Avaya Solution & Interoperability Test Lab

Application Notes for Configuring Trio Enterprise 3.0 and Avaya Communication Server 1000 Release 6.0 using SIP 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 system using SIP 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 system 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 an IP trunk.

1.2. Support

Technical support for 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 SIP interface. The phones connected to the system will be used to generate call traffic to Avaya Communication Server 1000 Release 6.0 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 connects to Avaya CS1000 system using ICP, a proprietary protocol for redirecting phones to the attendant service. An ICP connection is done through the network or using a terminal server connected to a local Avaya RS232 interface, or through TCP/IP.

In this example, the Trio Enterprise server connects to Avaya CS1000 system using RS232.

The SIP interface is used for connecting voice channels between Trio Enterprise and Avaya Communication Server 1000 Release 6.0 system.

Network Routing Service (NRS) gives directives to Trio Enterprise of which node to use for the outgoing call for each call going out from Trio Enterprise.

TRIO Enterprise software is running on a DELL Laptop.

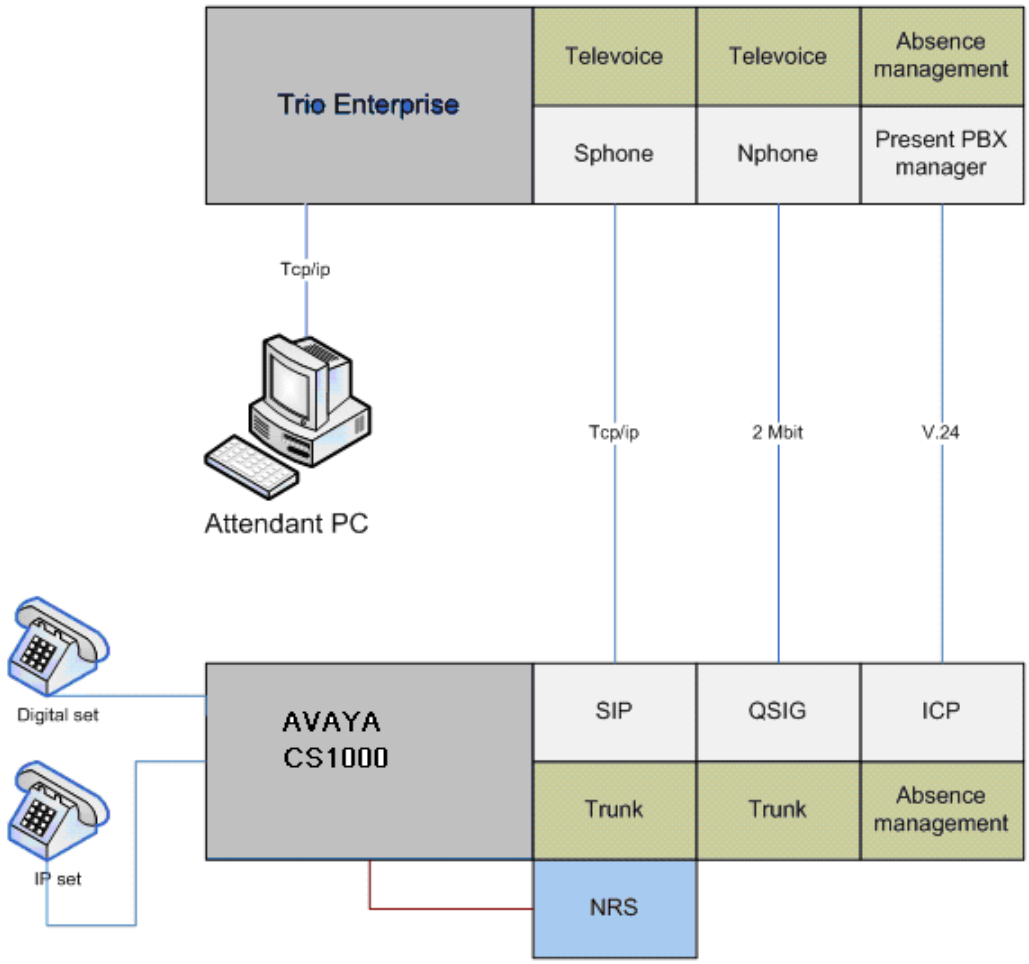


Figure 1: Network Configuration of TRIO Enterprise 3.0 with Avaya Communication Server 1000 Release. 6.0

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 System

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

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

The configuration steps are listed below.

- Configure SIP D-Channel.
- Configure SIP Route
- Configure SIP Trunks
- Configure RLI for SIP.
- Configure CDP to TRIO Endpoint.
- Configure ICP Data in Customer Data Block.
- Configure TTY for ICP Connection
- Configure SIP Dynamic Endpoint for TRIO in NRS.
- Configure Routing Entries for TRIO in NRS

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

4.1. Configure D-Channel for SIP.

Configure D-Channel for SIP using Overlay LD 17.

LD 17

ADAN DCH 64
CTYP DCIP

```
DES  VTRK
USR  ISLD
ISLM 4000
SSRC 1800
OTBF 128
NASA YES
IFC  SL1
CNEG 1
RLS  ID  25
RCAP ND2 NCT TAT
MBGA NO
H323
  OVLR YES
  OVLS YES
OVLT 0
```

4.2. Configure SIP Route

Configure SIP route using Overlay LD 16.

LD 16

```
TYPE RDB
CUST 00
ROUT 66
DES  VTRK_SIP
TKTP TIE
NPID_TBL_NUM   0
ESN  YES
RPA  NO
CNVT NO
SAT  NO
RCLS EXT
VTRK YES
ZONE 002
PCID SIP
CRID NO
NODE 920
DTRK NO
ISDN YES
   MODE ISLD
   DCH  64
   IFC  SL1
   PNI  00000
   NCNA YES
   NCRD NO
   FALT NO
   CTYP UKWN
   INAC NO
   ISAR NO
   DAPC NO
MBXR NO
PTYP ATT
```

```
AUTO NO
DNIS NO
DCDR NO
ICOG IAO
SRCH LIN
TRMB YES
STEP
ACOD 87066
TCPP NO
TARG
CLEN 10
BILN NO
OABS
INST
IDC  NO
DCNO 0
NDNO 0
DEXT NO
SIGO ESN5
MFC  NO
ICIS YES
OGIS YES
TIMR ICF  512
    OGF  512
    EOD  13952
    DSI  34944
    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
    EESD  1024
SST  5 0
DTD  NO
SCDT NO
2 DT NO
NEDC ORG
FEDC ORG
CPDC NO
DLTN NO
HOLD 02 02 40
SEIZ 02 02
SVFL 02 02
DRNG NO
CDR  NO
NATL YES
```

SSL
CFWR NO
IDOP NO
VRAT NO
MUS NO
PANS YES
RACD NO
MANO NO
FRL 0 0
FRL 1 0
FRL 2 0
FRL 3 0
FRL 4 0
FRL 5 0
FRL 6 0
FRL 7 0
OHQ NO
OHQT 00
CBQ NO
AUTH NO
TTBL 0
ATAN NO
OHTD NO
PLEV 2
OPR NO
ALRM NO
ART 0
PECL NO
DCTI 0
TIDY 87066 66
ATRR NO
TRRL NO
SGRP 0
ARDN NO
AACR NO

4.3. Configure SIP Trunks.

Configure SIP Trunks using Overlay LD 14.

LD 14

DES SIP
TN 132 0 02 00 VIRTUAL
TYPE IPTI
CDEN 8D
CUST 0
XTRK VTRK
ZONE 002
LDOP BOP
TIMP 600
BIMP 600

AUTO_BIMP NO
NMUS NO
TRK ANLG
NCOS 0
RTMB 66 1
CHID 1
TGAR 1
STRI/STRO WNK WNK
SUPN YES
AST NO
IAPG 0
CLS UNR DTN CND ECD WTA LPR APN THFD XREP SPCD MSBT
    P10 NTC
TKID
AACR NO

4.4. Configure RLI for SIP.

Configure RLI for SIP using Overlay LD 86.

RLI (LD 86)

RLI 36
ENTR 0
ROUT 66
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

DMI 135
DEL 5
ISPN NO
INST 92030
CTYP CDP

FSNI 0
BNE NO
SBOC NRR
IDBB DBD
IOHQ NO

ISET 2
NALT 5
MFRL 0
OVLL 0

4.5. Configure CDP to TRIO Endpoint

Configure CDP Dialing Plan to TRIO Endpoint using Overlay LD 87.

DSC to Trio (LD 87)

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

4.6. Configure ICP Data in Customer Data Block

Configure ICP Data in Customer Data Block using 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

4.7. Configure TTY for ICP Connection

Configure TTY for ICP Connection using Overlay LD 17.

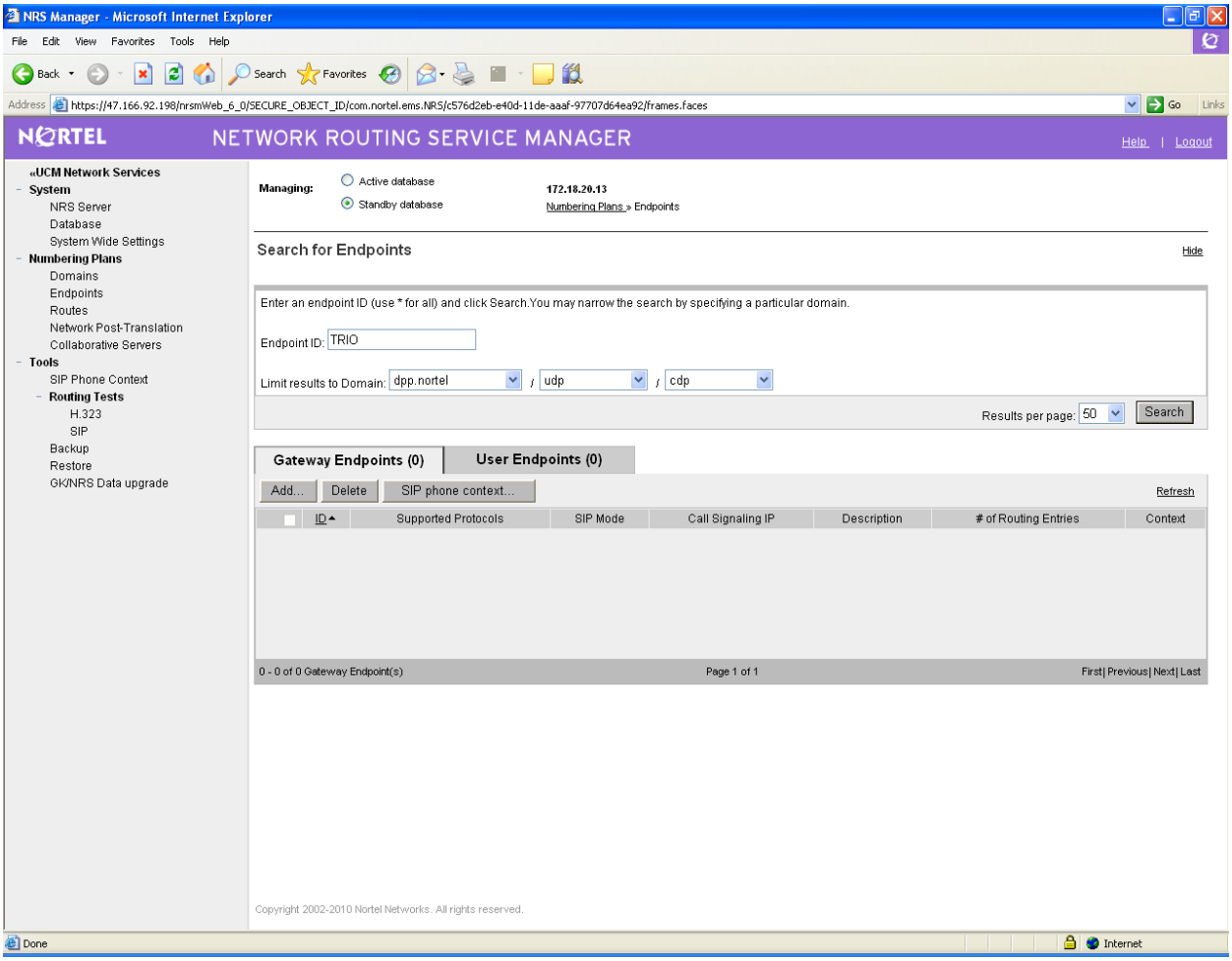
LD 17

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

4.8. Configure SIP Dynamic Endpoint for TRIO in NRS.

Launch NRS Manager Page from UCM of Avaya Communication Server 1000 Release 6.0 System. Navigate to NumberingPlans→Endpoints.

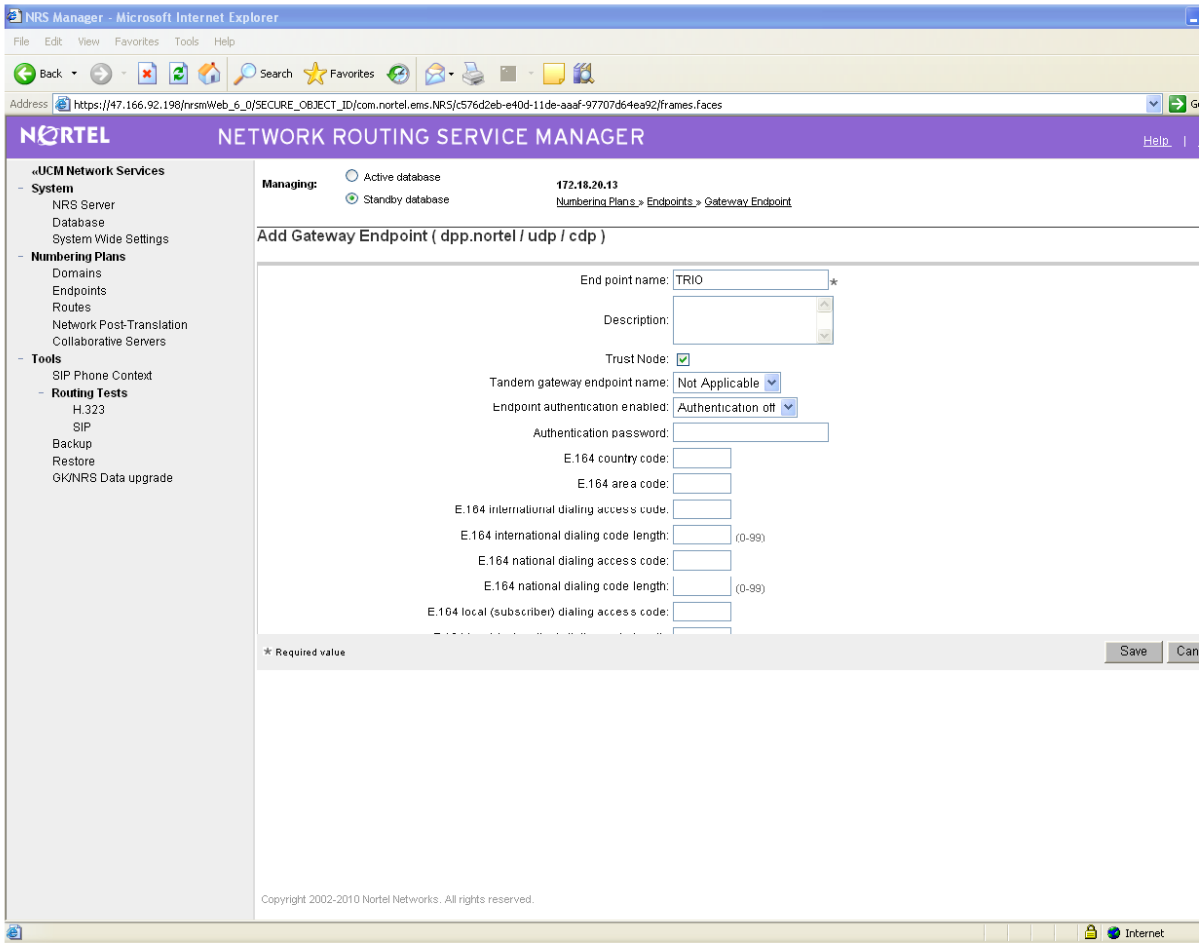
- Select **Standby** database for adding a configuration in NRS page.
- Enter the **EndPoint ID** as TRIO.
- Select the **Domains** (Service Domain as dpp.nortel, L0 Domain as udp and L1 Domain as CDP).
- Click on **Add** button to add an Gateway Endpoint.



Configuration found in the NRS Manager

Add Gateway Endpoint Page opens.

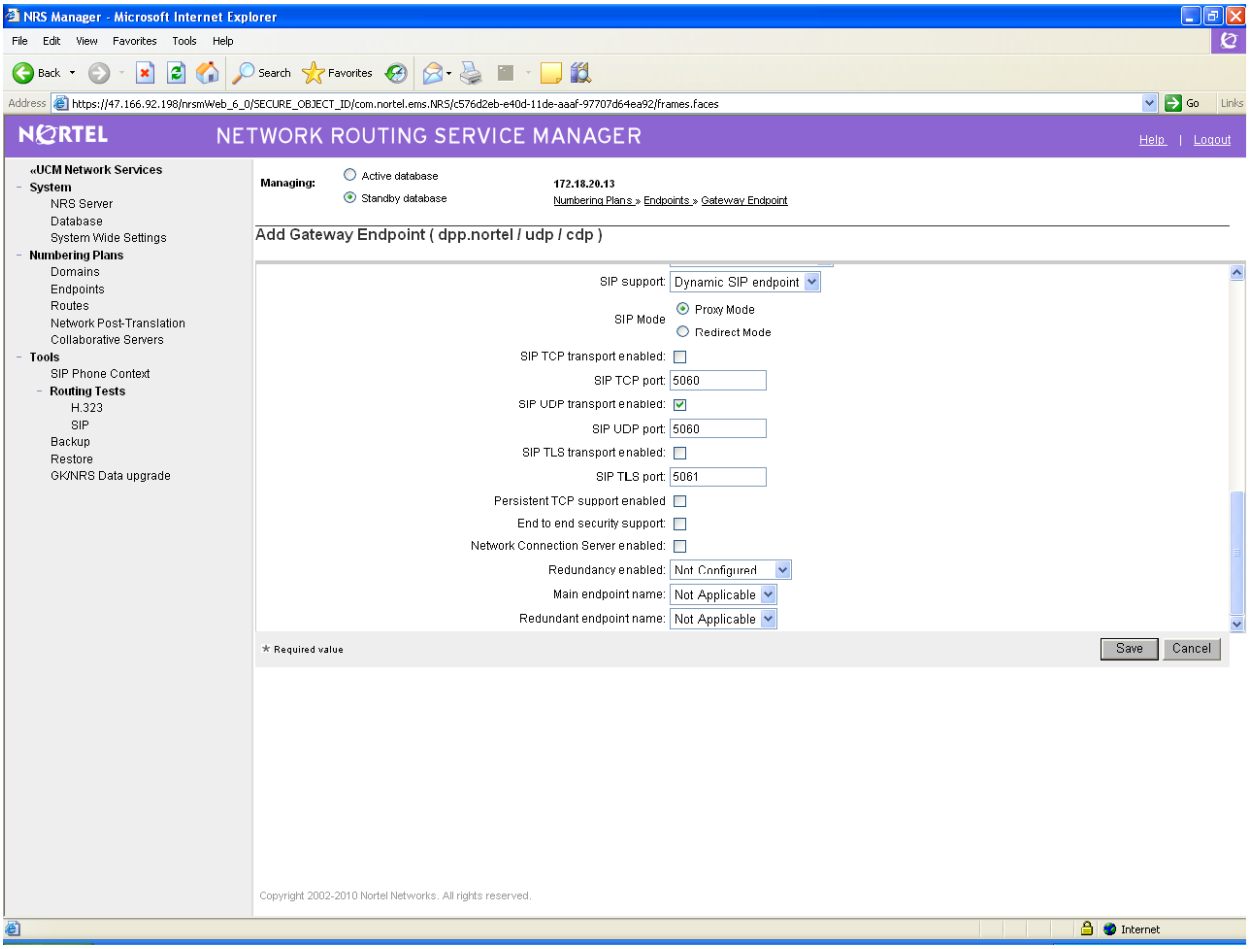
- Enter the **Endpoint Name** as TRIO.



Configuration found in the NRS Manager

Scroll down the page and set the following:

- Select **Dynamic SIP endpoint** for **SIP Support**.
- Select **Proxy Mode** for **SIP Mode**
- Enable the **SIP UDP transport enabled** checkbox.
- Enter **5060** for **SIP UDP Port**.

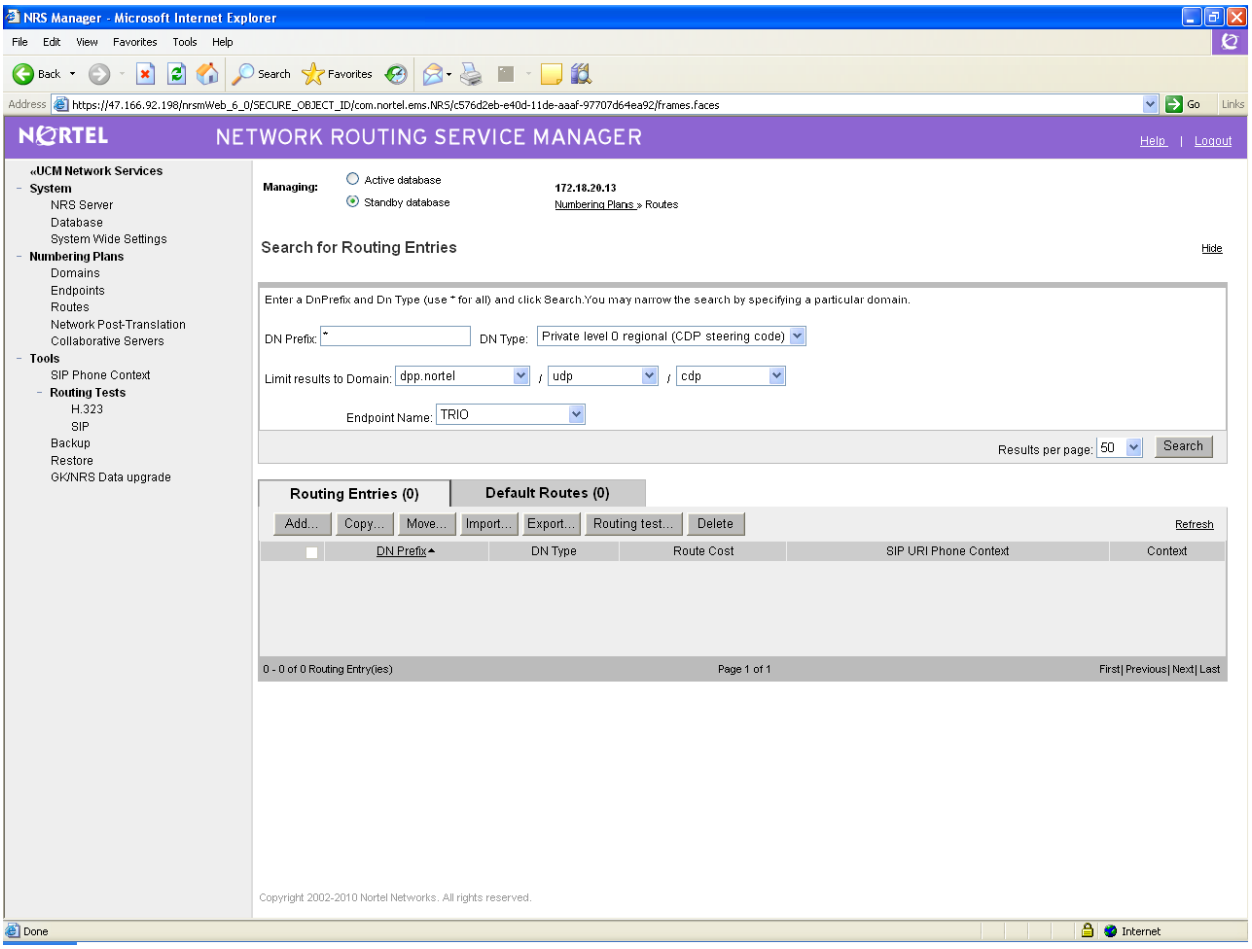


Configuration found in the NRS Manager

4.9. Configure Routing Entries for TRIO in NRS.

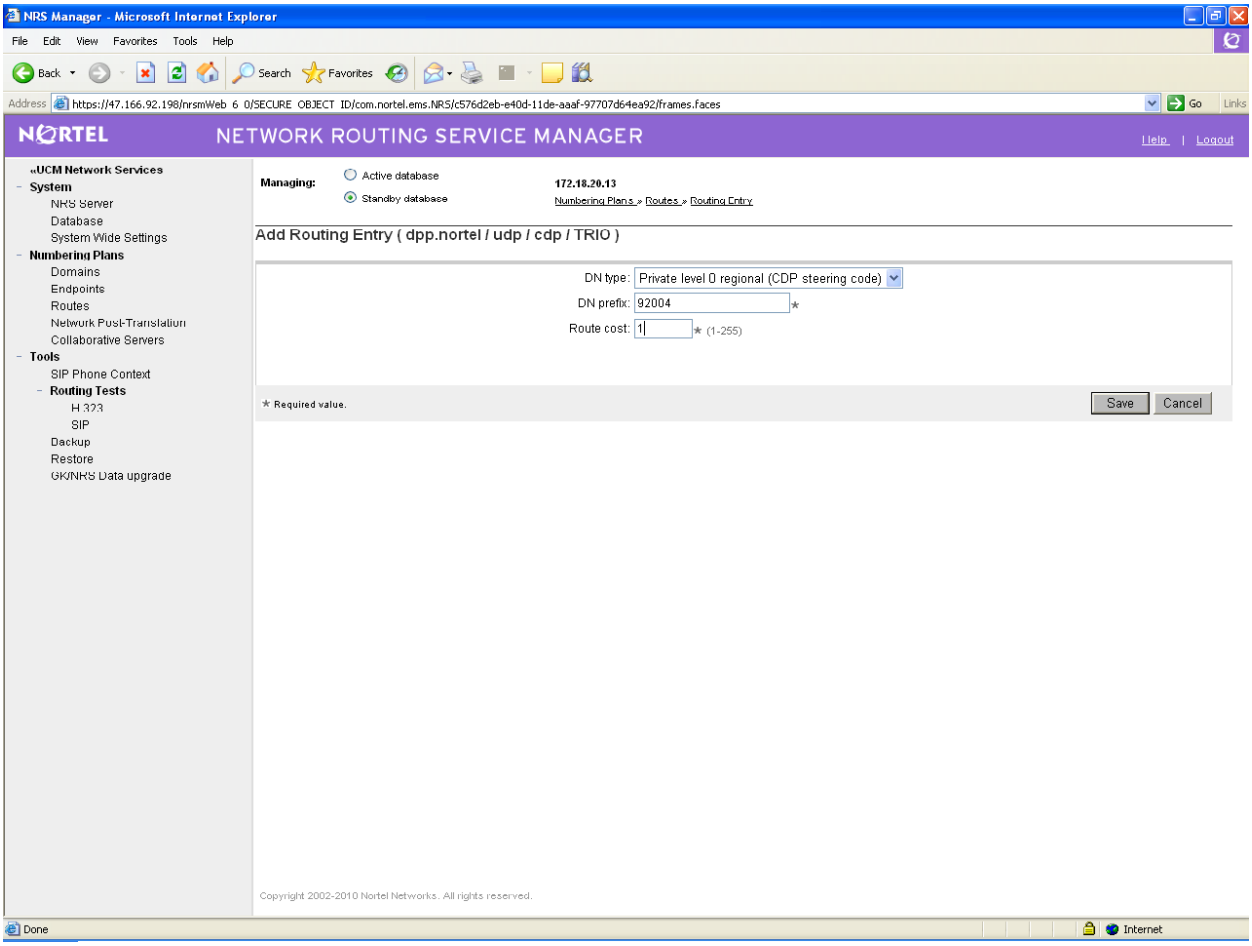
From NRS Manager page, navigate to **Numbering Plans→ Routes.**

- Select the **Domains** (Service Domain as dpp.nortel, L0 Domain as udp and L1 Domain as CDP).
- Select **TRIO** as **Endpoint Name**.
- Click on **Add** Button to add an routing entry.



Add Routing Entry page opens.

- Select **Private level 0 regional (CDP steering code)** for **DN type.**
- Enter the **DN** (Ex:92004) for **DNPrefix.**
- Enter **1** for **Route cost.**



Configuration found in the NRS Manager

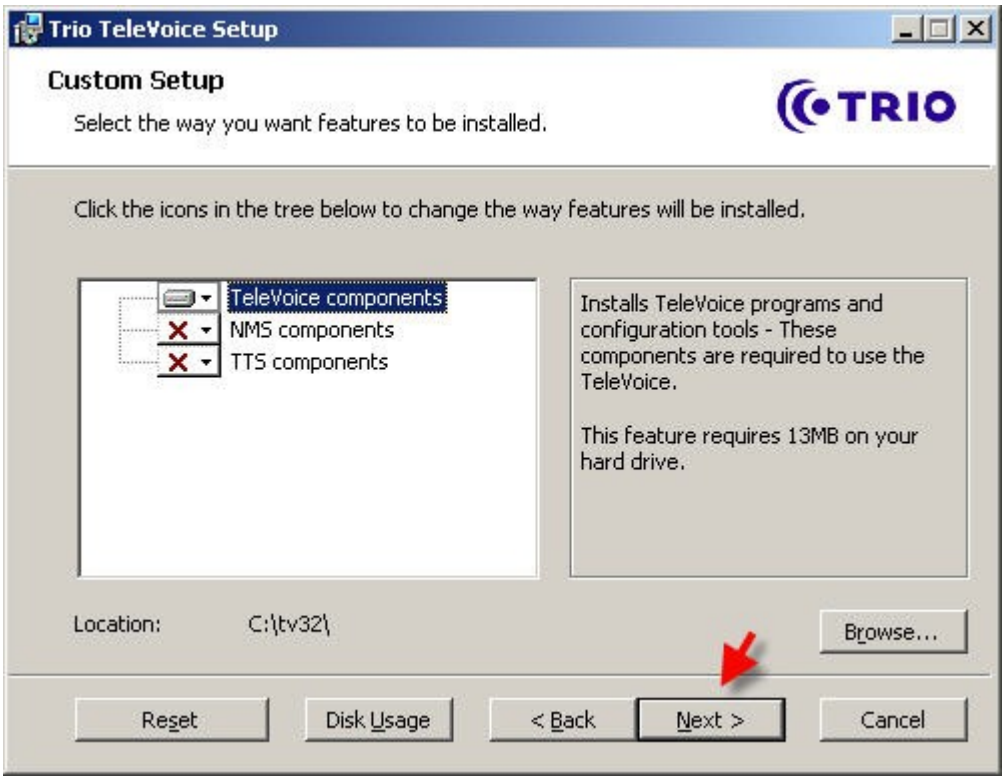
5. Configure TRIO Enterprise 3.0 for SIP interface

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

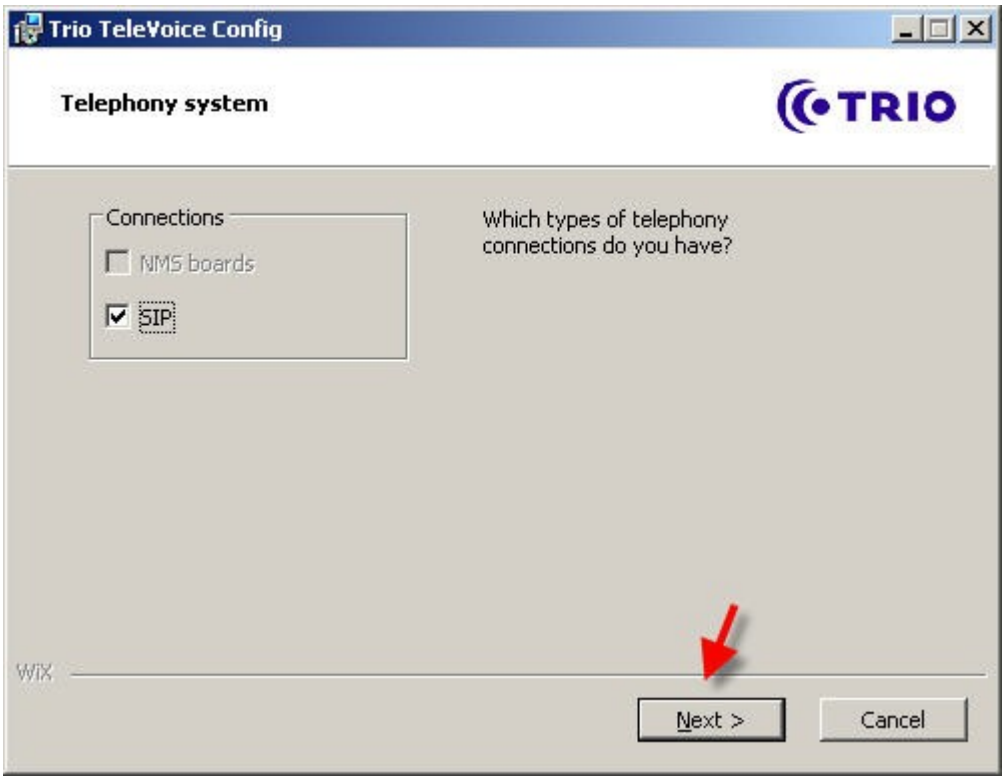
This section describes the installation steps performed for TRIO Enterprise 3.0 Setup.

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

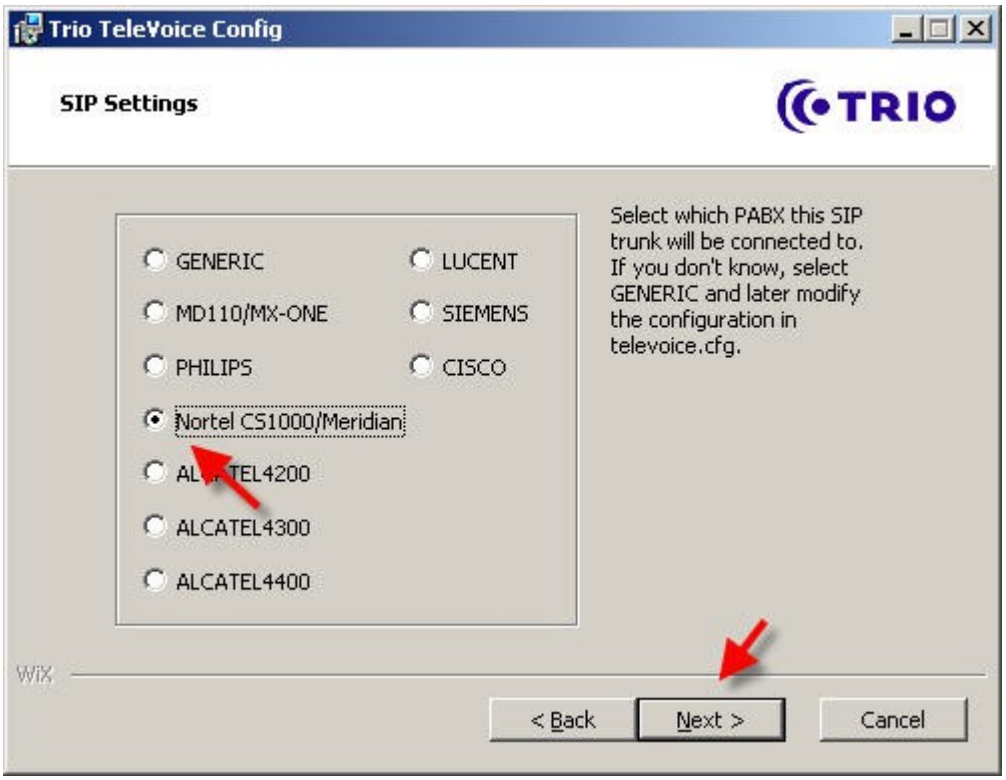
- Click on TeleVoice components.
- Make sure NMS components is not selected and click **Next.**



- Select **SIP** checkbox for Connections and click on **Next** button.



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



- SIP Settings Page opens. Enter the SIP settings as described below and click on **Next** button.
  - **Local IP**

    The local IP address of the Trio Enterprise server

  - **Target IP**

    The IP address of the Network Routing Server (NRS)

  - **Service Domain**

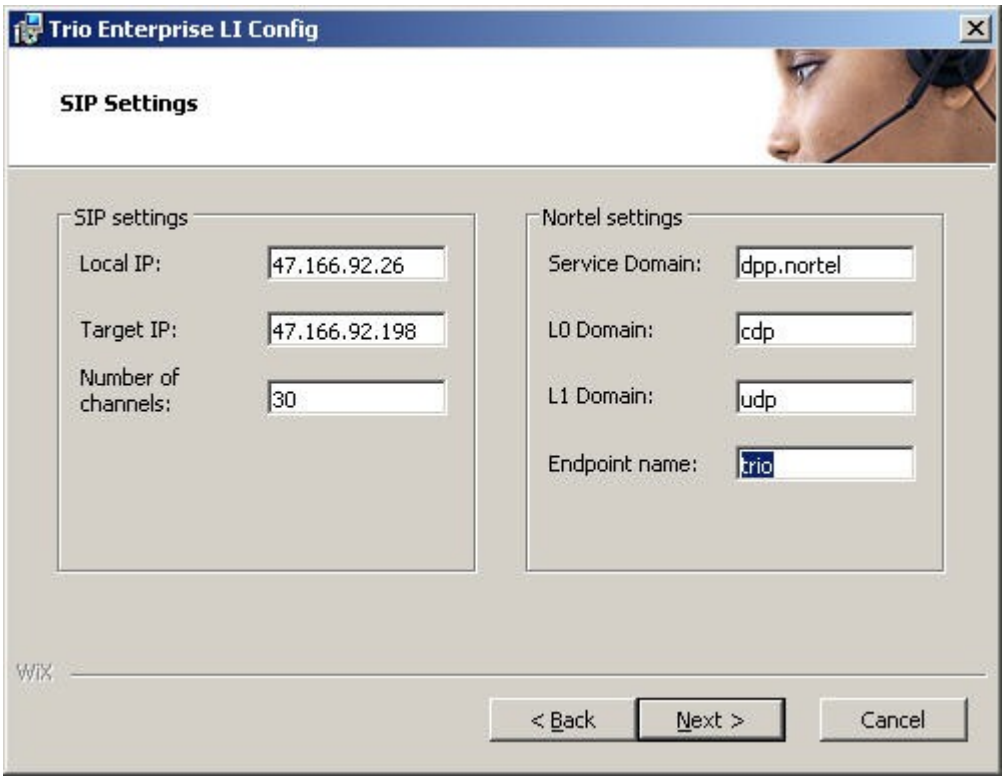
    The Service domain configured in Network Routing Server (NRS)

  - **LO domain**

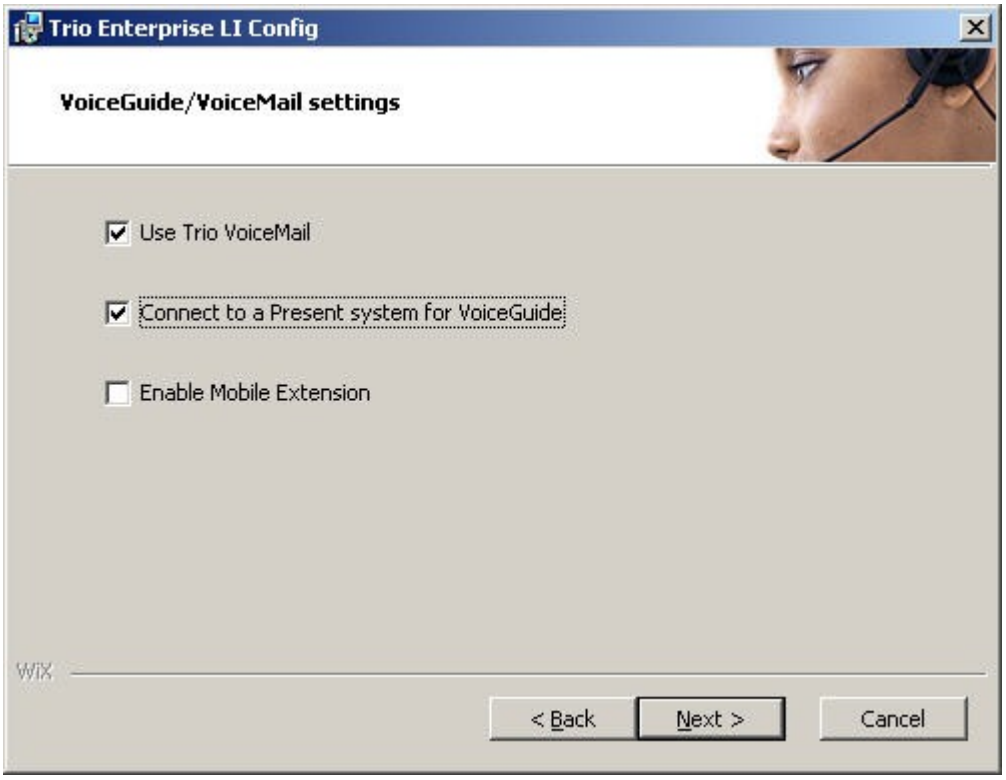
    The LO Domain configured in Network Routing Server (NRS)

  - **Endpoint Name**

    TRIO endpoint name configured in Network Routing Server (NRS)



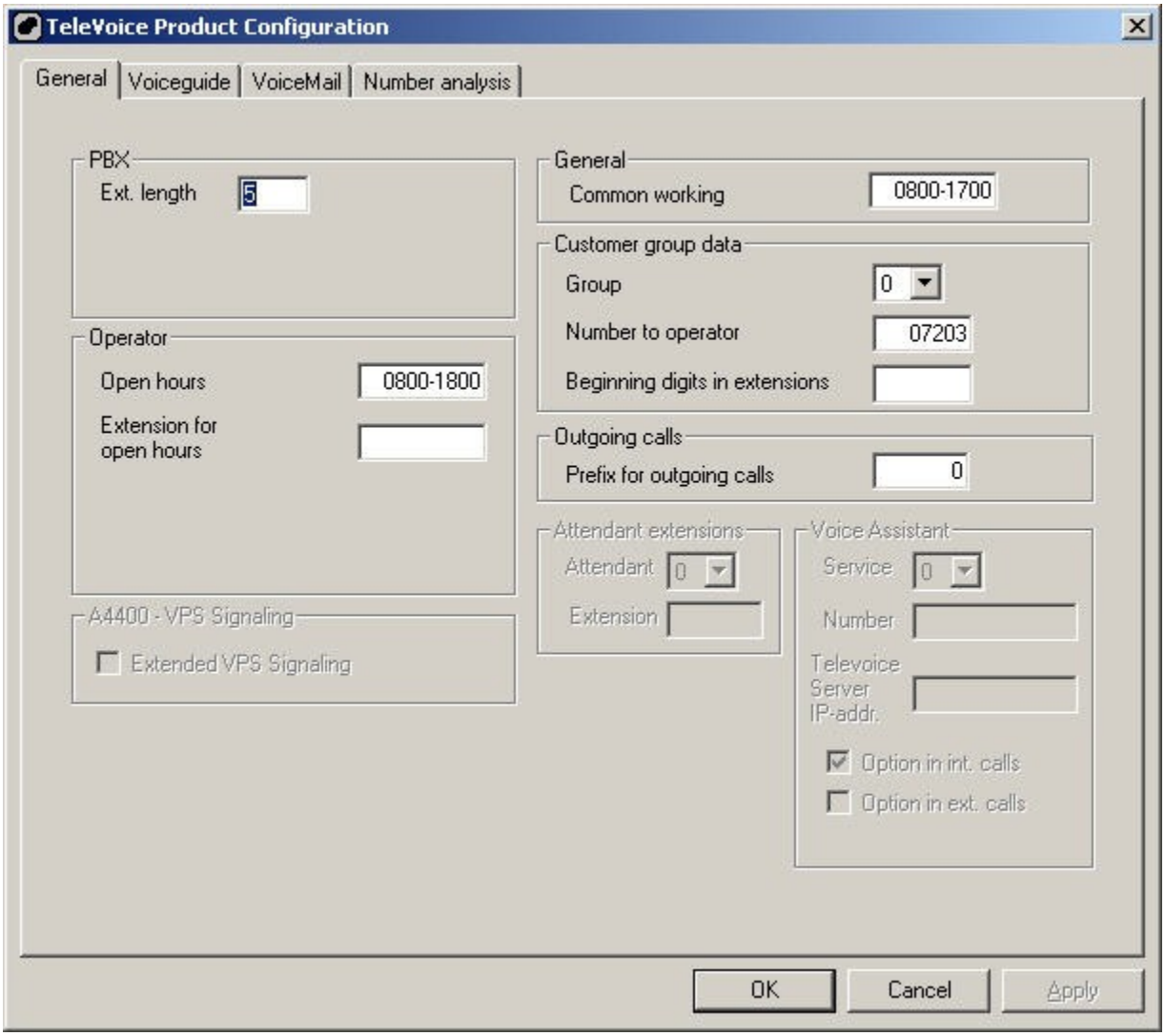
- VoiceGuide/VoiceMail settings page opens.
    - Enable **Use Trio VoiceMail** checkbox.
    - Enable **Connect to a Present system for VoiceGuide** checkbox.
    - Click on **Next** Button.



- TeleVoice Product Configuration Page appears**.**

  Enter the following in the General Tab:

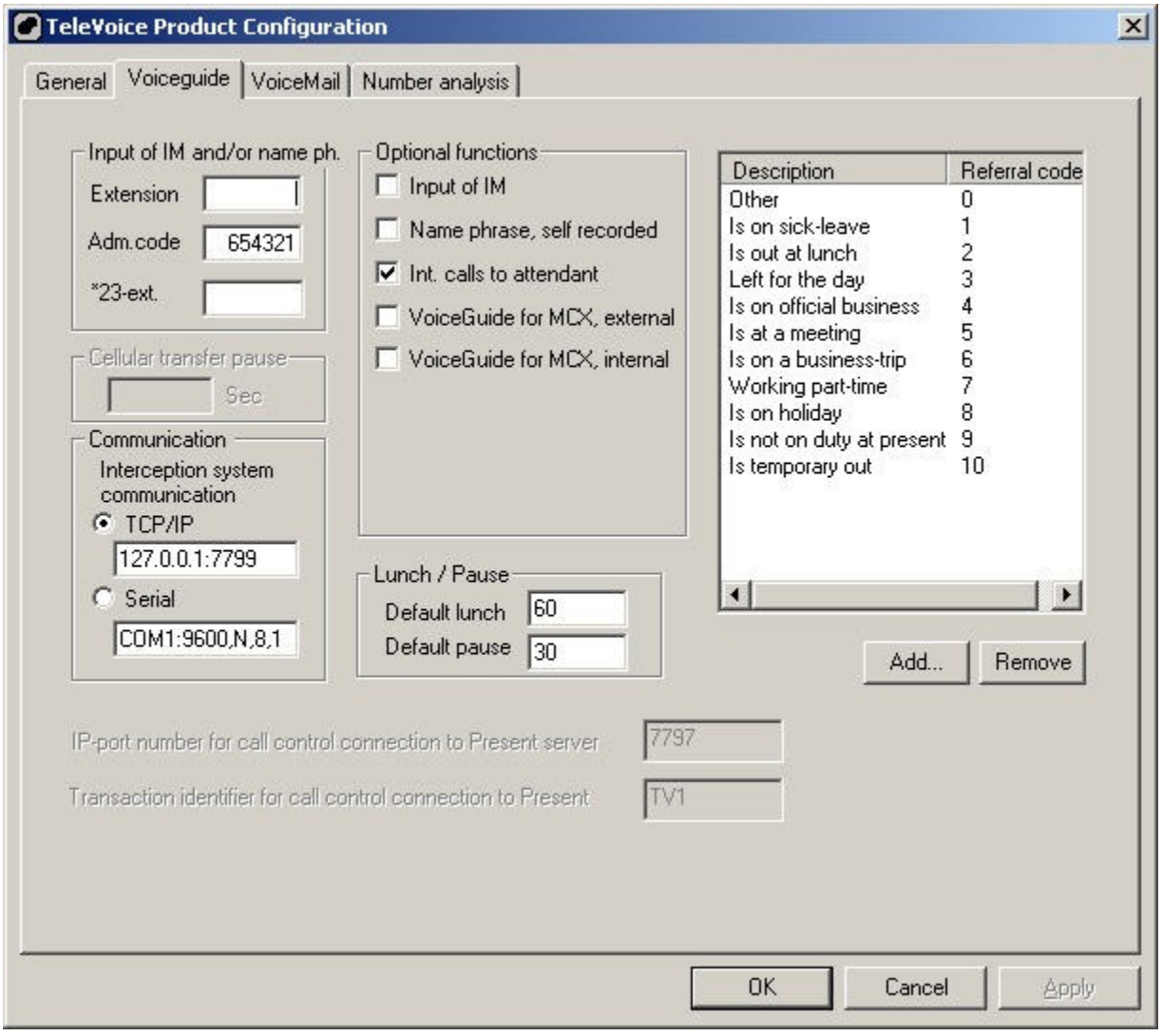
  - Enter the value as 5 for **Ext. length**.
  - Enter the value for **Operator Open hours**.
  - Click on **Apply** button.
  - Click on **OK** button.



- 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.

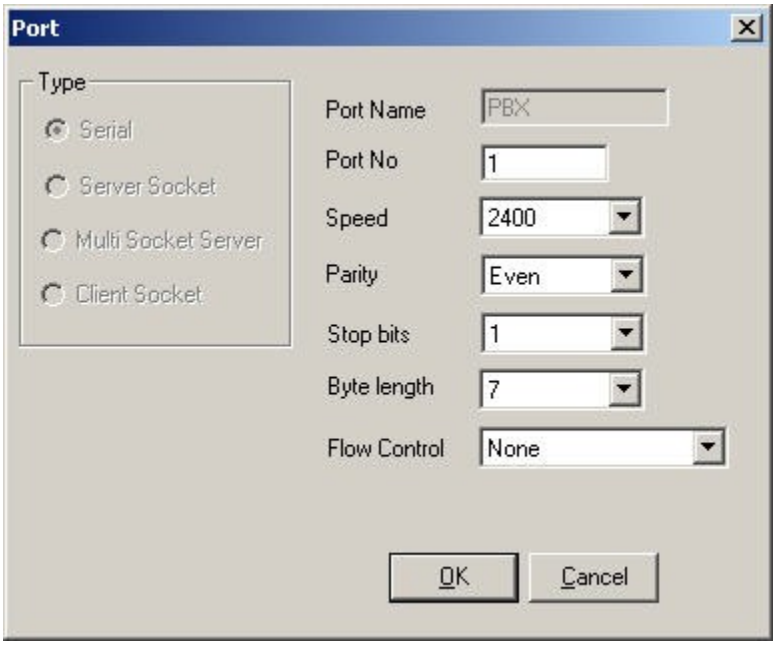


5.1. Server configuration for ICP Protocol

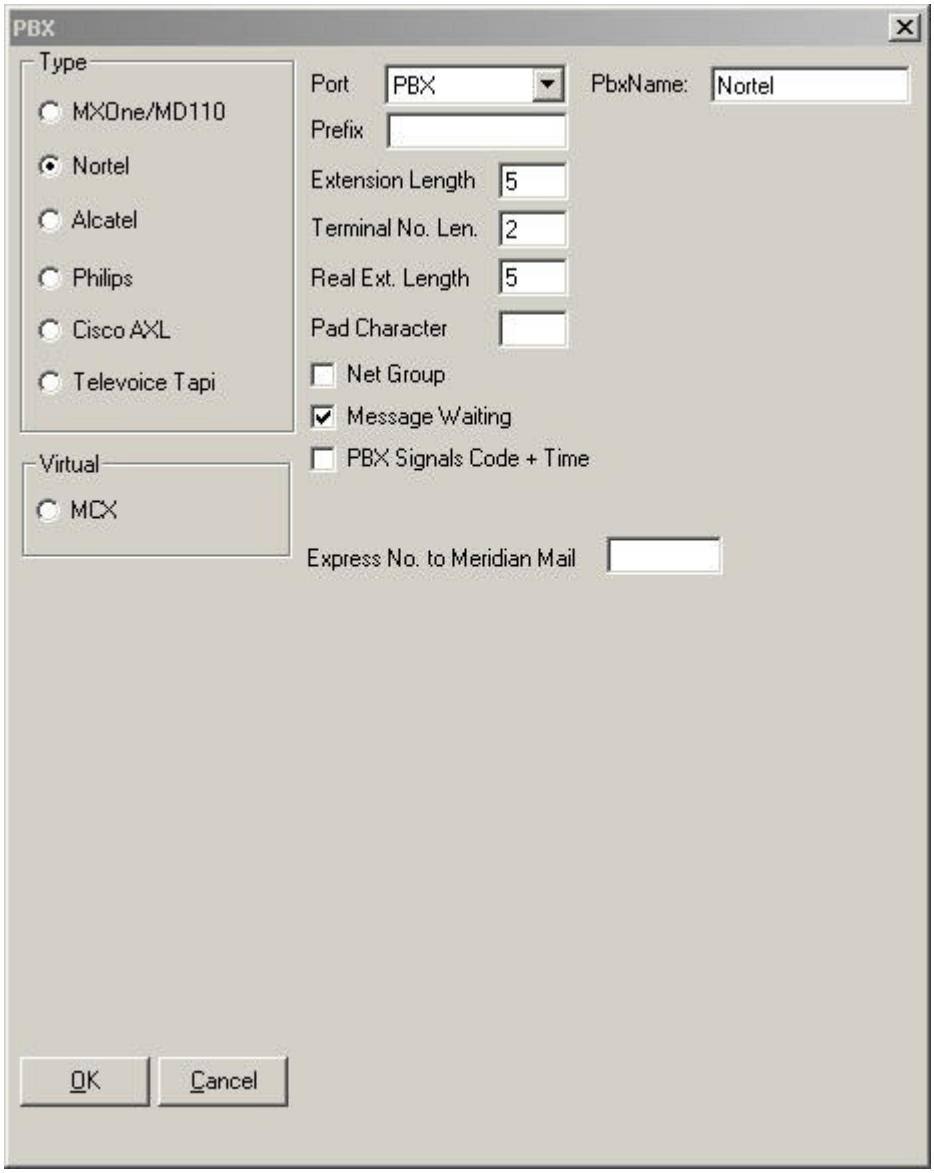
This is the required configuration on the server side to utilize forwarding on ICP protocol.

Open the ICP protocol HyperTerminal connection.

- Set up a port to communicate with the ICP interface.
  - Enter the 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.**



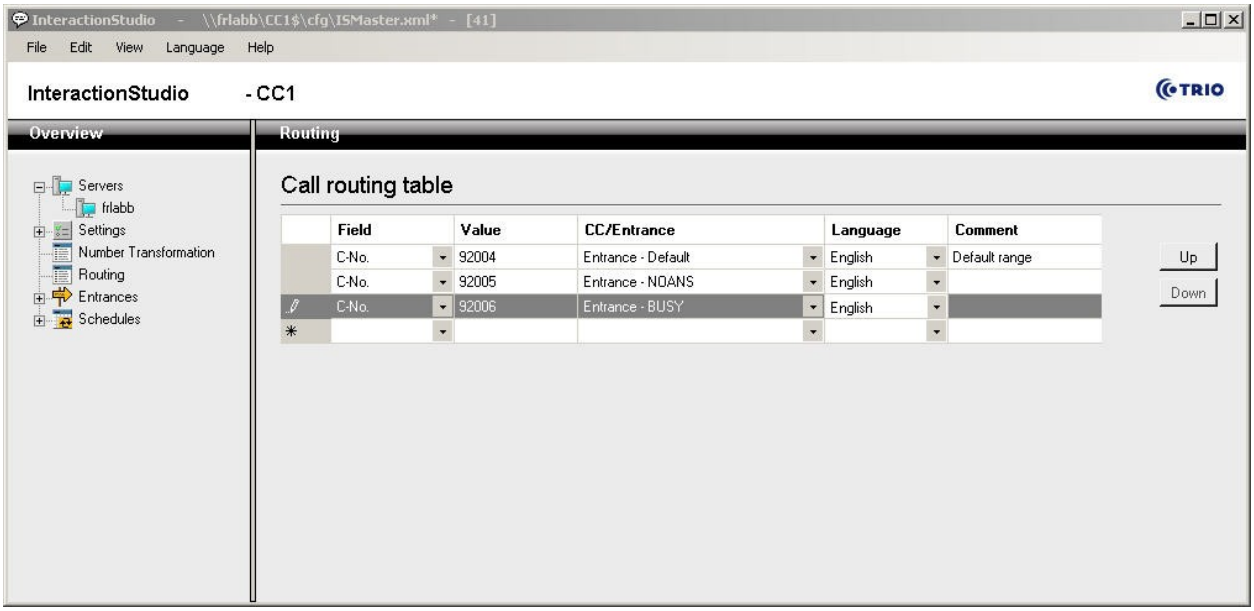
- Add a PBX to the configuration.
  - PBX type is Nortel
  - Extension length is 5



5.2. Call Routing Table 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 the Trio Enterprise trunk.
92004 – The main queue number.
92005 –Extensions should be forwarded to this number when Call Forward Noanswer is activated.
92006 – Extensions should be forwarded to this number when Call Forward Busy is activated.

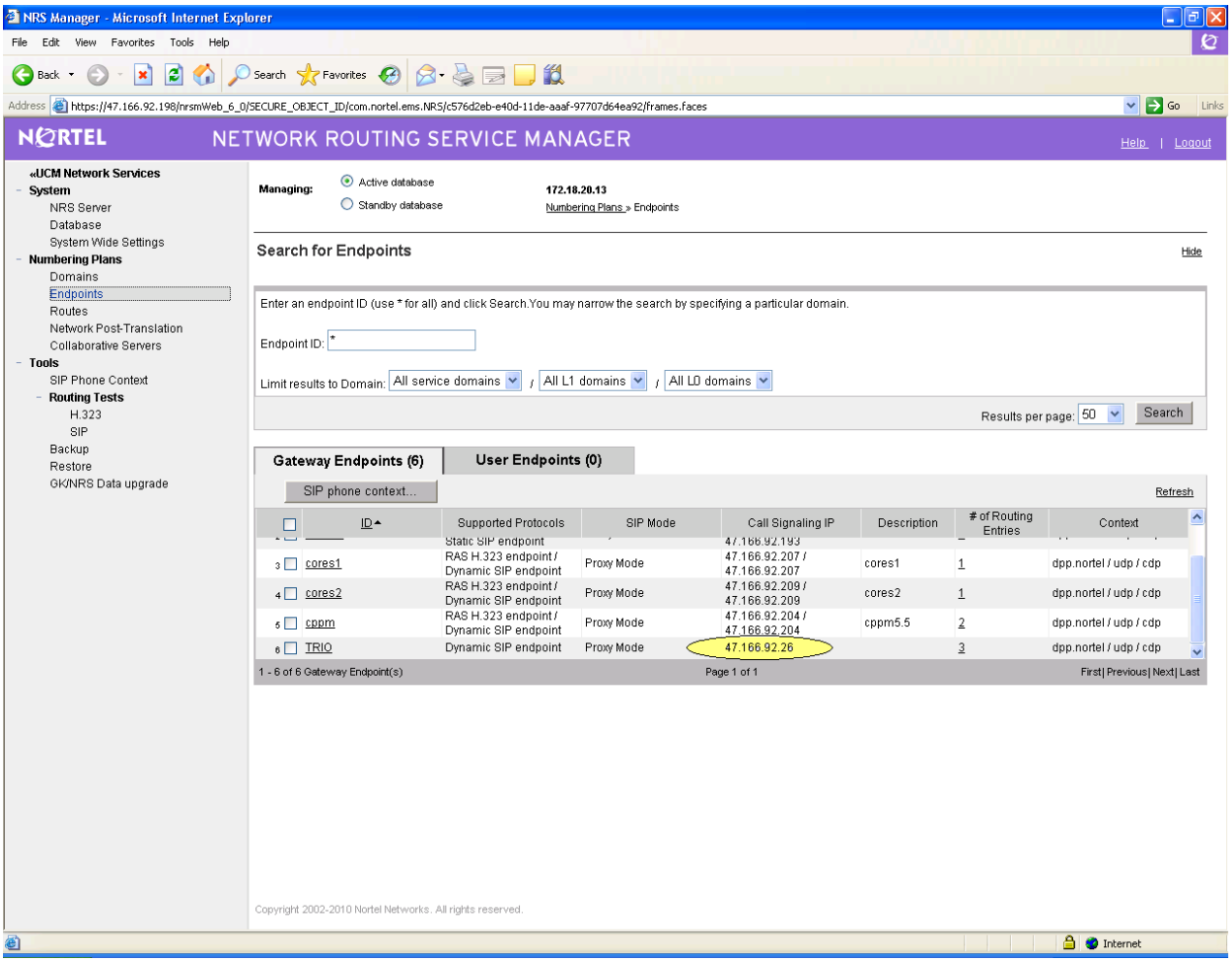
6. Verification Steps

This section provides the tests that can be performed to verify correct configuration of Avaya Communication Server 1000 Release 6.0 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 TRIO Endpoint is registered with the NRS.

- Launch **NRS** Page from UCM.
- Navigate to **Numbering Plans → Endpoints.**
- Search for TRIO Endpoint.
- If the **Call Signaling IP** of the TRIO Endpoint from NRS Page displays the NodeIP of TRIO Enterprise 3.0, it is considered as registered to NRS.

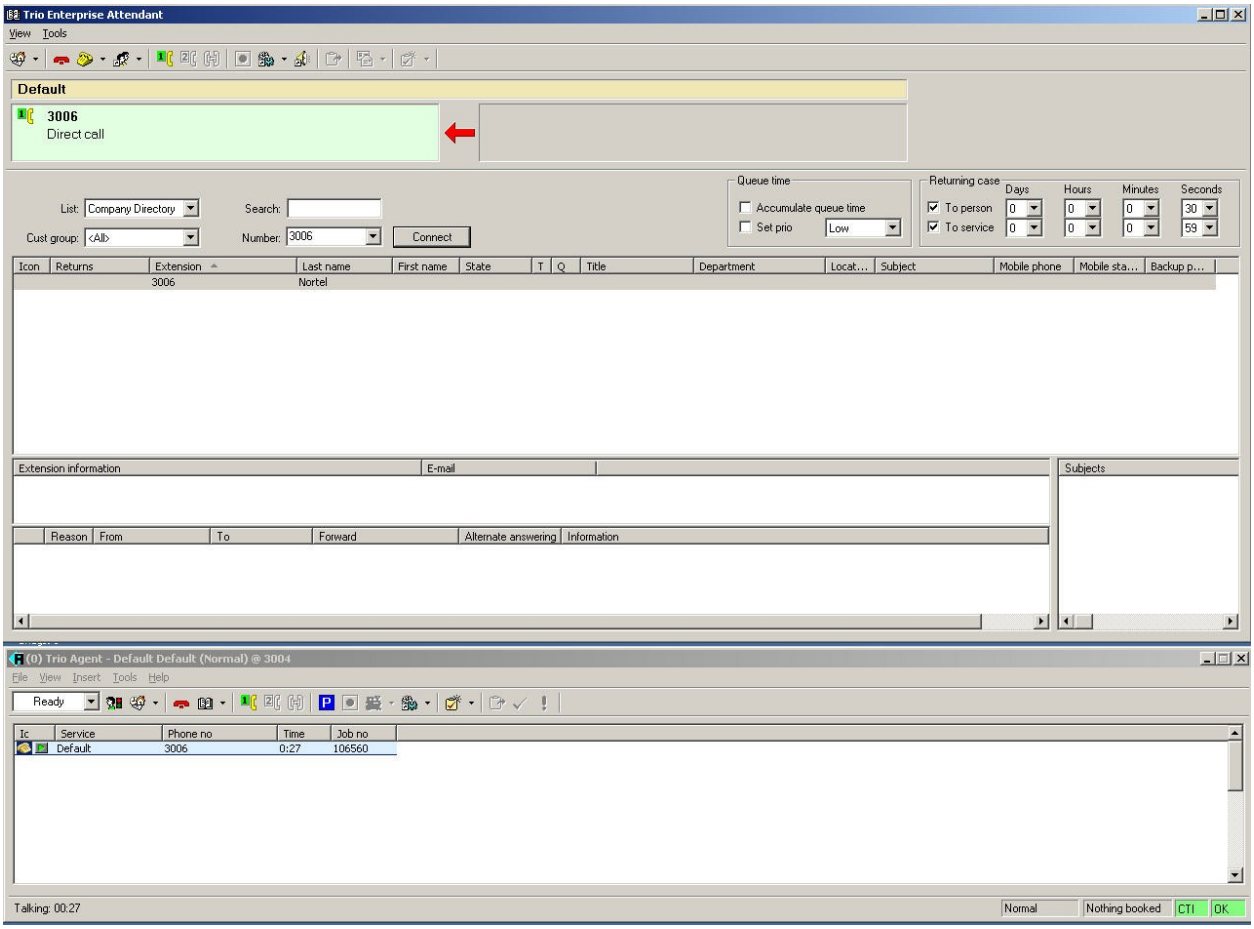


6.2. Connection between TRIO Enterprise 3.0 and Avaya Communication Server 1000 Release 6.0 System

When set up correctly, the following maneuvers could be performed to make sure everything is working fine.

- 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 3.0 and Avaya Communication Server 1000 Release 6.0 to successfully provide Attendant Client functionality. TRIO Enterprise Server 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] *NN43001-313 02.06 Communication Server 1000 IP Peer Networking Installation and Commissioning*
[2] *NN43001-564 02.08 Communication Server 1000 Network Routing Service Installation and Commissioning*

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