Avaya Solution & Interoperability Test Lab

Application Notes for Configuring NovaLink NovaMail with Avaya Communication Manager Using PRI/BRI – Issue 1.1

Abstract

These Application Notes describe the compliance testing of the NovaLink NovaMail voice mail system connected to Avaya Communication Manager via PRI and BRI trunks. These Application Notes contain an extensive description of the configurations for both NovaMail 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.

1. Introduction

The purpose of this document is to describe the compliance testing done with NovaMail 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 NovaMail voice mail server handles calls for NovaMail clients who are unable to answer the telephone. The NovaMail server greets callers with a message which indicates whether the called party is

- busy with another call
- away from the desk or unable to answer the phone
- out of the office

NovaMail takes voice messages from callers and turns on the message waiting lamp on the client's telephone when new messages are received. NovaMail clients can call the NovaMail server, which executes commands corresponding to telephone key input and responds with audio messages, providing clients with a means of retrieving messages and administering their mailbox from their local telephone or remotely. The NovaMail server turns off the client's telephone message waiting lamp after messages have been retrieved by the client.

The NovaMail server includes a web-based administration facility that allows remote administration from a web browser.

Voicemail clients can optionally be assigned a PIN code with which they are required to authenticate themselves.

NovaMail supports multiple interfaces, including the Integrated Services Digital Network (ISDN) Primary Rate (PRI) and Basic Rate (BRI) trunks described in these Application Notes.

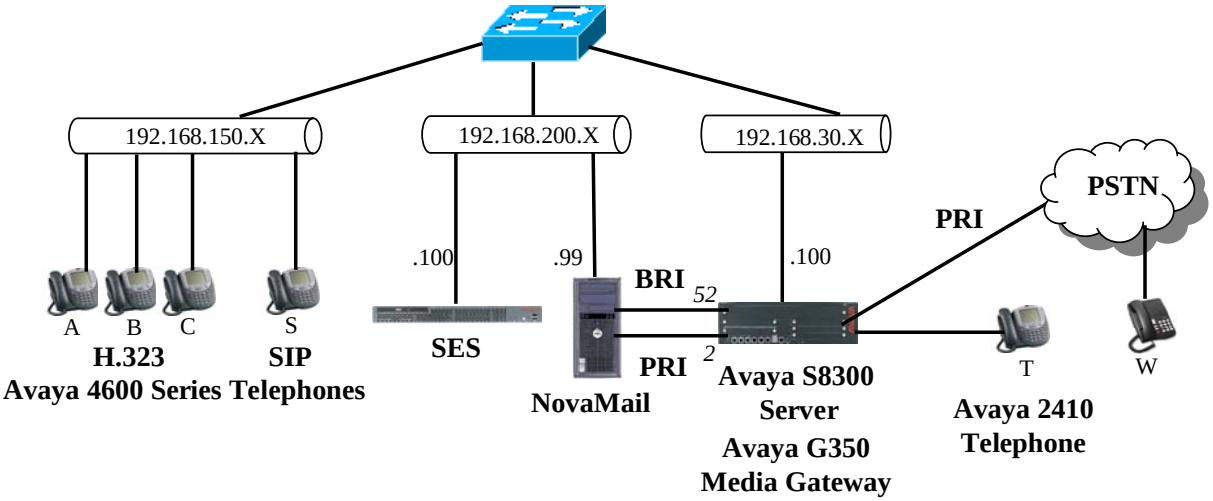

Figure 1: NovaMail Test Configuration

The numbers associated with the BRI (52) and PRI (2) trunks shown in the diagram are trunk numbers. The function of each of the components in **Figure 1** is as follows:

- The NovaMail server provides voice mail coverage for telephones attached to Avaya Communication Manager via either a Basic Rate or Primary Rate ISDN interface between itself and the Avaya Media Gateway.
- Avaya Communication Manager runs on the Avaya S8300 Server and communicates with the NovaMail 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 Communication 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
MM720AP BRI	HW05 FW007
MM712AP DCP	HW05 FW008
MM710AP DS1	HW05 FW018
Avaya 4600 series H.323 stations	2.8
Avaya 4600 series SIP stations	2.2.2
NovaLink NovaMail	7.5
Gerdes Primux 1S2M II / 4S0 II	3.6.4695
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
01000113	W
2000000	NovaMail via PRI
5200000	NovaMail via BRI

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 describe in this section can be summarized as follows:

- Verify that the licenses allocated to the system are sufficient to the support the required configuration.
- Configure the dial plan and call routing required for the NovaMail configuration.
- Configure the BRI and PRI interfaces that are used to connect to the NovaMail 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 NovaMail 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 NovaMail.

```
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 parameter must be set as show in the following table.

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
ISDN-BRI Trunks	y	This is required to allow the allocation of the BRI trunk to be attached to NovaMail.
ISDN-PRI	y	This is required to allow the allocation of the PRI trunk to be attached to NovaMail.

Table 3: System-Parameters Customers-Options Parameters, 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 NovaMail.

```
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. Change system-parameters features

Enter the **change system-parameters features** command and enter an unused extension which is within the dial plan for the "QSIG/ETSI TSC Extension" parameter on page 8. Set the value for the "MWI – Number of Digits Per Voice Mail Subscriber" parameter to the number of digits in the local dial plan.

```
display system-parameters features                                Page   8 of  17
                        FEATURE-RELATED SYSTEM PARAMETERS

ISDN PARAMETERS
                                                          PARAMETERS FOR CREATING
 Send Non-ISDN Trunk Group Name as Connected Name? n      QSIG SELECTION NUMBERS
 Display Connected Name/Number for ISDN DCS Calls? n        Network Level: 0
       Send ISDN Trunk Group Name on Tandem Calls? n         Level 2 Code:
                                                             Level 1 Code:

                          QSIG/ETSI TSC Extension: 390-0000
 MWI - Number of Digits Per Voice Mail Subscriber: 7

                               National CPN Prefix:
                         International CPN Prefix:
                        Pass Prefixed CPN to ASAI? n
    Unknown Numbers Considered Internal for AUDIX? n
             USNI Calling Name for Outgoing Calls? n
               Path Replacement with Measurements? y
                  QSIG Path Replacement Extension: 390-0001
            Path Replace While in Queue/Vectoring? n
```

3.1.3. Configure Node Names

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

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

Figure 7: Node-Names IP Form

3.1.4. Configure PRI Interface to the NovaMail Server

Use the **add ds1 <media module hardware address>** command to configure the DS1 interface card to serve as a Primary Rate ISDN interface. Assign those values for this command as shown in the following table.

Parameter	Usage
Bit Rate	Assign the bit rate to “2.048”, as required to connect to the NovaMail E1 interface card.
Line Coding	Assign the line coding to "hdb3", as required to connect to the NovaMail E1 interface card.
Name	Assign a name to be used to identify the card.
Signaling Mode	Assign the signaling mode to “isdn-pri”.
Connect	Specify the connection is to a “pbx”.
Interface	Specify that the Avaya G350 Media Gateway is to serve as the “peer-master”.
Peer Protocol	Specify the “QSIG” protocol is to be used.
Interface Companding	Specify “a-law” speech encoding is to be used.
CRC?	Set this field to “y” to specify a cyclic-redundancy-check sequence is to be sent with data frames to verify correct transmission.
Idle Code	Specify that an idle sequence of “11111111” is to be sent on the interface when no data is being transmitted.

Table 4: DS1 Parameters for PRI Interface

```
add ds1 1v5                                                     Page   1 of   1
                                DS1 CIRCUIT PACK

            Location: 001V5                            Name: QSIG-PRI
            Bit Rate: 2.048                     Line Coding: hdb3

      Signaling Mode: isdn-pri
             Connect: pbx                          Interface: peer-master
   TN-C7 Long Timers? n                        Peer Protocol: Q-SIG
Interworking Message: PROGress                          Side: a
Interface Companding: alaw                               CRC? y
           Idle Code: 11111111            Channel Numbering: sequential
                              DCP/Analog Bearer Capability: 3.1kHz

                                             T303 Timer(sec): 4

      Slip Detection? n                  Near-end CSU Type: other
```

Figure 8: Ds1 Form for PRI Interface

Use the **add trunk-group** command to configure the Trunk Group to the NovaMail Server. Assign values for this command as shown in the following table.

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.
Carrier Medium	Specify a Carrier Medium of “PRI/BRI”, as PRI will be used for this trunk.
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.
Supplementary Service Protocol	Specify a Supplementary Service Protocol of “b” for QSIG.
Digit Handling	Specify “overlap/overlap” to allow overlap sending of dialed digits.
Format (page 2)	Specify “unk-unk” to use unknown dialing plan for calls in both directions.
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 Connected Number	Specify “y” so that the number of the connected party is sent to the caller.
Group Member Assignments	Assign the interface ports on the MM710AP to the trunk group members. Note that port 16 is used for the D channel, which must be assigned to the signaling group associated with this trunk. After signaling group 2 is created, as show in Figure 14, use the “change trunk-group” command to assign each of these members to that signaling group.

Table 5: Trunk-Group Parameters for PRI Interface

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

Group Number: 2                     Group Type: isdn          CDR Reports: y
  Group Name: NOVA S2M QSIG               COR: 1        TN: 1        TAC: *02
   Direction: two-way        Outgoing Display? n         Carrier Medium: PRI/BRI
 Dial Access? y              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
```

Figure 9: Trunk-Group Form for PRI Interface, Page 1

```
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: b     Digit Handling (in/out): overlap/overlap
       Digit Treatment:                                          Digits:
            Trunk Hunt: ascend
                                                     Digital Loss Group: 13
Incoming Calling Number - Delete:     Insert:                 Format: unk-unk
              Bit Rate: 1200         Synchronization: async    Duplex: full
 Disconnect Supervision - In? y  Out? y
 Answer Supervision Timeout: 0
          Administer Timers? n
```

Figure 10: Trunk-Group Form for PRI Interface, Page 2

```
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              Hop Dgt? n     Send EMU Visitor CPN? n
   Suppress # Outpulsing? n    Format: unkknown
 Outgoing Channel ID Encoding: preferred     UUI IE Treatment: service-provider

                                                   Replace Restricted Numbers? n
                                                  Replace Unavailable Numbers? n
                                                        Send Connected Number: y
                                                    Hold/Unhold Notifications? y
             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
 Show ANSWERED BY on Display? y
                              Network (Japan) Needs Connect Before Disconnect? n
```

Figure 11: Trunk-Group Form for PRI Interface, Page 3

```
add trunk-group 2                                                Page   5 of  21
                                 TRUNK GROUP
                                      Administered Members (min/max):   1/30
GROUP MEMBER ASSIGNMENTS                  Total Administered Members:  29

       Port    Code Sfx Name        Night           Sig Grp
  1: 001V501  MM710                                  2
  2: 001V502  MM710                                  2
  3: 001V503  MM710                                  2
  4: 001V504  MM710                                  2
  5: 001V505  MM710                                  2
  6: 001V506  MM710                                  2
  7: 001V507  MM710                                  2
  8: 001V508  MM710                                  2
  9: 001V509  MM710                                  2
 10: 001V510  MM710                                  2
 11: 001V511  MM710                                  2
 12: 001V512  MM710                                  2
 13: 001V513  MM710                                  2
 14: 001V514  MM710                                  2
 15: 001V515  MM710                                  2
```

Figure 12: Trunk-Group Form for PRI Interface, Page 5

```
add trunk-group 2                                                Page   6 of  21
                                 TRUNK GROUP
                                      Administered Members (min/max):   1/30
GROUP MEMBER ASSIGNMENTS                  Total Administered Members:  30

       Port    Code Sfx Name        Night           Sig Grp
 16: 001V517  MM710                                  2
 17: 001V518  MM710                                  2
 18: 001V519  MM710                                  2
 19: 001V520  MM710                                  2
 20: 001V521  MM710                                  2
 21: 001V522  MM710                                  2
 22: 001V523  MM710                                  2
 23: 001V524  MM710                                  2
 24: 001V525  MM710                                  2
 25: 001V526  MM710                                  2
 26: 001V527  MM710                                  2
 27: 001V528  MM710                                  2
 28: 001V529  MM710                                  2
 29: 001V530  MM710                                  2
 30: 001V531  MM710                                  2
```

Figure 13: Trunk-Troup Form for PRI Interface, Page 6

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

Parameter	Usage
Group Type	Specify “isdn-pri” for ISDN primary rate.
D-Channel	Assign port 16 of the DS1 interface as the D channel.
Trunk Group for Channel Selection	Specify “2” as the Trunk Group to be used for channel selection.
TSC Supplementary Service Protocol	Specify “b” to designate use of the QSIG protocol.
Max number of NCA TSC	Specify “4” to allow NovaMail to control the message waiting lamp of Avaya Telephones.

Table 6: Signaling-Group Parameters for PRI Interface

```
add signaling-group 2                                          Page   1 of   1
                                SIGNALING GROUP

 Group Number: 2              Group Type: isdn-pri
                    Associated Signaling? y          Max number of NCA TSC: 4
                       Primary D-Channel: 001V516     Max number of CA TSC: 0
                                                    Trunk Group for NCA TSC:
       Trunk Group for Channel Selection: 2
      TSC Supplementary Service Protocol: b
```

Figure 14: Signaling-Group Form for PRI Interface

3.1.5. Configure Dial Plan and Call Routing

Use the **change dialplan analysis** command to specify that dialed strings which begin with “2”or “3” are extensions. The extensions local to this PBX are all seven digit numbers which begin with a “3”. The extensions assigned to the NovaMail are all seven digit numbers which begin with “2”. The dial string “*02” is used as a trunk access code to access the NovaMail 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
        2          7   ext
        3          7   ext
        52         7   ext
        *02        3   dac
        *52        3   dac
        *83        3   dac
```

Figure 15: Dialplan Analysis Form

Use the **change uniform-dialplan** command to designate extensions which begin with “2” or “52” to use Automatic Alternate Routing (AAR).

```
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
  2               7   0                  aar  n
  52              7   0                  aar  n
```

Figure 16: Uniform-Dialplan Form

Use the **change aar analysis** command to select routing pattern 2 for numbers which have the leading dialed string “2”, as specified in the uniform dial plan shown in **Figure 16**.

```
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
    2                     7    7     2        aar          n
    52                    7    7     52       aar          n
```

Figure 17: AAR Analysis Form

Use the **change route-pattern** command to route numbers using routing pattern 2 via trunk group 2.

```
change route-pattern 2                                           Page   1 of   3
                    Pattern Number: 2   Pattern Name: NovaMail PRI
                              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
 5: y y y y y n  n            rest                                        none
 6: y y y y y n  n            rest                                        none
```

Figure 18: Route-Pattern 2 Form

Use the **change route-pattern** command to route numbers for routing pattern 52 via trunk 52, as shown in **Figure 19.**

```
change route-pattern 52                                          Page   1 of   3
                    Pattern Number: 52  Pattern Name: NovaMail BRI
                                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: 52    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 19: Route-Pattern Form for BRI Interface

3.1.6. Configure BRI Interface to the NovaMail Server

Use the **add bri-trunk-board** command to configure port 1 of the MM720 interface card to serve as a basic rate interface. Assign those values for this command as shown in the following table.

Parameter	Usage
Termination Type	Set this field to “NT”.
Interface	Set this field to “peer-master”.
Max NCA TSC	Set this field to 4 to provide control of the message waiting light from NovaMail.

Table 7: Parameters for BRI-Trunk-Board

```
add bri-trunk-board 1v2                                          Page   1 of   2
                          ISDN-BRI TRUNK CIRCUIT PACK

               Location: 001V2                             Name: S0 TRUNKS
   Interface Companding: a-law    DCP/Analog Bearer Capability: 3.1kHz
  T3 Timer Length (sec): 15                  Termination Type: NT
 Port  Interface   Side  Cntry/Peer  TEI                         Layer 1 Detect
                          Protocol                               Stable? Slips?
   1: peer-master   a       QSIG     0                              y      n
   2:                                0                              y      n
   3:                                0                              y      n
   4:                                0                              y      n
   5:                                0                              y      n
   6:                                0                              y      n
   7:                                0                              y      n
   8:                                0                              y      n
```

Figure 20: BRI-Trunk-Board Form for BRI Interface, Page 1

```
add bri-trunk-board 1v2                                       Page   2 of   2
                          ISDN-BRI TRUNK CIRCUIT PACK

Port  Interwork  XID   Endpt      SPID       Endpt      SPID      Endpt    Max
       Message  Test?  Init?                  ID                    ID    NCA TSC
  1:  PROGress    n      n                                                  4
  2:  PROGress    n      n                                                  0
  3:  PROGress    n      n                                                  0
  4:  PROGress    n      n                                                  0
  5:  PROGress    n      n                                                  0
  6:  PROGress    n      n                                                  0
  7:  PROGress    n      n                                                  0
  8:  PROGress    n      n                                                  0

  Port Directory    Directory            Port Directory    Directory
         Number       Number                   Number       Number
    1:                                     5:
    2:                                     6:
    3:                                     7:
    4:                                     8:
```

Figure 21: BRI-Trunk-Board Form for BRI Interface, Page 2

Use the **add trunk-group** command to configure the MM720AP interface card to serve as a basic rate interface. Assign values for this command as shown in the following table.

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. This dial string must be contained in the dial plan specified in **Figure 15**.
Carrier Medium	Specify a Carrier Medium of “PRI/BRI”, as BRI will be used for this trunk.
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.
Supplementary Service Protocol	Specify a Supplementary Service Protocol of “b” for QSIG.
Digit Handling (in/out)	Specify “overlap/overlap” to allow overlap sending of dialed digits.
Send Name	Specify “y” so that the name of the caller is sent for outgoing calls.
Send Caller Number	Specify “y” so that the number of the caller is sent for outgoing calls.
Format	Specify “unknown” to use unknown dialing plan for calls in both directions.
Send Connected Number	Specify “y” so that the number of the connected party is sent to the caller.
QSIG Value-Added	Specify “y” to allow NovaMail to control the message waiting lamp of the Avaya Telephones.
Group Member Assignments	Assign the interface ports on the MM720AP to the trunk group members.

Table 8: Parameters BRI Trunk Group

```
add trunk-group 52                                                Page   1 of  21
                                TRUNK GROUP

Group Number: 52                    Group Type: isdn          CDR Reports: y
  Group Name: BRI QSIG                     COR: 1        TN: 1        TAC: *52
   Direction: two-way        Outgoing Display? n         Carrier Medium: PRI/BRI
 Dial Access? y              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
```

Figure 22: Trunk-Group Form, Page 1

```
add trunk-group 52                                          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: end-on-request
  Supplementary Service Protocol: b     Digit Handling (in/out): overlap/overlap
       Digit Treatment:                                      Digits:
            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
```

Figure 23: Trunk-Group Form, Page 2

```
add trunk-group 52                                          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              Hop Dgt? n     Send EMU Visitor CPN? n
   Suppress # Outpulsing? n    Format: unknown
 Outgoing Channel ID Encoding: preferred     UUI IE Treatment: service-provider

           Decimal Point: period                 Replace Restricted Numbers? n
                                                Replace Unavailable Numbers? n
                                                      Send 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                         Ds1 Echo Cancellation? n

    Apply Local Ringback? n
 Show ANSWERED BY on Display? y
                              Network (Japan) Needs Connect Before Disconnect? n
```

Figure 24: Trunk-Group Form, Page 3

```
add trunk-group 52                                          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 25: Trunk-Group Form, Page 4

```
add trunk-group 52                                          Page   5 of  21
                                 TRUNK GROUP
                                      Administered Members (min/max):   1/2
GROUP MEMBER ASSIGNMENTS                  Total Administered Members:   2

       Port    Code Sfx Name        Night           Sig Grp
  1: 001V201  MM720
  2: 001V217  MM720
  3:
  4:
  5:
  6:
  7:
  8:
  9:
 10:
 11:
 12:
 13:
 14:
 15:
```

Figure 26: Trunk-Group Form for BRI Interface, Page 5

3.1.7. 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 "3" for trunks "2" and "52" 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  3             2                         7           Maximum Entries: 240
 7  3             52                        7
```

Figure 27: Public-Unknown-Numbering Form

3.1.8. 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 phone, 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 NovaMail. This is not required for SIP telephones.

Table 9: 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 28: 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 29: Add Station Form, Page 4

3.1.9. 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 phone.
Application	Enter “OPS”.
Phone Number	Enter the phone number assigned to the SIP phone.
Trunk Selection	Enter the number assigned to the SIP trunk later in **Section 3.1.9**.
Call Limit	Enter “3” to allow the SIP phone to do call transfers.

Table 10: 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 30: 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 31: Off-PBX-Telephone Form, page 2

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

Parameter	Usage
Call Forwarding All Activation 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 11: Parameters for Off-PBX-Telephone Feature-Name-Extension

```
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:        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 32: 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 33: Feature Access Codes 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 phones, as shown in **Table 17**.

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 12: 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 34: 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 35: 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** 48.
Name	Enter a descriptive name.

Table 13: 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 36: 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 37: 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 Avaya SES in **Figure 7**.

Table 14: 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 38: Avaya SES SIP 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.
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 38**.
Number of Members	Specify sufficient number of members to support the maximum simultaneous connections required.

Table 15: 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 39: 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 phones 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 16: Parameters for Telephone Setting File

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

Figure 40: 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 12**.

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 17: Speed Dial Entry Assignments for Avaya SIP Telephones

3.3. Configure Avaya SIP Enablement Services

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".

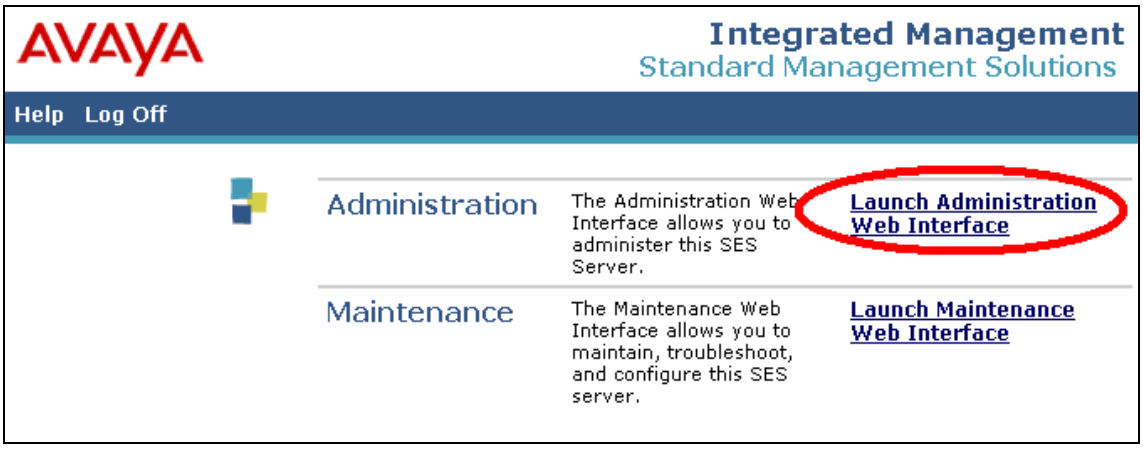

Figure 41: Avaya SES Initial Greeting Screen

From the top-level management screen, click “Manage Hosts” followed by “Add Host”.

Figure 42: 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.

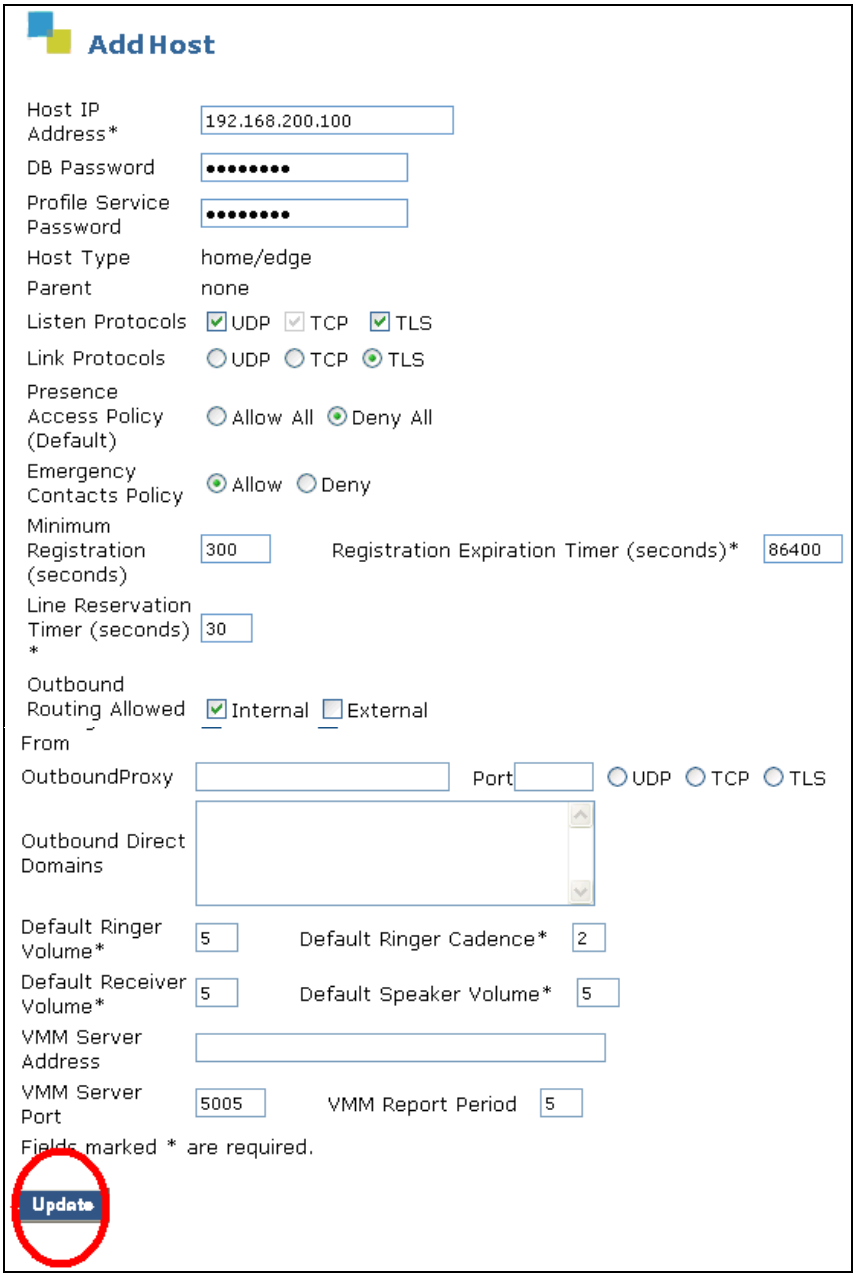

Figure 43: Avaya SES "Add Host" Screen

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

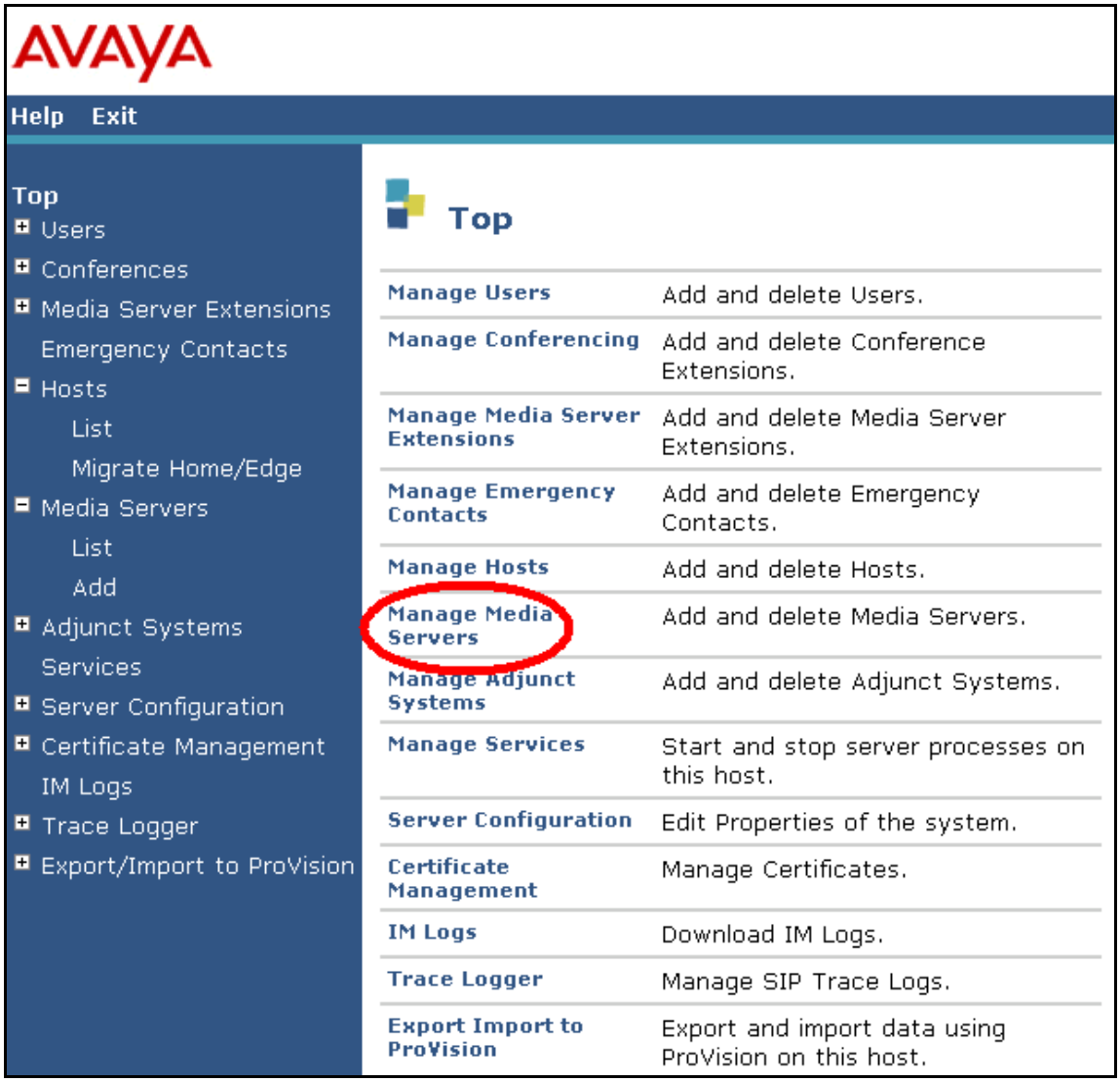

Figure 44: Media Server Management Selection from Top-Level Administration Screen

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.

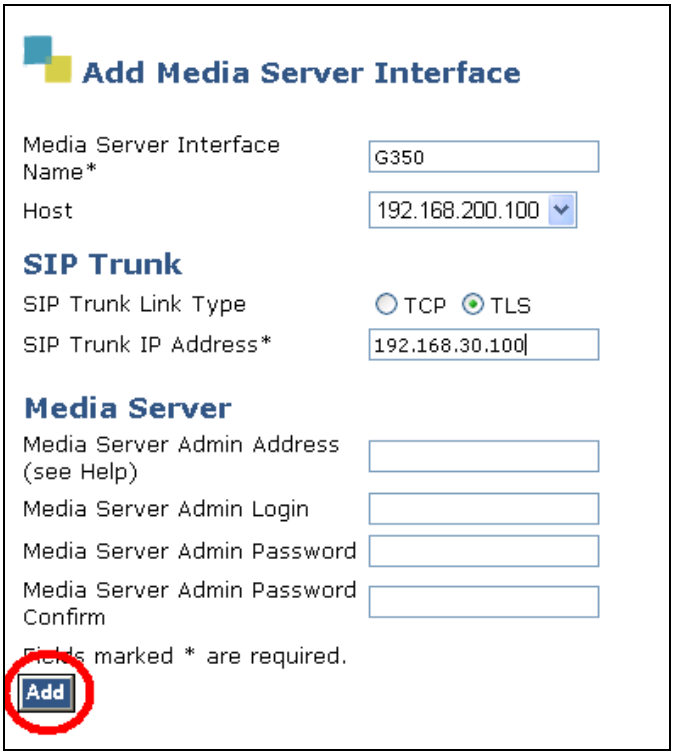

Figure 45: Avaya SES Add Media Server Interface Screen

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

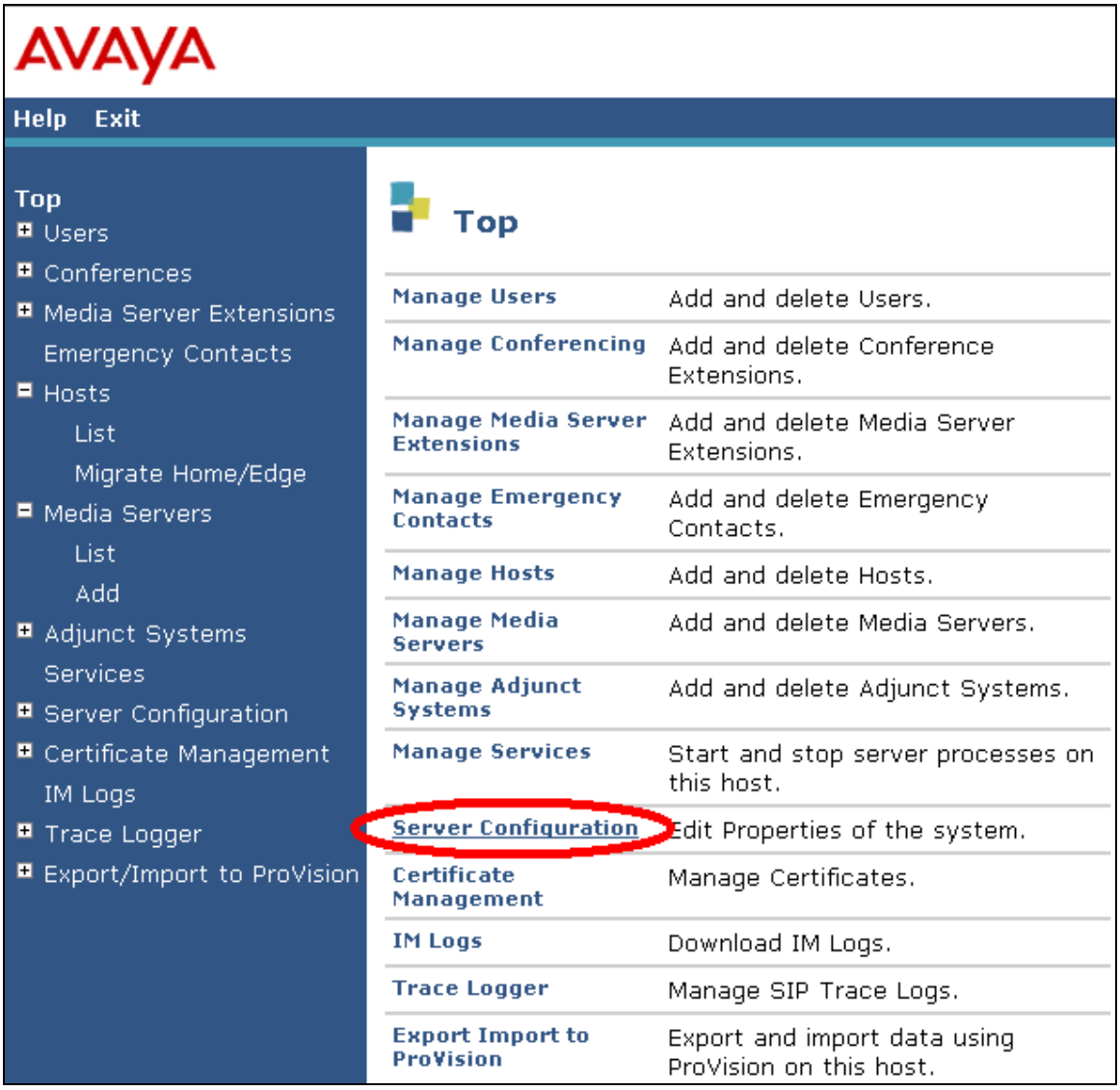

Figure 46: Server Configuration Selection from Top-Level Administration Screen

From the Server Configuration screen, select “System Properties”.

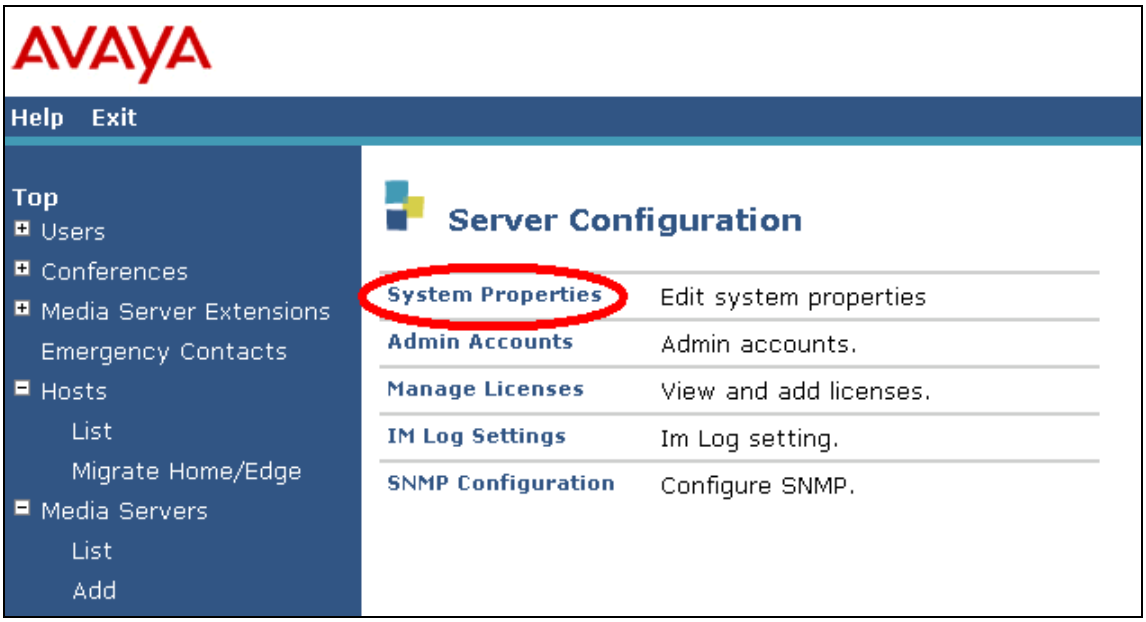

Figure 47: System Properties Selection from Server Configuration Screen

Enter the name to be assigned to the "SIP Domain". This must be the same name as is assigned in **Figure 36** and **Figure 38**. Select the "Update" button.

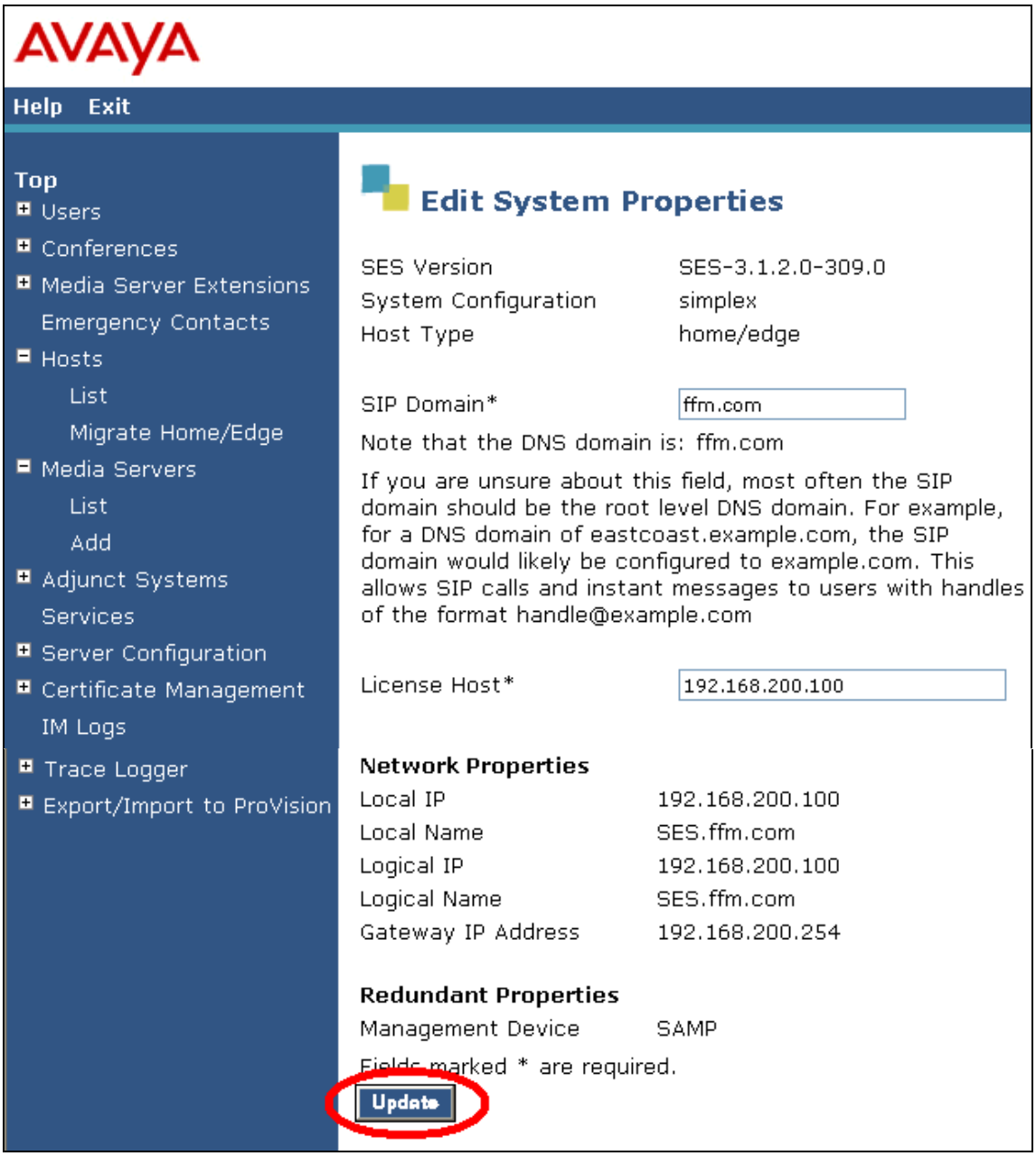

Figure 48: Avaya SES Edit System Properties Screen

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

Figure 49: User Management Selection from Top-Level Administration Screen

Select “Add User”.

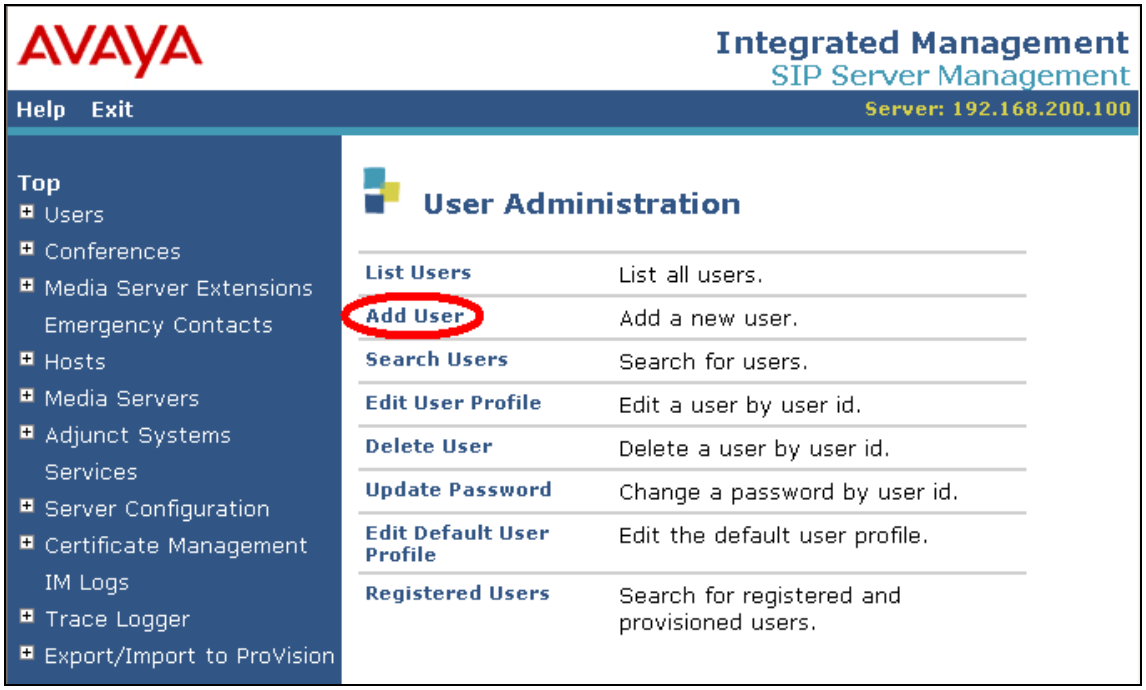

Figure 50: Avaya SES User Administration Screen

Enter the extension of the user to be added as the "Primary Handle". This is the same extension that was configured in **Section 3.1.9**. Enter a password and first/last name of the user, check the "Add Media Server Extension" box, and click "Add".

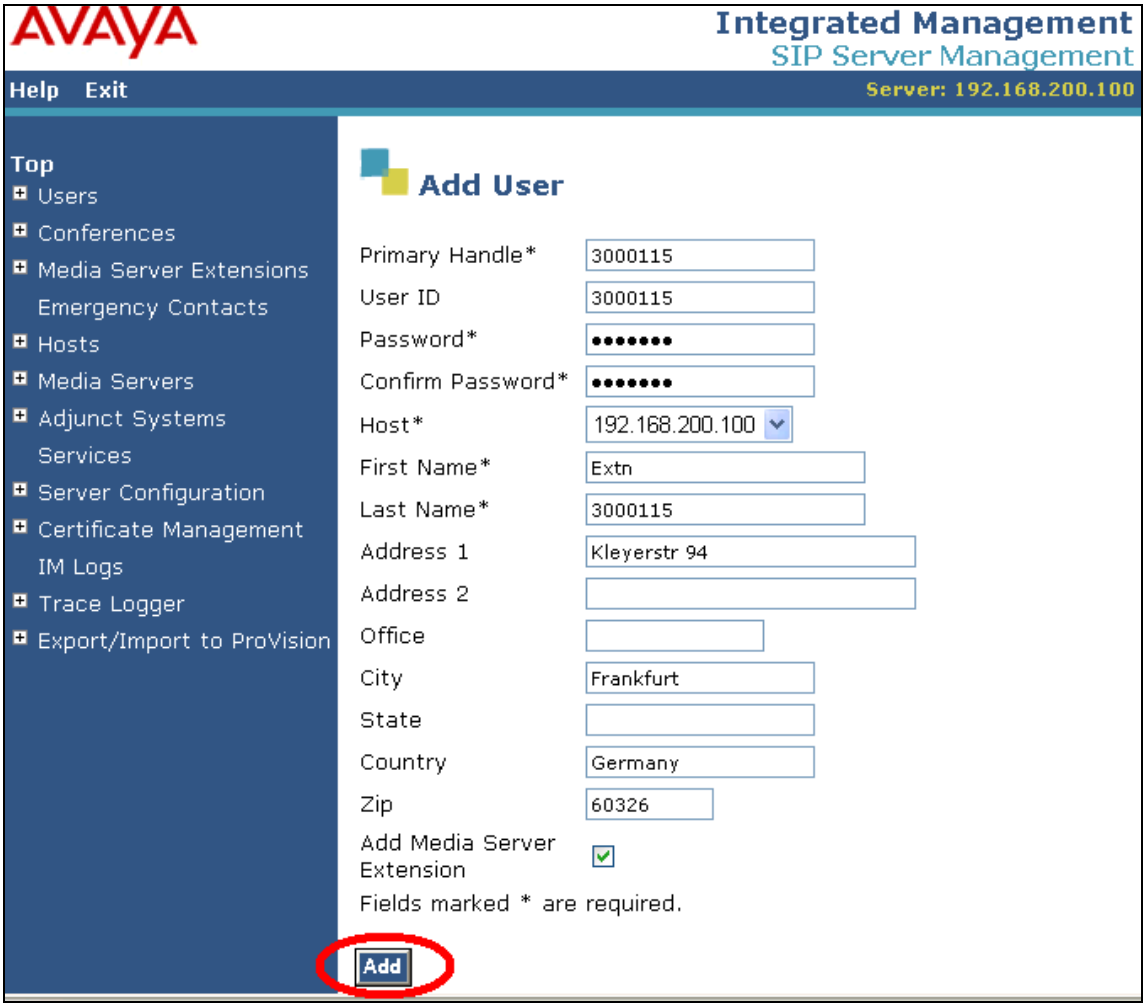

Figure 51: Avaya SES "Add User" Screen

Enter the Media Server Extension for the User ID 3000115 and enter the extension of the SIP telephone. Select the Media Server from and drop down box and click “Add” to continue.

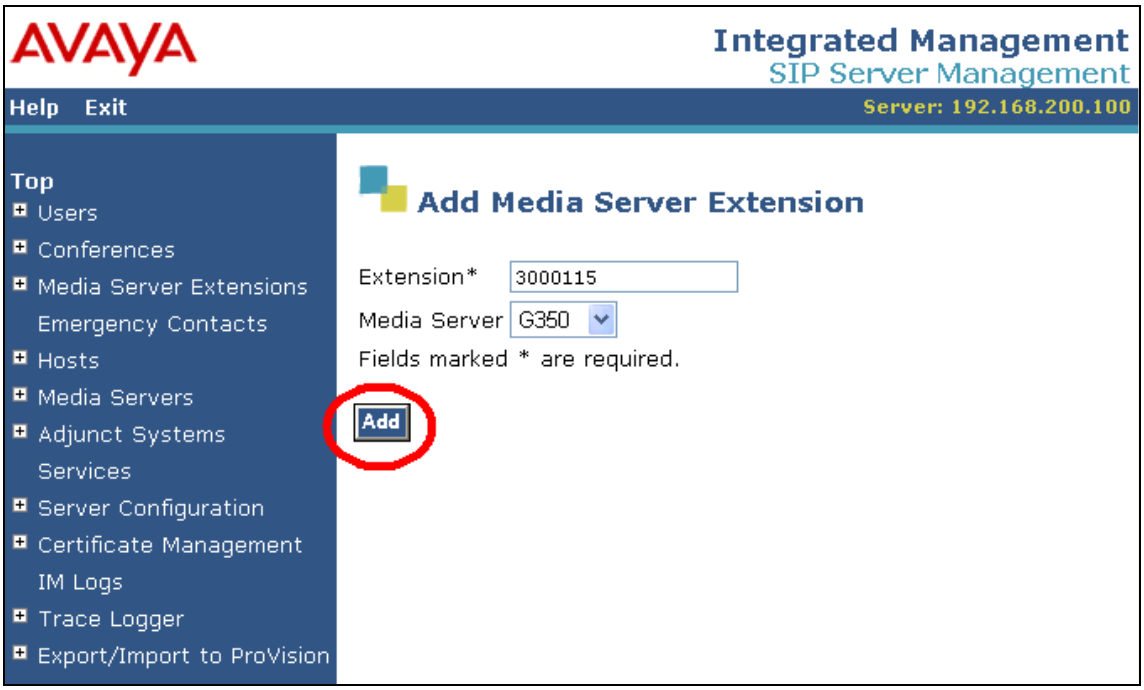

Figure 52: Avaya SES Add Media Server Extension Screen

3.4. Configure NovaMail

3.4.1. Configuration file NovaMail.ini

The NovaMail.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 NovaMail server (e.g. C:\Program Files\NovaMail).

Parameter	Usage
CardDriver	Set this value to “2” for the ISDN CAPI interface cards used by the NovaMail server.
Interface	Set this value to “2” for PRI usage or to “3” for BRI usage.
SigTyp	Set this value to “32” for ISO QSIG operation.
CallingParty	Set this value to the extension to be used by NovaMail for outgoing calls. Use “2000000” for PRI or “5200000” for BRI.
ChannelIDLength	Set this value to “1”.

Table 18: NovaMail.ini File Configuration Parameters

```
 [CallInfo]
CardDriver=2
Interface=3
SigTyp=32
CallingParty=5200000
ChannelIDLength=1
```

Figure 53: NovaMail.ini Configuration File Content

3.4.2. Configure Interface to Avaya Communication Manager

Use the Windows “Start” button to select the program Primux ISDN / CAPI Configuration. If the BRI interface is used, the “PrimuX 450 II” icon should be selected. If the PRI interface is used, the “PrimuX 1S2M II” icon should be selected.

3.4.2.1 Configure PRI Interface

Set the parameters in the “General” tab as show in the following table.

Parameter	Usage
Switch Type	Specify “PBX, Q.SIG (experimental)”
Interface Type	Specify “Point-to-Point”
Inbound calls	Specify “No Phone Numbers”

Table 19: ISDN PRI Interface General Configuration Parameters

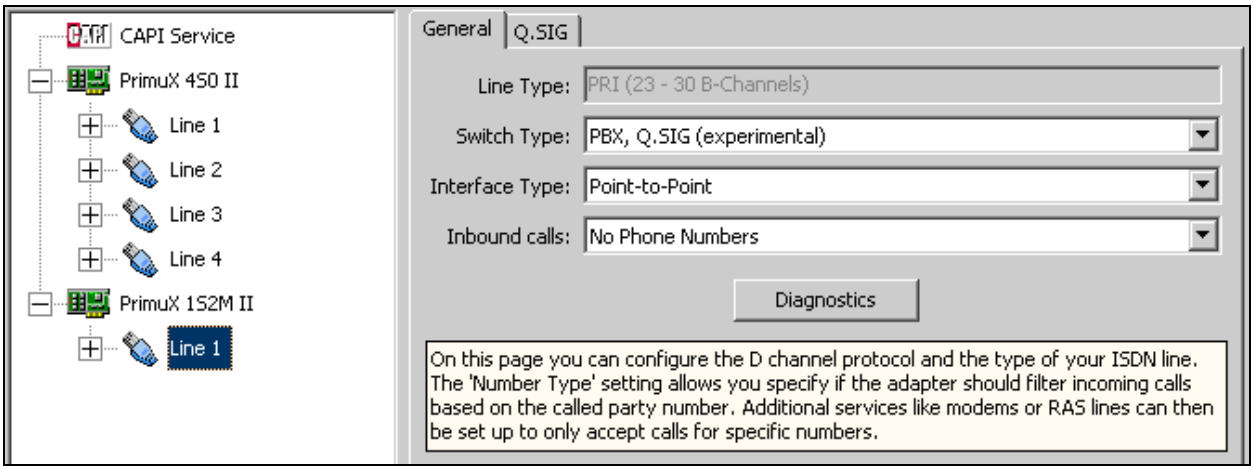

Figure 54: ISDN PRI Interface General Configuration Settings

Configure the parameters in the "Q.SIG" tab as shown in the following table.

Parameter	Usage
PBX type	Specify "Universal"
Q.SIG Standard	Specify "Automatic"
Length of CR Value	Specify "Default"
Length of Channel Info IE	Specify "Continuous Number"
Call Transfer Mode	Specify "Automatic"
Disconnect on PROGRESS	Specify "Off"
Process Interpretation APDU	Specify "Off"

Table 20: ISDN PRI Interface Q.SIG Configuration Parameters

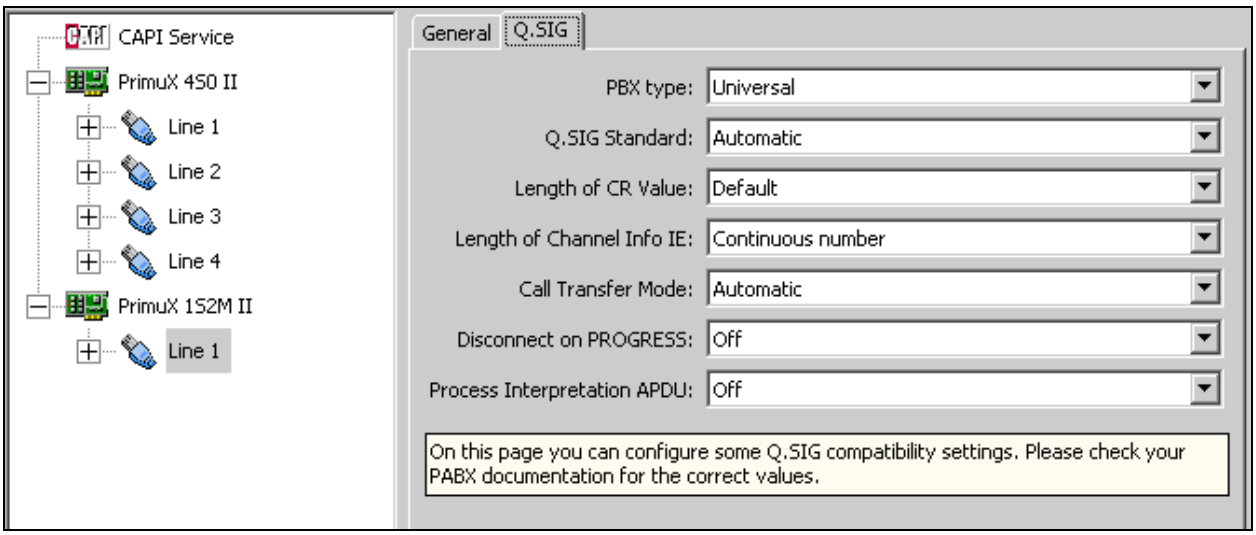

Figure 55: ISDN PRI Interface Q.SIG Configuration Settings

3.4.2.2 Configure BRI Interface

Set the parameters in the “General” tab as show in the following table.

Parameter	Usage
Switch Type	Specify “PBX, Q.SIG (experimental)”
Interface Type	Specify “Point-to-Point“
Inbound calls	Specify “No Phone Numbers”

Table 21: ISDN BRI Interface General Configuration Parameters

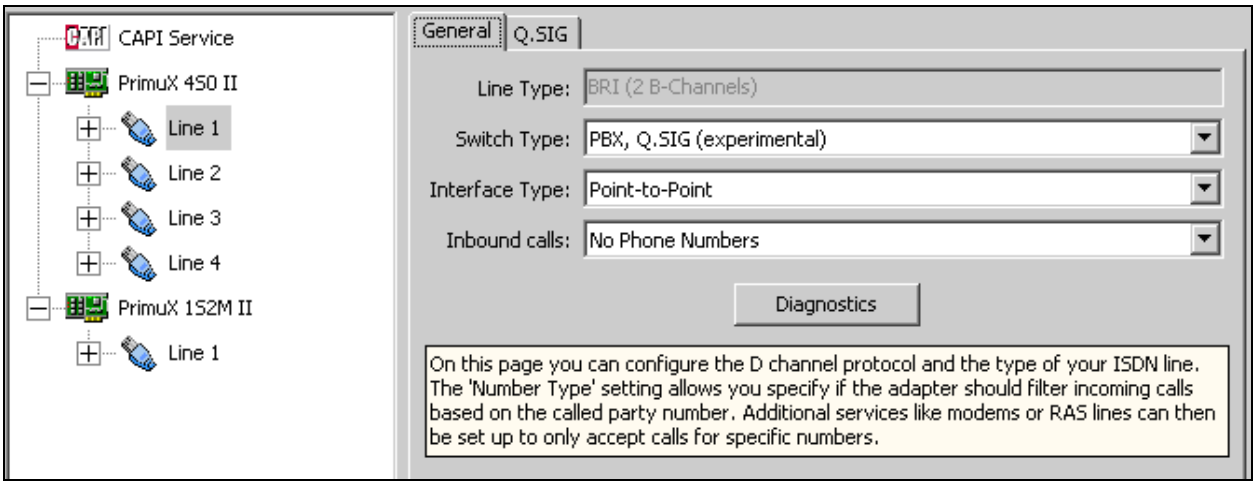

Figure 56: ISDN BRI Interface General Configuration Settings

Configure the parameters in the Q.SIG tab as shown in the following table.

Parameter	Usage
PBX type	Specify “Universal”
Q.SIG Standard	Specify “Automatic”
Length of CR Value	Specify “Default”
Length of Channel Info IE	Specify “Continuous Number”
Call transfer mode	Specify “Automatic”
Disconnect on PROGRESS	Specify “Off”
Process Interpretation APDU	Specify “Off”

Table 22: ISDN BRI Interface Q.SIG Configuration Parameters

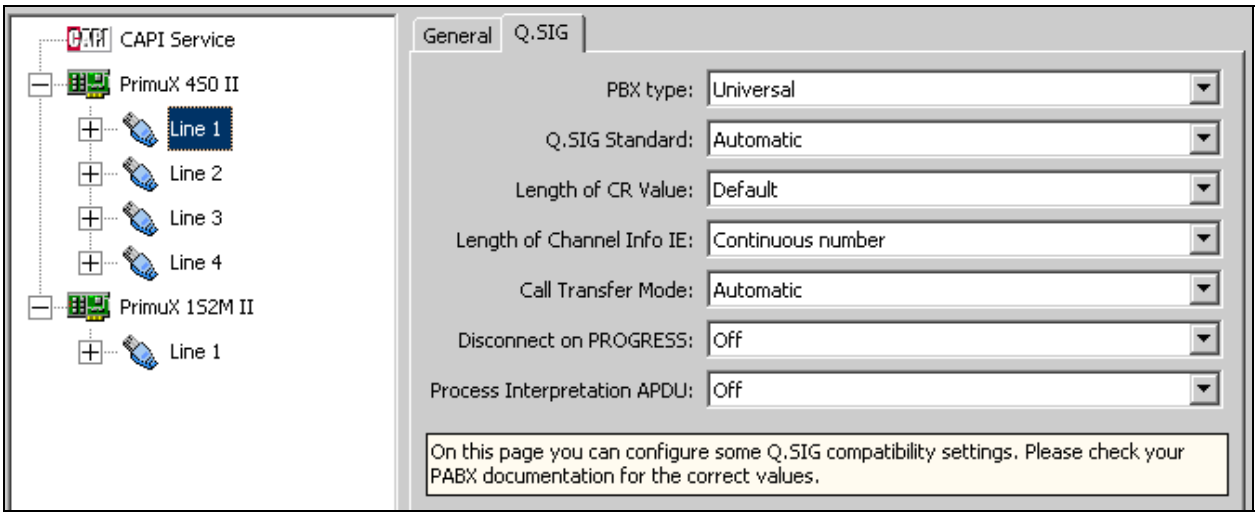

Figure 57: ISDN BRI Interface Q.SIG Configuration Settings

3.4.3. Configure NovaMail Application

Use the Windows “Start” button to select the program “NovaMail Webclient”. After entering the user name and password, the NovaMail startup screen is displayed. Click the “Participant” icon to show the configured NovaMail participants.

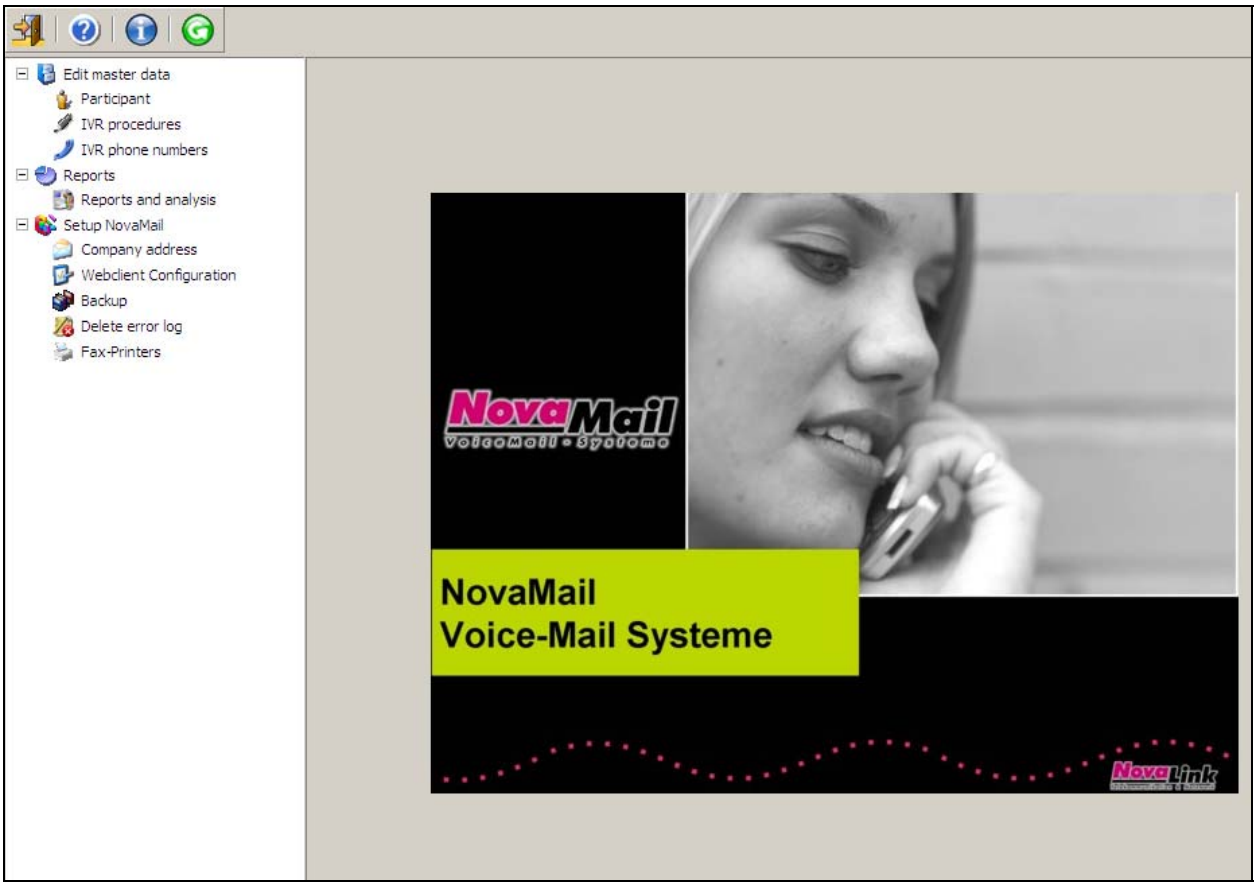

Figure 58: NovaMail Startup Screen

3.4.3.1 Configure Users

Assuming that no other users have been defined, the user designated as administrator is displayed. The configuration of the administrator is beyond the scope of these Application Notes. See reference [4] for additional information. Click the "New participant" icon to add a NovaMail participant. A Participant should be configured for each of the telephone extensions shown in **Table 2**.

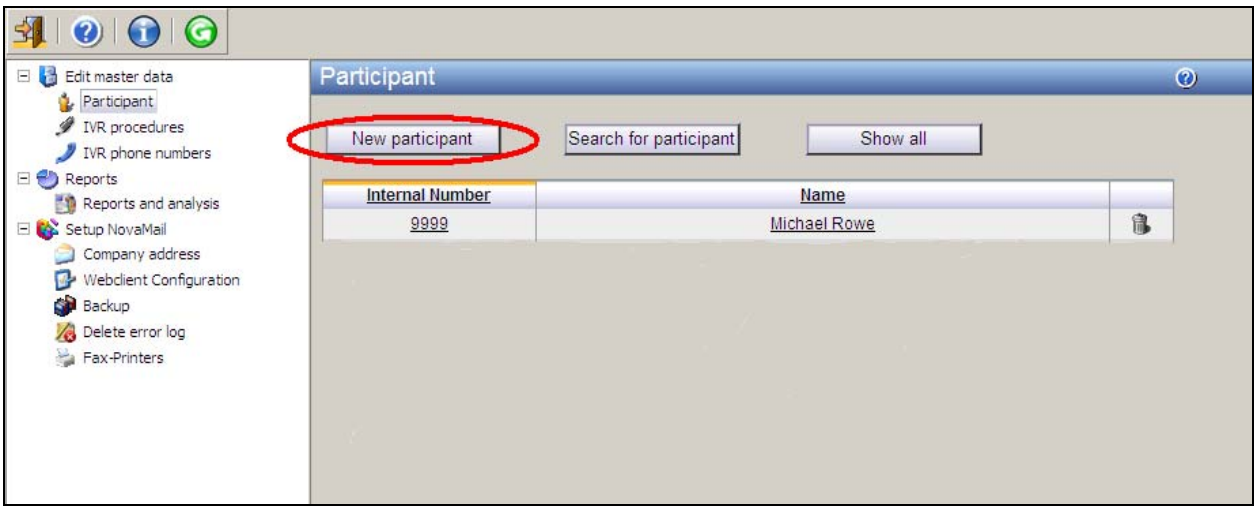

Figure 59: NovaMail Participant List Screen

Enter the values shown in the table below into the NovaMail Participants Screen shown in **Figure 60** and click the "Adopt data" button upon completion.

Parameter	Usage
View	Select "Expert" from the drop-down box.
Internal phone number	Enter the user's extension.
Surname / First name	Enter the user's first name followed by last name.
Pin code	Enter the numeric code that the user can use for authorization.
Language	Select the language spoken by the user
Deputy's phone number	Enter the extension to which calls are to be diverted when the user is absent or unable to answer incoming calls.

Table 23: NovaMail Conference Common Configuration Parameters

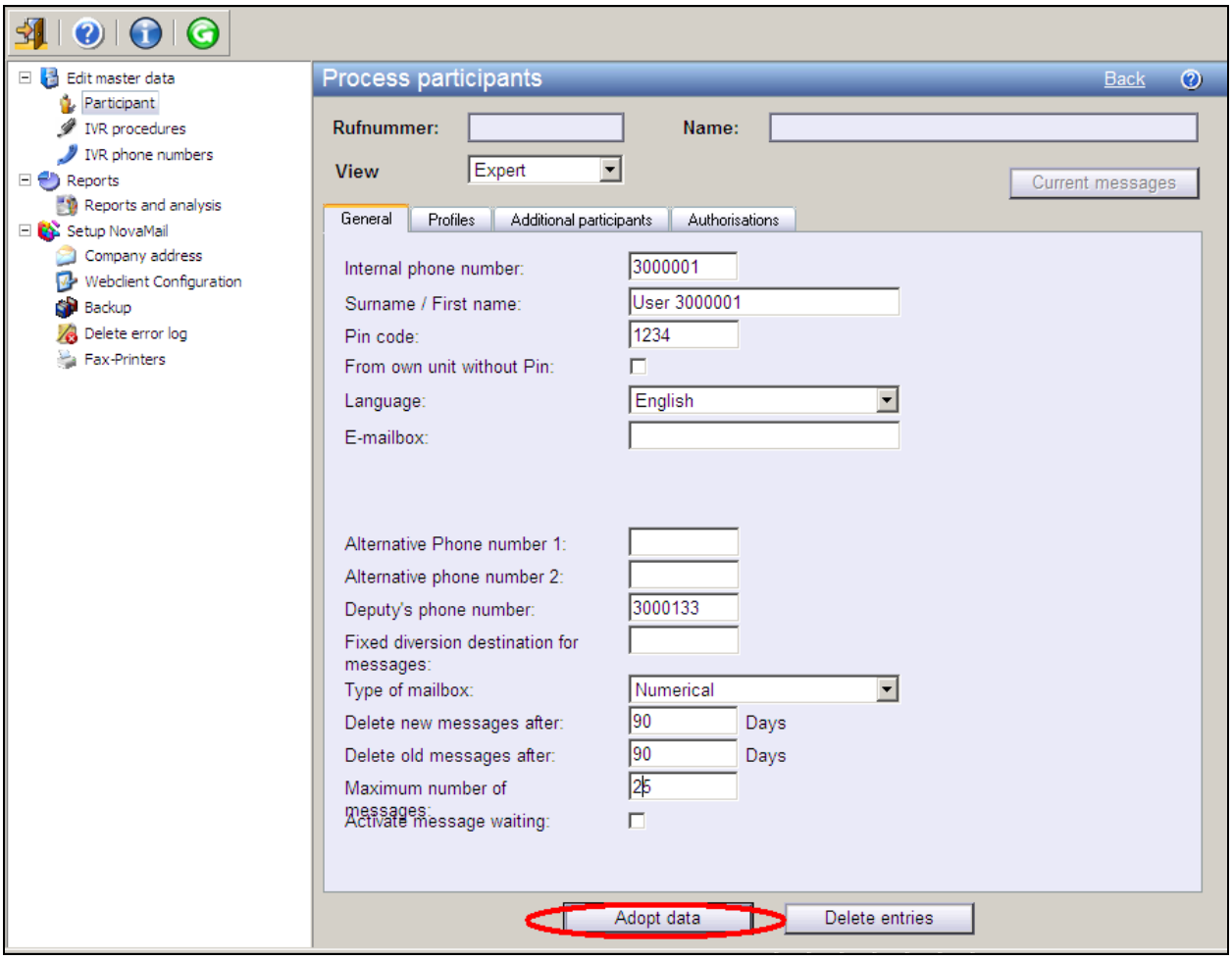

Figure 60: NovaMail Participant Screen

Select the "Profiles" tab and click the "Standard" profile.

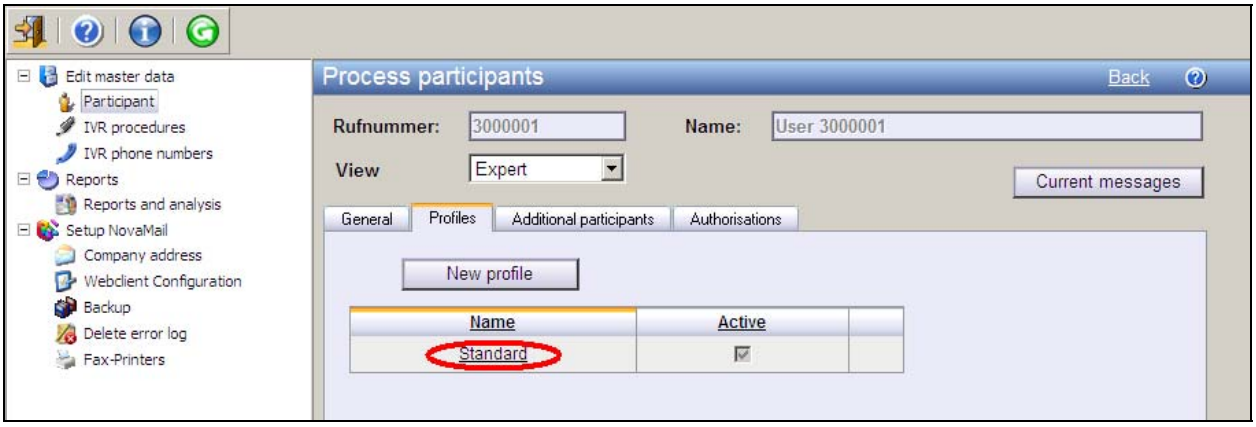

Figure 61: NovaMail Profile Screen

For “Internal calls” select “1: Representative” from the “Possible selection” drop-down box for each of the call types. Note that this selection is only available if a “Deputy’s phone number” was assigned in NovaMail Participant screen shown in **Figure 60**. Leave the other fields within this screen set to their default values.

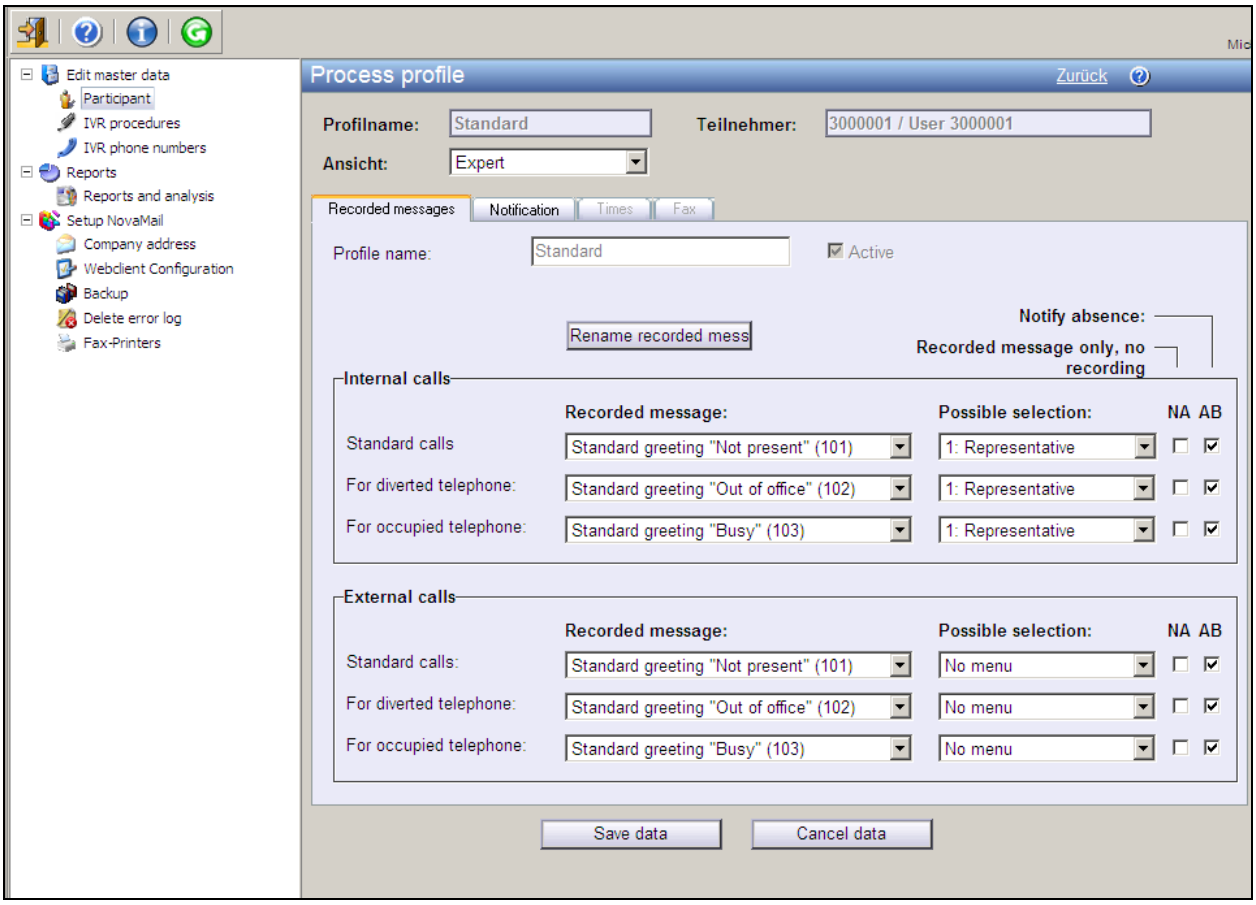

Figure 62: NovaMail Recorded Message Profile Screen

Select the “Notification” tab and enter values shown in the following table. On completion of this operation, click the “Save Data” button.

Parameter	Usage
Notification for	Selected “Voice messages only” from the drop down box.
Keep copy of the recording on the VoiceMail system	Check this box to cause voice mail recordings to be retained.
Display on telephone	Check this box to cause the Message Waiting Lamp to be activated on the user’s telephone when new messages are available.

Table 24: NovaMail Notification Configuration Parameters

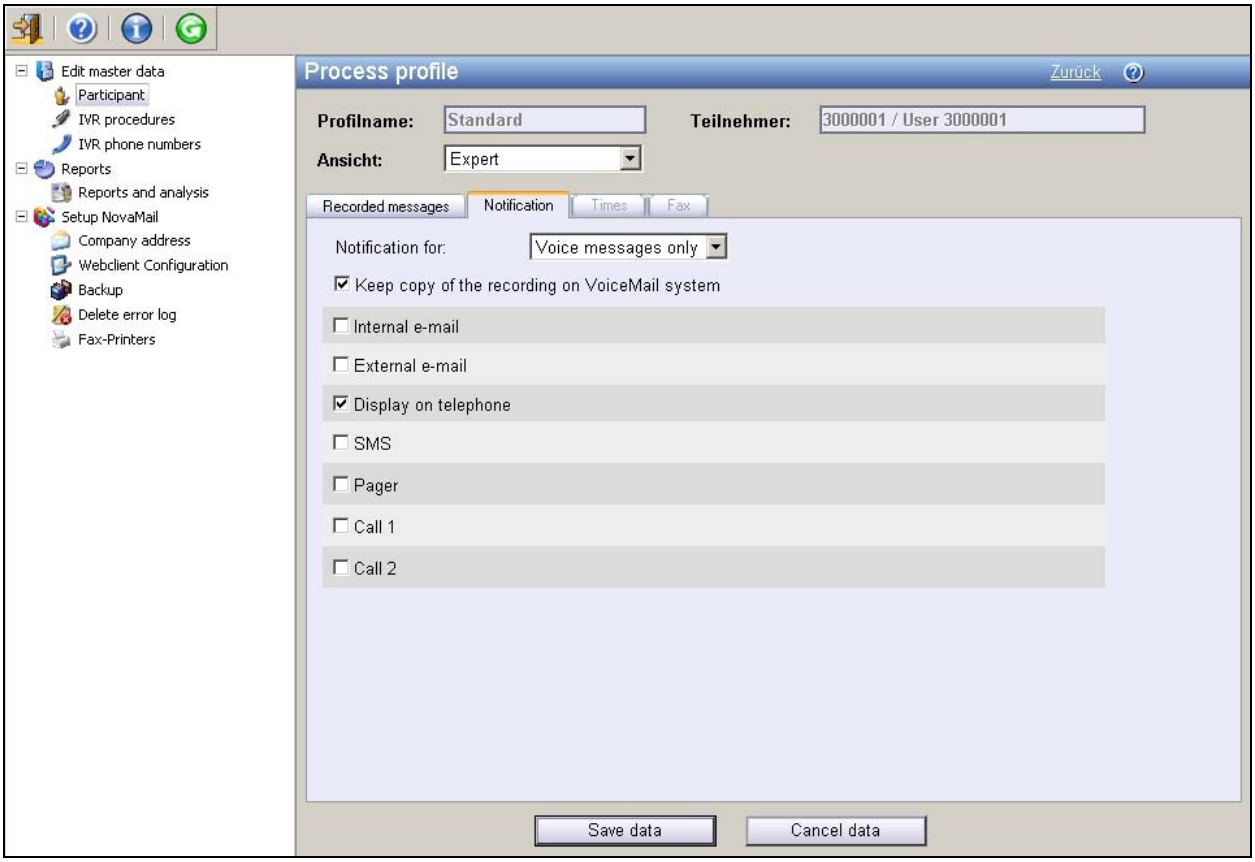

Figure 63: NovaMail Notification Profile Screen

When users have been allocated for each of the extensions in **Table 2**, the newly configured users are now listed in the "Participant" screen.

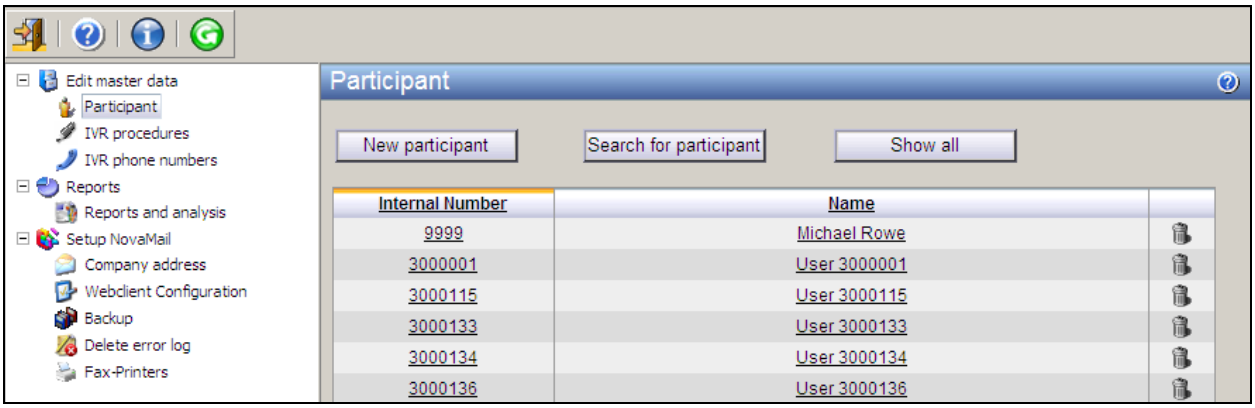

Figure 64: NovaMail Participant List Screen

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 NovaMail server and Avaya products, including various sequences involving the following:

- Verification of the ability of various Avaya telephones to call the NovaMail server.
- Verification of the ability of the NovaMail server to establish connections to various Avaya telephones.
- Verification of the ability of the NovaMail server to establish contact with Avaya telephones that have activated a call diversion.
- Verification of the ability of the NovaMail server to present callers with the correct greeting dependent on whether the called party was busy, unavailable, or out of the office.
- Verification of the ability of the NovaMail server to differentiate between local and external callers.
- Verification of the ability of NovaMail to recognize DTMF tones.
- Verification of the ability of NovaMail to receive overlap number transmission.
- Verification of the ability of Avaya telephones to correctly log unanswered calls from the NovaMail server.

The serviceability testing focused on verifying that the NovaMail product components can recover from interruption to interface connections that can occur during routine maintenance activities. The NovaMail server was also tested for recovery from unexpected power interruption.

4.1. General Test Approach

The test method employed can be described as follows:

- Correct interoperation between the NovaMail server and Avaya Communication Manager was verified by confirming that the various telephony operations that can be invoked by voice mail activity all function properly.
- NovaLink NovaMail robustness was tested by verifying its ability to recover from interruptions to its external connections including:
  - The LAN connection between the NovaMail and the network
  - The BRI connection between NovaMail and the Avaya G350 Media Gateway
  - The PRI connection between NovaMail and the Avaya G350 Media Gateway
- Verifying the ability to recover from power interruptions to the NovaMail 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 NovaMail to detect that an Avaya 4600 Series H.323 phone is disconnected, as Avaya Communication Manager does not report this status to the caller.

- When testing the QSIG PRI interface to NovaMail, a problem occurred for external calls to Avaya stations which have initiated an unconditional call diversion to NovaMail. This is normally done when the user of the Avaya station is out of the office. The problem only occurs if there is no coverage path configured for the Avaya station. In this case, the call is sent over the trunk to NovaMail with a "reason for diversion" of CFNR instead of CFU. This causes the caller to be presented with the wrong recorded message: "away from the desk" instead of "out of the office".

  If the called station has configured a coverage path, CFU is sent correctly as the "reason for diversion". This problem only occurs for external calls (received via a trunk). This problem did not occur for the QSIG BRI interface to NovaMail. This problem can be avoided if the user allocates a coverage path.

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 NovaMail server can ping each other. The "ping" command can be executed from the NovaMail 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.
- If TN2464CP is used for the PRI interface, verify that the switches on these components are set to "32 channel", "120 ohm" by removing this component from the G650 cabinet and verifying that the settings of the dip switches are set to "32 channel" and "120 ohm".
- From the Avaya Communication Manager SAT terminal, use the "status trunk" command to verify that the ports for the trunk connected to NovaMail are in the "in-service/idle" state.
- 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.
- Verify that each of the Avaya Telephones can call the extension allocated to NovaMail to perform a mailbox enquiry.
- Verify that it is possible for NovaMail to call each of the Avaya IP Telephones to deliver a voicemail message.
- Call the NovaMail server from both local extensions and telephones attached to the PSTN and verify that NovaMail responds with the correct greeting.
- Make calls to NovaMail clients which are busy, out of the office (send all calls activated), and unavailable (no answer) and verify that the correct greeting is presented to the caller.
- Verify that it is possible to navigate the NovaMail voice menu from each of the Avaya Telephones by calling the NovaMail extension, and entering key sequences in response to prompting requests from NovaMail.
- Verify the ability of NovaMail to receive overlap numbers by using Avaya IP Telephones to place a call to NovaMail via its trunk access code followed by the NovaMail extension.
- Verify the ability of Avaya Telephones to correctly log unanswered calls by initiating an unanswered voicemail delivery call from NovaMail 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.

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 NovaMail with Avaya Communication Manager. The various features of the NovaMail 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. NovaMail 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] *NovaMail 7.5 Manual*, May 2007

Please e-mail any questions or comments pertaining to these Application Notes along with the full title name and filename, located in the lower right corner, directly to the Avaya Developer*Connection* Program at devconnect@avaya.com.