AVAYA

Avaya Solution & Interoperability Test Lab

Application Notes for Configuring NovaLink NovaAlert with Avaya Communication Manager H.323 – Issue 1.0

Abstract

These Application Notes describe the compliance testing of the NovaLink NovaAlert alarm system connected to Avaya Communication Manager via an H.323 link. These Application Notes contain an extensive description of the configurations for both NovaAlert and Avaya Communication Manager.

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

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Solution & Interoperability Test Lab Application Notes
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NovaAlertH323CM

1. Introduction

The purpose of this document is to describe the compliance testing done with NovaAlert and Avaya Communication Manager, including a description of the configuration of each, a description of the tests that were performed, and a summary of the results of those tests.

The NovaAlert is a PC-resident application which is used in a health care, hotel or industrial environment for alerting, messaging or information services. NovaAlert can react to external alarm stimuli which indicate the existence of an emergency situation by informing affected persons of the situation.

NovaAlert supports multiple interfaces, including the H.323 trunk described in these Application Notes.
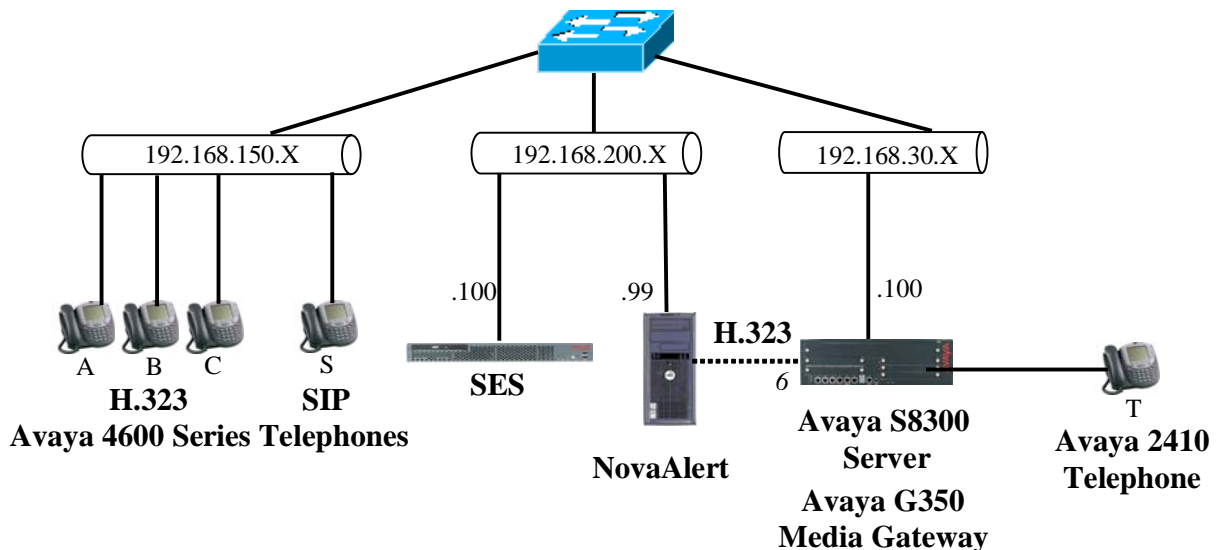

Figure 1: NovaAlert Test Configuration

The H.323 trunk connecting Avaya Communication Manager to the NovaAlert server was configured as trunk group 6, as shown in the diagram. The function of each of the components in **Figure 1** is as follows:

- The NovaAlert server signals alarm events to Avaya IP Telephones attached to Avaya Communication Manager via the H.323 trunk.
- Avaya Communication Manager runs on the Avaya S8300 Server and communicates with the NovaAlert server and Avaya Telephones via the Avaya G350 Media Gateway.
- The Avaya SIP Enablement Services (SES) server is the interface between Avaya Communication Manager and Avaya SIP Telephones.

2. Equipment and Software Validated

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

Equipment	Software Version
Avaya S8300 Server	Avaya Communications Manager 4.0 (R014x.00.0.730.5) Service Pack 00.0.730.5-13566
Avaya SIP Enablement Services Server	SES-3.1.2.0-309.0
Avaya G350 Media Gateway	26.31.0
MM712AP DCP	HW05 FW008
Avaya 4600 series H.323 stations	2.8
Avaya 4600 series SIP stations	2.2.2
NovaLink NovaAlert	7.5 SP 1A
Microsoft Windows Server 2003 SE	SP2

Table 1: Version Numbers of Equipment and Software

3. Configuration

The following table contains the extensions that are used for testing. The capital letter designations correspond to the telephones shown in **Figure 1**.

Extension	Designation
3000136	A
3000134	B
3000133	C
3000115	S
3000001	T
6000000	NovaAlert via H.323
6000001	NovaAlert number for direct alarm initiation

Table 2: Extensions Used for Testing

3.1. Configure Avaya Communication Manager

The configuration and verification operations illustrated in this section were all performed using the Avaya Communication Manager SAT terminal via SSH port 5022.

The information provided in this section describes the configuration of Avaya Communication Manager for this solution. For all other provisioning information such as installation and configuration, please refer to the product documentation in reference [**1**].

The configuration operations described in this section can be summarized as follows:

- Verify that the licenses allocated to the system are sufficient to support the required configuration.
- Configure the dial plan and call routing required for the NovaAlert configuration.
- Configure the H.323 interface that is used to connect to the NovaAlert server.
- Configure the telephone stations that are to be used for testing.
- Configure Avaya Communication Manager as required to interface to the Avaya SIP Enablement Services server.

3.1.1. Verify system-parameters customer-options

Use the **display system-parameters customer-options** command to verify that Avaya Communication Manager is licensed to meet the minimum requirements to interoperate with the NovaAlert server. Those items shown in bold indicate required values or minimum capacity requirements. If these are not met in the configuration, please contact an Avaya representative for further assistance.

On page 1 of this form, verify that the "Maximum Off-PBX Telephones – OPS" is sufficient for the number of Avaya SIP Telephones to be used.

```
display system-parameters customer-options                    Page   1 of  10
                          OPTIONAL FEATURES

    G3 Version: V14
      Location: 2                                RFA System ID (SID): 1
      Platform: 13                               RFA Module ID (MID): 1

                                                              USED
                           Platform Maximum Ports: 900   76
                                 Maximum Stations: 450   7
                         Maximum XMOBILE Stations: 0     0
                Maximum Off-PBX Telephones - EC500: 0     0
                Maximum Off-PBX Telephones -   OPS: 5     2
                Maximum Off-PBX Telephones - PBFMC: 0     0
                Maximum Off-PBX Telephones - PVFMC: 0     0
                Maximum Off-PBX Telephones - SCCAN: 0     0
```

Figure 2: System-Parameters Customers-Options Form, Page 1

On page 2, the value configured for "Maximum Concurrently Registered IP Stations" must be sufficient to support the total number of IP stations used.

The number "Maximum Administered SIP Trunks" must be sufficient to support the maximum number of members assigned to all SIP trunks.

```
display system-parameters customer-options                    Page    2 of  10
                            OPTIONAL FEATURES

IP PORT CAPACITIES                                              USED
                 Maximum Administered H.323 Trunks: 30         5
          Maximum Concurrently Registered IP Stations: 10      3
              Maximum Administered Remote Office Trunks: 0      0
Maximum Concurrently Registered Remote Office Stations: 0      0
              Maximum Concurrently Registered IP eCons: 0      0
  Max Concur Registered Unauthenticated H.323 Stations: 0      0
                  Maximum Video Capable H.323 Stations: 0      0
                  Maximum Video Capable IP Softphones: 0       0
                      Maximum Administered SIP Trunks: 10       3

    Maximum Number of DS1 Boards with Echo Cancellation: 0      0
                           Maximum TN2501 VAL Boards: 0        0
                     Maximum Media Gateway VAL Sources: 0      0
            Maximum TN2602 Boards with 80 VoIP Channels: 0     0
           Maximum TN2602 Boards with 320 VoIP Channels: 0     0
   Maximum Number of Expanded Meet-me Conference Ports: 0      0
```

Figure 3: System-Parameters Customers-Options Form, Page 2

On page 3 of this form, the "Cvg Of Calls Redirected Off-net" parameter must by set to "y" to allow redirection of calls to NovaAlert.

```
display system-parameters customer-options                    Page    3 of  10
                            OPTIONAL FEATURES

       Abbreviated Dialing Enhanced List? n         Audible Message Waiting? n
             Access Security Gateway (ASG)? n          Authorization Codes? n
           Analog Trunk Incoming Call ID? n                      CAS Branch? n
  A/D Grp/Sys List Dialing Start at 01? n                          CAS Main? n
Answer Supervision by Call Classifier? n              Change COR by FAC? n
                                  ARS? y  Computer Telephony Adjunct Links? n
                ARS/AAR Partitioning? y  Cvg Of Calls Redirected Off-net? y
            ARS/AAR Dialing without FAC? y                      DCS (Basic)? n
             ASAI Link Core Capabilities? n              DCS Call Coverage? n
             ASAI Link Plus Capabilities? n             DCS with Rerouting? n
         Async. Transfer Mode (ATM) PNC? n
  Async. Transfer Mode (ATM) Trunking? n     Digital Loss Plan Modification? n
            ATM WAN Spare Processor? n                            DS1 MSP? n
                                 ATMS? n          DS1 Echo Cancellation? n
                  Attendant Vectoring? n
```

Figure 4: System-Parameters Customers-Options Form, Page 3

On page 4, the parameters must be set as shown in **Table 3**.

Parameter	Required Setting	Comment
IP Stations	y	This is required so that IP stations can be configured.
Enhanced EC500	y	This is required to enable the allocation of off-PBX SIP telephones.
IP Trunks	y	This is required to allow the allocation of the H.323 trunks to be attached to NovaAlert.

Table 3: System-Parameters Customers-Options Form, Page 4

```
display system-parameters customer-options                      Page   4 of  10
                             OPTIONAL FEATURES

    Emergency Access to Attendant? y                        IP Stations? y
           Enable 'dadmin' Login? y
           Enhanced Conferencing? n                     ISDN Feature Plus? n
                 Enhanced EC500? y         ISDN Network Call Redirection? n
     Enterprise Survivable Server? n                     ISDN-BRI Trunks? y
         Enterprise Wide Licensing? n                             ISDN-PRI? y
               ESS Administration? n           Local Survivable Processor? n
           Extended Cvg/Fwd Admin? n                 Malicious Call Trace? n
       External Device Alarm Admin? n             Media Encryption Over IP? n
   Five Port Networks Max Per MCC? n    Mode Code for Centralized Voice Mail? n
                  Flexible Billing? n
      Forced Entry of Account Codes? n                 Multifrequency Signaling? y
         Global Call Classification? n       Multimedia Call Handling (Basic)? n
             Hospitality (Basic)? y    Multimedia Call Handling (Enhanced)? n
  Hospitality (G3V3 Enhancements)? n
                       IP Trunks? y

             IP Attendant Consoles? n
```

Figure 5: System-Parameters Customers-Options Form, Page 4

On page 8, the "Value-Added (VALU)?" parameter must be set to "y" to enable QSIG features required by NovaAlert.

```
display system-parameters customer-options                      Page   8 of  10
                           QSIG OPTIONAL FEATURES

                              Basic Call Setup? y
                  Basic Supplementary Services? y
                          Centralized Attendant? n
                          Interworking with DCS? n
         Supplementary Services with Rerouting? y
                 Transfer into QSIG Voice Mail? n
                            Value-Added (VALU)? y
```

Figure 6: System-Parameters Customers-Options Form, Page 8

3.1.2. Configure Node Names

Use the **change node-names ip** command to configure the IP addresses of the NovaAlert and the Avaya SES servers.

```
change node-names ip                                      Page   1 of   2
                            IP NODE NAMES
    Name              IP Address
default            0.0.0.0
NovaAlert          192.168.200.99
procr              192.168.30.100
ses                192.168.200.100
```

Figure 7: Node-Names IP Form

3.1.3. Configure H.323 Interface to the NovaAlert Server

Use the **add trunk-group** command to configure the Trunk Group to the NovaAlert Server. Assign values for this command as shown in **Table 4**.

Parameter	Usage
Group Type	Specify the Group Type as "isdn"
Group Name	Select an appropriate name to identify the device.
TAC	Specify a trunk access code that can be used to provide dial access to the trunk group.
Carrier Medium	Specify a Carrier Medium of "H.323" will be used for this trunk group.
Dial Access	Allow dial access to the trunk by dialing the trunk access code.
Service Type	Designate the trunk as a "tie" line to a peer system.
Member Assignment Method *	Specify "auto" assignment.
Signaling Group *	Specify signaling group 6.
Number of Members *	Specify a sufficient number of members to accommodate expected traffic. A value of "5" was used for these tests.
Supplementary Service Protocol	Specify a Supplementary Service Protocol of "b" for QSIG.
Format (page 2)	Specify "unk-unk" to use unknown dialing plan for calls in both directions.
Disconnect Supervision Out	Specify "y" to allow trunk-to-trunk transfers.
Send Name	Specify "y" so that the name of the caller is sent for outgoing calls.
Send Calling Number	Specify "y" so that the number of the caller is sent for outgoing calls.
Format (page 3)	Specify "unknown" to use unknown dialing plan for calls in both directions.
Send Called/Busy/Connected Number	Specify "y" so that the number of the connected party is sent to the caller.
QSIG Value-Added	Specify "y" so that NovaAlert can use the QSIG Value-Added extensions.

Table 4: Trunk-Group Parameters for H.323 Interface

* Perform a "change trunk-group 6" command after adding Signaling group 6 to define Member Assignment Method, Signaling Group, and Number of Members field.

```
add trunk-group 6                                         Page   1 of  21
                             TRUNK GROUP

Group Number: 6                   Group Type: isdn        CDR Reports: y
  Group Name: NovaLink                     COR: 1     TN: 1       TAC: *06
   Direction: two-way     Outgoing Display? n     Carrier Medium: H.323
 Dial Access? y           Busy Threshold: 255   Night Service:
Queue Length: 0
Service Type: tie                   Auth Code? n
                                             Member Assignment Method: manual
                                                      Signaling Group:
                                                     Number of Members:
```

Figure 8: Trunk-Group Form for H.323 Interface, Page 1

```
add trunk-group 6                                         Page   2 of  21
     Group Type: isdn

TRUNK PARAMETERS
        Codeset to Send Display: 6      Codeset to Send National IEs: 6
                                        Charge Advice: none
  Supplementary Service Protocol: b     Digit Handling (in/out): overlap/overlap
     Digit Treatment:                                        Digits:

                                              Digital Loss Group: 18
Incoming Calling Number - Delete:     Insert:           Format: unk-unk

 Disconnect Supervision - In? y  Out? y
Answer Supervision Timeout: 0
```

Figure 9: Trunk-Group Form for H.323 Interface, Page 2

```
add trunk-group 6                                         Page   3 of  21
TRUNK FEATURES
        ACA Assignment? n          Measured: none
                             Internal Alert? n      Maintenance Tests? y
                             Data Restriction? n    NCA-TSC Trunk Member:
                              Send Name: y        Send Calling Number: y
          Used for DCS? n          Hop Dgt? n    Send EMU Visitor CPN? n
  Suppress # Outpulsing? n    Format: unknown
                                             UUI IE Treatment: service-provider

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

Figure 10: Trunk-Group Form for H.323 Interface, Page 3

```
add trunk-group 6                                            Page   4 of  21
                        QSIG TRUNK GROUP OPTIONS



     TSC Method for Auto Callback: drop-if-possible
            Diversion by Reroute? y
                Path Replacement? y
Path Replacement with Retention? n
         Path Replacement Method: better-route
                            SBS? n
   Display Forwarding Party Name? y
     Character Set for QSIG Name: eurofont
                QSIG Value-Added? y
                 Encoding Method: proprietary
```

Figure 11: Trunk-Group Form for H.323 Interface, Page 4

Use the **add signaling-group** command to allocate a signaling group for this trunk group.

Parameter	Usage
Group Type	Specify "h.323".
Max number of NCA TSC	Assign a sufficient number of Non-Call Associated Temporary Signaling Connections to accommodate the anticipated maximum number of concurrent MWI messages which can be sent by NovaAlert to control the message waiting lamps of Avaya Telephones. A value of "4" was used for these tests.
Trunk Group for NCA TSC	Specify "6" as the Trunk Group to be used Non-Call Associated Temporary Signaling Connection.
Trunk Group for Channel Selection	Specify "6" as the Trunk Group to be used for channel selection.
TSC Supplementary Service Protocol	Specify "b" to designate use of the QSIG protocol.
Far-end Node Name	Specify "NovaAlert" as the far end node name.

Table 5: Signaling-Group Parameters for H.323 Interface

```
add signaling-group 6                                              Page   1 of   5
                                SIGNALING GROUP

 Group Number: 6                  Group Type: h.323
                            Remote Office? n           Max number of NCA TSC: 4
                                    SBS? n              Max number of CA TSC: 0
            IP Video? n                               Trunk Group for NCA TSC: 6
      Trunk Group for Channel Selection: 6
      TSC Supplementary Service Protocol: b
                         T303 Timer(sec): 10

  Near-end Node Name: procr                     Far-end Node Name: NovaAlert
Near-end Listen Port: 1720                    Far-end Listen Port: 1720
                                             Far-end Network Region: 1
          LRQ Required? n              Calls Share IP Signaling Connection? n
          RRQ Required? n

                                          Bypass If IP Threshold Exceeded? n
                                                 H.235 Annex H Required? n
            DTMF over IP: out-of-band        Direct IP-IP Audio Connections? n
Link Loss Delay Timer(sec): 90                    IP Audio Hairpinning? n
Enable Layer 3 Test? n                        Interworking Message: PROGress
                                        DCP/Analog Bearer Capability: 3.1kHz
```

Figure 12: Signaling-Group Form for H.323 Interface

3.1.4. Configure Dial Plan and Call Routing

Use the **change dialplan analysis** command to specify that dialed strings which begin with
"3"or "6" are extensions. The extensions local to this PBX are all seven digit numbers which
begin with a "3". The extensions assigned to the NovaAlert are all seven digit numbers which
begin with "6". The dial string "*06" is used as a trunk access code to access the NovaAlert
trunk.

```
change dialplan analysis                                          Page   1 of  12
                            DIAL PLAN ANALYSIS TABLE
                                                         Percent Full:    3

     Dialed   Total  Call    Dialed   Total  Call    Dialed   Total  Call
     String   Length Type    String   Length Type    String   Length Type

      3         7    ext
      6         7    ext
     *83        3    dac
     *06        3    dac
```

Figure 13: Dialplan Analysis Form

Use the **change uniform-dialplan** command to designate extensions which begin with "6" and are seven digits in length to use the Automatic Alternate Routing (AAR) table.

```
change uniform-dialplan 0                                    Page   1 of   2
                        UNIFORM DIAL PLAN TABLE
                                                       Percent Full: 0


 Matching                    Insert              Node
 Pattern         Len Del     Digits      Net Conv Num
 6                7   0                  aar  n
```

Figure 14: Uniform-Dialplan Form

Use the **change aar analysis** command to select routing pattern "6" for numbers which have the leading dialed string "6", as specified in the uniform dial plan shown in **Figure 14**.

```
change aar analysis 0                                        Page   1 of   2
                        AAR DIGIT ANALYSIS TABLE
                                                       Percent Full:    3


        Dialed          Total     Route    Call  Node ANI
        String        Min  Max  Pattern    Type  Num  Reqd
  6                    7    7      6         aar        n
```

Figure 15: AAR Analysis Form

Use the **change route-pattern** command to route numbers using Routing Pattern 6 via Trunk Group 6.

```
change route-pattern 6                                       Page   1 of   3
                Pattern Number: 2  Pattern Name: NovaAlert H.323
                           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: 6    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
 5: y y y y y n  n            rest                                     none
 6: y y y y y n  n            rest                                     none
```

Figure 16: Route-Pattern 6 Form

3.1.5. Configure Public-Unknown-Numbering Format

Use the **change public-unknown-numbering** command to designate how telephone numbers are to be displayed on stations that have displays. Specify that seven digit numbers starting with "6" from trunk group "6" and "3" from trunk group "83" should not be modified.

```
change public-unknown-numbering 7                          Page   1 of   2
                    NUMBERING - PUBLIC/UNKNOWN FORMAT
                                        Total
Ext Ext           Trk      CPN          CPN
Len Code          Grp(s)   Prefix       Len
                                              Total Administered: 2
 7  6             6                     7        Maximum Entries: 240
 7  3             83                    7
```

Figure 17: Public-Unknown-Numbering Form

3.1.6. Configure Telephone Stations

Use the **add station** command to configure all of the telephones shown in **Table 2**. The settings for Avaya 2400 Telephones are the same as those required for the Avaya 4621 Telephone, except that the "Type" designation must be set to match the telephone type.

Parameter	Usage
Type	Enter the type of station that is to be configured.
Security Code	Enter a numeric security code.
Name	Enter a descriptive name for the user of the station.
BUTTON ASSIGNMENTS	Assign "send-calls" and "call-fwd" buttons to the stations, as required to test call coverage and call forwarding with NovaAlert. This not required for SIP telephones.

Table 6: Station Parameters

```
add station 3000136                                      Page   1 of   5
                               STATION

Extension: 300-0136                   Lock Messages? n              BCC: 0
     Type: 4621                     Security Code: 6310003           TN: 1
     Port: S00006                  Coverage Path 1:                 COR: 1
     Name: extn 3000136            Coverage Path 2:                 COS: 1
                                   Hunt-to Station:
STATION OPTIONS
                                      Time of Day Lock Table:
          Loss Group: 19       Personalized Ringing Pattern: 1
                                     Message Lamp Ext: 300-0136
        Speakerphone: 2-way          Mute Button Enabled? y
    Display Language: english        Expansion Module? n
 Survivable GK Node Name:
        Survivable COR: internal     Media Complex Ext:
  Survivable Trunk Dest? y                    IP SoftPhone? n




                                    Customizable Labels? y
```

Figure 18: Add Station Form, Page 1

```
add station 3000136                                      Page   4 of   5
                               STATION
 SITE DATA
      Room:                                    Headset? n
      Jack:                                    Speaker? n
     Cable:                                   Mounting: d
     Floor:                               Cord Length: 0
  Building:                                  Set Color:

ABBREVIATED DIALING
    List1:                 List2:                  List3:




BUTTON ASSIGNMENTS
 1: call-appr                      5: call-fwd   Ext:
 2: call-appr                      6:
 3: call-appr                      7:
 4: send-calls Ext:                8:
```

Figure 19: Add Station Form, Page 4

3.1.7. Configure Interface to Avaya SES and Integration for SIP Telephones

Use the **change off-pbx-telephone station-mapping** command to configure SIP telephones. Assign values for this command as shown in the following table.

Parameter	Usage
Station Extension	Enter the extension of the SIP telephone.
Application	Enter "OPS".
Phone Number	Enter the phone number assigned to the SIP telephone.
Trunk Selection	Enter the number assigned to the SIP trunk group later in **this section**.
Call Limit	Enter "3" to allow the SIP telephone to do call transfers.

Table 7: Parameters for Off-PBX-Telephone Station-Mapping

```
change off-pbx-telephone station-mapping 3000115              Page   1 of   2
                 STATIONS WITH OFF-PBX TELEPHONE INTEGRATION


 Station          Application Dial   CC  Phone Number      Trunk      Config
 Extension                    Prefix                       Selection  Set
 300-0115            OPS        -       3000115              83        1
```

Figure 20: Off-PBX-Telephone Form, Page 1

```
change off-pbx-telephone station-mapping 3000115              Page   2 of   2
                 STATIONS WITH OFF-PBX TELEPHONE INTEGRATION

 Station       Call      Mapping     Calls      Bridged
 Extension     Limit     Mode        Allowed    Calls
 300-0115       3       both        all        both
```

Figure 21: Off-PBX-Telephone Form, Page 2

Use the **change feature-access-codes** command to assign feature codes required by SIP telephones, as shown in the following table:

Parameter	Usage
Call Forwarding Activation All and Deactivation	Assign unused feature access codes that are within the local dial plan to activate/deactivate call forwarding.
Send All Calls Activation and Deactivation	Assign unused feature access codes that are within the local dial plan to activate/deactivate call sending all calls to coverage.

Table 8: Parameters for the Feature Access Codes

```
change feature-access-codes                              Page   1 of   5
                         FEATURE ACCESS CODE (FAC)
        Abbreviated Dialing List1 Access Code:
        Abbreviated Dialing List2 Access Code:
        Abbreviated Dialing List3 Access Code:
Abbreviated Dial - Prgm Group List Access Code:
                   Announcement Access Code:
                   Answer Back Access Code:
                     Attendant Access Code:
    Auto Alternate Routing (AAR) Access Code:
    Auto Route Selection (ARS) - Access Code 1:        Access Code 2:
               Automatic Callback Activation:          Deactivation:
  Call Forwarding Activation Busy/DA: *75    All: *73    Deactivation: *74
     Call Forwarding Enhanced Status:       Act:          Deactivation:
                      Call Park Access Code:
                    Call Pickup Access Code:
CAS Remote Hold/Answer Hold-Unhold Access Code:
                CDR Account Code Access Code:
                      Change COR Access Code:
                 Change Coverage Access Code:
                 Contact Closure   Open Code:          Close Code:
```

Figure 22: Feature Access Codes Form, Page 1

```
change feature-access-codes                              Page   3 of   5
                         FEATURE ACCESS CODE (FAC)
            Leave Word Calling Send A Message:
            Leave Word Calling Cancel A Message:
  Limit Number of Concurrent Calls Activation:          Deactivation:
            Malicious Call Trace Activation:          Deactivation:
         Meet-me Conference Access Code Change:

 PASTE (Display PBX data on Phone) Access Code:
  Personal Station Access (PSA) Associate Code:        Dissociate Code:
         Per Call CPN Blocking Code Access Code:
     Per Call CPN Unblocking Code Access Code:

                    Priority Calling Access Code:
                         Program Access Code:

     Refresh Terminal Parameters Access Code:
            Remote Send All Calls Activation:          Deactivation:
            Self Station Display Activation:
                 Send All Calls Activation: *71    Deactivation: *72
      Station Firmware Download Access Code:
```

Figure 23: Feature Access Code Form, Page 3

Use the **change off-pbx-telephone feature-name-extension** command to assign extensions to features required by SIP telephones, as shown in the following table below. Note that the extensions used here are assigned to speed dial entries for SIP telephones, as shown in **Table 14**.

Parameter	Usage
Call Forward All	Assign an unused extension within the local dial plan to the "Call Forward All" feature.
Call Forward Cancel	Assign an unused extension within the local dial plan to the "Call Forward Cancel" feature.
Send All Calls	Assign an unused extension within the local dial plan to the "Send All Calls" feature.
Send All Calls Cancel	Assign an unused extension within the local dial plan to the "Send All Calls Cancel" feature.

Table 9: Parameters for Off-PBX-Telephone Feature-Name-Extension

```
change off-pbx-telephone feature-name-extensions             Page   1 of   2
      EXTENSIONS TO CALL WHICH ACTIVATE FEATURES BY NAME

      Active Appearance Select:
           Automatic Call Back:
      Automatic Call-Back Cancel:
               Call Forward All: 300-1804
      Call Forward Busy/No Answer:
            Call Forward Cancel: 300-1806
                      Call Park:
            Call Park Answer Back:
                   Call Pick-Up:
            Calling Number Block:
          Calling Number Unblock:
            Conference on Answer:
            Directed Call Pick-Up:
          Drop Last Added Party:
      Exclusion (Toggle On/Off):
      Extended Group Call Pickup:
          Held Appearance Select:
```

Figure 24: Off-PBX-Telephone Feature Name Extensions Form, Page 1

```
change off-pbx-telephone feature-name-extensions             Page   2 of   2
      EXTENSIONS TO CALL WHICH ACTIVATE FEATURES BY NAME

      Idle Appearance Select:
          Last Number Dialed:
          Malicious Call Trace:
      Malicious Call Trace Cancel:
           Off-Pbx Call Enable:
           Off-Pbx Call Disable:
                  Priority Call:
                 Send All Calls: 300-1825
            Send All Calls Cancel: 300-1826
              Transfer On Hang-Up:
          Transfer to Voice Mail:
          Whisper Page Activation:
```

Figure 25: Off-PBX-Telephone Feature Name Extensions Form, Page 2

Use the **change ip-network-region** command to configure the network region used by Avaya SES. Assign values for this command as shown in the following table.

Parameter	Usage
Authoritative Domain	Enter the name assigned to Avaya SES in **Figure 38**.
Name	Enter a descriptive name.

Table 10: Parameters for IP-Network-Region 1

```
change ip-network-region 1                                      Page   1 of  19
                              IP NETWORK REGION
  Region: 1
Location: 1          Authoritative Domain: ffm.com
    Name: FFM
MEDIA PARAMETERS                    Intra-region IP-IP Direct Audio: yes
      Codec Set: 1                  Inter-region IP-IP Direct Audio: yes
   UDP Port Min: 2048                          IP Audio Hairpinning? y
   UDP Port Max: 3329
DIFFSERV/TOS PARAMETERS                       RTCP Reporting Enabled? y
 Call Control PHB Value: 46      RTCP MONITOR SERVER PARAMETERS
        Audio PHB Value: 46       Use Default Server Parameters? y
        Video PHB Value: 26
802.1P/Q PARAMETERS
 Call Control 802.1p Priority: 6
        Audio 802.1p Priority: 6
        Video 802.1p Priority: 5      AUDIO RESOURCE RESERVATION PARAMETERS
H.323 IP ENDPOINTS                                    RSVP Enabled? n
  H.323 Link Bounce Recovery? y
 Idle Traffic Interval (sec): 20
   Keep-Alive Interval (sec): 5
           Keep-Alive Count: 5
```

Figure 26: IP-Network-Region Form

Use the **change ip-codec-set** command to specify the codec to be used for the Network Region assigned to Avaya SES. Specify that the G.711A codec is to be used.

```
change ip-codec-set 1                                          Page   1 of   2

                       IP Codec Set

   Codec Set: 1

    Audio          Silence      Frames    Packet
    Codec          Suppression  Per Pkt   Size(ms)
 1: G.711A             n            2          20
 2:
 3:
 4:
 5:
 6:
 7:
```

Figure 27: IP-Codec-Set Form

Use the **add signaling-group** command to configure the Signaling Group parameters for the SIP trunk group. Assign values for this command as shown in the following table.

Parameter	Usage
Group Type	Enter the Group Type as "sip".
Far-end Node Name	Enter node name assigned to the Avaya SES in **Figure 7.**
Far-end Domain	Enter the domain name configured for SES in **Figure 38**.

Table 11: Signaling-Group Parameters for SIP Interface

```
add signaling-group 83                                          Page   1 of   1
                              SIGNALING GROUP

 Group Number: 83                   Group Type: sip
                           Transport Method: tls




   Near-end Node Name: procr                  Far-end Node Name: ses
 Near-end Listen Port: 5061             Far-end Listen Port: 5061
                                        Far-end Network Region:
      Far-end Domain: ffm.com


                                        Bypass If IP Threshold Exceeded? n

        DTMF over IP: rtp-payload          Direct IP-IP Audio Connections? y
                                                    IP Audio Hairpinning? y
 Enable Layer 3 Test? n
 Session Establishment Timer(min): 3
```

Figure 28: Avaya SES Signaling-Group Form

Use the **add trunk-group** command to configure the SIP interface to Avaya SES. Assign values for this command as shown in the following table.

Parameter	Usage
Group Type	Specify the Group Type as "sip"
Group Name	Select an appropriate name to identify the device.
TAC	Specify a trunk access code which can be used to provide dial access to the trunk group.
Service Type	Designate the trunk as a "tie" line to a peer system.
Signaling Group	Enter the number assigned to the SIP signaling group show in **Figure 28**.
Number of Members	Specify sufficient number of members to support the maximum simultaneous connections required.

Table 12: Trunk-Group Parameters for the SIP Interface

```
add trunk-group 83                                             Page   1 of  21
                              TRUNK GROUP

Group Number: 83                    Group Type: sip        CDR Reports: y
  Group Name: SIP                          COR: 1      TN: 1      TAC: *83
   Direction: two-way       Outgoing Display? n
 Dial Access? n                                      Night Service:
Queue Length: 0
Service Type: tie                    Auth Code? n


                                                   Signaling Group: 83
                                                 Number of Members: 5
```

Figure 29: Trunk-Group Screen Form

3.2. Configure Avaya IP Telephones

Configure the **46xxsettings.txt** text file to be used by Avaya IP Telephones. The parameters that are required to be configured in this file are shown in the following table. This is a "flat" ASCII file that must reside in the directory of the TFTP server accessible by the Avaya IP Telephones. Avaya IP Telephones must be configured so that the "FileSv" parameter is set to the address of the TFTP server that contains this configuration file, which is re-read each time the phone is restarted.

Parameter	Usage
MWISRVR	The value "SES_IP_address" indicates that Avaya SIP telephones should register with the Avaya SES server to receive message waiting events.
SIPDOMAIN	Enter the name of the SIP domain.
ENHDIALSTAT	Set this parameter to "0" to indicate that enhanced dialing is not required.

Table 13: Parameters for Telephone Setting File

```
SET MWISRVR         "SES_IP_address"
SET SIPDOMAIN       "ffm.com"
SET ENHDIALSTAT     0
```

Figure 30: Telephone Settings File Content

In addition to these settings, Avaya SIP Telephones must be configured manually to add speed dial entries to activate/deactivate Call Forwarding and Send All Calls features, by assigning the extensions that were assigned to the features shown in the following table to speed dial entries. These extensions are those that were assigned to using the **Off-Pbx-Telephone Feature-Name-Extensions** command described in **Table 9**.

Parameter	Extension	Usage
CallFwd On	3001804	Activate Call Forwarding
CallFwd Off	3001806	Deactivate Call Forwarding
SendAll On	3001825	Activate Send All Calls
SendAll Off	3001826	Deactivate Send All Calls

Table 14: Speed Dial Entry Assignments for Avaya SIP Telephones

3.3. Configure Avaya SIP Enablement Services

Avaya SES is needed in this configuration only if Avaya SIP IP Telephones are used. Log in to the Avaya SES Web-based Integrated Management tool by selecting the IP address of the Avaya SES server followed by "/admin" from the Web browser. After entering the login ID and password, select "Launch Administration Web Interface".
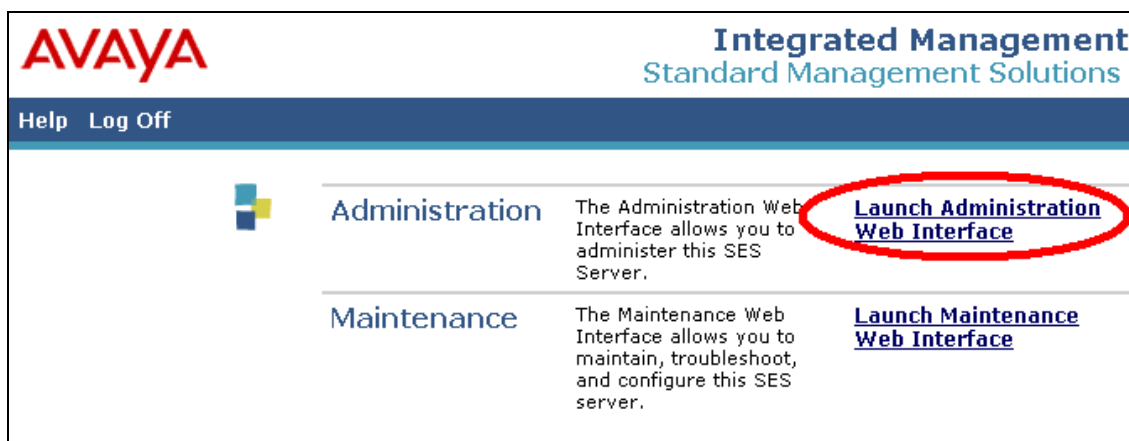
Figure 31: SES Initial Greeting Screen

From the top-level management screen, click "Manage Hosts" followed by "Add Host".
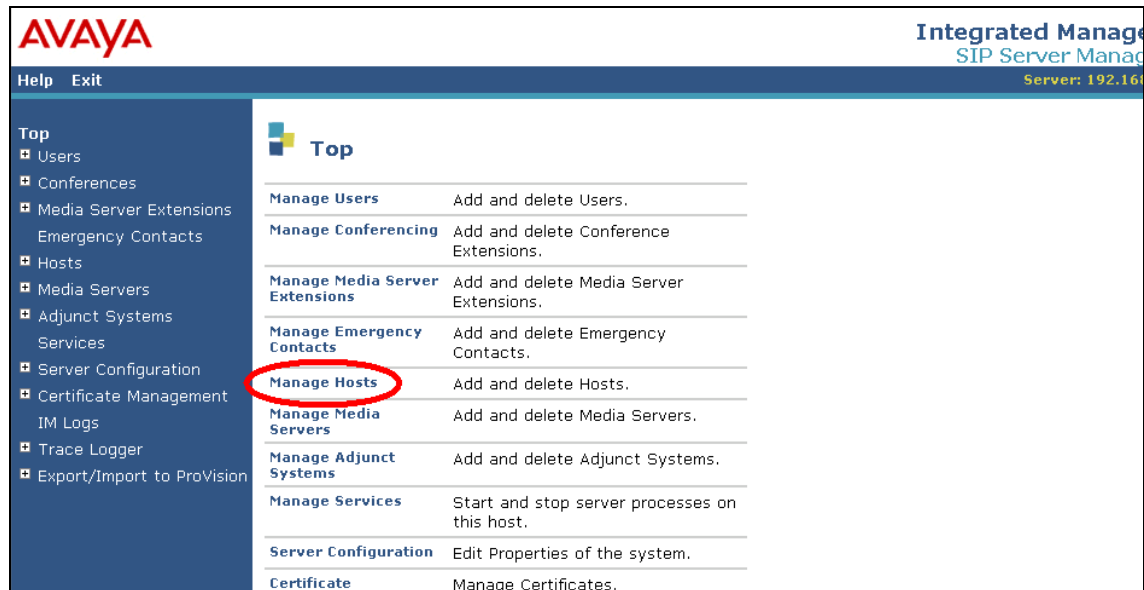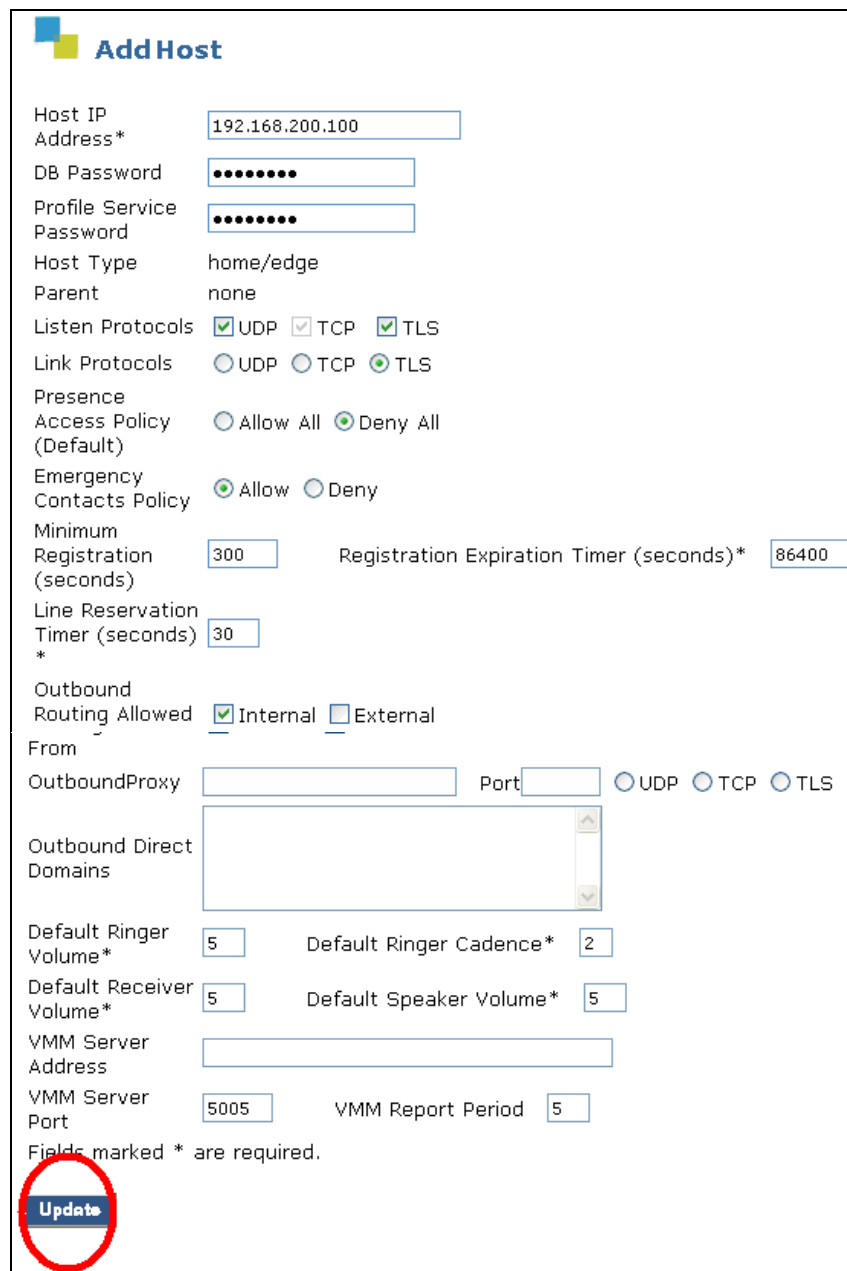
Figure 32: Host Management Selection from Top-Level Administration Screen

Enter the IP address of the Avaya SES Server, a database password, and a Profile Service Password that were allocated to the Avaya SES server when it was installed. Leave the other field assigned to their respective default values. Select the "Update" button.

Figure 33: Avaya SES "Add Host" Screen

From the top-level management screen, select "Manage Media Servers".

Figure 34: Media Server Management Selection from Top-Level Administration Screen

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Assign a meaningful name to the "Media Server Interface Name". Select the IP address of the Avaya SES server as the "Host". Enter the address of the Avaya S8300 Server as the SIP Trunk IP Address. Select the "Add" button when these parameters have been entered.

Figure 35: Avaya SES Add Media Server Interface Screen

From the top-level management screen, select "Server Configuration".

Figure 36: Server Configuration Selection from Top-Level Administration Screen

From the Server Configuration screen, select "System Properties".
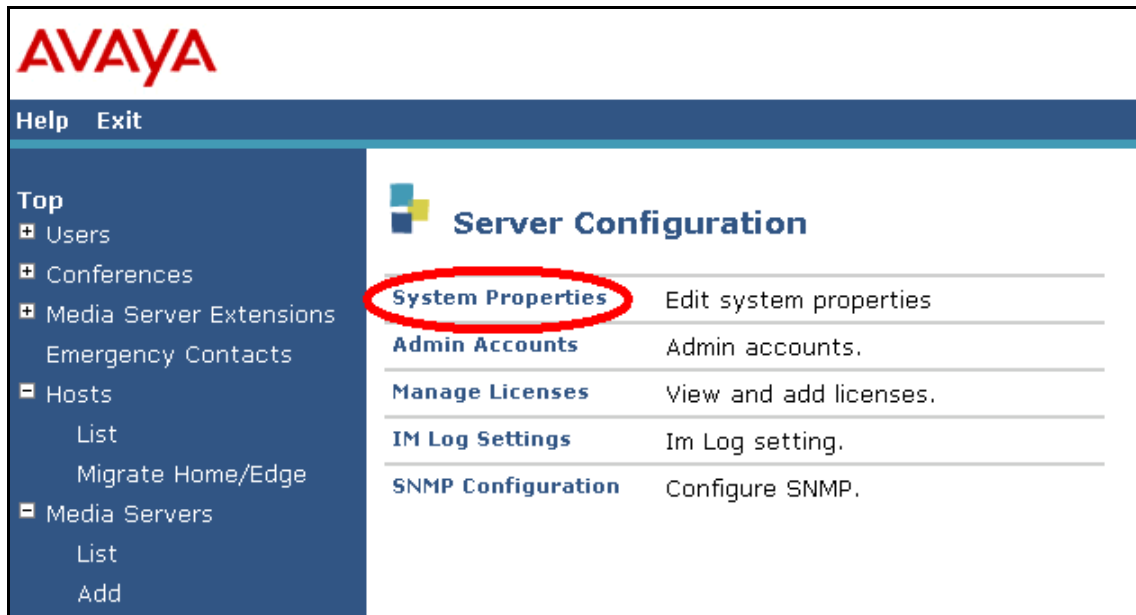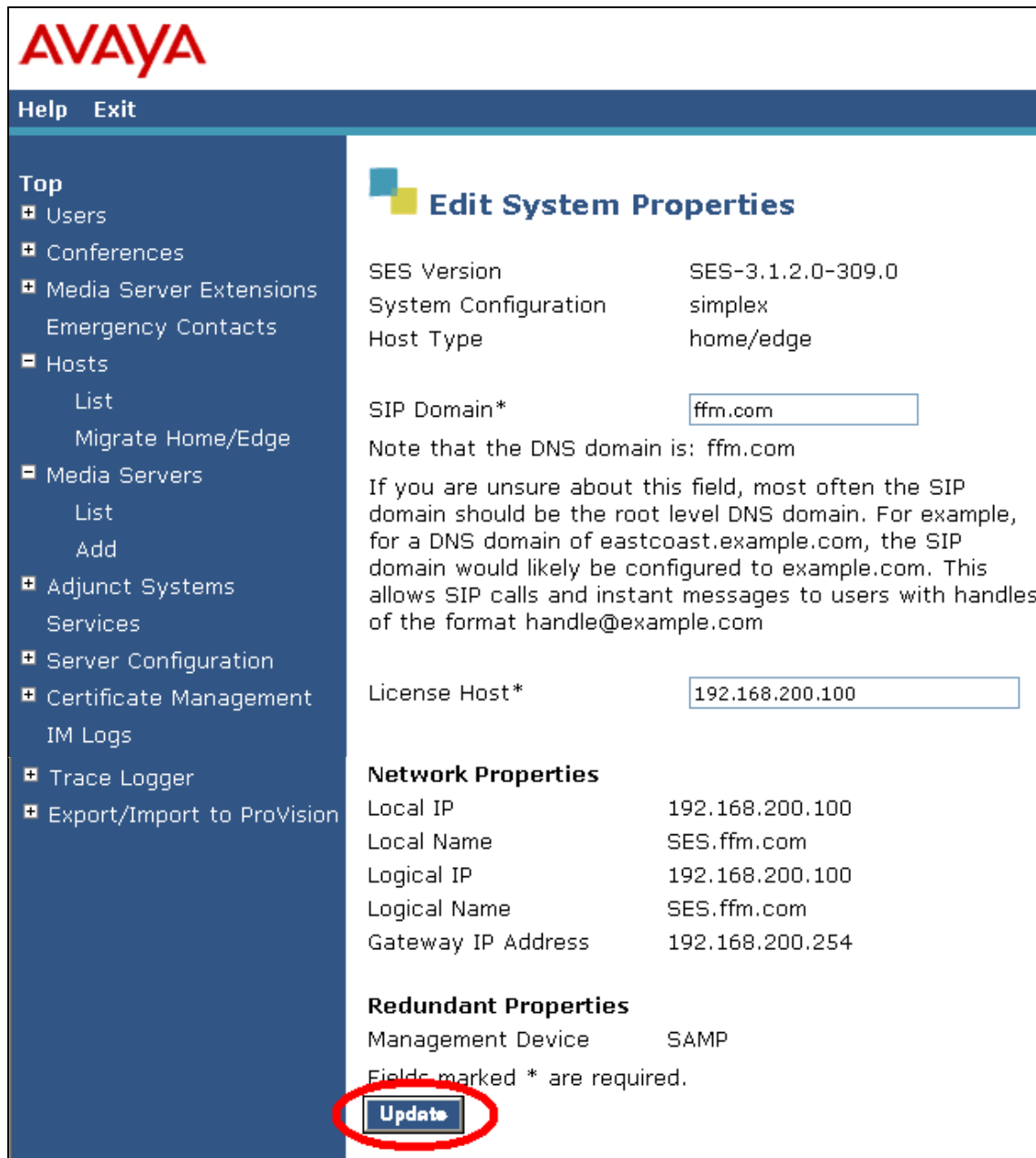
Figure 37: System Properties Selection from Server Configuration Screen

Enter the name to be assigned to the "SIP Domain". This must be the same name as is assigned in **Figure 26** and **Figure 28**. Select the "Update" button.

Figure 38: Avaya SES Edit System Properties Screen

From the top-level management screen, select "Manage Users".

Figure 39: User Management Selection from Top-Level Administration Screen

Select "Add User".

Figure 40: Avaya SES User Administration Screen

Enter the extension of the user to be added as the "Primary Handle". This is the same extension that was configured in **Section 3.1.7**. Enter a password and first/last name of the user, check the "Add Media Server Extension" box, and click "Add".

Figure 41: Avaya SES "Add User" Screen

Enter the Media Server Extension for the User ID 3000115 (the extension of the Avaya SIP telephone). Select the Media Server (refer to **Figure 42**) and drop down box and click "Add" to continue.

Figure 42: Avaya SES Add Media Server Extension Screen

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3.4. Configure NovaAlert

3.4.1. Configuration file NovaAlert.ini

The NovaAlert.ini configuration file is a "flat" ASCII file that can be edited with a text editor. This file is contained in the main installation directory on the NovaAlert server (e.g. C:\Program Files\NovaAlert). The values within this file must be set as shown in **Figure 43**. The values for those items shown in bold may vary, depending on the configuration of external components. The values to be used for these entries are described in the following table.

Parameter	Usage
DefaultCallingParty	This is the default extension to be used for calls made by NovaAlert. A value of "6000000" was used for these tests.
LocalUserName	This is the user name to be used for calls made by NovaAlert. A value of "6000000" was used for these tests.
H323_Gateway	This is the IP address that was the Avaya Communication Manager "procr" entry in the Node-Names form shown in **Figure 7**.
H323_ListenerConfig	This is the IP port at which NovaAlert listens for connections. This must be the same value that is used as the "Far-end Listen Port" in **Figure 12**. The default H.323 signaling port "1720" is used for these tests.

Table 15: Parameters for Telephone Setting File

```
[CallInfo]
CardDriver=3
Interface=9
GewählteNummer=1
AufschaltenAktiv=0
CallingPartyAktiv=1
DefaultCallingParty=6000000
CNIPAktiv=1
DefaultLocalName=NovaAlert
WatchdogDTMF=

[VoIP]
DriverPref=2
LocalUserName=6000000
SilenceDetection=0
MinJitterBuffer=50
MaxJitterBuffer=250
H323_Gateway=192.168.30.100
H323_UseGateKeeper=0
H323_GateKeeperAddress=
H323_GateKeeperZone=
H323_GateKeeperPwd=
H323_UseFastStart=0
H323_UseH245Tunneling=0
H323_ListenerConfig=*:1720
H323_Alias=
```

Figure 43: NovaAlert.ini Configuration File Content

3.4.2. Configure Users

Use the Windows "Start" button to select the program NovaAlert, and select the "User master data" icon from the left frame.
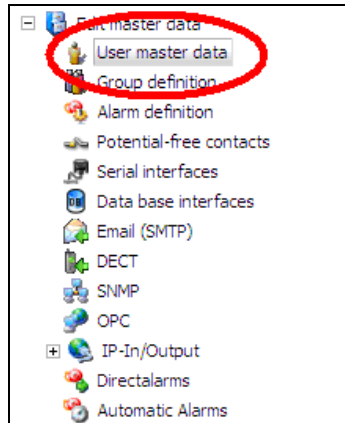
Figure 44: User Master Data Configuration Selection from NovaAlert Top-Level Screen

When the "Person definitions" screen appears, click the "New person" button.
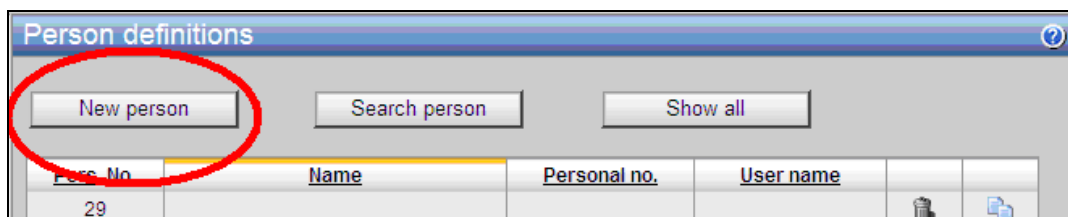
Figure 45: New Person Selection from NovaAlert User Screen

In the "Personal details" tab, enter the name and a PIN code to be assigned to the user. This PIN code will be used by the user when an authorization sequence is required.

Figure 46: NovaAlert Edit Personal Details Screen

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Select the "Telephone numbers" tab, enter the telephone number to be assigned to the user, and click the "Save changes" button.

Figure 47: NovaAlert Edit Personal Telephone Numbers Screen

Repeat this for the other extensions which are used for testing.

The newly configured users are now listed in the "Person definitions" screen.

Figure 48: NovaAlert Personal User Display Screen

3.4.3. Configure Alarms

Use the Windows "Start" button to select the "Alarm definition" icon from the left frame.
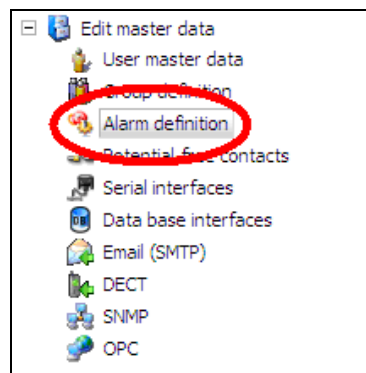
**Figure 49: Alarm Definition Configuration Selection
from NovaAlert Top-Level Screen**

When the "Alarm definition" screen appears, click the "New Alarm" button.
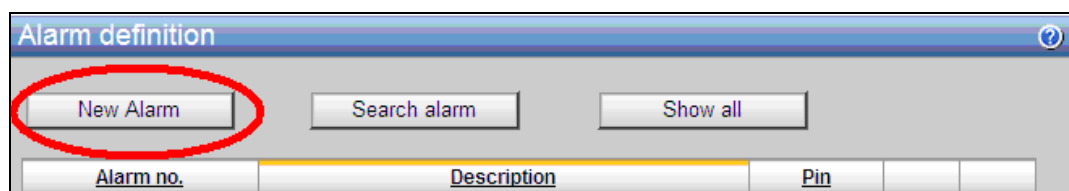
Figure 50: NovaAlert New Alarm Selection Screen

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Configure the "General" alarm definition tab with the information shown in the following table.

Parameter	Usage
Description	Enter a name to be assigned to the alarm.
Pin code for trigger	Enter the PIN code to be used for alarm recipient verification
Priority	Select "Höchste Priorität" (highest priority) from the drop-down box.
Group call	Select "Group Call" from the drop-down box.
Nbr. Of pers. To be contac	Select "Alle" (all) from the drop-down box.
Based on person	Check this box.
Display on reports	Check this box.
Select contact group	Select the "Compile individual alert list" radio button.

Table 16: NovaAlert General Alarm Configuration Parameters

Figure 51: NovaAlert New Alarm Definition Screen

Configure the "Messages" alarm definition tab with the information shown in the following table and click the "Save changes" button.

Parameter	Column	Usage
Phone display	Alarm messages	Enter the text message which is to be shown on the Avaya telephone display. The length of this message should not exceed the maximum calling party name text length which can be displayed by Avaya telephones, which is 15 characters for telephones used for these tests.
	Event text	Select "Yes" from the drop-down box.
	Call type	Select "Dauer" from the drop-down box.
	copy	Select this check box.
Phone TTS		Select the check box which is positioned to the left of the "Alarm messages" text box.
	Alarm messages	Enter the text message which is converted to speech and announced to the party receiving the alarm.
	Event text	Select "Yes" from the drop-down box.

Table 17: NovaAlert Alarm Messages Configuration Parameters

Figure 52: NovaAlert Alarm Message Definition Screen

3.4.3.1 Configure Direct Alarms

The Direct Alarm function maps a specific Called Party Number to an alarm, so that when this number is dialed, the caller records a message (optional) and the alarm is triggered. The recorded message is played on the alarmed stations.

Use the Windows "Start" button to select the "Directalarms" icon from the left frame.
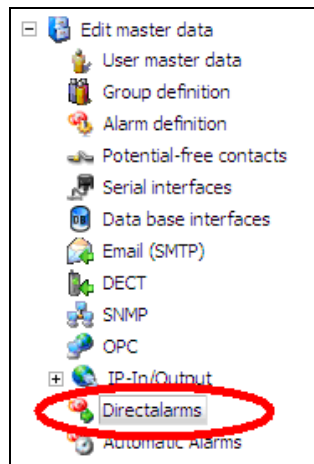

**Figure 53: Direct Alarm Configuration Selection
from NovaAlert Top-Level Screen**

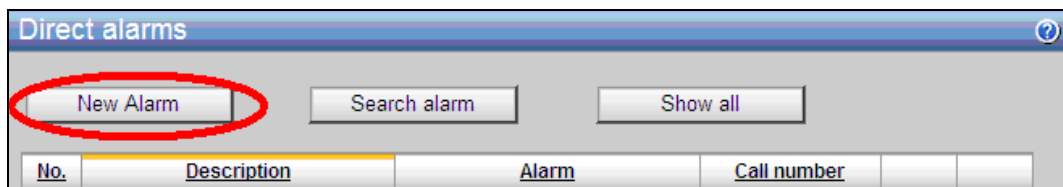When the "Direct alarm" screen appears, click the "New Alarm" button.

Figure 54: NovaAlert New Direct Alarm Selection Screen

Configure the "General" alarm definition tab with the information shown in the following table, and click the "Save changes" button.

Parameter	Usage
Description	Enter a name to be assigned to the alarm.
Initiating call number	Enter the telephone number which is to be used by NovaAlert to make the alarm call.
PIN Code	Enter a PIN code that needs to get input to trigger the alarm. Leave empty if none is required.
Alarm no.	Select one of the previously configured alarms from the drop-down box.
Alarm text	Input an alarm text to display on the alarmed stations (as Calling Party Name). Leave empty for the default alarm text.
Recording	Check this box to allow the recording of an alarm message per call.
Min. recording time	Enter the minimum recording time, in seconds.

Table 18: NovaAlert General Direct Alarm Configuration Parameters

Figure 55: NovaAlert Direct Alarm Configuration Screen

4. Interoperability Compliance Testing

The interoperability compliance tests included feature and serviceability testing.

The feature testing focused on testing scenarios that involve interaction between the NovaLink server and Avaya products, including various sequences involving the following:

- Verification of the correct delivery of alarm voice messages
- Verification of the correct display of alarm text messages
- Verification of the ability of NovaAlert to recognize DTMF tones.
- Verification of the ability of Avaya Telephones to correctly log unanswered alarms.

The serviceability testing focused on verifying that the NovaLink product components can recover from interruption to interface connections which can occur during routine maintenance activities. Each of these units was also tested for recovery from unexpected power interruption.

4.1. General Test Approach

The test method employed can be described as follows:
- The individual features of the NovaAlert were tested by manually generating alarms from the NovaAlert console and manually making calls from Avaya Telephones.
- NovaAlert server robustness was tested by verifying its ability to recover from interruptions to its external connections via the LAN between the NovaAlert and the network.
- Verifying the ability to recover from power interruptions to the NovaAlert server further tested its robustness.

All testing was performed manually. The tests were all functional in nature, and no performance testing was done.

4.2. Test Results

The following was observed during testing:
- It is not possible for NovaAlert to detect that an Avaya 4600 Series H.323 phone is disconnected, as Avaya Communication Manager does not report this status to the caller.

5. Verification Steps

The following steps can be performed to verify the basic operation of the various system components:

- Verify that Avaya Communication Manager and the NovaAlert server can ping each other. The "ping" command can be executed from the NovaAlert server by executing the "cmd" component via the run facility from the Windows "Start" control and entering "ping" followed by the IP address to which the ping message is to be sent. The "ping" command can be executed from Avaya Communication Manager via an SSH login session.

- Verify that the Avaya IP Telephones can call each other.
- From the Avaya Communication Manager SAT terminal, use the "status trunk" command to verify that the ports for the trunk connected to NovaAlert are in the "in-service/idle" state.
- Verify that each of the Avaya Telephones can call the extension allocated to NovaAlert to participate in an incoming conference.
- Verify that it is possible for NovaAlert to call each of the Avaya IP Telephones to participate in an outgoing conference.
- Verify that it is possible to navigate the NovaAlert voice menu from each of the Avaya Telephones by calling the NovaAlert extension, and entering key sequences in response to prompting requests from NovaAlert.
- Verify the ability of Avaya Telephones to correctly log unanswered calls by initiating an unanswered alarm call from NovaAlert to each of the Avaya Telephones, verifying the name and number in the log of the telephone, and subsequently dialing the caller from the telephone log.
- From the Avaya SES Maintenance Web Interface, select the "Status Summary" screen and verify that the server is in "Active" mode, no alarms are being generated, the "Server Hardware" is "okay", and that server "Processes" are "okay".
- Verify that it is possible to place calls between SIP and H.323 Telephones.

6. Support

Technical support from NovaLink can be obtained through the following:

NovaLink GmbH
Businesstower
Zuercherstrasse 310
8500 Frauenfeld
Switzerland
helpdesk@novalink.ch
Phone: +41 52 762 66 77
Fax: +41 52 762 66 99

7. Conclusion

These Application Notes describe the conformance testing of the NovaAlert with Avaya Communication Manager. The various features of the NovaAlert that involve its telephone interface were tested. A detailed description of the configuration required for both the Avaya and the NovaLink equipment is documented within these Application Notes. NovaAlert passed all of the tests performed, which included both functional and robustness tests.

8. Additional References

[1] *Administrator Guide for Avaya Communication Manager*, February 2007, Issue 3, Document Number 03-300509
[2] *Feature Description and Implementation for Avaya Communication Manager*, February 2007, Issue 5, Document Number 555-245-205
[3] *Installing and Administering SIP Enablement Services*, March 2007, Issue 2.1, Document Number 03-600768
[4] *NovaAlert 7.5 manual*, May 2007