Avaya Solution & Interoperability Test Lab

Application Notes for Configuring Nu Technologies ORBi-TEL^7 using NetBuffer with Avaya CS1000 System - Issue 1.0

Abstract

These Application Notes describe the configuration steps required for the Nu Technologies ORBi-TEL^7 to successfully collect call detail records (CDRs) from Avaya CS1000 system using NetBuffer.

ORBi-TEL^7 is a set of integrated tools to measure quality of service, usage trends, and performance to optimize the network. ORBi-TEL^7 consists of four modules. Cost management also referred to as call logging and reporting module was the only module that was tested. Call logging and Reporting module collects, stores and processes these call records to provide usage analysis, call costing, and billing capabilities.

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

ORBi-TEL^7 is a set of integrated tools to measure quality of service, usage trends, and performance to optimize the network. ORBi-TEL^7 consists of four modules. Cost management also referred to as call logging and reporting module was the only module that was tested. Call logging and Reporting module collects, stores and processes these call records to provide usage analysis, call costing and billing capabilities. The other modules that were not tested include Performance management, Traffic management, Operations management and Alarm management.

ORBi-TEL^7 retrieves call detail records via a buffer called the NetBuffer from Avaya CS1000 system. The NetBuffer is configured via a web interface to receive and buffer call detail records via serial cable connection. ORBi-TEL^7 polls the NetBuffer and converts the call records into a common internal format.

Avaya CS1000 system can generate call detail records for intra-switch calls, inbound trunk calls and outbound trunk calls. In addition, split records can be generated for transferred calls and conference calls. ORBi-TEL^7 creates a custom PBX configuration file to accurately parse the CDR data.

The ORBi-TEL^7 server and multiple NetBuffers are able to receive CDR outputs from more than one switch.

1.1. Interoperability Compliance Testing

The interoperability compliance test included feature and serviceability testing. The feature testing evaluated the ability of Nu Technologies' ORBi-TEL^7 and NetBuffer to collect and process CDR records 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. The serviceability testing introduced failure scenarios to see if ORBi-TEL^7 and NetBuffer can resume CDR collection after failure recovery.

1.2. Support

Technical support from Nu Technologies can be obtained through the following:

Phone: +44 1582 814700
E-mail: support@nut.eu.com.
Web: http://www.nut.eu.com

2. Reference Configuration

Figure 1 illustrates a sample configuration that was used to compliance test the interoperability of Nu Technologies' ORBi-TEL[7] and CS1000 system. CS1000 system has connections to the following: Avaya IP Telephones, Digital Phones, SIPLines phones and a PRI trunk to the PSTN. ORBi-TEL[7] uses NetBuffer to connect to and collect CDR records from each site using FTP. The phones connected to the system will be used to generate call traffic to Avaya CS1000 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.

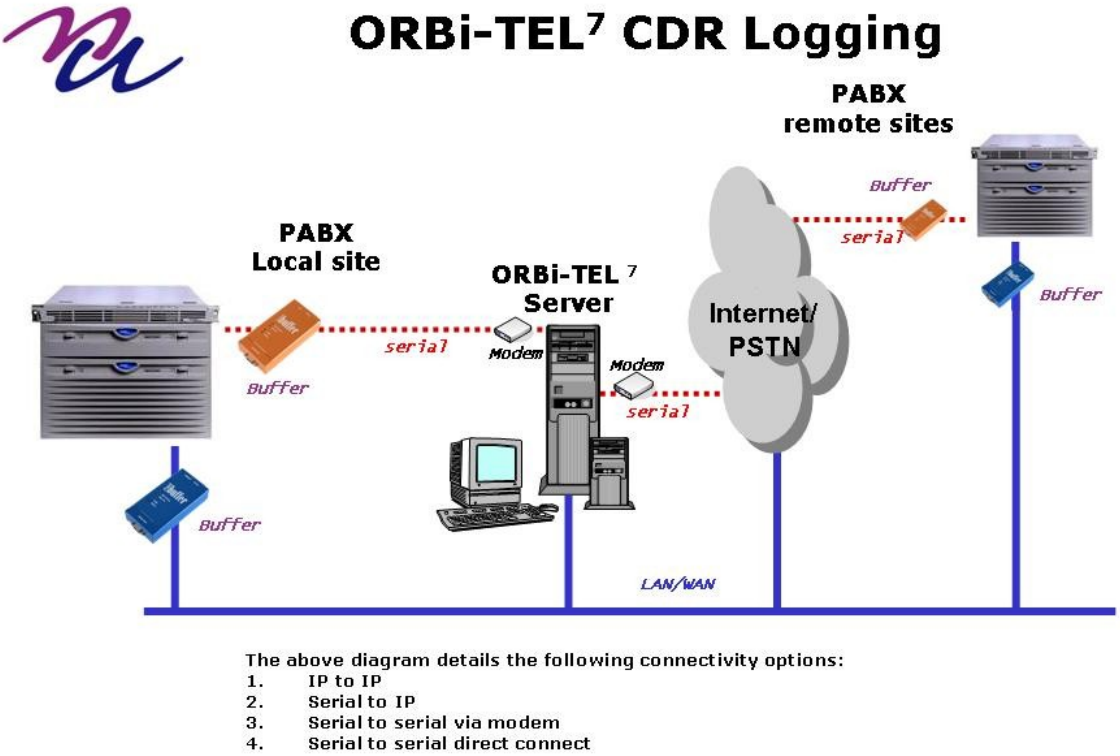


Figure 1: Network Configuration of ORBi-TEL[7] with Avaya CS1000 System

3. Equipment and Software Validated

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

Equipment	Software Version
Avaya CS1000 Server	Release 6.0
Avaya IP Telephones 11xx series, i2004, i2007, i2050	-
Avaya Digital Telephones 2616	-
Avaya SIPLines Telephones SMC3456,Sigma	-
Nu Technologies Software	ORBi-TEL[7] Release 18, Windows XP, VMware running Linux Fedora9.
Nu Technologies Buffer	NetBuffer Release 2.41.133
Nu Technologies Server	Dell Laptop

4. Configure the Avaya CS1000 System

This section provides the procedures for configuring Call Data Record (CDR) features in Avaya CS1000 system. For all other provisioning information such as initial installation and configuration, please refer to the product documentation in Section 9. CS1000 system was configured to generate CDR records to the serial port of the NetBuffer. ORBi-TEL[7] server collects the CDR records from the NetBuffer via FTP.

The configuration steps are listed below.

- Configure CDR in the Configuration Record
- Configure CDR in the Customer Data Block
- Configure CDR in the Route Data Block
- Configure CDR for Meridian 1 proprietary phones
- Configure CDR in the Authorization Code Data Block

4.1. Configure CDR in the Configuration Record

>ld 17
CFN000
MEM AVAIL: (U/P): 32663773 USED U P: 5402757 102043 TOT: 38168573

```
DISK SPACE NEEDED: 120 KBYTES
DCH              AVAIL:  249   USED:    6   TOT:  255
AML              AVAIL:   12   USED:    4   TOT:   16
REQ  chg
TYPE adan
ADAN new tty 12
CTYP mgc
IPMG 4 0
PORT 0
DNUM 12
DES  remotetty
BPS
BITL
STOP
PARY
FLOW
USER SCH MTC BUG OSN CTY
TTYLOG
BANR

MEM AVAIL: (U/P): 32663693    USED U P: 5402809 102071    TOT: 38168573
DISK SPACE NEEDED: 120 KBYTES
DCH              AVAIL:  249   USED:    6   TOT:  255
AML              AVAIL:   12   USED:    4   TOT:   16

ADAN DATA SAVED
ADAN

REQ  ****


>ld 17
MEM AVAIL: (U/P): 32663693    USED U P: 5402809 102071    TOT: 38168573
DISK SPACE NEEDED: 120 KBYTES
DCH              AVAIL:  249   USED:    6   TOT:  255
AML              AVAIL:   12   USED:    4   TOT:   16
REQ  chg
TYPE parm
LPIB
HPIB
500B
SL1B
DTIB
DTOB
```

NCR
MGCR
CSQI
CSQO
TUBO
AXQI
AXQO
NCPU
CFWS
PCML
ALRM
ERRM
DTRB
ABCD
TMRK
FCDR new
PCDR
TPO
TSO
CLID
DUR5
MLDN
MARP
IPIE
FRPT
DCUS
MSCL
PMSI
NDIS
OCAC
MTRO
SBA_ADM_INS
SBA_USER
BCAP
IDLE_SET_DISPLAY Rls6 CoRes1
MODIFY
ICON
MSEC
MSSD
NKEY
TKEY

MEM AVAIL: (U/P): 32663693 USED U P: 5402809 102071 TOT: 38168573
DISK SPACE NEEDED: 120 KBYTES
DCH AVAIL: 249 USED: 6 TOT: 255

AML AVAIL: 12 USED: 4 TOT: 16
REQ

4.2. Configure CDR in the Customer Data Block

>ld 15
CDB000
MEM AVAIL: (U/P): 32663693 USED U P: 5402809 102071 TOT: 38168573
DISK SPACE NEEDED: 120 KBYTES
REQ: chg
TYPE: cdr

TYPE CDR_DATA
CUST 0
CDR yes
IMPH yes
OMPH yes
AXID yes
TRCR yes
CDPR yes
ECDR yes
BDI yes
OTCR yes
PORT 12
PORT
CNI
BCAP
CHLN
FCAF

MEM AVAIL: (U/P): 32663693 USED U P: 5402809 102071 TOT: 38168573
DISK SPACE NEEDED: 120 KBYTES
REQ:

4.3. Configure CDR in Route Data Block

>ld 16
RDB000
MEM AVAIL: (U/P): 32663693 USED U P: 5402809 102071 TOT: 38168573
DISK SPACE NEEDED: 120 KBYTES
RAN RTE AVAIL: 511 USED: 1 TOT: 512
REQ chg

TYPE rdb
CUST 0
ROUT 14
DES
TKTP
M911P
ESN
CNVT
SAT
RCLS
VTRK YES
SCH1456
ZONE
PCID
CRID
NODE
ISDN YES
MODE
DCH
IFC
PNI
NCNA
NCRD
TRO
FALT
CTYP
INAC
ISAR
DAPC
MBXR
PTYP
AUTO
DNIS
DCDR
IANI
ICOG
TRMB
STEP
ACOD
CLEN
TCPP
PII
AUXP
TARG
BILN

SGRP
OABS
INST
IDC
ANTK
SIGO
STYP
MFC
ICIS
OGIS
PTUT
CNTL
DRNG
CDR yes
INC yes
LAST yes
QREC yes
OAL yes
AIA yes
OAN yes
OPD yes
NDP
NATL
SSL
CFWR
IDOP
VRAT
MUS
PANS
RACD
MANO
FRL
OHQ
OHQT
CBQ
AUTH
TDET
TTBL
ATAN
OHTD
PLEV
OPR
ALRM
PECL
DCTI

TIDY
ATRR
TRRL
CCBA
ARDN

MEM AVAIL: (U/P): 32663693 USED U P: 5402809 102071 TOT: 38168573
DISK SPACE NEEDED: 120 KBYTES
RAN RTE AVAIL: 511 USED: 1 TOT: 512
REQ

4.4. Configure CDR for Meridian 1 Proprietary phones.

>ld 11

MEM AVAIL: (U/P): 32663693 USED U P: 5402809 102071 TOT: 38168573
DISK SPACE NEEDED: 120 KBYTES
TNS AVAIL: 32353 USED: 414 TOT: 32767

REQ: chg
TYPE: 2616
TN 0 0 10 2
ECHG yes
ITEM cls abda cdma icda
ITEM

4.5. Configure CDR in the Authorization Code Data Block

>ld 88

MEM AVAIL: (U/P): 32663693 USED U P: 5402809 102071 TOT: 38168573
DISK SPACE NEEDED: 120 KBYTES
REQ chg
TYPE aub
CUST 0
SPWD
ACDR yes
AUTHCOD_ALRM
RANR
ACLE
BRST

RTRY
CLAS

MEM AVAIL: (U/P): 32663693 USED U P: 5402809 102071 TOT: 38168573
DISK SPACE NEEDED: 120 KBYTES
REQ

5. Configure ORBi-TEL[7]

This section provides the procedures to configure ORBi-TEL[7] Server and NetBuffer to receive Call Data Records (CDRs) from the Avaya CS1000 system. The procedures described below are normally carried out by a Nu Technologies engineers during installation and subsequent re-configuration.

5.1. Configure the ORBi-TEL[7] Server

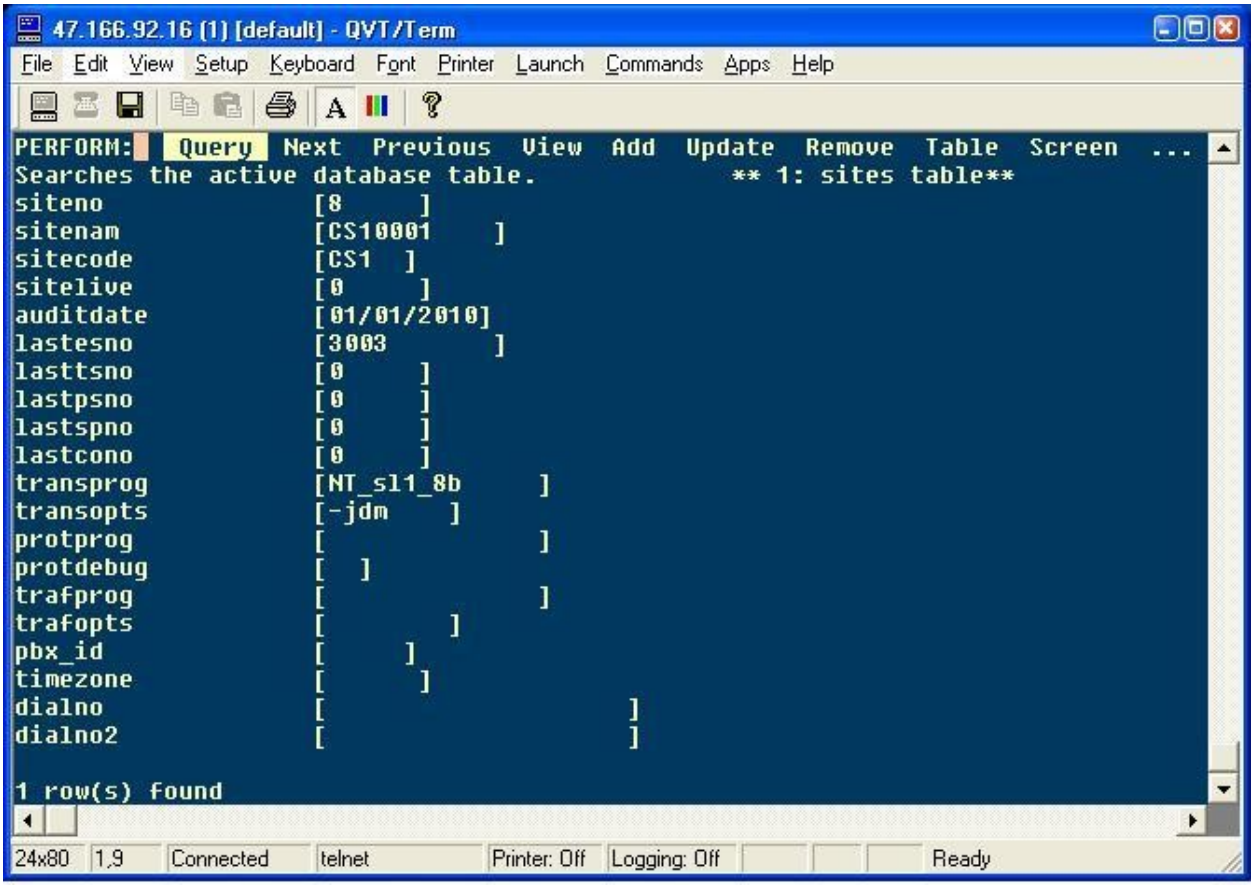
The ORBi-TEL[7] Server needs to be configured for site details and setting up the collection and translation script for the collection of CDRs.

5.1.1. Add Site Details

Add site details to the ORBi-TEL[7] Server by logging onto the ORBi-TEL[7] Linux server with the pre-configured ORBi-TEL[7] Server username and password. From the UNIX prompt type the following command **isql –f sites**. Select **u** for update and enter the relevant fields as shown below:

- **sitenam** Enter in **CS10001** as site name
- **transprog** Set this parameter to **NT_sl1_8b.**
- **transopts** Set it for the **jcdm** translator option

The remainder of the fields can be left as default. Select **esc** to save. The completed screen is displayed below.



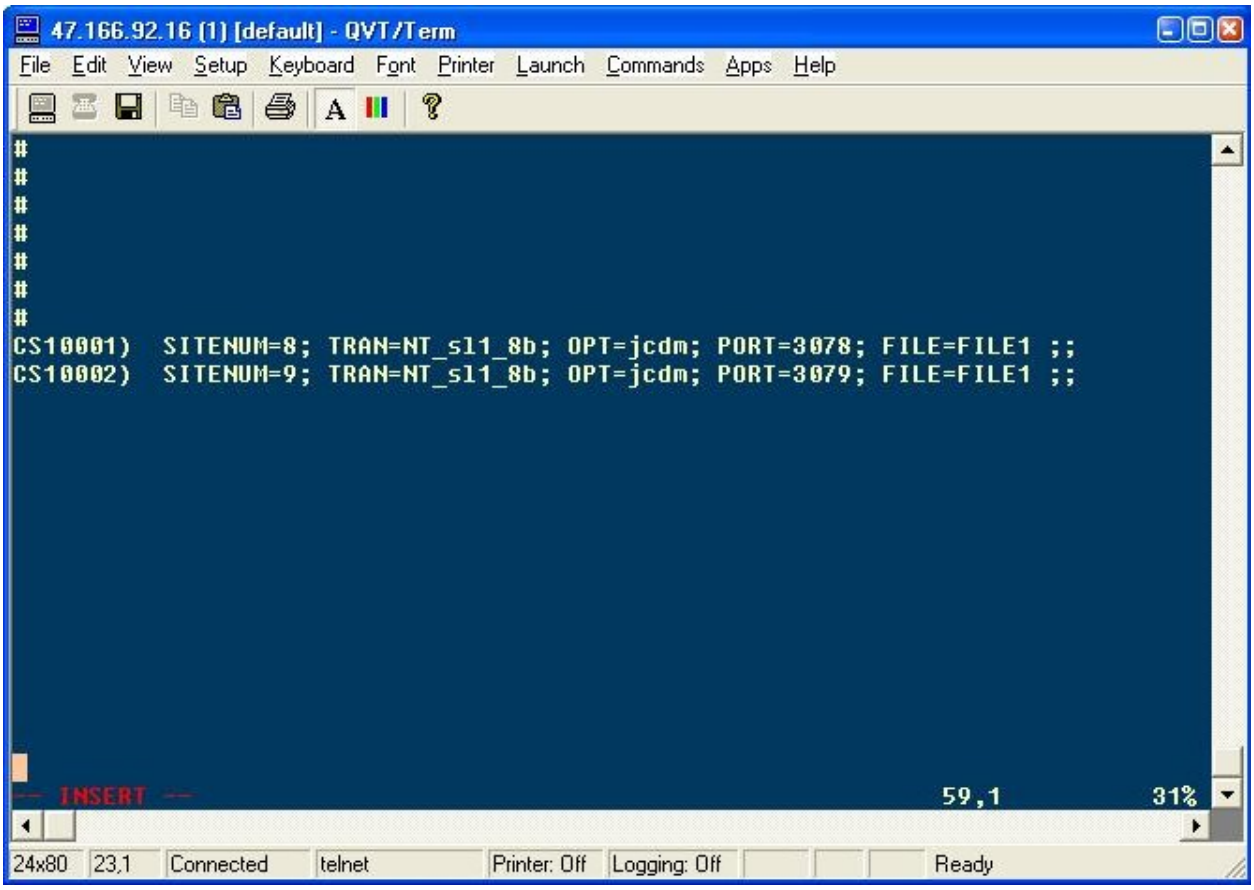
5.1.2. Configure Collection and Translation Script

A script is configured for the automatic/on-demand CDR collection and translation. From the UNIX prompt edit the file **/usr/prog3/scantran** using the vi editor. Enter in the parameters as follows:

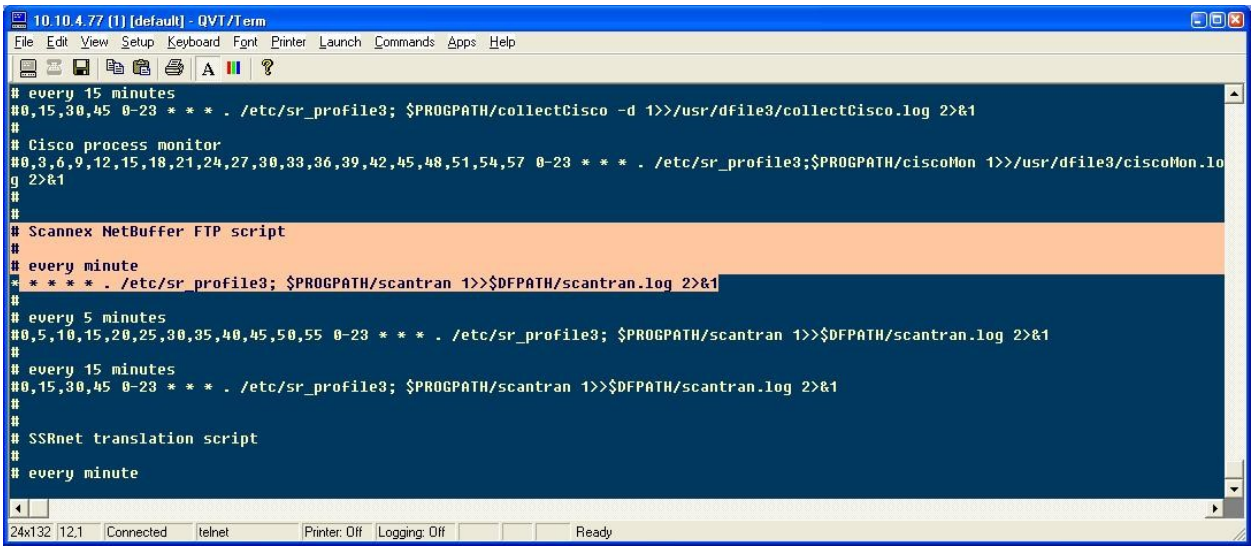
- **SITE : CS10001** as named in **Section 5.1.1.**
- **TRAN** : This parameter defines the format, set for **NT_sl1_8b**
- **OPT :** Set it for **jcdm** translator option.

Save the file and exit.

The completed screen is displayed below:



The CDR collection script runs in the Linux background task manager “cron” and is configured as in the screen below:



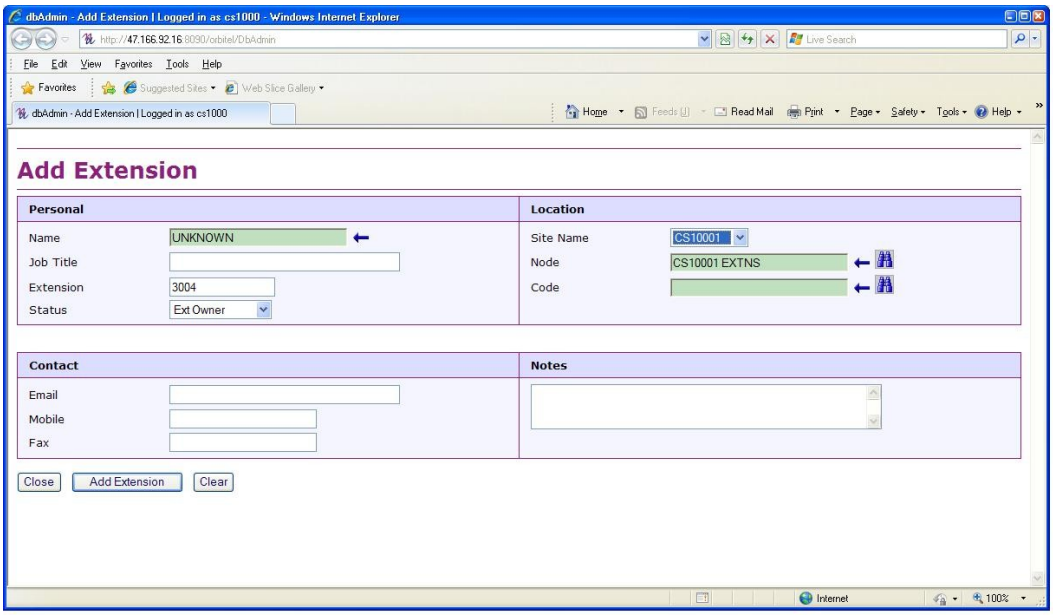
5.2. Add Extensions to the ORBi-TEL[7] Server Database

The database on the ORBi-TEL[7] Server must be populated with CS1000 extensions and trunks prior to running reports. Enter the following URL **http://<IPaddr ORBi-TEL[7] >/orbitel.** Select **dbAdmin** and then select **New** on the dbAdmin page (not shown) to access the **Add Extension** form.

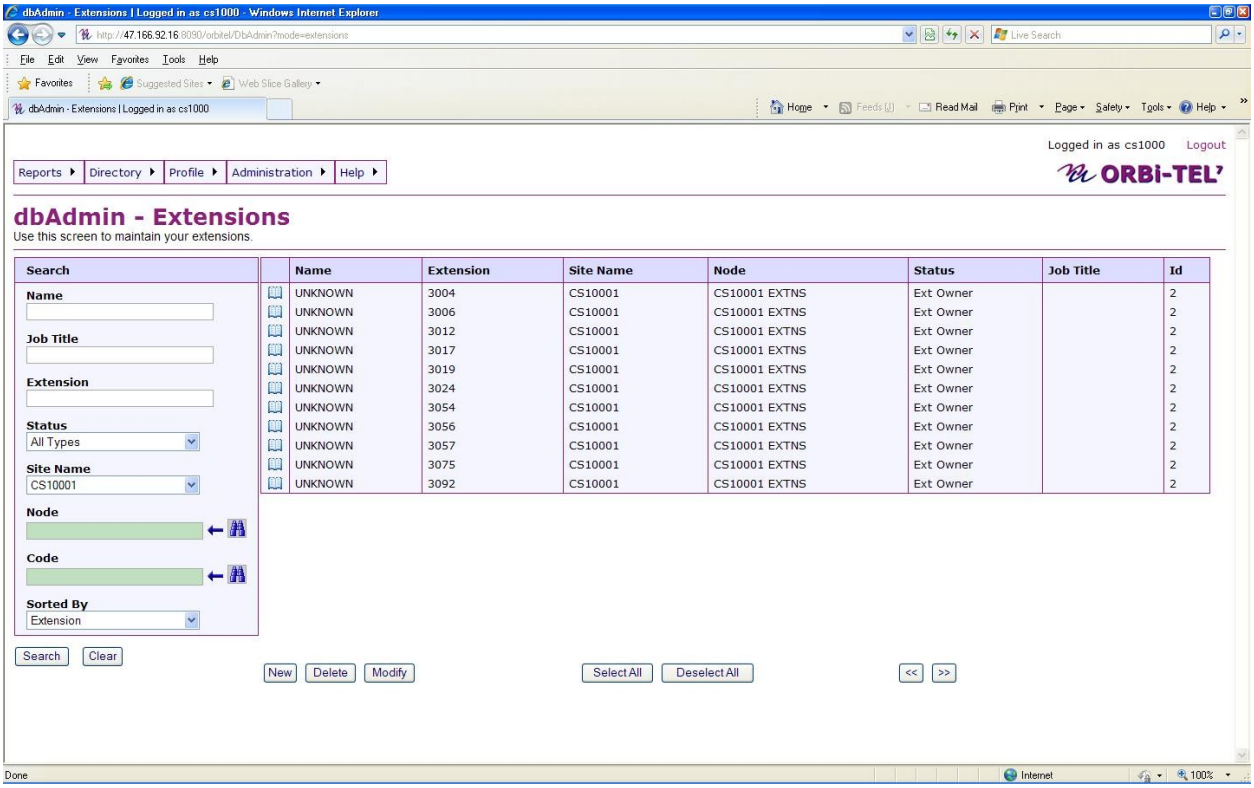
On the Add Extension page, complete the following fields:

- **Site Name** Choose **CS10001** as the Site Name to correspond with **Section 5.1.1**
- **Extension** Enter an valid extension number as configured on CS1000 System
- **Status** Choose **Ext Owner**

Click the **Add Extension** button after filling the details. The Add Extension Screen page is displayed below with the details filled in.



Repeat the above steps to add all the necessary extensions. The complete list of extensions added for the site is displayed below.



5.3. Configure the NetBuffer

The NetBuffer is configured to work with ORBi-TEL[7] and the Avaya solution.

5.3.1. Setting the NetBuffer IP address

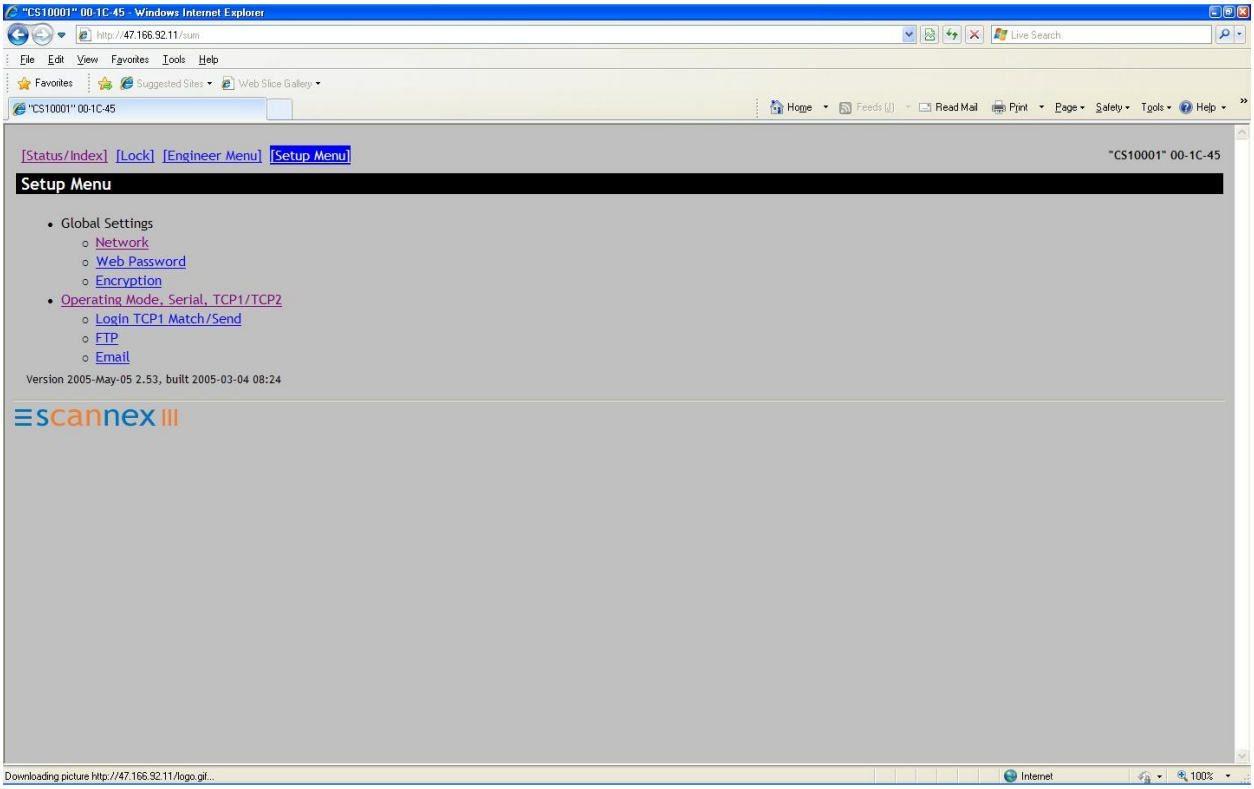
The NetBuffer is shipped with a default factory set IP Address. The NetBuffer IP address is set by associating the NetBuffer with its MAC address. Open a DOS window on the ORBi-TEL[7] Server by clicking on **Start**, **Run** and type **cmd** and issue the following command: **arp –s x.x.x.x yy-yy-yy-yy-yy-yy,** where **x.x.x.x** will be the new IP Address of NetBuffer and **yy-yy-yy-yy-yy-yy** is the MAC address found on the reverse side of the NetBuffer. Power off the NetBuffer for 30 seconds and re-connect the power. Ping the new IP address to check the NetBuffer IP configuration and verify a successful reply.

5.3.2. Configuring the NetBuffer with Internet Explorer (IE)

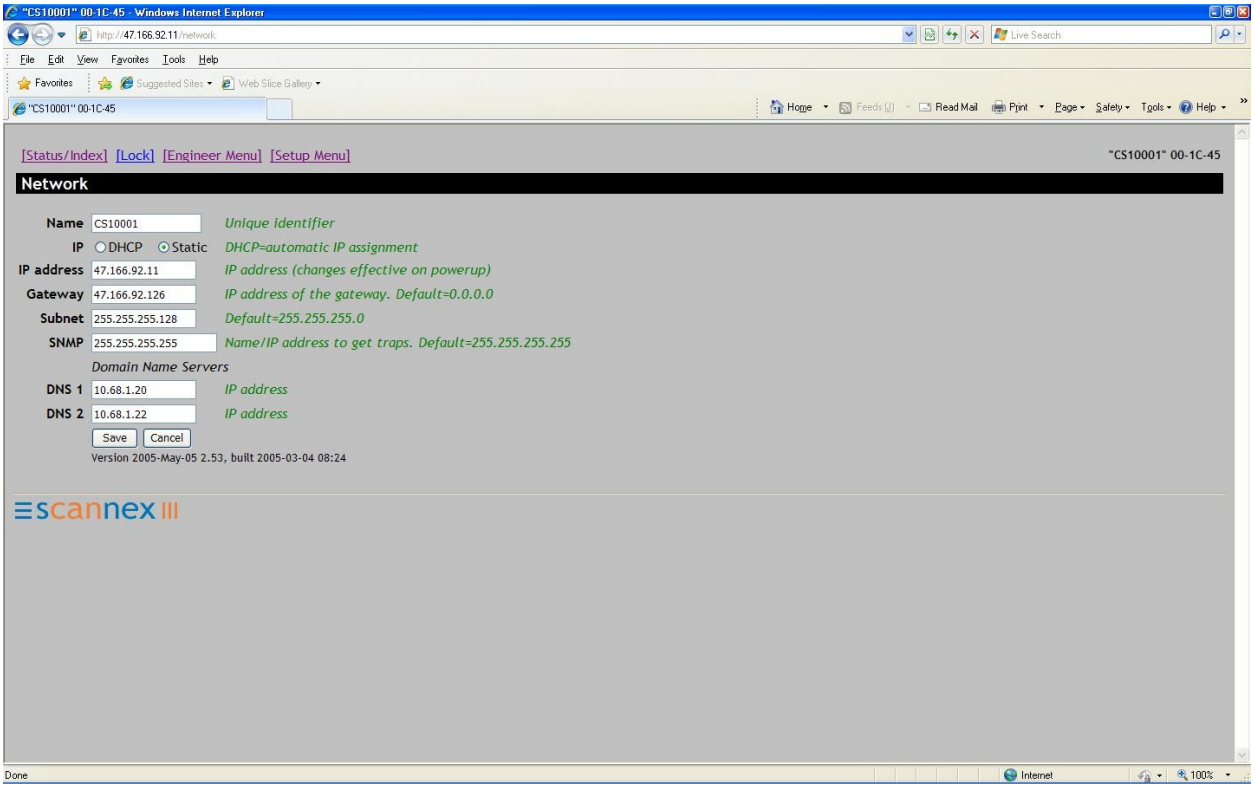
Enter the following URL Address in the web browser (IE) address bar **http://x.x.x.x,** where **x. x. x. x** is the selected IP address of the NetBuffer. Select the Setup Menu tab located on the opening Status screen to access the **Setup Menu**.

In the windows login box that appears, enter the default username and password for the NetBuffer.

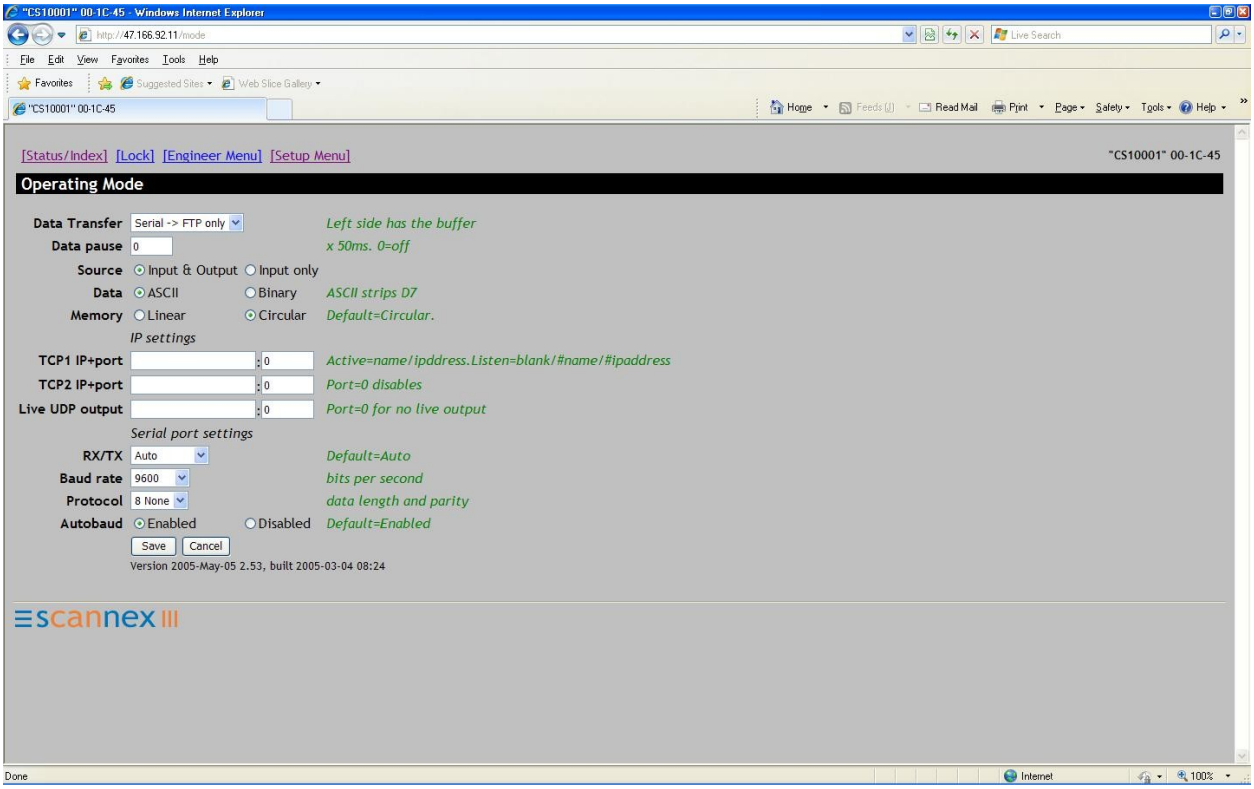
After successful login, the Setup Menu screen is shown.



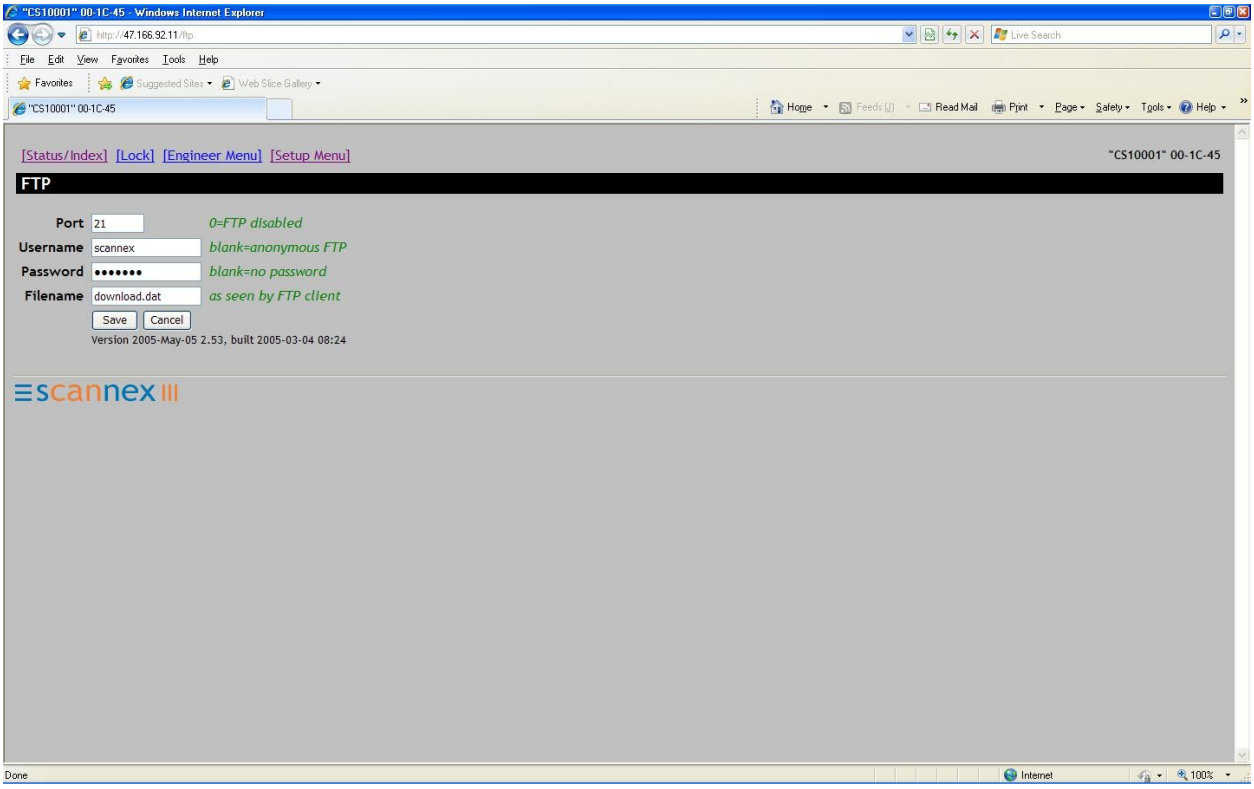
In the **Setup Menu** screen, select **Network**. The following screen is displayed. In the **Name** field, enter the name that matches the ORBi-TEL[7] site name configured on the ORBi-TEL[7] Server in **Section 5.1.1**. Select the **Static** DHCP option button for **IP**. The **IP address** of the NetBuffer is pre-populated with the **arp** command issued in **Section 5.3.1**. Enter the **Gateway** and **Subnet** IP address as shown below. The remaining fields can be left with the default values. Click on **Save**.



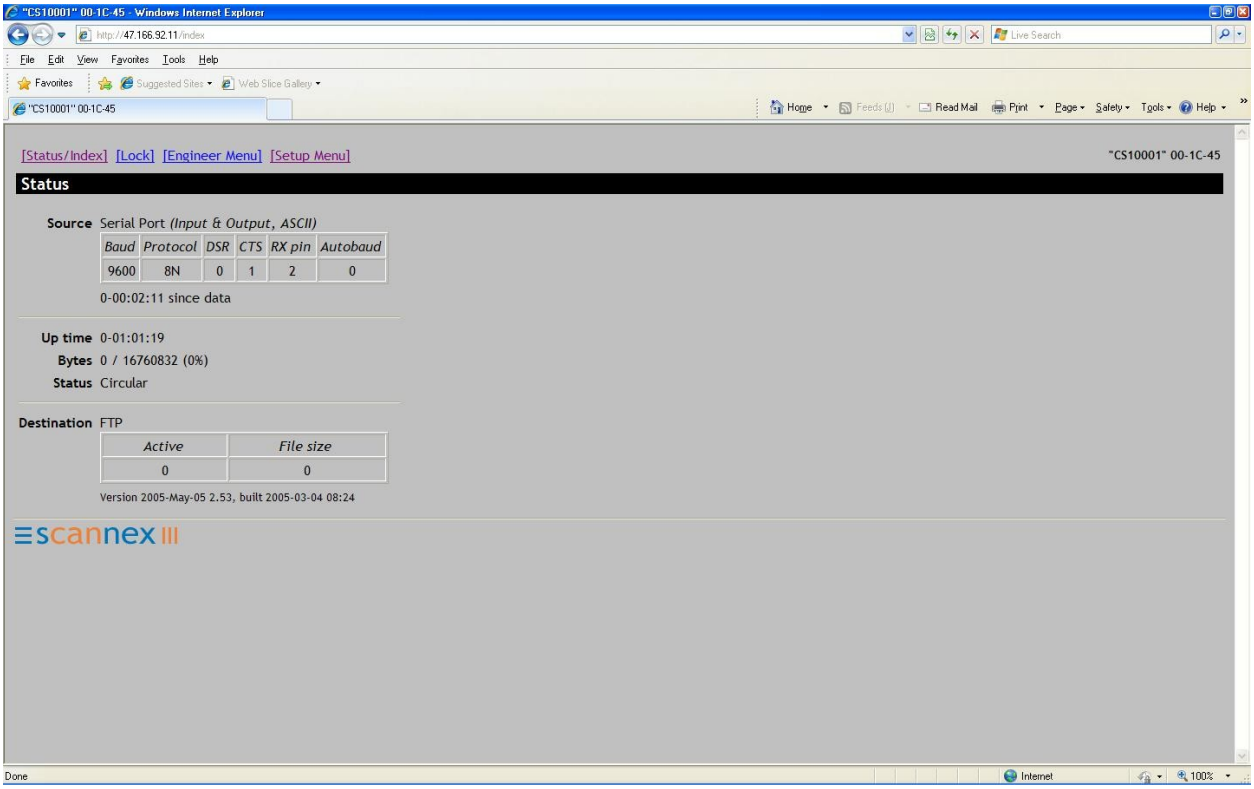
In the Setup Menu screen under Operating Mode, select **Data Transfer** field as **Serial -> FTP only**, select **Input & Output** for the **Source**, **ASCII** for the **Data,** and **Circular** for **Memory**. Under the **Serial Port Settings,** select **Auto** for RX/TX, Baud rate as **9600**, Protocol as **8 None** and **Autobaud enabled**. The remaining fields can be left with the default values. Click on **Save.**



On the **Setup Menu FTP screen** displayed below, set **Filename** to **download.dat**. Change **Username** and **Password** to the FTP client (ORBi-TEL[7] Server) required values. Click on **Save.** The ORBi-TEL[7] Server acts as the FTP client with the NetBuffer being the FTP server.



Select **Status** and the completed **Status** screen is displayed below.



6. General Test Approach and Test Results

The general test approach was to manually place intra-switch calls, inbound and outbound PSTN trunk calls to and from telephones attached to the CS1000 system, and verify that ORBi-TEL[7] with NetBuffer collects the CDR records and properly classifies and reports the attributes of the call.

All the executed test cases were passed. NetBuffer successfully collected the CDR records from the CS1000 system for all calls generated including intra-switch calls, inbound / outbound PSTN trunk calls, transferred calls and conference calls. It passed them on to the ORBi-TEL[7] Server. For serviceability testing, the ORBi-TEL[7] server was able to resume collecting CDR records automatically after failure recovery, including buffered CDR records for calls that were placed during the outages.

7. Verification Steps

This section provides the tests that can be performed to verify correct configuration of CS1000 system with ORBi-TEL^7 solution.

7.1. Verify ORBi-TEL^7 and NetBuffer

Verify the connection between ORBi-TEL^7 Server and the NetBuffer through the following steps.

7.1.1. Connection between ORBi-TEL^7 Server and the NetBuffer.

Access the NetBuffer from a DOS or UNIX prompt and issue the following command:

#ftp x.x.x.x where **x.x.x.x** is the IP address of NetBuffer.

Enter Username and Password of the ftp server (NetBuffer).

Ensure that the following message is received

#Connected

Enter in the following:

DIR

The return will display

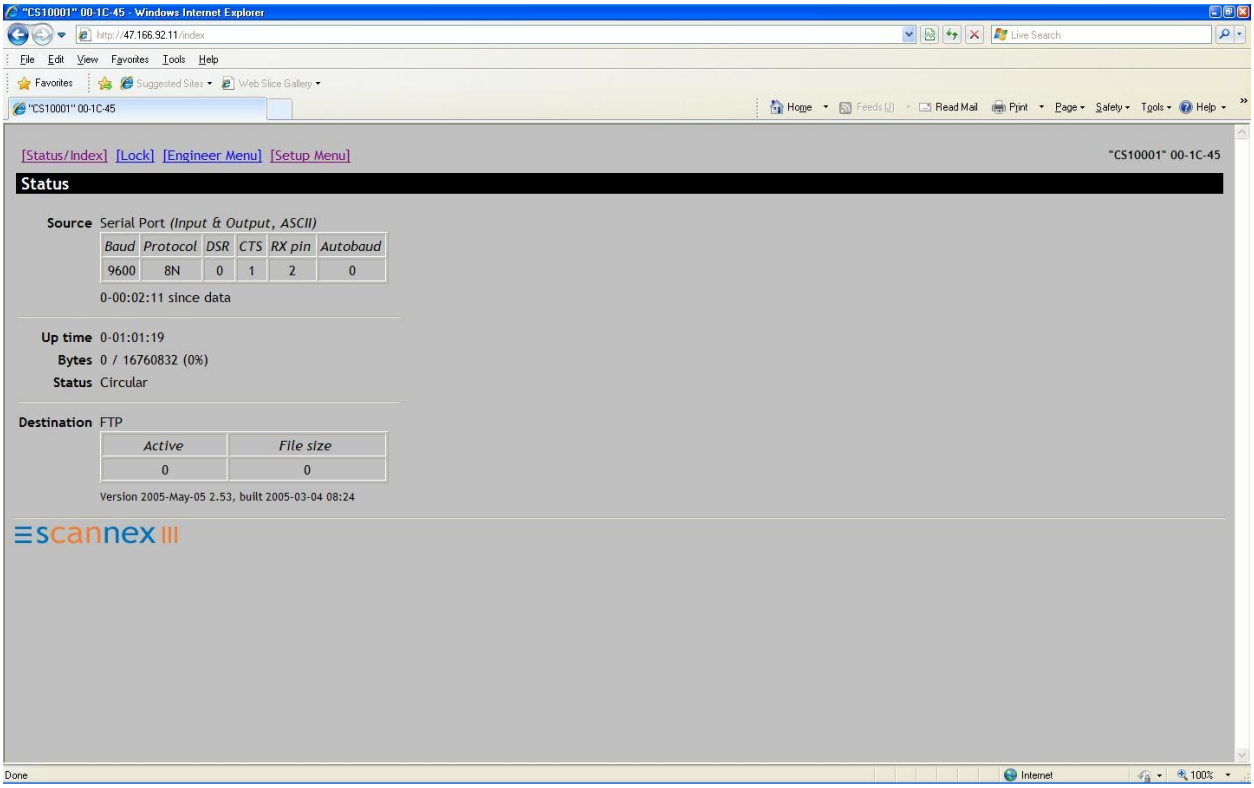
#download.dat

Enter BYE to return to return to Unix or DOS.

BYE

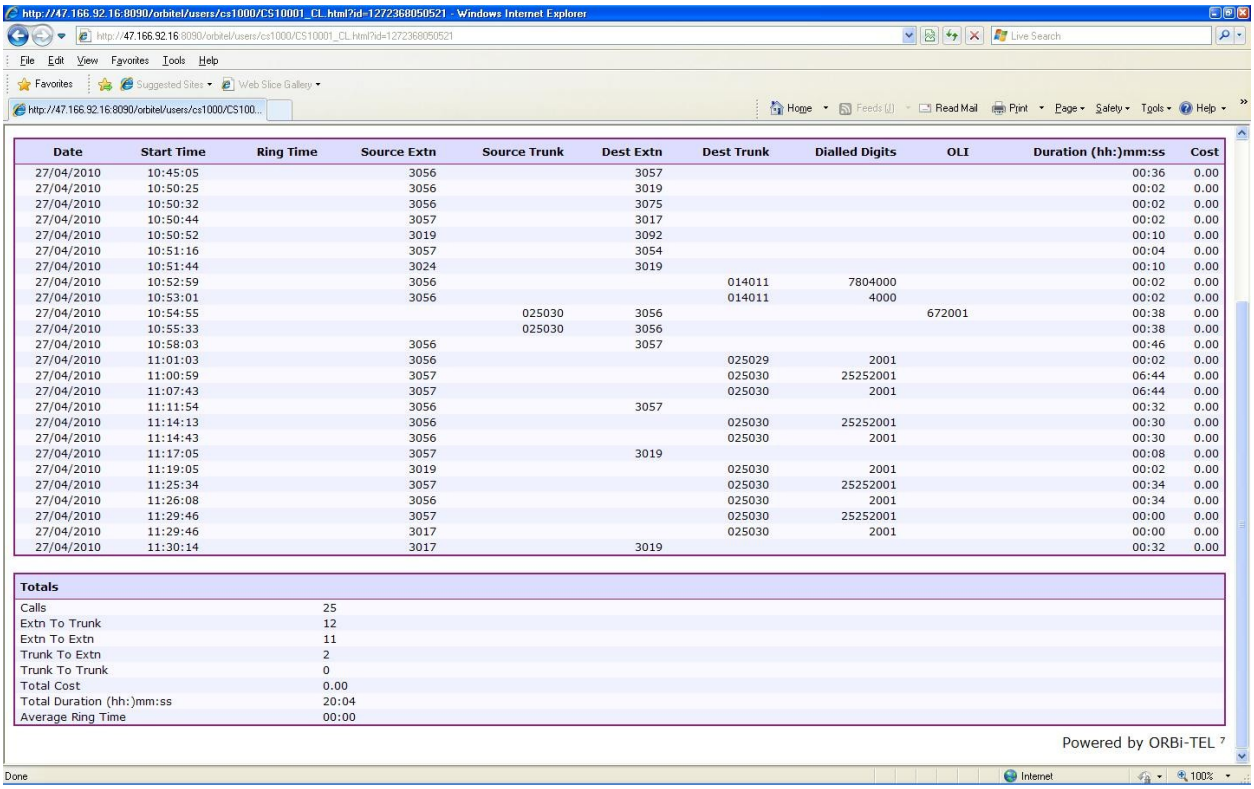
7.1.2. Connection between CS1000 System and the NetBuffer.

Select **Status** and the completed **Status** screen is displayed. The Source Serial Port details the connection protocols, baud rate, parity, DSR, CTS and RX pin detected.



Run some test calls, including internal, inbound trunk and outbound trunk calls, then run the ORBi-TEL[7] report to ensure correct collection of results.

Below is a sample CDR report.



Date	Start Time	Ring Time	Source Extn	Source Trunk	Dest Extn	Dest Trunk	Dialled Digits	OLI	Duration (hh:)mm:ss	Cost
27/04/2010	10:45:05		3056		3057				00:36	0.00
27/04/2010	10:50:25		3056		3019				00:02	0.00
27/04/2010	10:50:32		3056		3075				00:02	0.00
27/04/2010	10:50:44		3057		3017				00:02	0.00
27/04/2010	10:50:52		3019		3092				00:10	0.00
27/04/2010	10:51:16		3057		3054				00:04	0.00
27/04/2010	10:51:44		3024		3019				00:10	0.00
27/04/2010	10:52:59		3056			014011	7804000		00:02	0.00
27/04/2010	10:53:01		3056			014011	4000		00:02	0.00
27/04/2010	10:54:55			025030	3056			672001	00:38	0.00
27/04/2010	10:55:33			025030	3056				00:38	0.00
27/04/2010	10:58:03		3056		3057				00:46	0.00
27/04/2010	11:01:03		3056			025029	2001		00:02	0.00
27/04/2010	11:00:59		3057			025030	25252001		06:44	0.00
27/04/2010	11:07:43		3057			025030	2001		06:44	0.00
27/04/2010	11:11:54		3056		3057				00:32	0.00
27/04/2010	11:14:13		3056			025030	25252001		00:30	0.00
27/04/2010	11:14:43		3056			025030	2001		00:30	0.00
27/04/2010	11:17:05		3057		3019				00:08	0.00
27/04/2010	11:19:05		3019			025030	2001		00:02	0.00
27/04/2010	11:25:34		3057			025030	25252001		00:34	0.00
27/04/2010	11:26:08		3056			025030	2001		00:34	0.00
27/04/2010	11:29:46		3057			025030	25252001		00:00	0.00
27/04/2010	11:29:46		3017			025030	2001		00:00	0.00
27/04/2010	11:30:14		3017		3019				00:32	0.00

Totals	
Calls	25
Extn To Trunk	12
Extn To Extn	11
Trunk To Extn	2
Trunk To Trunk	0
Total Cost	0.00
Total Duration (hh:)mm:ss	20:04
Average Ring Time	00:00

Powered by ORBi-TEL 7

8. Conclusion

These Application Notes describe the procedures for configuring Nu Technologies ORBi-TEL[7] and NetBuffer to collect call detail records from Avaya CS1000 system. ORBi-TEL[7] 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] *NN43001-550 Communication Server 1000 Call Detail Recording Fundamentals.*

The Nu Technologies documentation can be found at http://www.nut.eu.com

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.