



Avaya Solution & Interoperability Test Lab

Application Notes for Configuring TRIO Enterprise 3.0 and Avaya Communication Server 1000 Release 6.0 using QSIG Interface - Issue 1.0

Abstract

These Application Notes describe the configuration steps required for TRIO Enterprise 3.0 to successfully provide Attendant Client functionality with Avaya Communication Server 1000 Release 6.0 using QSIG interface.

Trio Enterprise 3.0 provides Attendant Client functionality with a view of contacts and schedules communications tasks integrating with existing Windows-based applications. It performs phone tasks without the need for a physical phone by One click dialing from the address book. Call scenarios involving Avaya Communication Server 1000 Release 6.0 and TRIO Enterprise 3.0 were tested.

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

1. Introduction

This is the interoperability test report for Avaya Communication Server 1000 Release 6.0 (CS1000) and Trio Enterprise 3.0. This test was performed to verify the basic interaction between Avaya Communication Server 1000 Release 6.0 and Trio Enterprise 3.0 to ensure that there is no adverse impact on Avaya Communication Server 1000 Release 6.0 system while Trio Enterprise 3.0 is running and accessing Avaya Communication Server 1000 Release 6.0 system. During the compliance testing, Trio Enterprise 3.0 was able to provide Attendant Client functionality successfully. Call scenarios involving Avaya Communication Server 1000 Release 6.0 and Trio Enterprise 3.0 were tested.

1.1. Interoperability Compliance Testing

The interoperability compliance test included feature testing to evaluate the ability of TRIO Enterprise 3.0 to successfully provide Attendant Client functionality integrated with Avaya Communication Server 1000 Release 6.0 System. The testing was performed for various types of calls: intra-switch calls (calls between phones on the same site), outbound/inbound calls to/from the PSTN and outbound/inbound calls to/from the phones between the two sites via the IP trunk.

1.2. Support

Technical support from TRIO Enterprise 3.0 can be obtained through the following:

Phone: +46 8 457 3000
E-mail: triosupport@trio.com
Web: www.trio.com

2. Reference Configuration

Figure 1 illustrates a sample configuration that was used to compliance test the interoperability of TRIO Enterprise 3.0 and Avaya Communication Server 1000 Release 6.0 system. Avaya Communication Server 1000 Release 6.0 System has connections to the following: Avaya Phones and a PRI trunk to the PSTN. TRIO Enterprise 3.0 uses Interception Protocol called ICP to provide Attendant Client functionality through QSIG interface. The phones connected to the system will be used to generate voice call traffic to Avaya Communication Server 1000 system. These phones will be used to generate intra-switch calls (calls between phones on the same system) and outbound/inbound calls to/from the PSTN.

Trio Enterprise 3.0 connects to the Avaya Communication Server 1000 Release 6.0 using ICP, a proprietary protocol for redirecting phones to the attendant service. ICP connection is done

through the network or using a terminal server connected to local Avaya RS232 interface, or through TCP/IP

The QSIG interface is used for connecting voice channels between Trio Enterprise 3.0 and Avaya Communication Server 1000 Release 6.0 System.

TRIO Enterprise software is running on a DELL Laptop

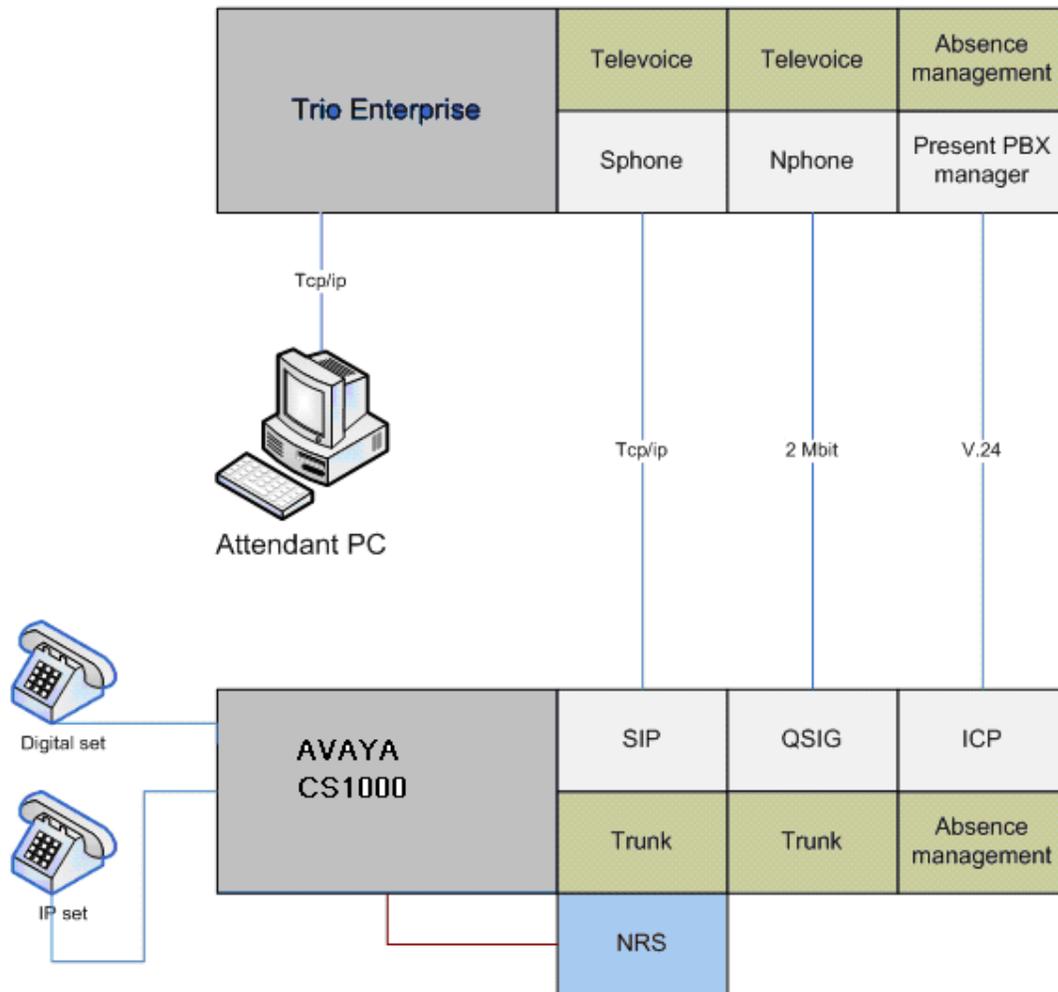


Figure 1: Network Configuration of TRIO Enterprise 3.0 with Avaya Communication Server 1000 Release 6.0 System

3. Equipment and Software Validated

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

Equipment	Software Version
Avaya Communication Server 1000	Release 6.0
TRIO Enterprise Software	TRIO Enterprise 3.0

4. Configure Avaya Communication Server 1000 Release 6.0

This section describes standard parameter settings and configuration of Trio Enterprise 3.0 when connecting to Avaya Communication Server 1000 Release 6.0.

During the test Trio, Enterprise was connected to Avaya Communication Server 1000 Release 6.0 utilizing ICP and QSIG interfaces.

The configuration steps are listed below.

- Configure NAS and NIT Data.
- Configure QSIG D-Channel
- Configure QSIG Route
- Configure QSIG Trunks
- Configure RLI for QSIG.
- Configure CDP to TRIO Endpoint.
- Configure ICP Data in Customer Data Block.
- Configure TTY for ICP Connection

The required changed attributes are in bold format where others are at default values.

4.1. Configure NAS and NIT Data

The Avaya Communication Server 1000 Release 6.0 is configured with attendant groups where the NAS and NIT functions routes the calls between the nodes and out to Trio Enterprise 3.0.

Configure NAS data in Overlay LD 86.

NAS (LD 86)
FEAT nas

TBL
TBL 00
TOD 00:
ALT0 1 DRBK= NO QUE= NO
ALT1 2 DRBK= NO QUE= NO
ALT 1 ID= 92004 First choice – Trio Enterprise
ALT 2 ID= 92030 Second choice – Fallback

Configure NIT_DATA in Overlay LD 15.

LD 15
TYPE NIT_DATA
CUST 00
NIT1 92004
TIM1
NIT2
TIM2
NIT3
TIM3
NIT4
TIM4
RPNS NO
ENS NO

4.2. Configure D-Channel for QSIG.

Configure D-Channel for QSIG interface in Overlay LD 17.

LD 17
ADAN DCH 58
CTYP MSDL
GRP 0
DNUM 6
PORT 1
DES TRIO
USR PRI
DCHL 5
OTBF 32
PARM RS422 DTE
DRAT 64KC
CLOK EXT
IFC ISGF
PINX_CUST 0
ISDN_MCNT 300

CLID OPT0
CO_TYPE STD
SIDE NET
CNEG 1
RLS ID 6
QCHID YES
RCAP COLP CCBI CCNI PRI DV3I CTI
PR_TRIGS DIV 3 1
 CNG 3 1
 CON 3 1
 CTR2 3 1
PR_RTN NO
MBGA NO
OVLN NO
OVLS NO
T310 120
T200 3
T203 10
N200 3
N201 260
K 7
PDCA 3
PCML A
NCOS 7
RTMB 48 1
B-CHANNEL SIGNALING
TGAR 1
AST NO
IAPG 0
CLS UNR DTN CND ECD WTA LPR APN THFD XREP BARD SPCD
 P10 VNL
TKID
AACR NO

4.3. Configure QSIG Route

Configure QSIG Route in Overlay LD 16.

LD 16
TYPE RDB
CUST 00
ROUT 48
DES TRIO
TKTP TIE

NPID_TBL_NUM 0
ESN NO
RPA NO
CNVT NO
SAT NO
RCLS INT
VTRK NO
NODE
DTRK YES
BRIP NO
DGTP PRI2
ISDN YES
MODE PRA
IFC ISGF
SBN NO
PNI 00001
NCNA NO
NCRD NO
CTYP CDP
INAC NO
ISAR NO
CPFXS YES
DAPC NO
INTC NO
MBXR NO
DSEL VOD
PTYD DTT
AUTO NO
DNIS NO
DCDR NO
ICOG IAO
SRCH LIN
TRMB YES
STEP
ACOD 87048
TCPP NO
TARG
CLEN 1
BILN NO
OABS
INST
IDC NO
DCNO 0
NDNO 0
DEXT NO

SIGO STD
MFC NO
ICIS YES
OGIS YES
TIMR ICF 512
OGF 512
EOD 13952
NRD 10112
DDL 70
ODT 4096
RGV 640
GTO 896
GTI 896
SFB 3
NBS 2048
NBL 4096

IENB 5
TFD 0
VSS 0
VGD 6
DTD NO
SCDT NO
2 DT NO
DRNG NO
CDR NO
NATL YES
SSL
CFWR NO
IDOP NO
VRAT NO
MUS NO
PANS YES
RACD NO
FRL 0 0
FRL 1 1
FRL 2 2
FRL 3 3
FRL 4 4
FRL 5 5
FRL 6 6
FRL 7 7
OHQ NO
OHQT 00
CBQ NO

AUTH NO
TTBL 1
ATAN NO
PLEV 2
OPR NO
ALRM NO
ART 0
PECL NO
DCTI 0
TIDY 87048 48
SGRP 0
ARDN NO
AACR NO

4.4. Configure QSIG Trunks.

Configure QSIG Trunks in Overlay LD 14.

LD 14
DES TRIO
TN 005 01
TYPE TIE
CDEN SD
CUST 0
TRK PRI2
PDCA 3
PCML A
NCOS 7
RTMB 66 1
B-CHANNEL SIGNALING
TGAR 1
AST NO
IAPG 0
CLS UNR DTN CND ECD WTA LPR APN THFD XREP BARD SPCD
P10 VNL
TKID
AACR NO

4.5. Configure RLI for QSIG.

Configure RLI for QSIG in Overlay LD 86.

RLI (LD 86)

RLI 36

ENTR 0

LTER NO

ROUT 48

TOD 0 ON 1 ON 2 ON 3 ON

4 ON 5 ON 6 ON 7 ON

VNS NO

SCNV NO

CNV NO

EXP NO

FRL 0

DMI 0

ISDM 0

FCI 0

FSNI 0

BNE NO

DORG NO

SBOC RRA

COPT 2

IDBB DBA

IOHQ NO

OHQ NO

CBQ NO

ENTR 1

LTER YES

TOD 0 ON 1 ON 2 ON 3 ON

4 ON 5 ON 6 ON 7 ON

VNS NO

FRL 0

DMI 135

FCI 0

FSNI 0

BNE NO

SBOC NRR

IDBB DBD

IOHQ NO

ISET 2

NALT 5

MFRL 0

OVLL 0

DMI 135
DEL 5
ISPN NO
INST 92030
CTYP CDP

4.6. Configure CDP to TRIO Endpoint

Configure CDP for TRIO Endpoint in Overlay LD 87

DSC to Trio (LD 87)

DSC 92004
FLEN 5
DSP DN
RRPA NO
RLI 36
NPA
NXX

4.7. Configure ICP Data in Customer Data Block

Configure ICP Data in Overlay LD 15.

ICP (LD 15)

TYPE ICP_DATA
CUST 00
ICP YES
APL 4
NIPN 9
ICCR NO
ICMM 9
ICDN 92004
ECDN 92004
ICWN 0
ICPS CIR
ICDL 5
ICPD 0
ICTD YES

4.8. Configure TTY for ICP Connection

Configure TTY for ICP Connection in Overlay LD 17.

LD 17

TYPE adan tty 4
ADAN TTY 4
CTYP SDI2
GRP 0
DNUM 4
DES HVD
FLOW NO
USER ICP
XSM NO

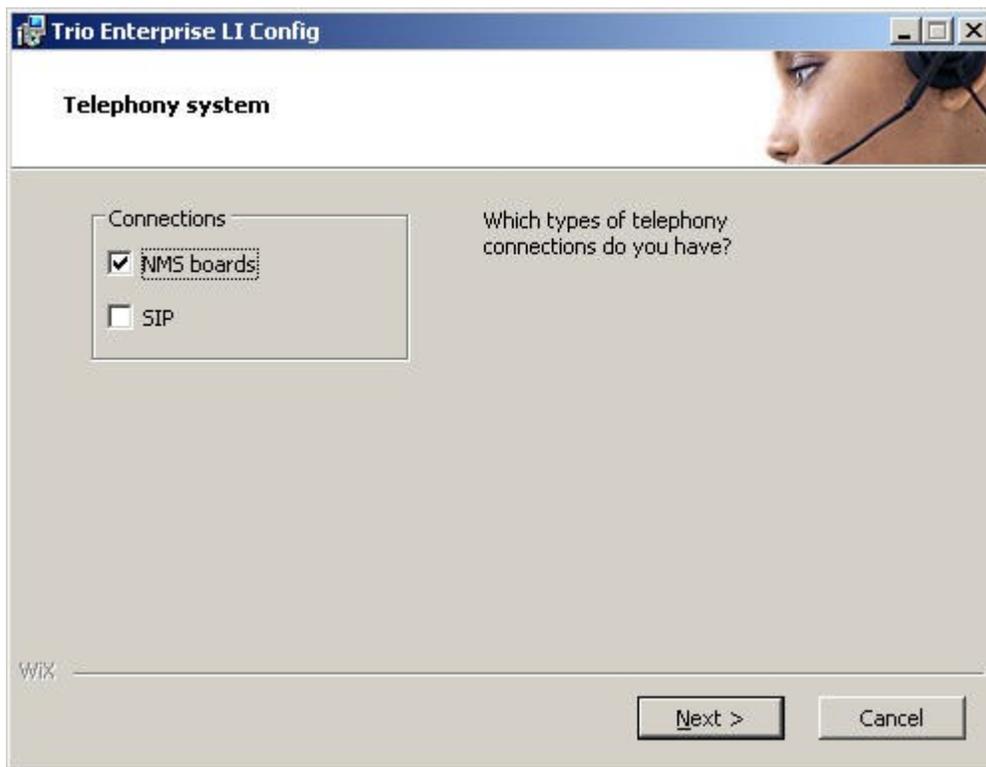
5. Configure TRIO Enterprise 3.0 for QSIG interface

This section describes how to integrate TRIO Enterprise 3.0 with Avaya Communication Server 1000 Release 6.0 System using QSIG interface.

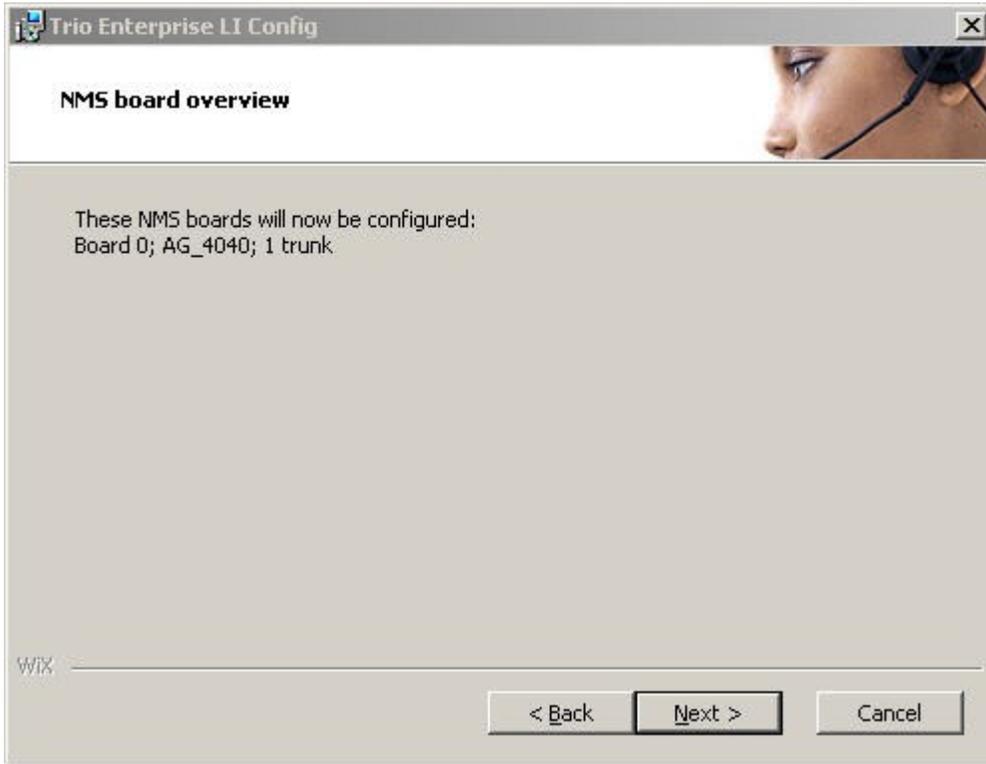
This section describes the installation steps performed for TRIO Enterprise 3.0 Setup.

Double Click on Trio Enterprise 3.0 Setup.exe file. The Trio TeleVoice Setup Custom Setup screen opens.

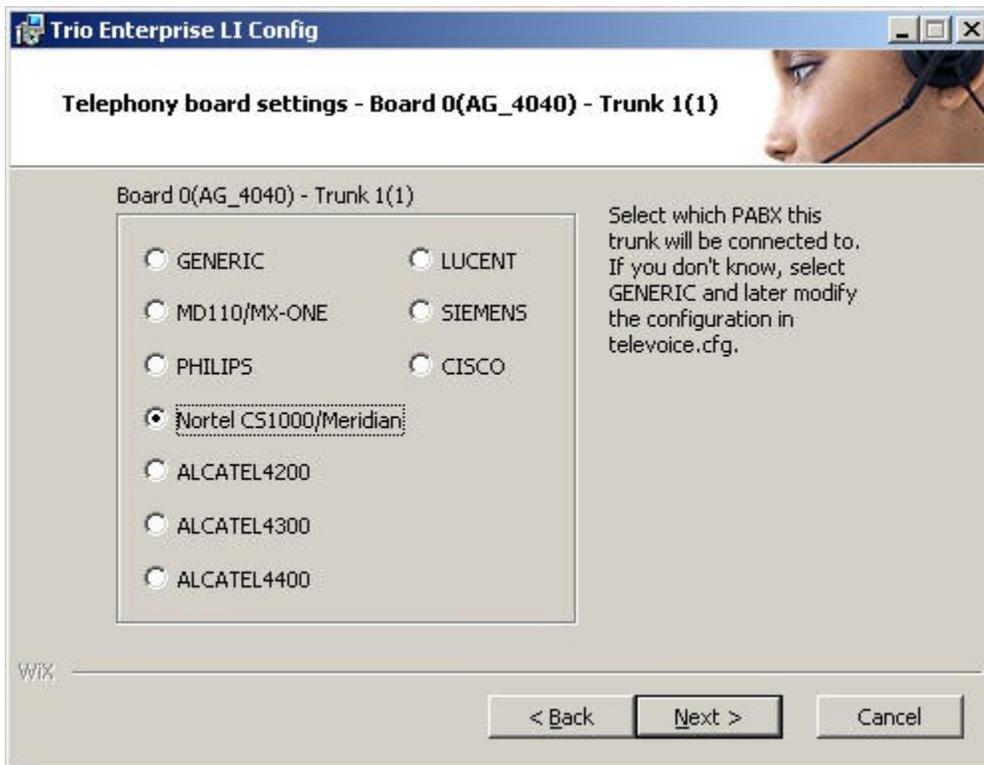
- Enable **NMS boards** checkbox and Click on **Next** button.



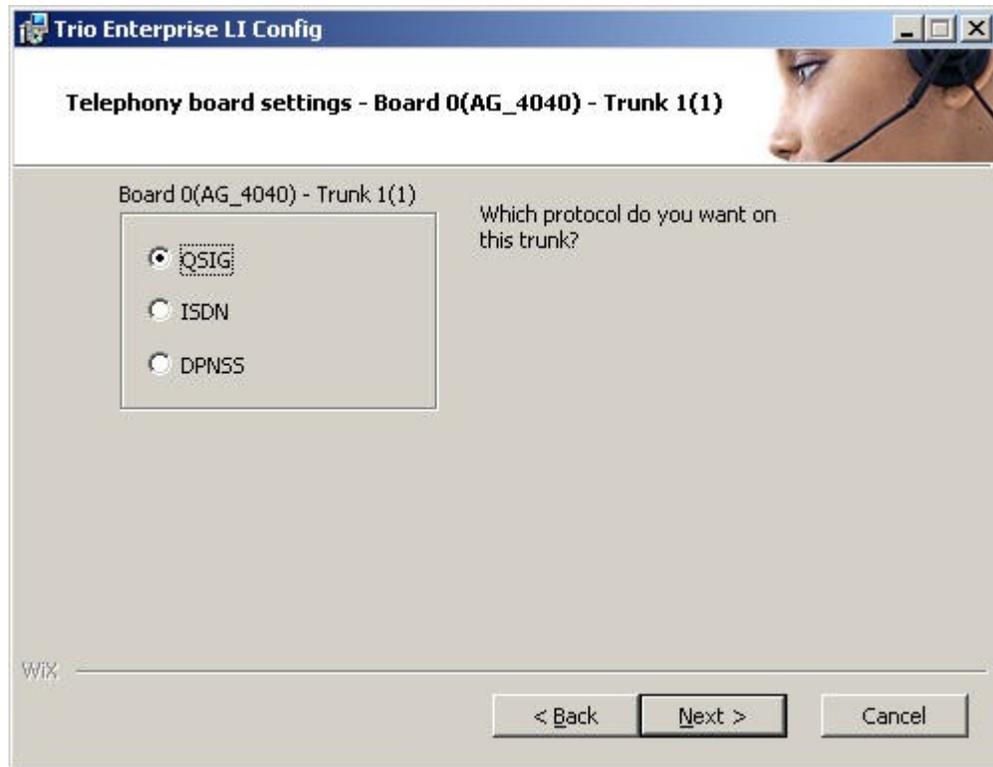
- NMS board overview page opens. Click on **Next** button.



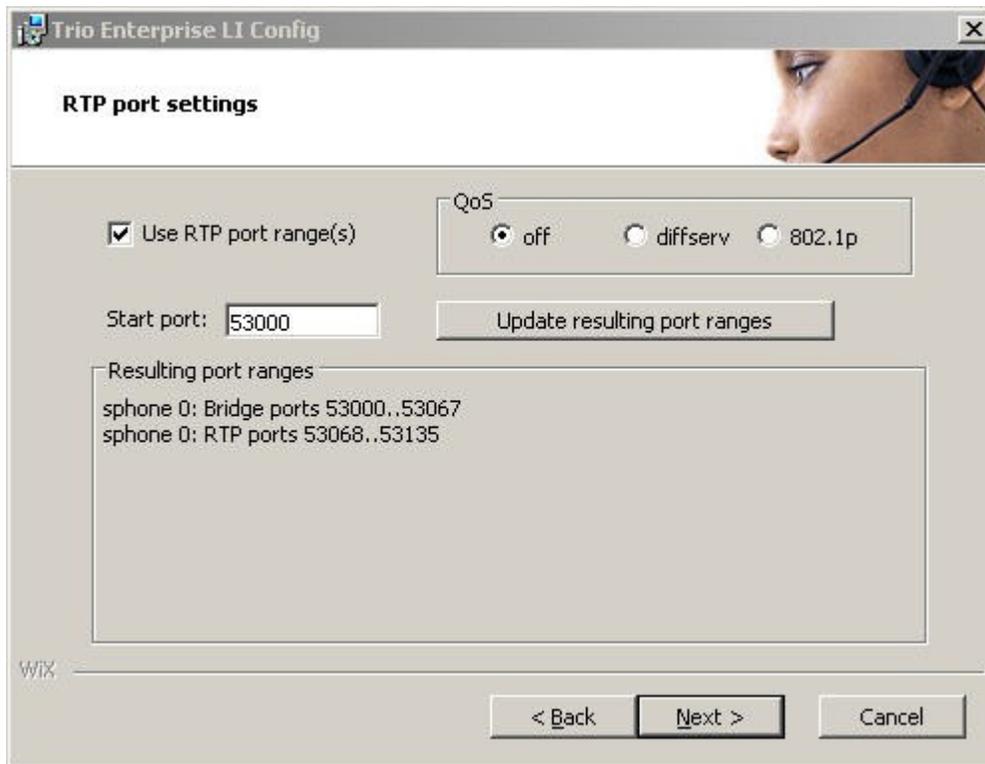
- Select **Nortel CS1000/Meridian** and click on **Next** button.



- Select **QSIG** and click on **Next** Button.



- Enter the **RTP Port Settings** as follows and Click on **Next** Button.
 - Enable **Use RTP port range** checkbox.
 - Enter the **Start port** value.
 - Select **off** for **QoS**.



The screenshot shows a window titled "Trio Enterprise LI Config" with a close button in the top right corner. The main heading is "RTP port settings". Below this, there is a checkbox labeled "Use RTP port range(s)" which is checked. To the right of this checkbox is a "QoS" section with three radio buttons: "off" (selected), "diffserv", and "802.1p". Below the checkbox is a text input field for "Start port:" containing the value "53000". To the right of this field is a button labeled "Update resulting port ranges". Below these elements is a large text area titled "Resulting port ranges" containing the text: "sphone 0: Bridge ports 53000..53067" and "sphone 0: RTP ports 53068..53135". At the bottom left of the window, the text "WIX" is visible. At the bottom right, there are three buttons: "< Back", "Next >", and "Cancel".

- TeleVoice Product Configuration Page appears.

Enter the following in General Tab.

- Enter the value as 5 for **Ext. length**
- Enter the value for **Operator Open hours**.
- Click on **Apply** Button.
- Click on **OK** Button.

The screenshot shows the 'TeleVoice Product Configuration' dialog box with the 'General' tab selected. The dialog has four tabs: 'General', 'Voiceguide', 'VoiceMail', and 'Number analysis'. The 'General' tab contains several sections:

- PBX:** 'Ext. length' is set to 5.
- Operator:** 'Open hours' is set to 0800-1800. 'Extension for open hours' is empty.
- A4400 - VPS Signaling:** 'Extended VPS Signaling' is unchecked.
- General:** 'Common working' is set to 0800-1700.
- Customer group data:** 'Group' is set to 0. 'Number to operator' is set to 07203. 'Beginning digits in extensions' is empty.
- Outgoing calls:** 'Prefix for outgoing calls' is set to 0.
- Attendant extensions:** 'Attendant' is set to 0. 'Extension' is empty.
- Voice Assistant:** 'Service' is set to 0. 'Number' is empty. 'Televoice Server IP-addr.' is empty. 'Option in int. calls' is checked. 'Option in ext. calls' is unchecked.

At the bottom of the dialog are three buttons: 'OK', 'Cancel', and 'Apply'.

- VoiceGuide Configuration

Select VoiceGuide tab from the Televoice Product Configuration Page.

- Enable **Int. calls to attendant** checkbox.
- Enter the **Adm. Code**.
- Click on **Apply** Button.
- Click on **OK** Button.

TeleVoice Product Configuration

General | **Voiceguide** | VoiceMail | Number analysis

Input of IM and/or name ph.

Extension:

Adm.code:

*23-ext.:

Cellular transfer pause: Sec

Communication

Interception system communication

TCP/IP

Serial

Optional functions

Input of IM

Name phrase, self recorded

Int. calls to attendant

VoiceGuide for MCX, external

VoiceGuide for MCX, internal

Lunch / Pause

Default lunch:

Default pause:

Description	Referral code
Other	0
Is on sick-leave	1
Is out at lunch	2
Left for the day	3
Is on official business	4
Is at a meeting	5
Is on a business-trip	6
Working part-time	7
Is on holiday	8
Is not on duty at present	9
Is temporary out	10

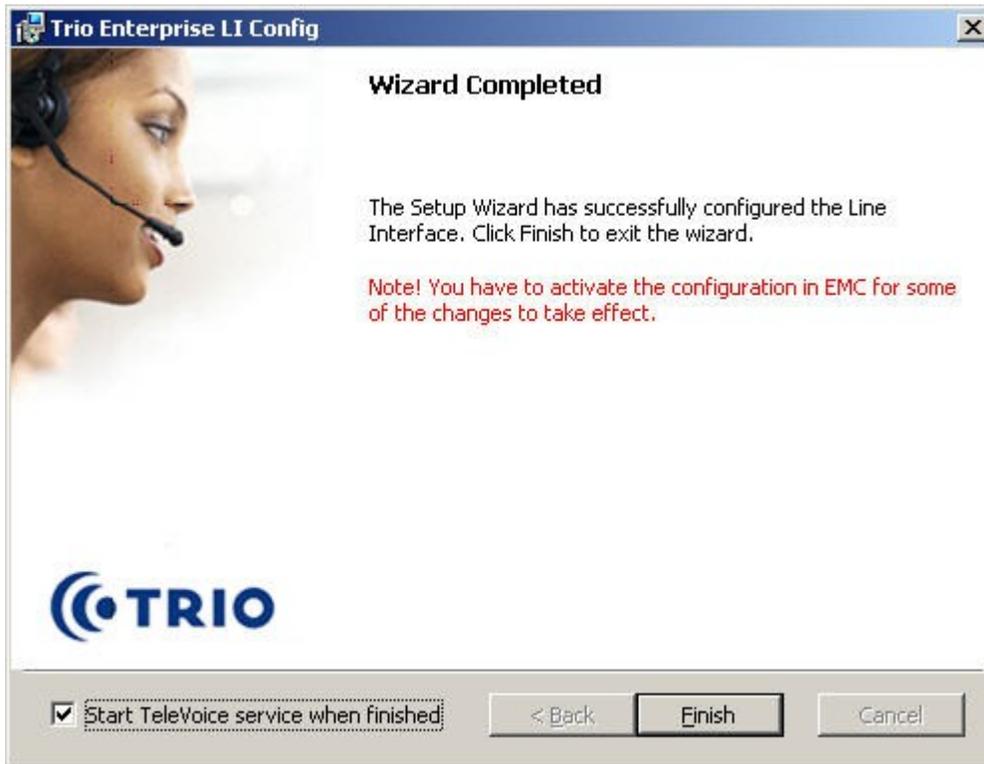
Add... Remove

IP-port number for call control connection to Present server:

Transaction identifier for call control connection to Present:

OK Cancel Apply

- Click on Finish button

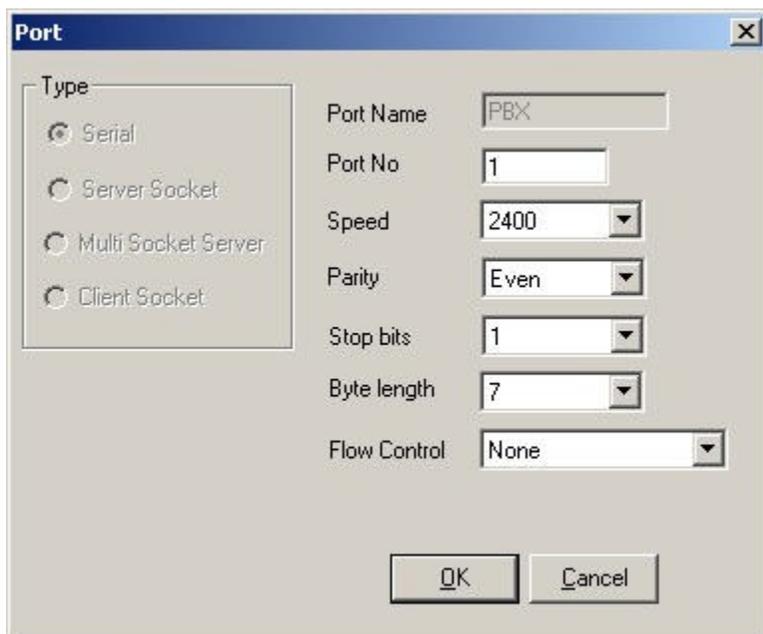


5.1. Server configuration for ICP Protocol

This is the required configuration on the server side to utilize forwarding on ICP protocol.

Open the ICP protocol HyperTerminal connection.

- Set up a port to communicate with the ICP interface.
 - Enter value 1 for **Port No.**
 - Enter the **Speed** value.
 - Select **Even** for Parity field.
 - Enter the values for **Stop bits** and **Byte length.**
 - Select None for **Flow Control.**
 - Click on **OK** button.



The screenshot shows a dialog box titled "Port" with a close button (X) in the top right corner. On the left, there is a "Type" section with four radio button options: "Serial" (selected), "Server Socket", "Multi Socket Server", and "Client Socket". On the right, there are several fields and dropdown menus: "Port Name" (text box containing "PBX"), "Port No" (text box containing "1"), "Speed" (dropdown menu showing "2400"), "Parity" (dropdown menu showing "Even"), "Stop bits" (dropdown menu showing "1"), "Byte length" (dropdown menu showing "7"), and "Flow Control" (dropdown menu showing "None"). At the bottom of the dialog, there are two buttons: "OK" and "Cancel".

- PBX Page Opens.
 - Select PBX **Type** as **Nortel**.
 - Enter the value for **Extension length** as 5.
 - Click on **OK** button.

The image shows a 'PBX' configuration dialog box with the following fields and options:

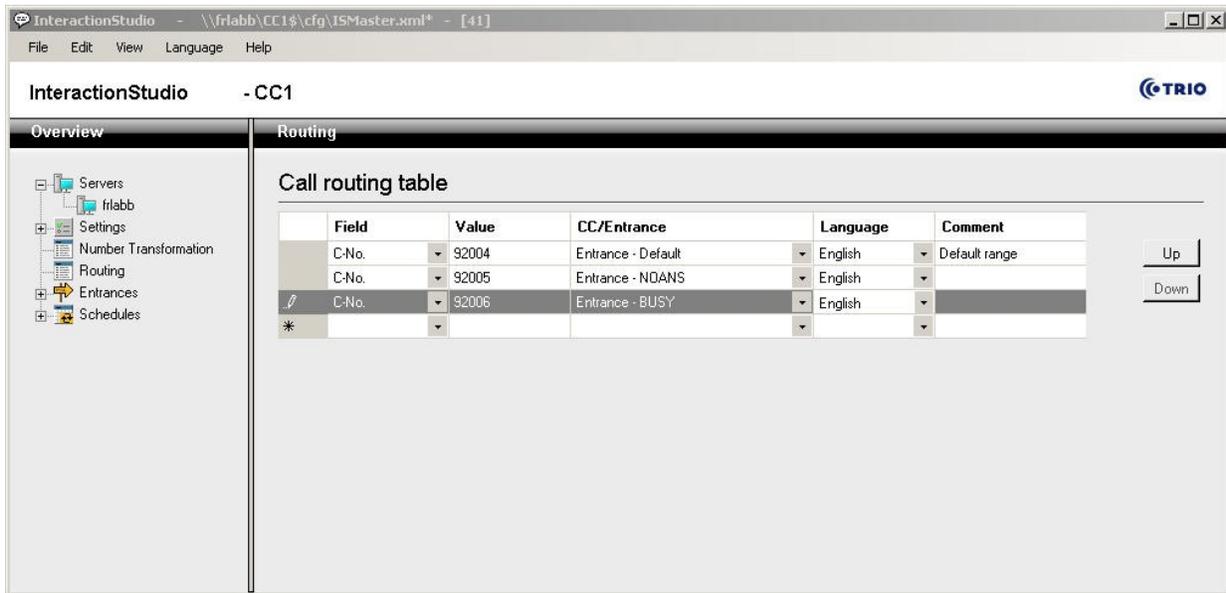
- Type:** Radio buttons for MXOne/MD110, **Nortel** (selected), Alcatel, Philips, Cisco AXL, and Televoice Tapi.
- Virtual:** Radio button for MCX.
- Port:** Dropdown menu set to 'PBX'.
- PbxName:** Text field containing 'Nortel'.
- Prefix:** Empty text field.
- Extension Length:** Text field containing '5'.
- Terminal No. Len.:** Text field containing '2'.
- Real Ext. Length:** Text field containing '5'.
- Pad Character:** Empty text field.
- Net Group:**
- Message Waiting:**
- PBX Signals Code + Time:**
- Express No. to Meridian Mail:** Empty text field.

Buttons: **OK** and **Cancel**.

5.2. Interaction studio Configuration

Click on the Interaction Studio Executable file available in the TRIO Enterprise server.

- Navigate to Settings → Routing
- Setup the Call routing table.



All numbers in the routing table should point to Trio Enterprise 3.0.

92004 – The main queue number.

92005 – Extensions should be forwarded to this number when Call Forward No Answer is activated.

92006 – Extensions should be forwarded to this number when Call Forward Busy is activated.

6. Verification Steps

This section provides the tests that can be performed to verify correct configuration of CS1000 system with TRIO Enterprise 3.0.

6.1. Connection between Avaya Communication Server 1000 Release 6.0 System and TRIO Enterprise 3.0

Check whether the QSIG D-channel to TRIO is Active from Overlay LD 96 of Avaya Communication Server 1000 Release 6.0.

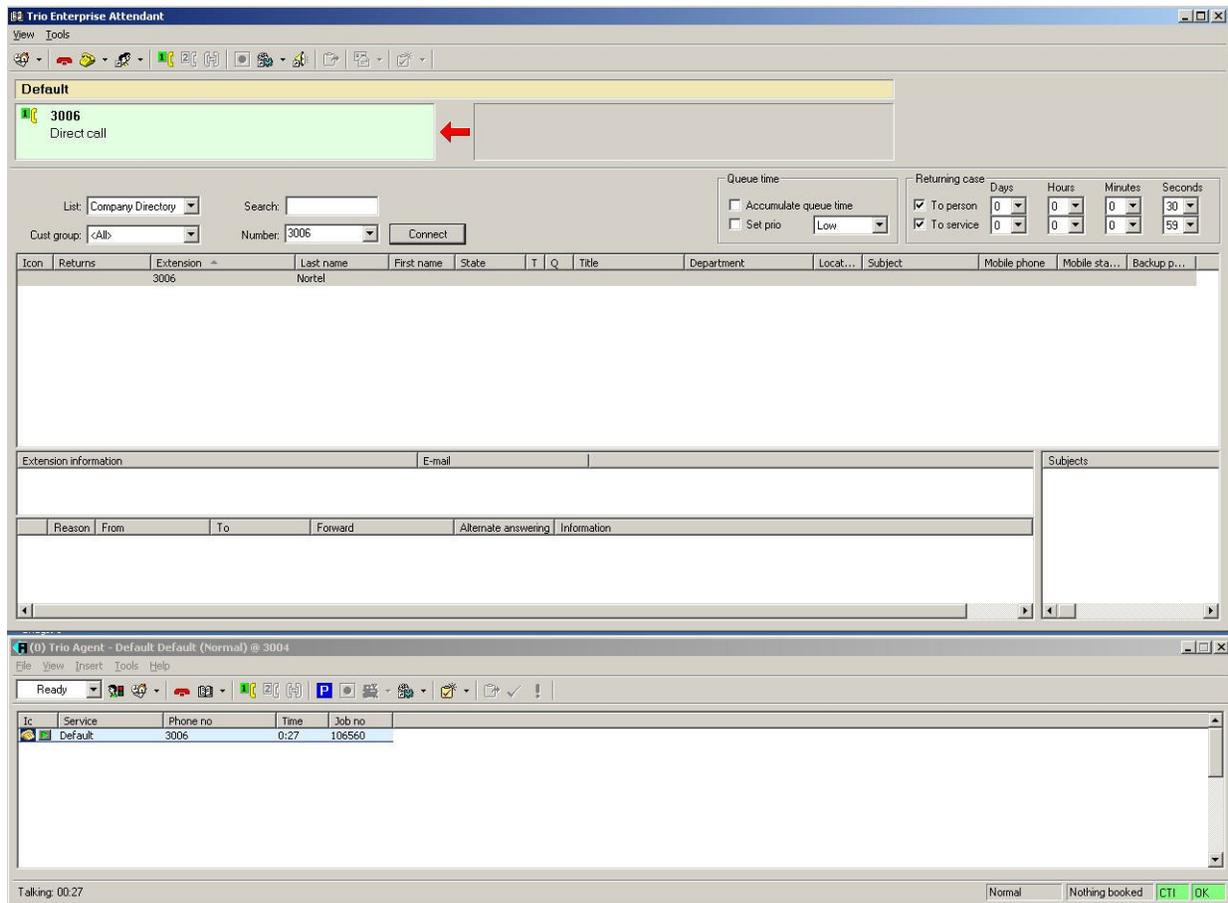
```
>ld 96
.stat dch
DCH 058 : OPER    EST  ACTV AUTO    DES : to_TRIO
```

6.2. Connection between TRIO Enterprise 3.0 and Avaya Communication Server 1000 Release 6.0 System

When set up correctly you should be able to perform these maneuvers to make sure everything is working ok.

- Answer a call in the Attendant client.
- Make a call from the Attendant client.
- Transfer a call from the Attendant client.

Given below is the sample screenshot during Call scenario.



7. General Test Approach and Test Results

The general test approach was to manually place calls, inbound and outbound trunk calls to the Attendant client and from telephones attached to Avaya Communication Server 1000 Release 6.0 system and verify that TRIO Enterprise 3.0 Attendant Client functionality successfully and properly classifies and reports the attributes of the call.

All the executed test cases passed. TRIO enterprise 3.0 provided Attendant client functionality with Avaya Communication Server 1000 Release 6.0 system for all calls generated including intra-switch calls, inbound / outbound PSTN trunk calls, and transfer calls.

8. Conclusion

These Application Notes describe the procedures for configuring TRIO Enterprise Server 3.0 and Avaya Communication Server 1000 Release 6.0 system to successfully provide Attendant Client functionality. TRIO Enterprise 3.0 successfully passed all compliance testing.

9. Additional References

Product documentation for Avaya products may be found at:

<http://support.nortel.com/go/main.jsp>

[1] *NN43001-569-B2 02.08 Communication Server 1000 ISDN Primary Rate Interface Features Fundamentals*

TRIO Enterprise documentation can be found at www.trio.com

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