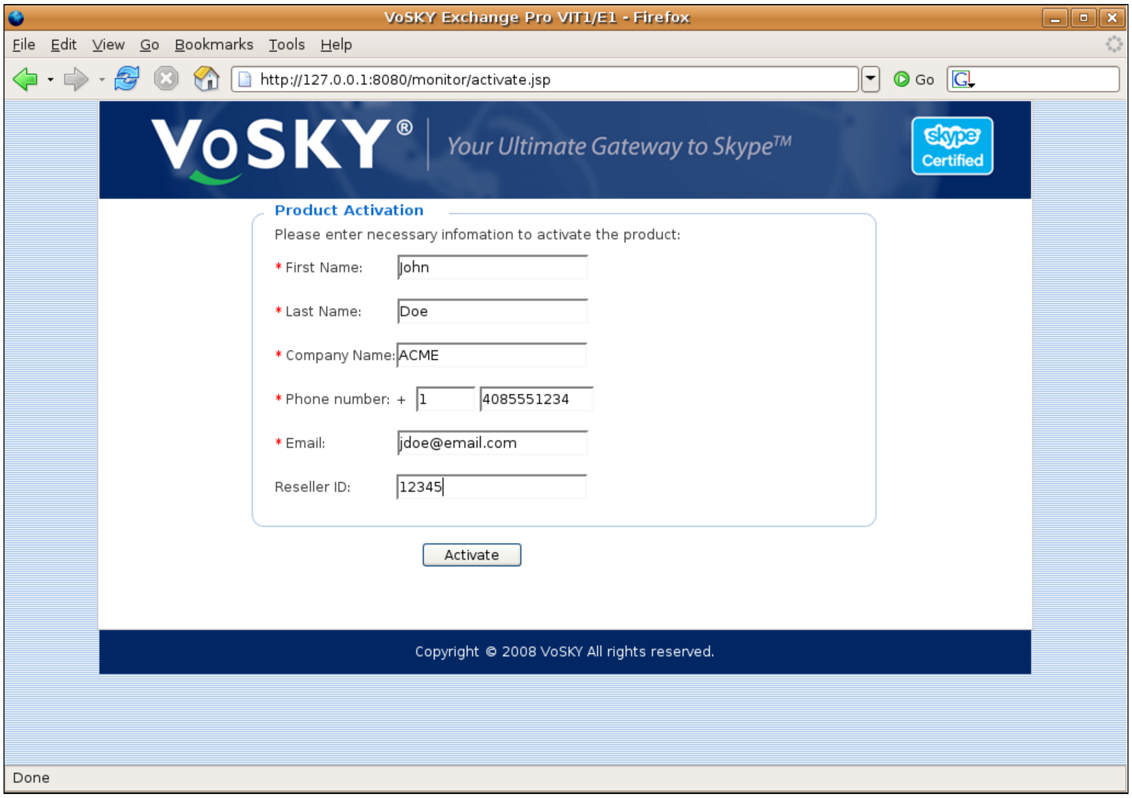
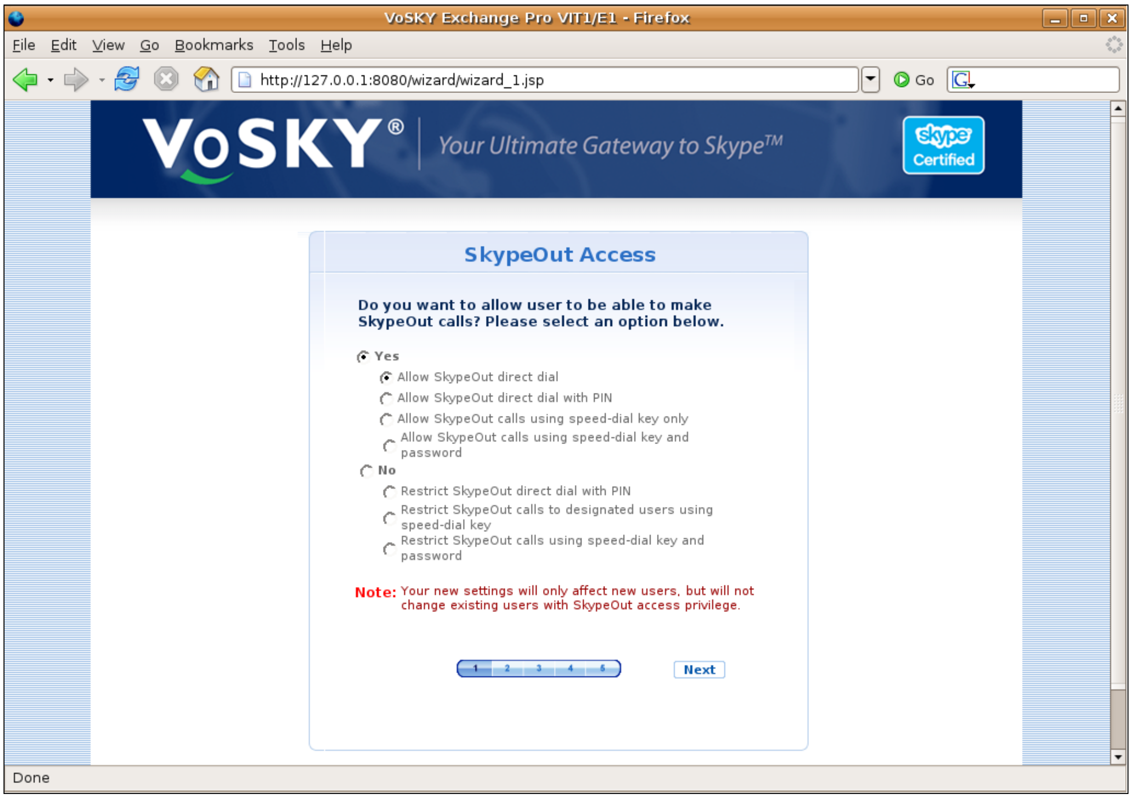
Step	Description
2.	**Product Activation** The first time the web interface is accessed, the following **Product Activation** screen will appear. Enter all required fields indicated by a *, then click **Activate**. 

<table>
<tr><th>Step</th><th>Description</th></tr>
<tr><td>3.</td><td>

SkypeOut Access

At this point, the configuration wizard will start automatically with the **SkypeOut Access** screen shown below. Select the appropriate options then click **Next** to proceed. For the compliance test, users were allowed to make outbound Skype calls. Thus, the **Yes** option was selected followed by the **Allow SkypeOut direct dial** option. This allows users to dial the outbound number directly without requiring a PIN, speed-dial key or password.



</td></tr>
</table>

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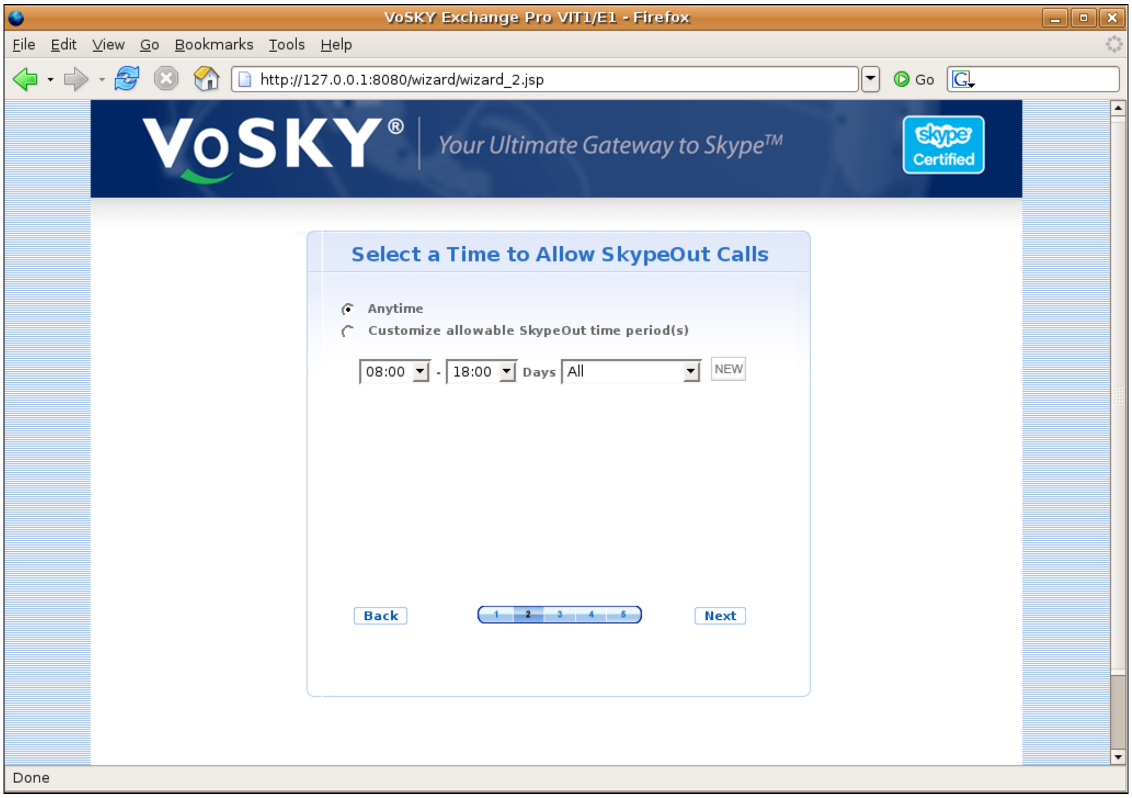
Step	Description
4.	**Time Outbound Calls Are Available** Select which days and what time of day to allow outbound calls. Click **Next** to proceed. For the compliance test, the **Anytime** option was selected. 

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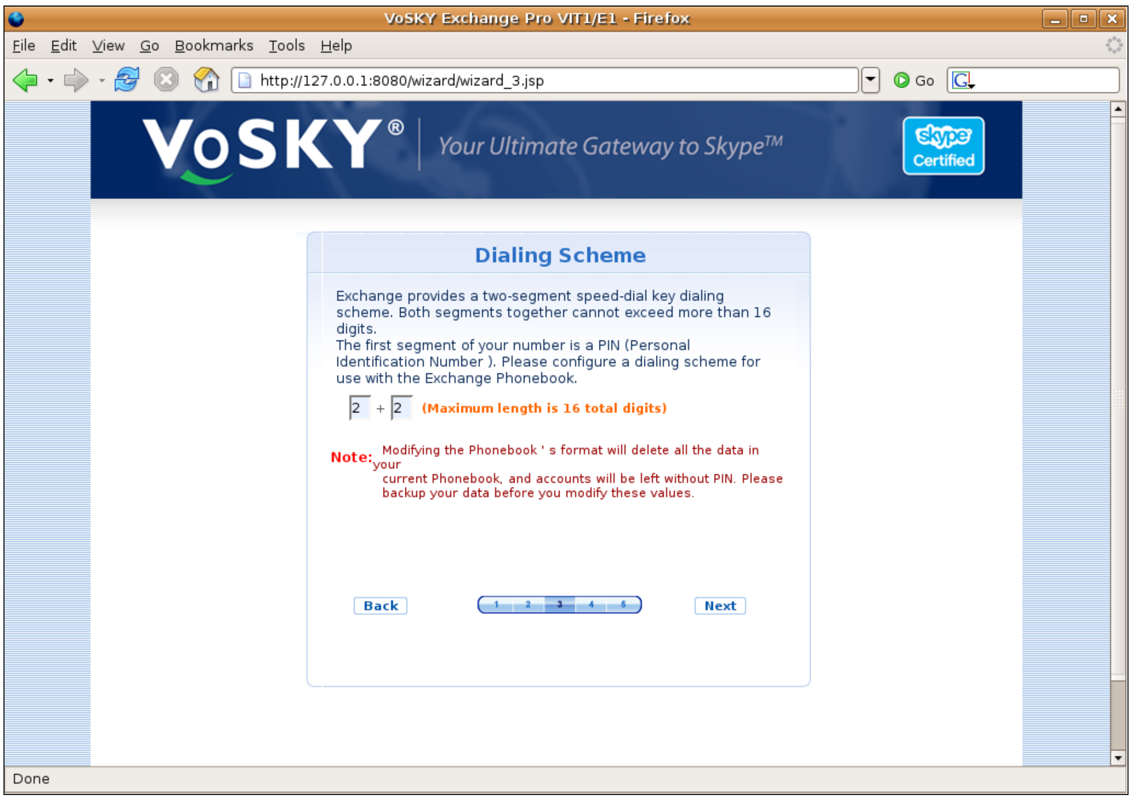
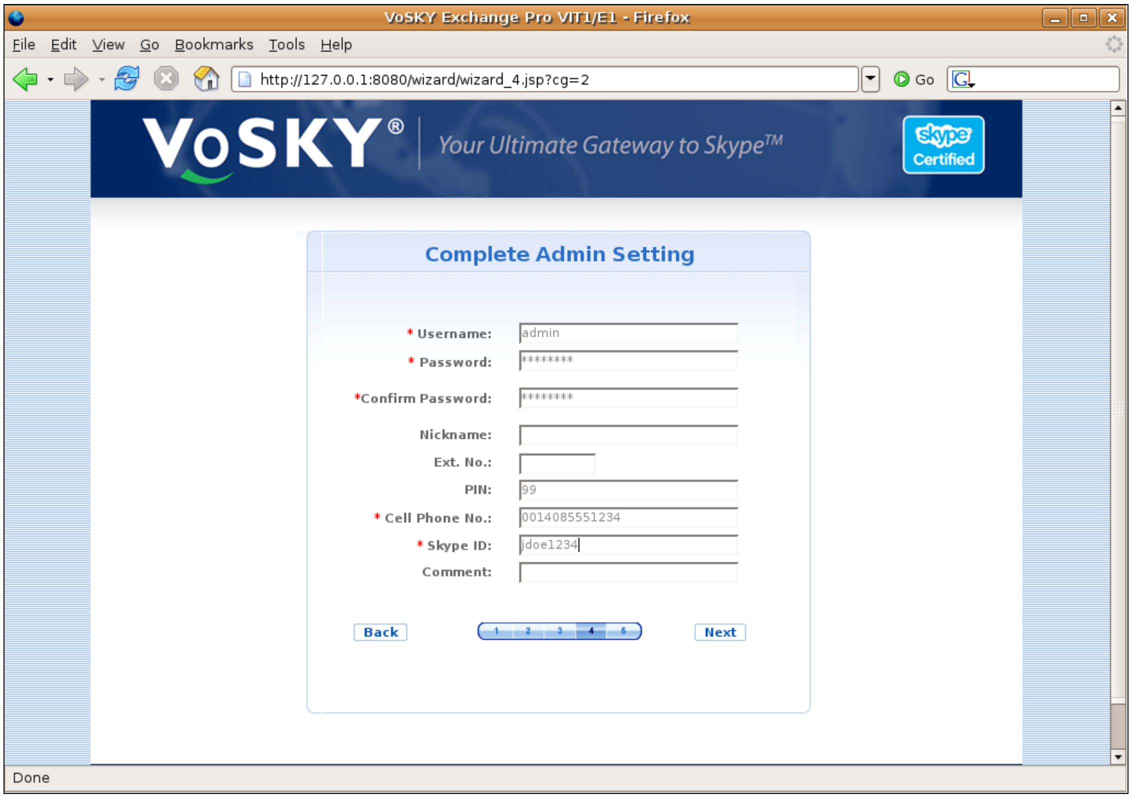
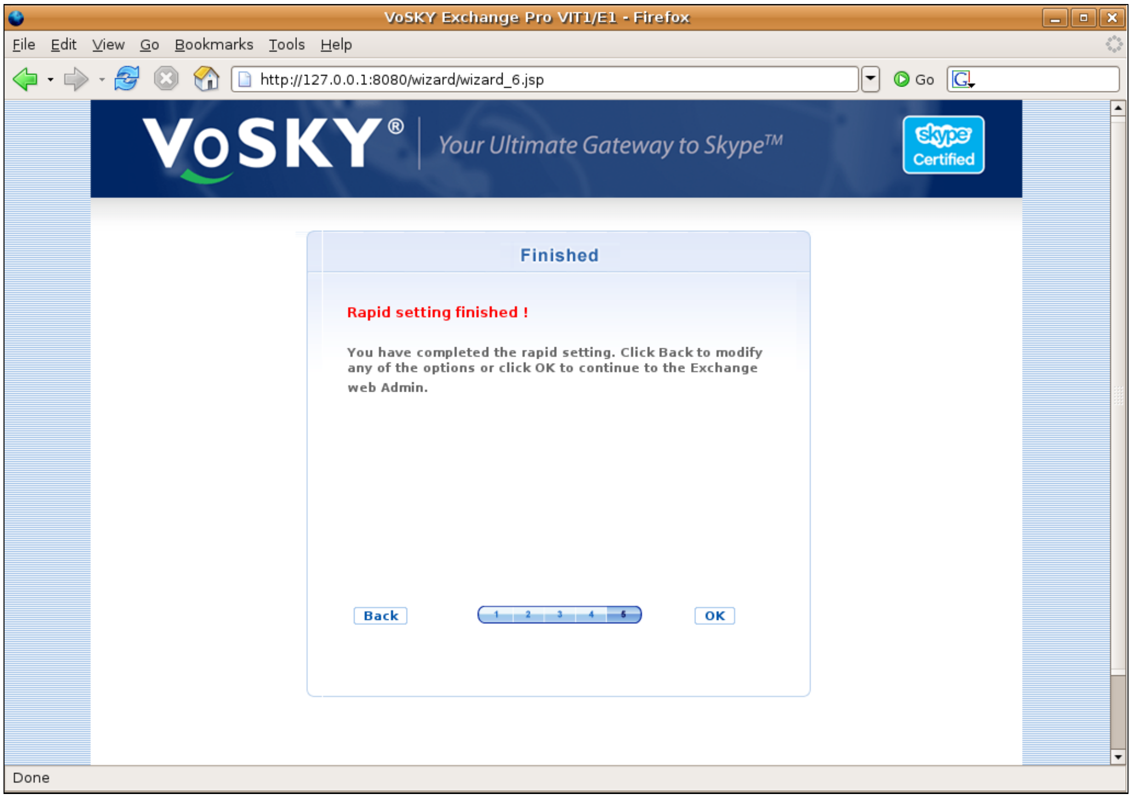
Step	Description
5.	**Dialing Scheme** Define the dialing scheme for the speed-dial codes used to dial other Skype users. The speed-dial is comprised of a PIN (if required) plus the dialed string assigned to a particular user. Enter the digit length of the PIN in the first box and the digit length of the user code in the second box. For the compliance test, a 2-digit PIN and a 2-digit user code were defined. However, since a PIN is not required (as defined in **Step 3**) then all Skype users in the Exchange Pro phone book can be reached by dialing a 2-digit code. 

Step	Description
6.	**Admin Settings** The **Complete Admin Setting** page that appears shows the default settings for the Exchange Pro administrator account. Enter any missing or update incorrect information in the required fields marked with a *. The cell phone number (**Cell Phone No.**) and **Skype ID** is the administrator contact information. Click **Next** to proceed. 

Step	Description
7.	**Wizard Setup Complete** The **Finished** screen appears as shown below. Click **OK** to proceed to the Exchange Pro web administration.



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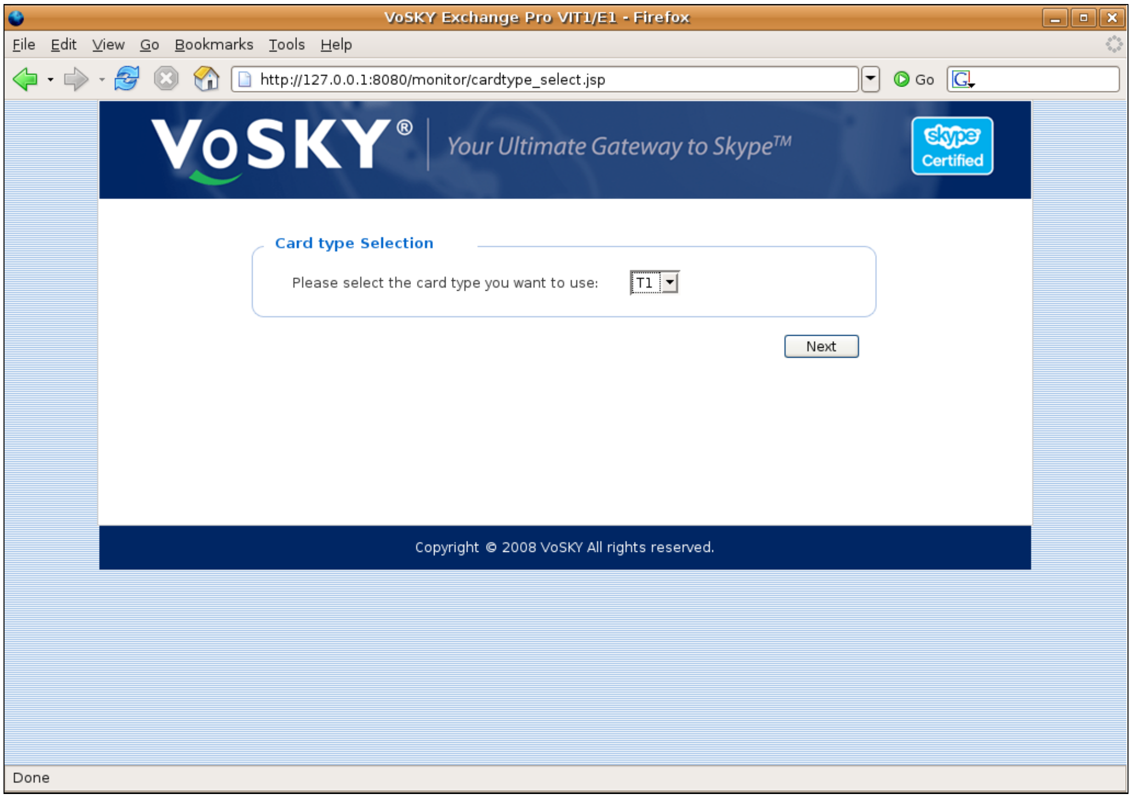
Step	Description
8.	**Card Type** On the **Card Type Selection** screen that appears, select ***T1*** from the pull-down menu. Click **Next** to proceed. 

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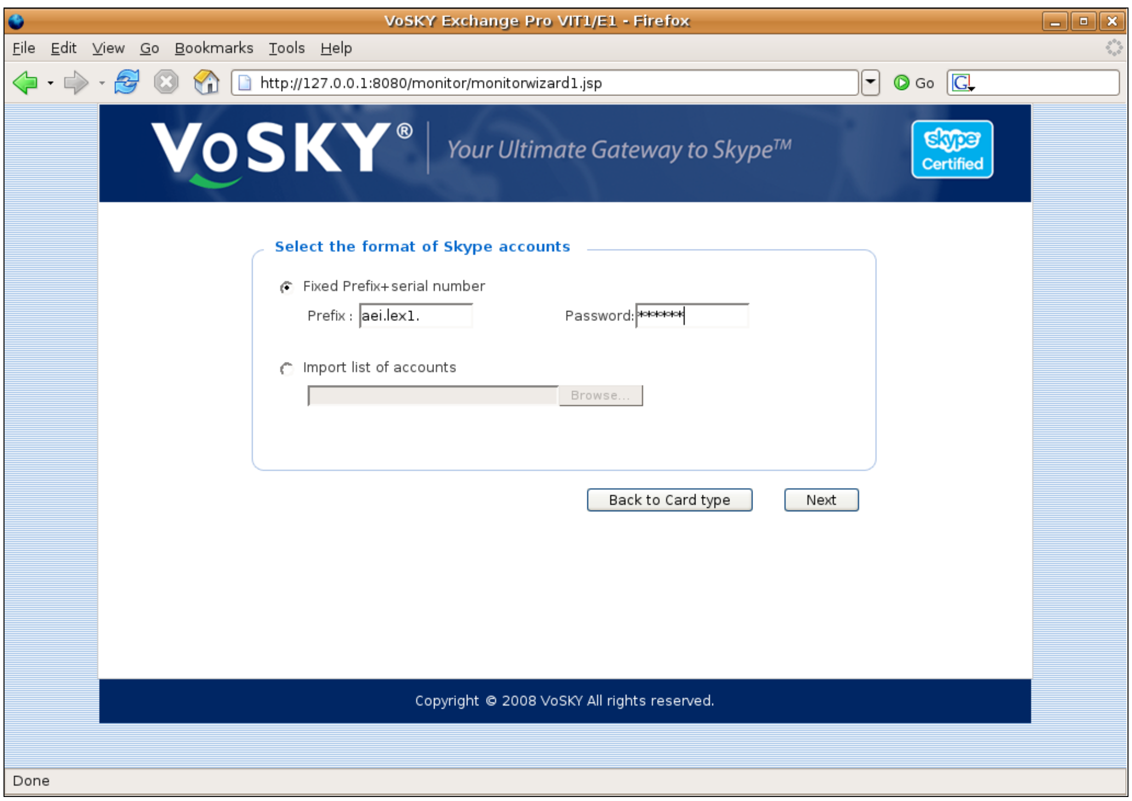
Step	Description
9.	**Account Format** Define the format of the Skype account names used by the Exchange Pro. Prior to Exchange Pro installation, the customer has been instructed to sign-up with the Skype service and obtain a set of accounts, one account for each license purchased with Exchange Pro. The customer selects the account names (Skype IDs) for these accounts so they may have a common format. If the accounts have a common format, it can be specified here. Otherwise, the account names can be imported from a list. One account is used for each active call involving the Exchange Pro. Thus, the number of accounts also represents the number of simultaneous calls supported by the Exchange Pro. In the case of the compliance test, each account started with the same prefix followed by a number. Thus, the **Fixed Prefix + serial number** option was selected. Enter the prefix in the **Prefix** field (*aei.lex.1*). Enter a password in the **Password** field. All accounts will share the same password. Click **Next** to proceed. Exchange Pro will start the serial number count at 1 and increment it for each available license. The compliance test used 23 licenses. Thus, Exchange Pro sets up accounts aei.lex.1.1 through aei.lex.1.23. 

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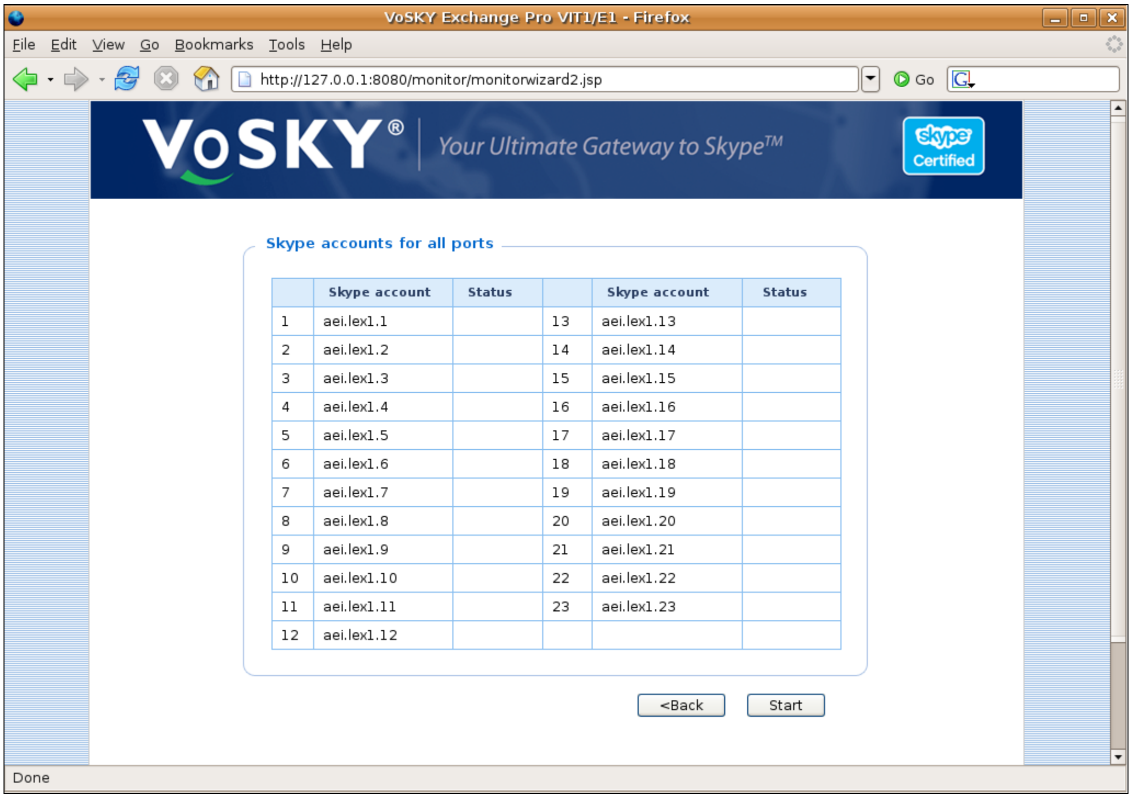
<table>
<tr><th>Step</th><th>Description</th></tr>
<tr><td>10.</td><td>

Account List

A status screen appears, while the accounts defined in **Step 9** are being set up. Once the set-up is complete, click the **Start** button to begin the process of logging in to each Skype account. The full administration GUI will open automatically to finish the configuration.



</td></tr>
</table>

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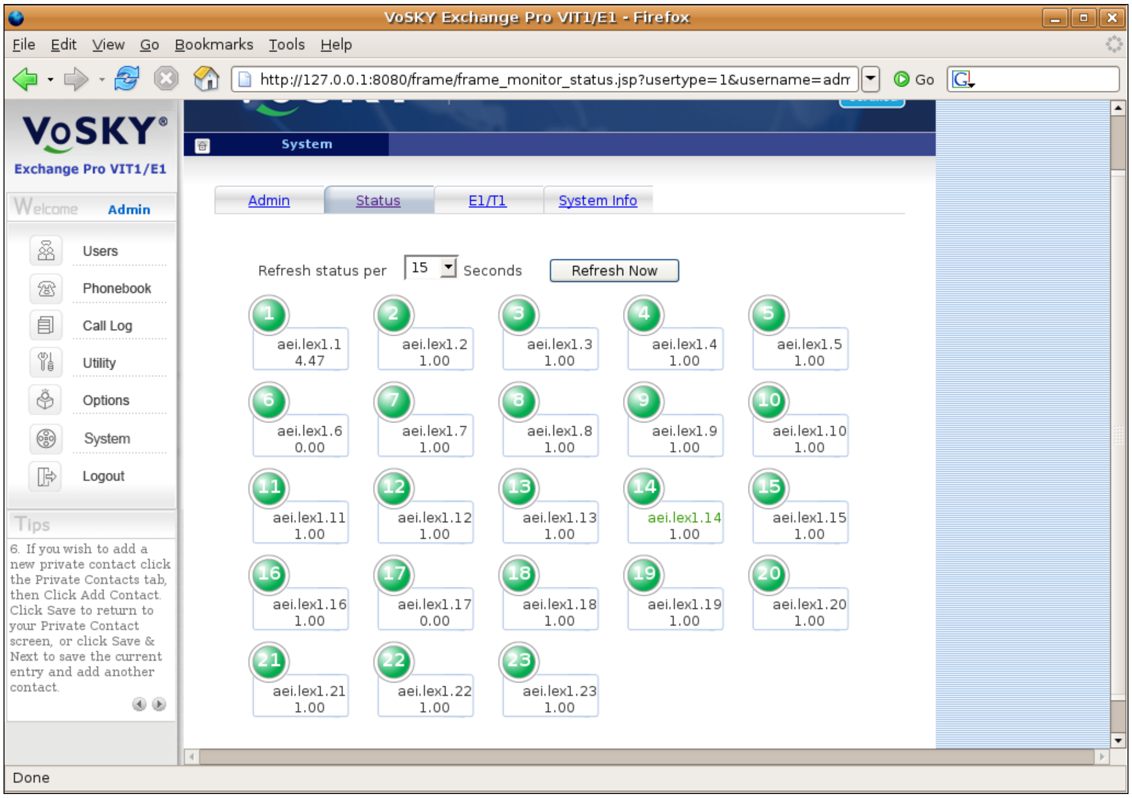
Step	Description
11.	**System Status** The full administration GUI opens with the **Status** tab of the **System** page. It shows the status of each of the accounts previously created. The green light next to each account name indicates Exchange Pro was successfully able to login to the Skype service with that account.



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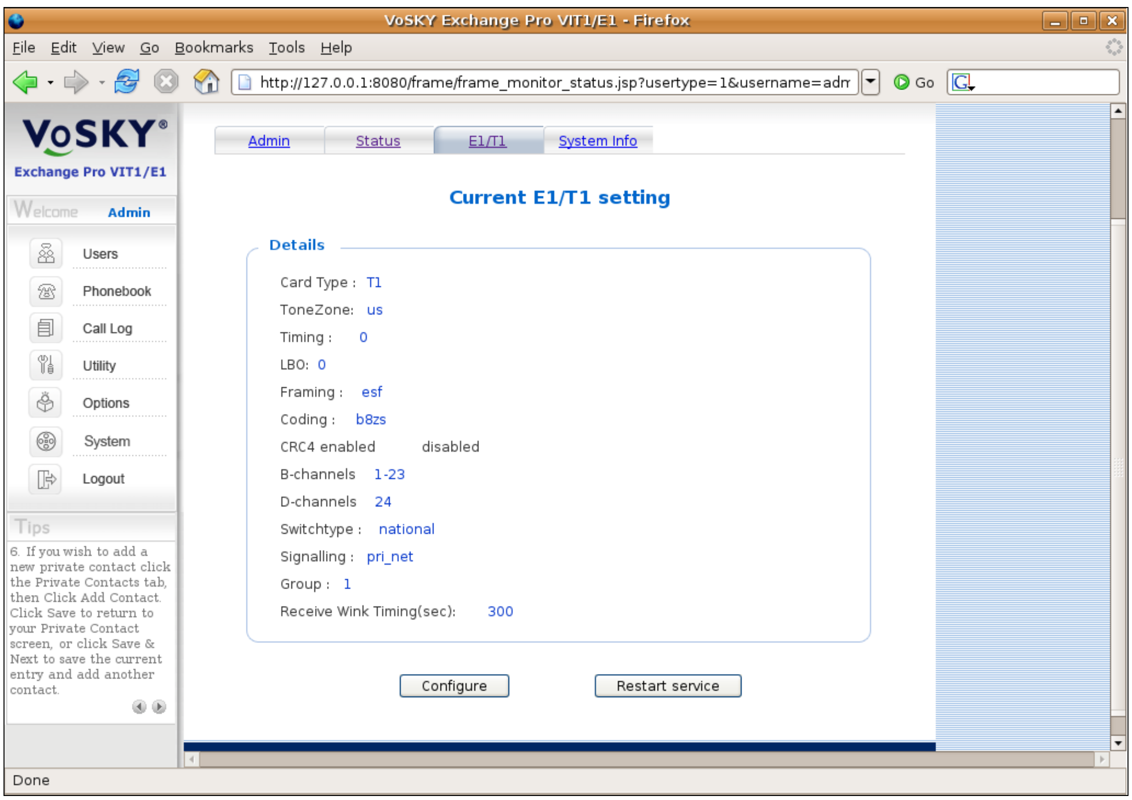
<table>
<tr><th>Step</th><th>Description</th></tr>
<tr><td>12.</td><td>

T1 Settings

To configure the T1 settings, click the **System** link in the left pane of the window. On the **T1/E1** tab, the current settings are displayed. To change any setting, click the **Configure** button. The example below shows the settings used for the compliance test. These values must match the corresponding values used on Avaya Communication Manager (**Section 4**, **Step 1**).

- **Framing**: ***esf***
- **Coding:** ***b8zs***
- **B-channels: 1-23**
- **D-channels: 24**
- **Switchtype: national**
- **Signaling: pri_net**



</td></tr>
</table>

6. General Test Approach and Test Results

The interoperability compliance testing consisted of placing calls through the Exchange Pro and exercising common PBX features. Calls were placed between the Avaya Communication Manager endpoints and the Skype users; as well as between the Avaya Communication Manager endpoints and the Skype-connected PSTN.

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Exchange Pro passed compliance testing. The following features and functionality were verified. Any observations related to these tests are listed at the end of this section.

- Calls between an Avaya Communication Manager endpoint and a Skype user.
- Calls between an Avaya Communication Manager endpoint and a PSTN user via the Exchange Pro.
- Interoperability of the Exchange Pro with analog, digital, H.323, and SIP telephones.
- Interoperability of the Exchange Pro with Avaya one-X Desktop Edition (SIP soft client).
- Proper recognition of DTMF transmissions by navigating voicemail menus.
- Voicemail support
- PBX features including Hold, Transfer, Call Waiting, Call Forwarding and Conference.
- Proper system recovery after an Exchange Pro restart and loss of IP connection.

The following observations were made during the compliance test:

- If an enterprise user calls the PSTN and the called party is "busy", the caller does not hear busy tone and the call is dropped. This was attributed to the operation of Skype and not related to an issue with interoperability between Exchange Pro and Avaya Communication Manager.
- Incoming Caller ID – When calling from an Internet Skype endpoint, the called party at the enterprise sees the caller's name preceded by an unexpected character. When calling from the PSTN, the Exchange Pro sends 000000 as the calling number since the SkypeIN™ service does not support caller ID.

7. Verification Steps

The following steps may be used to verify the configuration:

- From the Avaya Communication Manager SAT, use the **status signaling-group** command to verify that the ISDN-PRI signaling group is in-service.
- From the Avaya Communication Manager SAT, use the **status trunk-group** command to verify that the ISDN-PRI trunk group is in-service.
- Verify that calls can be placed between an Avaya Communication Manager endpoint and a Skype user.
- Verify that calls can be placed between an Avaya Communication Manager endpoint and a PSTN phone via the Exchange Pro.

8. Conclusion

These Application Notes describe the configuration required for VoSKY Exchange Pro VIT1/E1 to successfully interoperate with Avaya Communication Manager. VoSKY Exchange Pro VIT1/E1 successfully passed compliance testing.

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9. Additional References

[1] *Feature Description and Implementation For Avaya Communication Manager*, Doc # 555-245-205, Issue 6.0, January 2008.

[2] *Administrator Guide for Avaya Communication Manager*, Doc # 03-300509, Issue 4, January 2008.

[3] *SIP support in Avaya Communication Manager Running on the Avaya S8xxx Servers,* Doc # 555-245-206, Issue 8, January 2008.

[4] *Avaya Extension to Cellular and Off-PBX Station (OPS) Installation and Administration Guide Release 3.0*, version 6.0, Doc # 210-100-500, Issue 9, June 2005

[5] *Installing, Administering, Maintaining, and Troubleshooting SIP Enablement Services*, Doc # 03-600768, Issue 6, June 2008.

[6] *Avaya IA 770 INTUITY AUDIX Messaging Application,* Doc # 11-300532, May 2005.

[7] *4600 Series IP Telephone LAN Administrator Guide*, Doc # 555-233-507, July 2008.

[8] *Avaya one-X Deskphone SIP for 9600 Series IP Telephones Installation and Maintenance Guide Release 2.0*, Doc # 16-601943, Issue 2, December 2007.

[9] *Avaya one-X Deskphone SIP for 9600 Series IP Telephones Administrator Guide Release 2.0*, Doc # 16-601944, Issue 2, December 2007.

[10] *Avaya one-X Desktop Edition Administration*, October 2006.

[11] *Avaya one-X Desktop Edition Release 2.1 Quick Setup Guid*e, Doc # 16-600974, Issue 2, October 2006.

[12] *Avaya one-X Desktop Edition Getting Started, Doc # 16-600973, Issue 2, September 2007.*

[13] *VoSKY Exchange Pro VIT1/E1 User Manual, Version 1.0*

Product documentation for Avaya products may be found at http://support.avaya.com.
Product documentation for Exchange Pro VIT1/E1 may be obtained from VoSKY.

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