Avaya Solution & Interoperability Test Lab

Application Notes for Configuring Avaya Aura® Communication Manager R6.3 with NovaLink NovaAlert on NovaBox using H.323 Trunks – Issue 1.0

Abstract

These Application Notes describe the configuration for connecting the NovaLink NovaAlert on NovaBox alarm system via an H.323 interface to Avaya Aura® Communication Manager.

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

1. Introduction

The purpose of this document is to describe the configuration for connecting the NovaLink NovaAlert on NovaBox alarm system via an H.323 interface to Avaya Aura® Communication Manager, as well as the compliance tests which were performed, and a summary of the results of those tests.

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

Alarms can be triggered from various possible input sources including manual input via Web browser, Smartphone Applications, Databases, E-Mails, serial interfaces, potential free contacts, SNMP, OPC, SMS, IP, etc. "Direct" alarms can also be defined which allow alarms to be input and triggered via telephone calls. The alarm triggering described within these Application Notes is restricted to those methods which involve interaction with Avaya Aura® Communication Manager.

Once an alarm has been triggered, the medium selected when the alarm was configured is used to deliver the alarm. Possible delivery interfaces include phone calls (including conferences), Smartphone App's, Desktop-Clients, E-Mail, Pager, SMS, Fax, Printers, etc. Multiple recipients can be configured for an alarm, thus possibly creating multiple simultaneous telephone calls. These Application Notes focus on those delivery methods which involve interaction with Avaya Aura® Communication Manager.

Alarms which are triggered via Avaya Aura® Communication Manager can include pre-recorded or ad hoc voice messages, or can generate voice messages via a text-to-speech mechanism. The calling party name can also be configured to contain a brief alarm message, so that this alarm message will appear in the caller list of intended recipients who are unable to answer an alarm call.

NovaLink NovaAlert on NovaBox supports a wide range of interfaces for input and output, where telephony is the one most commonly used for alarming.

2. General Test Approach and Test Results

NovaAlert on NovaBox was manually configured using the web interface to deliver variety of alarms under a number of conditions.

DevConnect Compliance Testing is conducted jointly by Avaya and DevConnect members. The jointly-defined test plan focuses on exercising APIs and/or standards-based interfaces pertinent to the interoperability of the tested products and their functionalities. DevConnect Compliance Testing is not intended to substitute full product performance or feature testing performed by DevConnect members, nor is it to be construed as an endorsement by Avaya of the suitability or completeness of a DevConnect member's solution.

2.1. Interoperability Compliance Testing

The interoperability compliance testing evaluated the ability of NovaAlert on NovaBox to carry out a variety of alarming functions in various conditions to multiple types of endpoint according to the configuration made via the web interface. These included:

- Recording of alarms from SIP/H.323/Digital endpoints
- Delivery of voice recorded and TTS alarm to SIP/H.323 endpoints
- Service Observe calls to deliver alarms
- Verification of Calling Party Name
- Following forwarding to deliver alarms
- Alarms delivered to Voicemail
- DTMF PIN Entry

Serviceability testing consisted of verifying the ability of NovaAlert on NovaBox to recover from power on network interruption to both Communication Manager and NovaAlert on NovaBox.

2.2. Test Results

All test cases were executed successfully.

2.3. 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

3. Reference Configuration

Figure 1 below shows the compliance tested configuration comprising of Avaya Aura® Communication Manager connected to NovaLink NovaAlert on NovaBox over an H.323 trunk and an assortment IP endpoints.

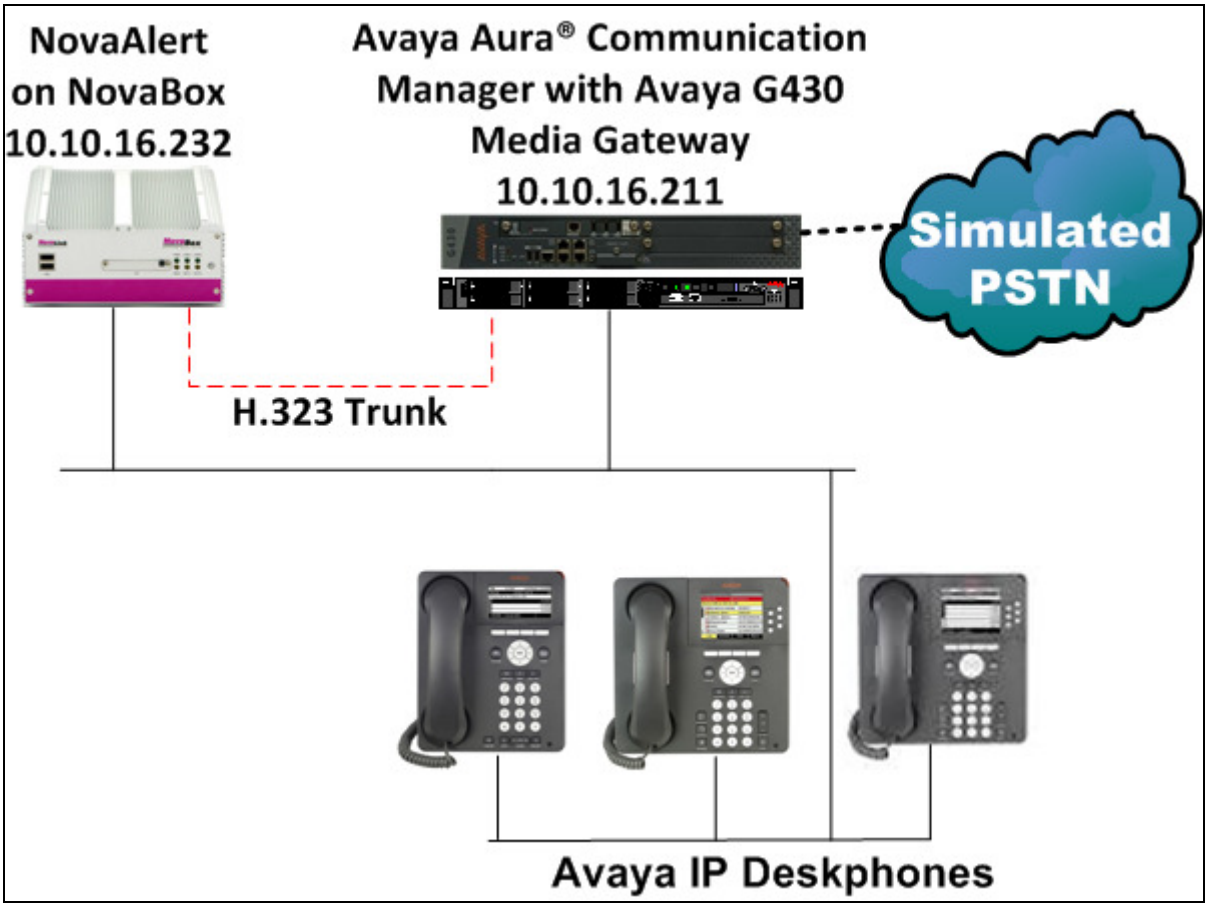


Figure 1: Avaya Aura® Communication Manager with NovaAlert on NovaBox Solution

4. Equipment and Software Validated

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

Equipment/Software	Release/Version
Avaya Aura® Communication Manager vAppliance	R6.3 SP0.1
Avaya G430 Media Gateway	33.13.0
Avaya 9630 IP Deskphone	• H.323 3.2 • SIP 2.6.10.1
NovaAlert on NovaBox	9.8

5. Configure Avaya Aura® Communication Manager

The configuration of Communication Manager is from the System Access Terminal (SAT) and can be summarized as follows:

- Configure Node Names
- Configure H.323 Trunk
- Configure Signaling Group
- Configure Call Routing
- Configure Public-Unknown-Numbering Table
- Configure Feature Access Codes
- Configure Class of Restriction
- Configure Remote Access

It is assumed that endpoints have been pre-configured as required, for more information see **Section 9**.

5.1. Configure Node Names

Node names must be configured with the IP address of NovaAlert on NovaBox in order to configure the H.323 signaling group in **Section 5.3**. Enter the command **change node-names ip** enter an appropriate node name for NovaAlert on NovaBox in the **Name** column and its corresponding **IP Address**. Note the procr IP address to be used when configuring the signaling group and NovaAlert on NovaBox.

```
change node-names ip                                          Page   1 of   2
                                  IP NODE NAMES
    Name                 IP Address
AES63RP              10.10.16.210
CM62                 10.10.16.142
IPO                  10.10.16.105
NovaBox              10.10.16.232
SM63RPSIG            10.10.16.214
default              0.0.0.0
procr                10.10.16.211
procr6               ::
```

5.2. Configure H.323 Trunk

An H.323 trunk must be administered between Communication Manager and NovaAlert on NovaBox.

Enter the command **add trunk-group next** and configure as follows:

- **Group Number** – take a note of this to be used when configuring the signaling group and routing
- **Group Type** – set to **isdn**
- **Group Name** – enter an appropriate name
- **TAC** – enter a TAC appropriate to the dialplan
- **Carrier Medium** – set to **H.323**
- **Service Type** – set to **Tie**
- **Member Assignment Method** – set to **auto**
- **Signaling Group** – enter the signaling group number configured later in this Section
- **Number of Members** – enter the number of channels required as appropriate

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

Group Number: 7                     Group Type: isdn          CDR Reports: y
  Group Name: To NovaLink                 COR: 1        TN: 1        TAC: 707
   Direction: two-way         Outgoing Display? n        Carrier Medium: H.323
 Dial Access? n               Busy Threshold: 255  Night Service:
Queue Length: 0
Service Type: tie                   Auth Code? n
                                                 Member Assignment Method: auto
                                                           Signaling Group: 7
                                                         Number of Members: 4
```

On **Page 2** configure as follows:

- **Supplementary Service Protocol** – set to **b**
- **Disconnect Supervision Out?** –set to **y**

```
add trunk-group next                                          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): enbloc/enbloc

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

 Disconnect Supervision - In? y  Out? y
 Answer Supervision Timeout: 0
                                  CONNECT Reliable When Call Leaves ISDN? n
           XOIP Treatment: auto    Delay Call Setup When Accessed Via IGAR? n
```

On **Page 3** configure as follows:

- **Send Name** – set to **y**
- **Send Calling Number** – set to **y**
- **Format** – set to **pub-unk**

```
add trunk-group next                                          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: pub-unk
                                        UUI IE Treatment: service-provider

                                             Replace Restricted Numbers? n
                                            Replace Unavailable Numbers? n
                                      Send Called/Busy/Connected Number: n
                                              Hold/Unhold Notifications? y
             Send UUI IE? y     Modify Tandem Calling Number: no
               Send UCID? n
 Send Codeset 6/7 LAI IE? y

 Show ANSWERED BY on Display? Y
```

On Page **4** configure **QSIG Value-Added?** to **y**.

```
add trunk-group next                                          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

    Character Set for QSIG Name: eurofont
                QSIG Value-Added? y
   QSIG-Value Coverage Encoding: proprietary
      SIP Reference Trunk Group:
```

5.3. Configure Signaling Group

A signaling group must be used to define the signaling parameters of the H.323 trunk. Enter the command **add sig next** and configure as follows:

- **Group Number** – take a note of this number to be used in the trunk configuration above
- **Group Type** – set to **h.323**
- **Max number of NCA TSC** – set to **4**
- **Max number of CA TSC** – set to **4**
- **Trunk Group for NCA TSC** – set to the trunk group number configured above, in this case **7**
- **Trunk Group for Channel Selection -** set to the trunk group number configured above, in this case **7**
- **TSC Supplementary Service Protocol** – set to **b**
- **Near-end Node Name** – enter the processor node-name usually **procr**
- Far-end Node Name – enter the node-name assigned to NovaAlert on NovaBox, in this case **NovaBox**
- **Far-end Listen Port** – set to **1720**
- **Direct IP-IP Audio Connections?** – ensure this is set to **n**
- **IP Audio Hairpinning?** – this must be set to **y**

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

 Group Number: 7                Group Type: h.323
          SBS? n            Remote Office? n          Max number of NCA TSC: 4
        Q-SIP? n                                       Max number of CA TSC: 4
     IP Video? n                                    Trunk Group for NCA TSC: 7
       Trunk Group for Channel Selection: 7    X-Mobility/Wireless Type: NONE
      TSC Supplementary Service Protocol: b          Network Call Transfer? n
                                                        T303 Timer(sec): 10
   H.245 DTMF Signal Tone Duration(msec):
   Near-end Node Name: procr                    Far-end Node Name: NovaBox
 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? y
         Enable Layer 3 Test? n                 Interworking Message: PROGress
                                         DCP/Analog Bearer Capability: 3.1kHz
```

5.4. Configure Call Routing

Enter the command **change route-pattern x** where **x** is an appropriate route pattern, in this case **7**. Enter an appropriate **Pattern Name** and configure the **Group Number** with the H.323 trunk group number configured in **Section 5.2**, set the FRL as appropriate.

```
change route-pattern 7                                          Page   1 of   3
                     Pattern Number: 7      Pattern Name: To NovaLink
                                   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: 7    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
```

During the compliance test 999 was dialed to reach NovaAlert on NovaBox where the initial 9 is the feature access code used to access the auto routing selection table. Enter the command **change ars analysis 9** and configure a **Dialed String** of **99**, **Toal Min** and **Total Max** values of **2**, enter the **Route Pattern** configured above and set the **Call Type** to **pubu**. This will result in calls placed to 999 reaching NovaAlert on NovaBox over the administered H.323 trunk.

```
change ars analysis 9                                           Page   1 of   2
                           ARS DIGIT ANALYSIS TABLE
                                 Location: all            Percent Full: 0

         Dialed           Total     Route    Call   Node  ANI
         String          Min  Max  Pattern   Type   Num   Reqd
   99                    2    2     7        pubu         n
```

5.5. Configure Public-Unknown-Numbering Table

As the trunk-group is configured to with **Format pub-unk**, the public-unknown numbering table must be configured so that the appropriate calling party number is presented for calls placed over this trunk. Enter the command **change public-unknown-numbering 0** and administer accordingly. In the example below, a number with a **Extension Length** of **4**, starting with an **Extension Code** of **1** present a **Total CPN Length** of **4** digits when calling over **Trunk Group 7**.

```
change public-unknown-numbering 0                              Page   1 of   2
                     NUMBERING - PUBLIC/UNKNOWN FORMAT
                                          Total
Ext  Ext             Trk       CPN        CPN
Len  Code            Grp(s)    Prefix     Len
                                                Total Administered: 4
 4   1               1                    4       Maximum Entries: 9999
 4   1               2         0207555    11
 4   1               7                    4     Note: If an entry applies to
 4   1               9                    4     a SIP connection to Avaya
                                                 Aura(R) Session Manager,
                                                 the resulting number must
                                                 be a complete E.164 number.

                                                 Communication Manager
                                                 automatically inserts
                                                 a '+' digit in this case.
```

5.6. Configure Feature Access Codes

Feature access codes must be administered for Priority Calling and Service Observing. Enter the command **change feature-access-codes** and on **Page 3** configure an appropriate **Priority Calling Access Code**.

```
change feature-access-codes                                    Page   3 of  10
                              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:
         Message Sequence Trace (MST) Disable:

PASTE (Display PBX data on Phone) Access Code:
 Personal Station Access (PSA) Associate Code: *31    Dissociate Code: *32
       Per Call CPN Blocking Code Access Code: *33
     Per Call CPN Unblocking Code Access Code: *34
                  Posted Messages Activation:        Deactivation:
                Priority Calling Access Code: *57
                         Program Access Code:

      Refresh Terminal Parameters Access Code: *35
            Remote Send All Calls Activation: *36    Deactivation: *37
             Self Station Display Activation:
                   Send All Calls Activation: *38    Deactivation: *39
        Station Firmware Download Access Code:
```

On **Page 5** configure an appropriate **Service Observing Listen/Talk Access Code**.

```
change feature-access-codes                                    Page   5 of  10
                              FEATURE ACCESS CODE (FAC)
                                Call Center Features
 AGENT WORK MODES
                           After Call Work Access Code: *40
                                  Assist Access Code: *41
                                Auto-In Access Code: *42
                               Aux Work Access Code: *43
                                  Login Access Code: *44
                                 Logout Access Code: *45
                              Manual-in Access Code: *46
 SERVICE OBSERVING
           Service Observing Listen Only Access Code: *47
           Service Observing Listen/Talk Access Code: *48
               Service Observing No Talk Access Code: *49
  Service Observing Next Call Listen Only Access Code: *50
Service Observing by Location Listen Only Access Code: *51
Service Observing by Location Listen/Talk Access Code: *52

 AACC CONFERENCE MODES
                       AACC No Conference Activation: *53  Deactivation: *54
                      AACC One Conference Activation: *55  Deactivation: *56
```

5.7. Configure Class Of Restriction

A class of restriction must be configured to enable the Service Observing Feature. Enter the command **change cor x** where **x** is an appropriate COR and set **Can Be Service Observed** and **Can Be A Service Observer** to **y**. If required, two separated CORs can be configured. This COR can be administered on the relevant stations as required.

```
change cor 1                                                  Page   1 of  23
                                CLASS OF RESTRICTION

               COR Number: 1
          COR Description: COR1

                      FRL: 2                                  APLT? y
  Can Be Service Observed? y            Calling Party Restriction: none
Can Be A Service Observer? y             Called Party Restriction: none
        Time of Day Chart: 1         Forced Entry of Account Codes? n
         Priority Queuing? n                  Direct Agent Calling? n
     Restriction Override: none         Facility Access Trunk Test? y
     Restricted Call List? n                  Can Change Coverage? n

            Access to MCT? y              Fully Restricted Service? n
Group II Category For MFC: 7              Hear VDN of Origin Annc.? n
         Send ANI for MFE? n               Add/Remove Agent Skills? n
            MF ANI Prefix:                Automatic Charge Display? n
Hear System Music on Hold? y    PASTE (Display PBX Data on Phone)? n
                          Can Be Picked Up By Directed Call Pickup? n
                                       Can Use Directed Call Pickup? n
                                       Group Controlled Restriction: inactive
```

5.8. Configure Remote Access

Remote access is used by NovaAlert on NovaBox in conjunction with the Service Observe Feature Access Code for the Intrusion feature of NovaAlert. Enter the command **change remote-access** and configure as follows.

- **Remote Access Extension** – enter an unused extension number appropriate to the dialplan
- **Barrier Code Length** – enter **4**
- **Barrier Code** – enter an appropriate 4 digit barrier code, in this case **1234**
- **Expiration Date** - set as required

Leave all other values as their default values as in this case COR 1 is permitted to service observe configured in **Section 5.7**.

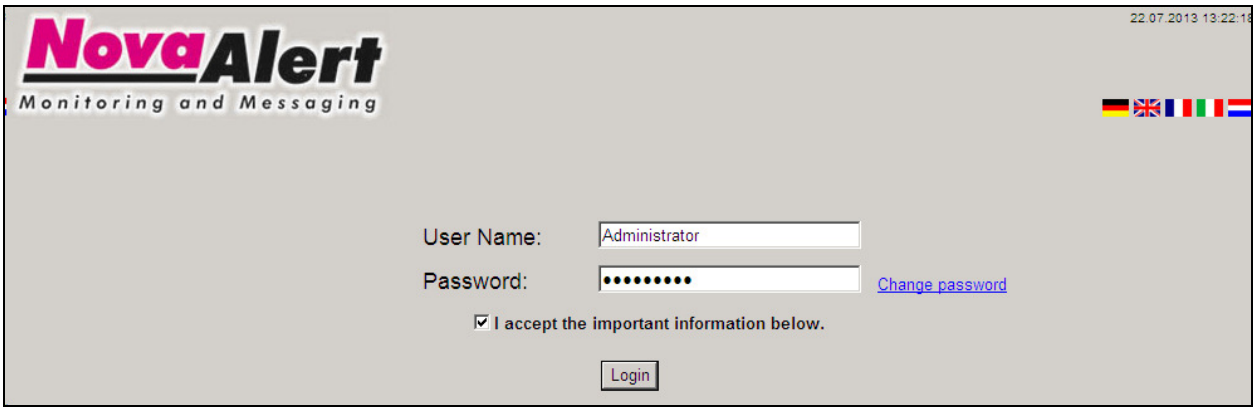
```
change remote-access                                          Page   1 of   1
                                REMOTE ACCESS

    Remote Access Extension: 1998          Barrier Code Length: 4
Authorization Code Required? n

           Barrier                          Expiration   No. of    Calls
            Code       COR   TN    COS        Date      Calls     Used
        1: 1234       1     1     1       07/16/33                 9
        2:
        3:
        4:
        5:
        6:
        7:
        8:
        9:
       10:

 Permanently Disable? n
 (NOTE: You must logoff to effect permanent disabling of Remote Access)
```

6. Configure NovaLink NovaAlert on NovaBox

The configuration of NovaAlert on NovaBox is performed using its web interface and can be summarized as follows:

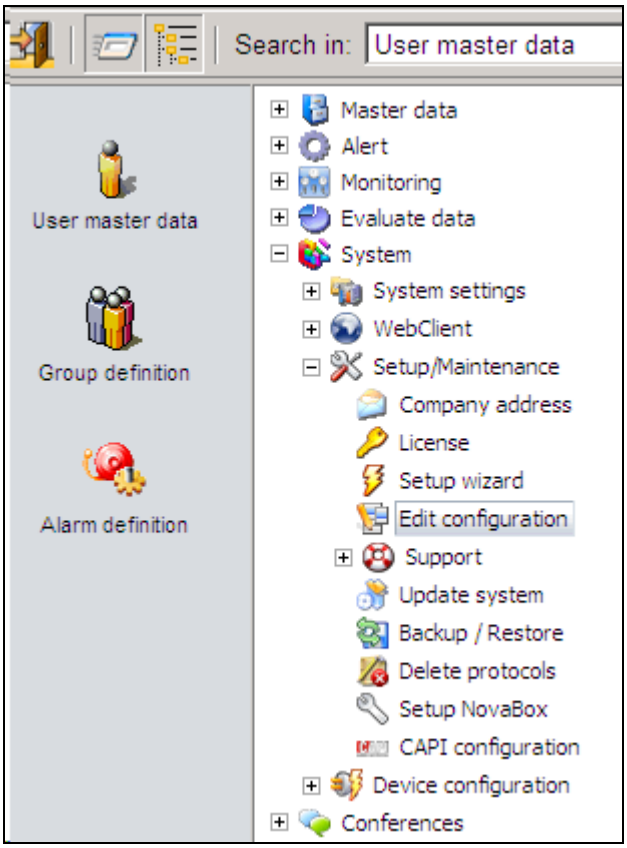
- Configure Avaya Aura® Communication Manager Integration Parameters
- Configure H.323 Trunk
- Configure Intrusion Code

Navigate to http://NovaAlert_IP_ADDR/NovaAlert and enter the appropriate credentials and click **Login**.



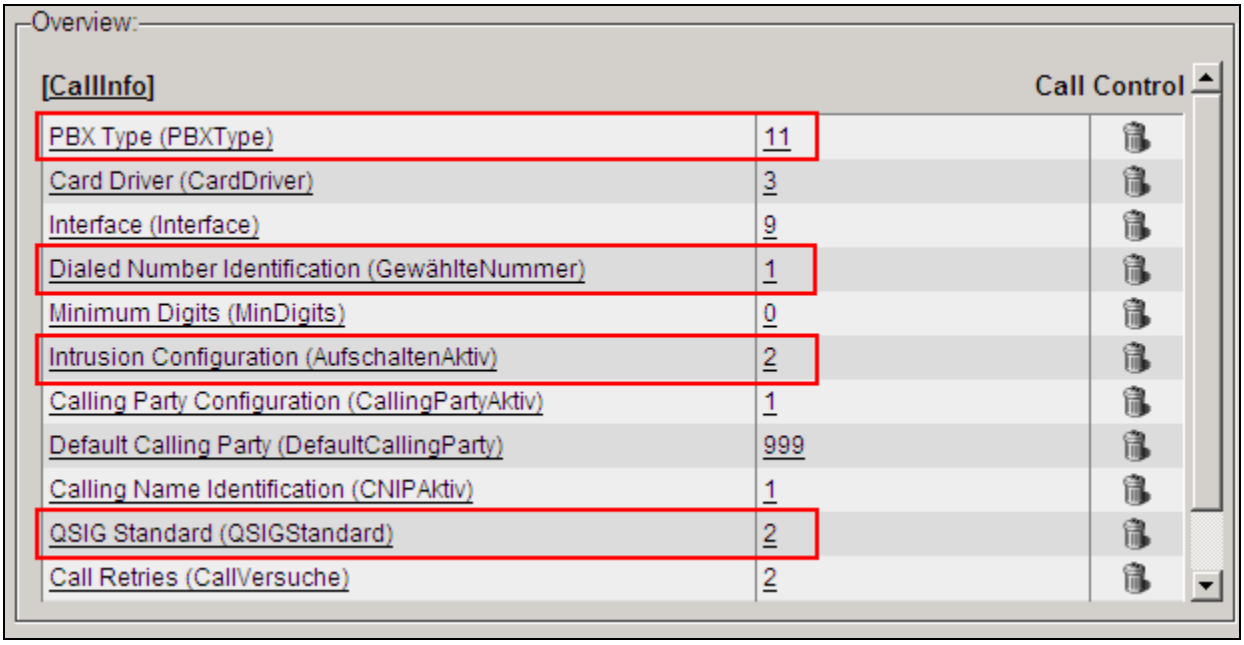
6.1. Configure Avaya Aura® Communication Manager Integration Parameters

Click **System → Setup/Maintenance → Edit Configuration**



In the right hand pane, configure as shown below:

- **PBX Type** - with a value of **11** defines Communication Manager parameters
- **Dialed Number Identification –** to process the dialed number and not any diverting party information in case of calling NovaAlert
- **Intrusion Configuration –** set to **2** to start a new call with intrusion if extension is busy
- **QSIG Standard –** set to **2** for additional Q.931 information codes with ISO

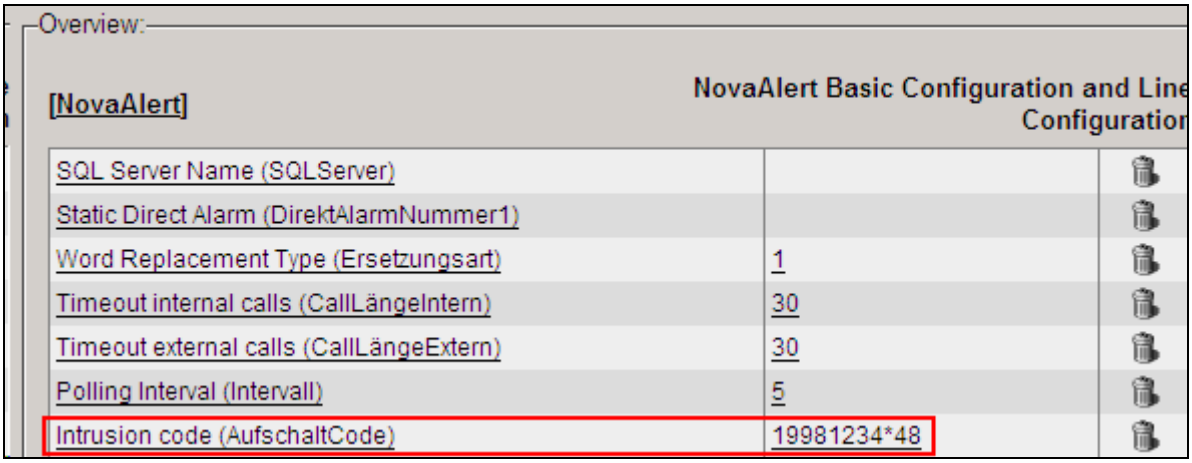


6.2. Configure H.323 Trunk

Continuing from the previous section, scroll down the page displayed and configure the **VoIP** section as shown below where **H323 Gateway** is the IP address assigned to **procr** on Communication Manager.

6.3. Configure Intrusion Code

Continuing from the previous section, scroll down the page displayed and configure the **NovaAlert** section as shown below with the **Intrusion Code** configured with the remote access details configured in **Section 5.8** and the **Service Observing Listen/Talk Access Code**.



See **Section 9** for more information on configuring NovaAlert on NovaBox.

7. Verification Steps

This section provides the tests that can be performed to verify the proper configuration of NovaAlert on NovaBox with Communication Manager.

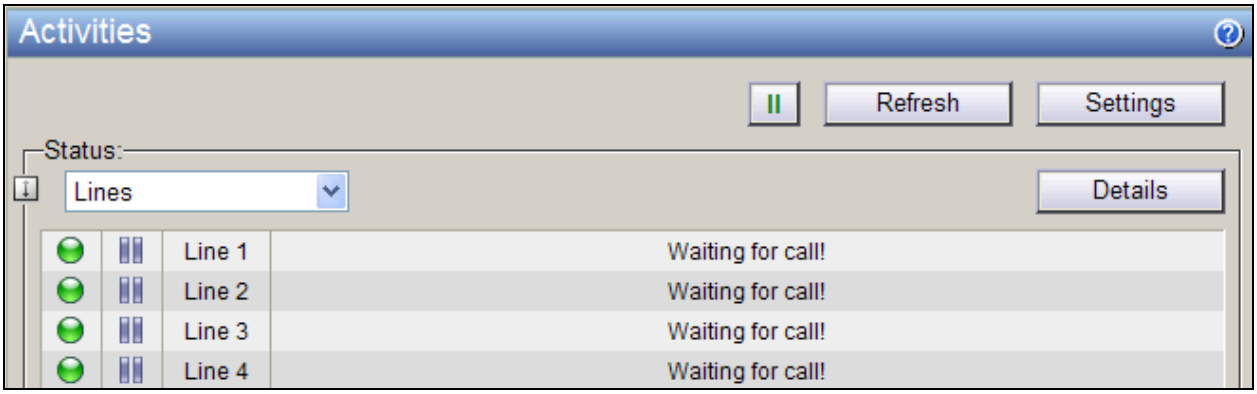
7.1. Verify Avaya Aura® Communication Manager H.323 Trunk Status

Enter the command **status trunk x** where **x** is the H.323 trunk configured in **Section 5.2** and verify that the **Service State** is **in-service**.

```
status trunk 7
                              TRUNK GROUP STATUS

Member    Port      Service State       Mtce Connected Ports
                                        Busy

0007/001  T00086    in-service/idle     no
0007/002  T00087    in-service/idle     no
0007/003  T00088    in-service/idle     no
0007/004  T00089    in-service/idle     no
```

7.2. Verify NovaLink NovaAlert on NovaBox Status

From the NovaAlert on NovaBox web interface navigate to **Monitoring → Activities** and verify that the icon in the left column is green indicating that the H.323 trunks are in service and the procr interface can be reached.



7.3. Verify Successful Recording of Alarm

Configure NovaAlert on NovaBox as required to record an alarm. Place a call into NovaAlert on NovaBox and record a voice alarm.

7.4. Verify Successful Delivery of Alarms

Ensure that the alarm recorded in the previous section is delivered to the defined destinations.

8. Conclusion

These Application Notes describe the configuration steps required for NovaLink NovaAlert on NovaBox to successfully interoperate with Avaya Aura® Communication. All feature test cases were completed successfully with any observations noted in **Section 2.2**.

9. Additional References

This section references the product documentation relevant to these Application Notes.

1. *Administering Avaya Aura® Communication Manager*, Release 6.3, 03-300509, Issue 8, May 2013
2. ftp://support.novalink.ch/Technikerhandbuch/English/Technikerhandbuch NovaLink GmbH EN.chm (please request Login and Password from NovaLink)

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 DevConnect Program at devconnect@avaya.com.