Avaya Solution & Interoperability Test Lab

Application Notes for Configuring 2N® StarGate 1.17 with Avaya Aura® Communication Manager 6.3 Using DSS1- Issue 1.0

Abstract

These Application Notes describe the configuration steps required for Avaya Aura® Communication Manager 6.3 with 2N® StarGate using DSS1.

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

2N® StarGate from 2N Telekomunikace can be supplied in two versions, with ISDN or with a VoIP interface. The 2N® StarGate also has two ISDN ports which can connect the gateway between a PSTN network and a PBX without the need for another ISDN port from the PBX (using DialThru mode). The 2N® StarGate is designed to maximize cost savings on GSM/UMTS calls. In DialThru mode it connects between a PSTN network and a PBX, when it automatically identifies whether the call is to GSM, VoIP or PSTN and selects the cheapest route. The PBX can be configured to use the 2N® StarGate GSM/UMTS feature to route calls when the primary PSTN access (i.e. PRI or SIP) is not available. Up to 32 GSM/UMTS channels are available.

2. General Test Approach and Test Results

The general test approach was to configure the 2N® StarGate (2N StarGate) to communicate with the Avaya Aura® Communication Manager (Communication Manager) as implemented on a customer's premises. Testing focused on verifying that calls could be routed via the 2N StarGate from the communication Manager to the Public switched Telephone Network (PSTN) and vice versa. Various call scenarios were preformed to simulate real call types as would be observed on a customer premises including the use of H323 and SIP telephones on the Communication Manager. See **Figure 1** for a network diagram. The interoperability compliance test included both feature functionality and serviceability tests.

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 testing included:

- Verification of the Board and Module status of the 2N StarGate
- Calls to the PSTN from Communication Manager, including Busy numbers
- Calls to Communication Manager from the PSTN, including Busy numbers
- Ensuring proper disconnects
- Observing DTMF
- Hold/Unhold
- Long Call Duration (one hour +)
- Restarting the 2NStarGate

2.2. Test Results

Tests were performed to insure interoperability between 2N® StarGate and Communication Manager. The tests were all functional in nature, and performance testing was not included. All the test cases passed successfully.

2.3. Support

Technical support from 2N Telekomunikace can be obtained through the following:

Phone: +420 261 301 111
E-mail: sales@2n.cz
Web: http://support.2n.cz/ (Account required)

3. Reference Configuration

Figure 1 illustrates the network topology used during compliance testing. The Avaya solution consists of a Communication Manager, System Manager, Session Manager and an Avaya G430 Gateway. The Communication Manager is configured to communicate to the 2N StarGate via the Avaya G430 Gateway using DSS1. TSC Supplementary Service Protocol C (DSS1/ETSI) is configured on the Signaling and Trunk Group of the Communication manager. A T1/E1 cable is connected from the T1/E1 port of the G430 Gateway to a PRI port on the 2N StarGate. A variety of Avaya 96XX H323and SIP Desk phones were used to generate inbound/outbound calls via the 2N StarGate from/to the GSM/UMTS Service Provider. The System Manager was used to administer the Session Manager which had the SIP Desk Phone registered.

Note: A number of Subscriber Identity Module's (SIM's) from the GSM/UMTS Service Provider is inserted on the GSM board of the 2N StarGate. During compliance only one SIM was used, therefore only one inbound/outbound call could be made simultaneously. Also an antenna was connected to the same board that the SIM was inserted.

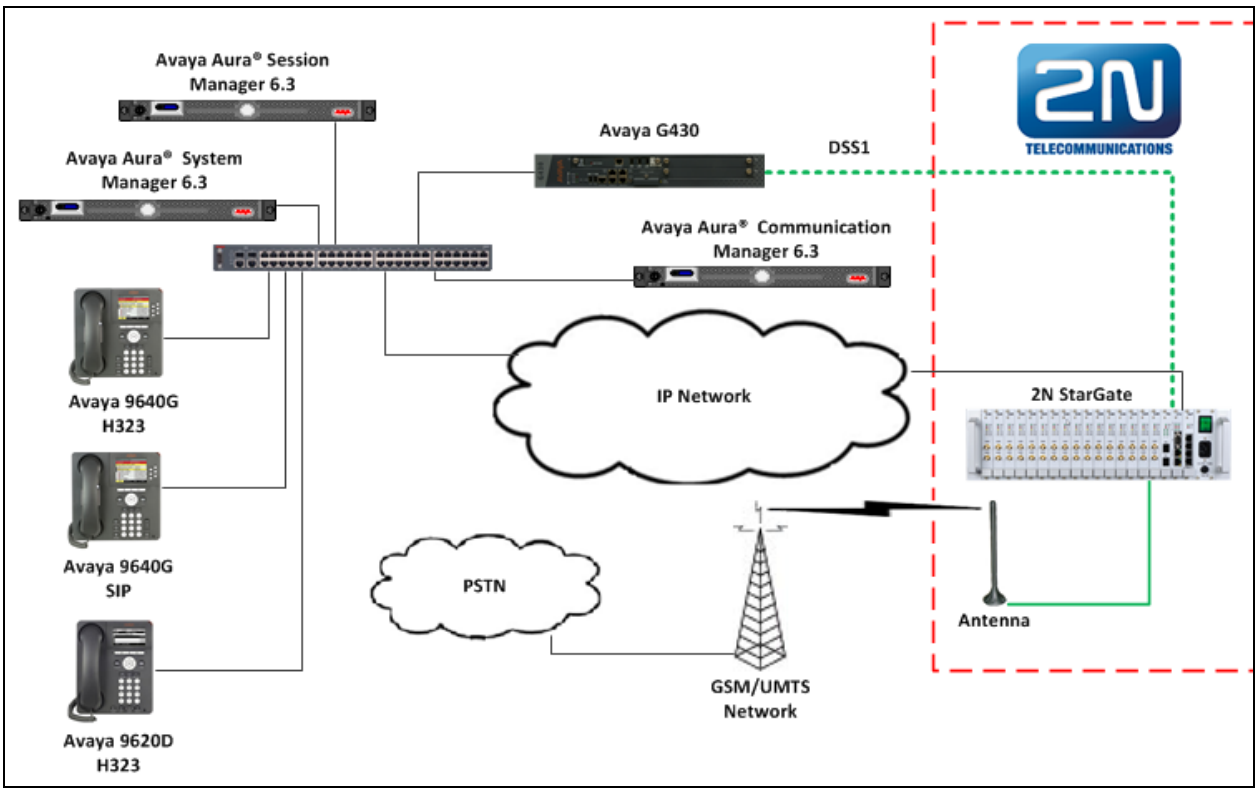


Figure 1: Avaya Aura® Communication Manager and 2N Telekomunikace Reference Configuration

4. Equipment and Software Validated

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

Avaya Equipment	Software / Firmware Version
Avaya Aura® Communication Manager	R6.3 Build R016x.03.0.124.0 Update 03.0.124.0-20850
Avaya Aura® System Manager	R6.3 Build 6.3.0.8.5682-6.3.8.1814 Update 6.3.3.5.1719
Avaya Aura® Session Manager	R6.3 Build 6.3.3.0.633004
Avaya G430 Media Gateway	31.22.0
Avaya 96xx Deskphones - H323 9620D - H323 9640G - SIP 9640D	 3.101S 3.105S 2.6.10.1
2N Telekomunikace Equipment	**Software / Firmware Version**
2N® StarGate	Firmware version 1.17.0.20.2 Bootware version 1.20

5. Configure Avaya Aura® Communication Manager

Configuration and verification operations on the Communication Manager illustrated in this section were all performed using Communication Manager's SAT administration interface. The information provided in this section describes the configuration of Communication Manager for this solution. It is implied a working system is already in place. For all other provisioning information such as initial installation and configuration, please refer to the product documentation in **Section 9**. The configuration operations described in this section can be summarized as follows: (Note: during Compliance Testing all inputs not highlighted in Bold were left as Default)

- Configure DS1 Circuit pack
- Configure signaling-group
- Configure Trunk Group

5.1. Configure DS1 Circuit pack

It is implied that the Avaya G430 is already operational and the DS1 Circuit pack is installed and configured as an E1 QSIG. The screen shot below shows how the DS1 Interface was configured during compliance testing.

```
display ds1 002v1
                               DS1 CIRCUIT PACK

            Location: 002V1                          Name: To Media G/W 2
            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? n
           Idle Code: 11111111           Channel Numbering: timeslot
                             DCP/Analog Bearer Capability: 3.1kHz

                                          T303 Timer(sec): 4
                                         Disable Restarts? n

      Slip Detection? n                Near-end CSU Type: other

   Echo Cancellation? n
```

5.2. Configure signaling-group

A signalling group is required before a trunk-group can be configured. Use the **add signaling-group** command followed by next available signaling-group number to configure the following:

- **Group Type:** Enter **isdn-pri**
- **Primary D-Channel:** Enter **002V116** (this is the D-Channel associated with the DS1 Circuit Pack.
- **Trunk Group for Channel Selection:** Enter **10** (This will be the trunk-group used in **Section 5.3**)
- **TSC Supplementary Service Protocol:** Enter **c** (ETSI/DSS1)

```
add signaling-group 10
                               SIGNALING GROUP

 Group Number: 10             Group Type: isdn-pri
                     Associated Signaling? y          Max number of NCA TSC: 10
                        Primary D-Channel: 002V116     Max number of CA TSC: 10
                                                    Trunk Group for NCA TSC: 10
       Trunk Group for Channel Selection: 10      X-Mobility/Wireless Type: NONE
     TSC Supplementary Service Protocol: c          Network Call Transfer? n
                       ETSI CCBS Support: both-directions
```

5.3. Configure Trunk Group

This section describes the Trunk Group configuration used during compliance. Use the **add trunk-group** command followed by next available Group number and configure the following:

On Page 1

- Group Type: Enter **isdn**
- Group Name: Enter an informative name for the trunk i.e. **DS1 Media G/W2**
- TAC: Enter a TAC number i.e. **710**
- Carrier Medium: Enter **PRI/BRI**
- Service Type: Enter **public-ntwrk**

```
add trunk-group 10                                          Page   1 of  21
                              TRUNK GROUP

Group Number: 10                    Group Type: isdn          CDR Reports: y
  Group Name: DS1 Media G/W2              COR: 1        TN: 1        TAC: 710
   Direction: two-way        Outgoing Display? y         Carrier Medium: PRI/BRI
 Dial Access? n              Busy Threshold: 255  Night Service:
Queue Length: 0
Service Type: public-ntwrk          Auth Code? n            TestCall ITC: rest
                         Far End Test Line No:
TestCall BCC: 4
```

On Page 2

Supplementary Service Protocol: Enter **c** (ETSI/DSS1)

```
add trunk-group 10                                          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: c     Digit Handling (in/out): enbloc/enbloc

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

6. Configure 2N® StarGate Gateway

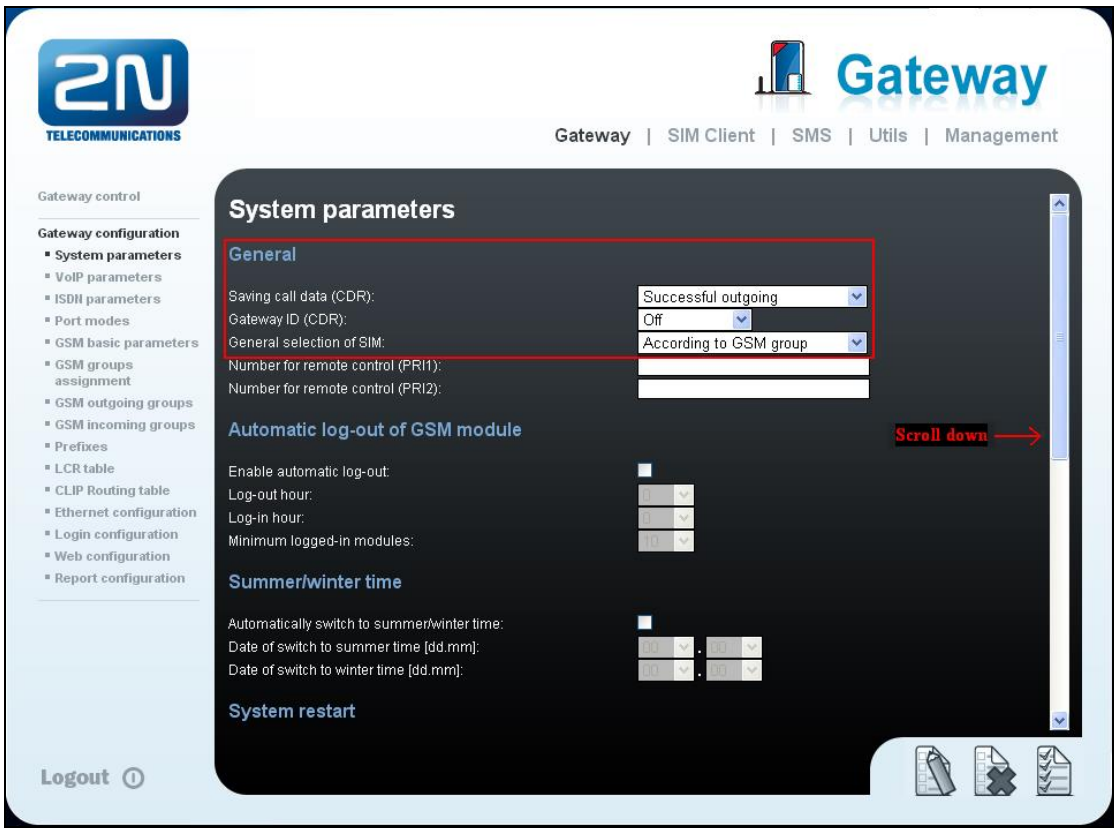
To access the 2N StarGate, open a web browser and navigate to **http://<IP address of the 2N StarGate>** and log in using the appropriate credentials and click on the login button.

Once logged in, click on **Gateway configuration**.

When the **System parameters** page opens, enter the following:

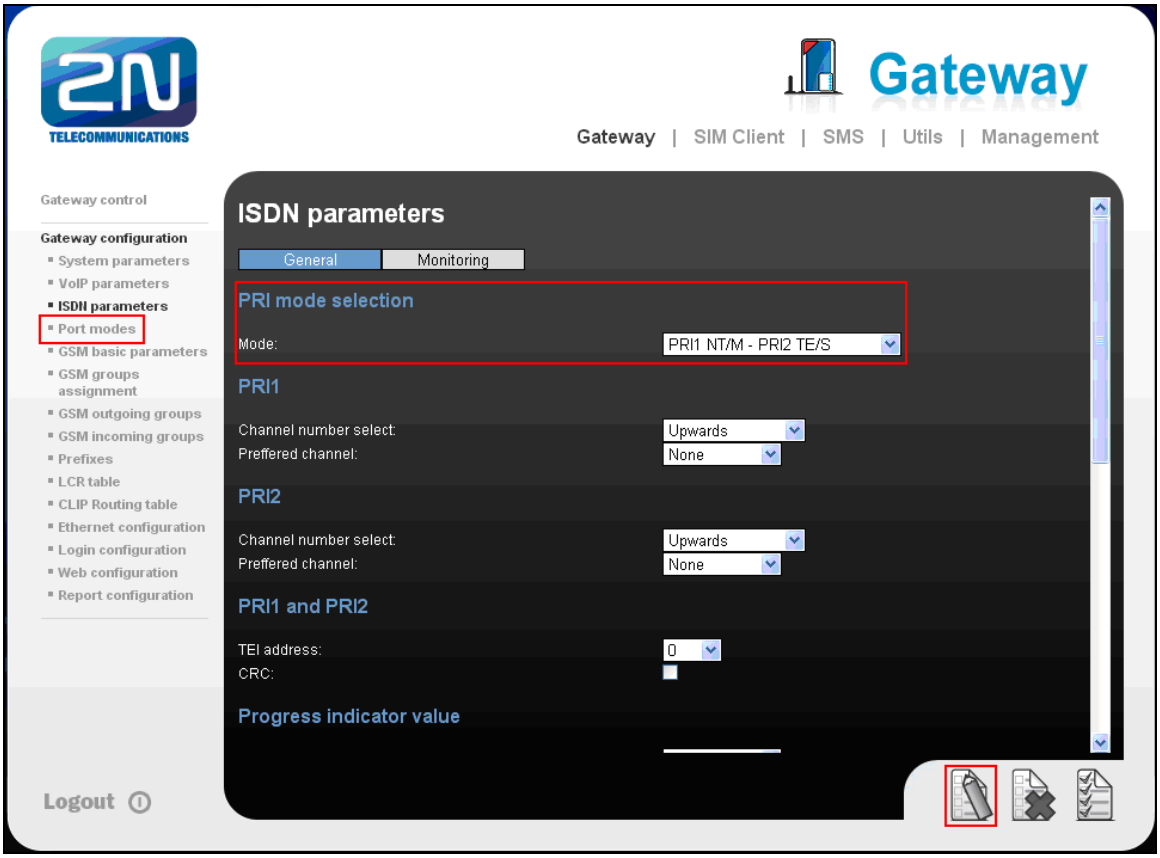
- Saving call data (CDR) Select **Successful outgoing** from the dropdown box
- Gateway ID (CDR) Select **Off** from the dropdown box
- General selection of SIM Select **According to GSM group** from the dropdown box.

Using the scroll bar on the right side of the page, scroll down to **Others** section.

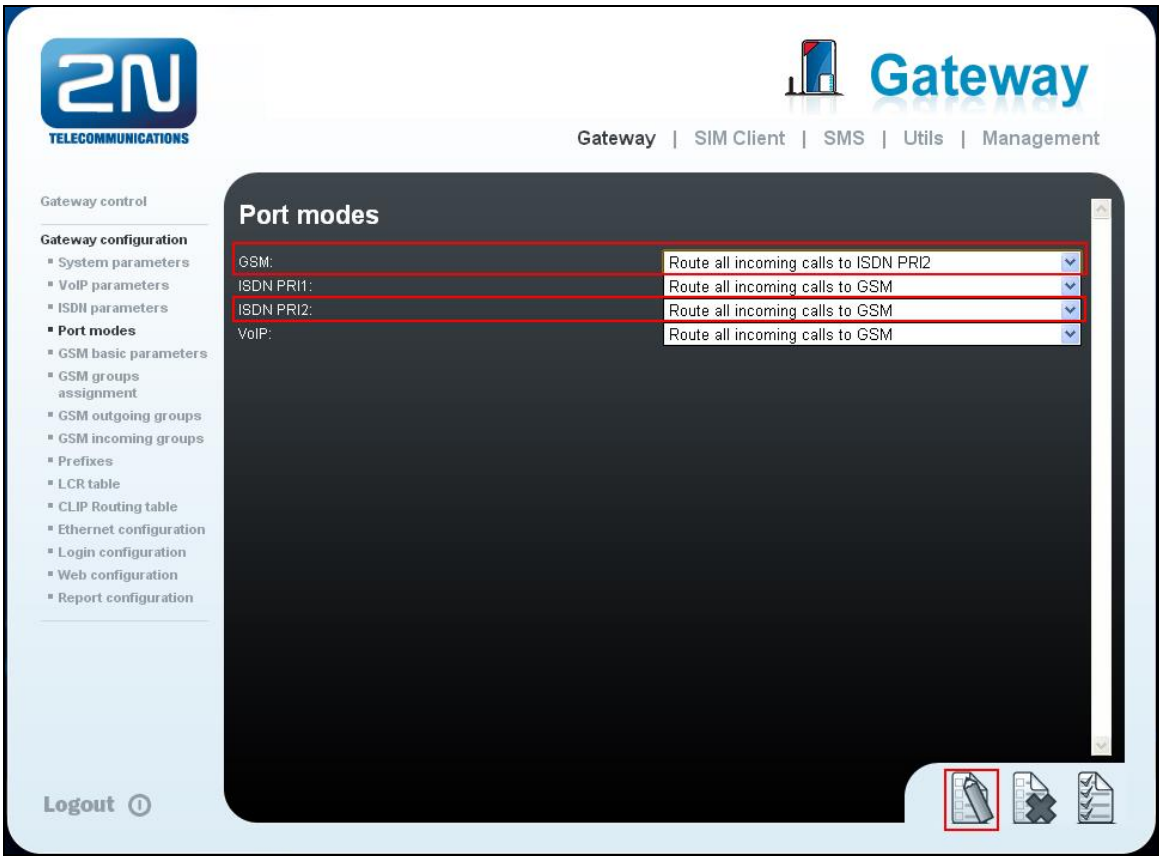


During compliance testing the SIM did not require a pin, therefore the PIN: box was left empty. Enter **#** in the **End of dialling** box. Click on the **Save Settings** icon on the bottom of the page to save the configuration. Select **ISDN parameters** to continue with the StarGate configuration.

When the **ISDN parameters** page opens, go to **PRI mode selection** and select **PRI1 NT/M-PRI2 TE/S** from the **Mode** dropdown box. Click on the **Save Settings** icon on the bottom of the page to save the configuration. Select **Port modes** to continue with the StarGate configuration.



Once the **Port modes** page opens, select **Route all incoming calls to ISDN PRI2** from the **GSM** dropdown box, and also select **Route all incoming calls to GSM** from the **ISDN PRI2** dropdown box. Click on the **Save Settings** icon on the bottom of the page to save the configuration.



7. Verification Steps

This section provides tests that can be performed to verify correct configuration of the Avaya and 2N StarGate solution.

7.1. Verify 2N® StarGate activity

Log in to the 2N StarGate and click on **Modules status** and verify that something similar to the screen shot below is seen. During compliance testing, only one SIM was used. The following screen shows that module 02 was used and has signal strength of -71 dBm.

7.2. Verify Calls via the 2N® StarGate

Place a call from a Desk Phone on the Communication Manager via the 2N StarGate to an external number, ensure the call is completed and verify two-way audio is heard.

Place a call from an external number via the 2N StarGate to a Desk Phone on the Communication Manager, ensure the call is completed and verify two-way audio is heard.

8. Conclusion

A full and comprehensive set of feature functional test cases were performed during Compliance testing. 2N® StarGate is considered compliant with Avaya Aura® Communication Manager 6.3. All test cases have passed and met the objectives outlined in **Section 2.1**

9. Additional References

These documents form part of the Avaya official technical reference documentation suite. Further information may be had from *http://support.avaya.com* or from your Avaya representative.

[1] Administering Avaya Aura® Communication Manager, Release 6.3, October 2013, Document Number 03-300509, Issue 9.0.

[2] Avaya Aura® Communication Manager Feature Description and Implementation, Release 6.3, May 2013, Document Number 555-245-205, Issue 10.0.

[3] Administering Avaya Aura® Session Manager, Release 6.3, Issue 3 October 2013

[4] Administering Avaya Aura® System Manager, Release 6.3, Issue 3, October, 2013

[5] Administration for the Avaya G430, 03-603228, Issue 1, May, 2009

Product Documentation for StarGate can be obtained from 2N Telekomunikace at http://www.2n.cz/

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.