Avaya Solution & Interoperability Test Lab

Application Notes for Unicorn Version 1.2 with Avaya Communication Server 1000 Release 7.6 – Issue 1.0

Abstract

These Application Notes describe the procedures for configuring FCS Unicorn application to interoperate with Avaya Communication Server 1000. FCS Unicorn is a Windows-based integrated billing and interface solution that supports all major Call Detail Recording and Property Management System Interfaces in PABX systems.

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

These Application Notes describe the procedures for configuring FCS Unicorn to interoperate with Avaya Communication Server 1000. FCS Unicorn is a Windows-based integrated billing and interface solution that supports all major Call Detail Recording (CDR) and Property Management Systems (PMS). FCS Unicorn provides a real-time multitasking interface between Avaya Communication Server 1000 (CS 1000) and a hotel's 3rd party Property Management System (PMS). In addition to functioning as a call charge and billing system that manages the costs of telephony and service usage, FCS Unicorn supports standard Hospitality feature requests to/from a PMS (guest room check-in/check-out/moves, Do Not Disturb (DND), Automatic Wake-Up (AWU), Message Waiting Lamp (MWL) control, Housekeeping/Room Status changes). The call charge and billing functionality is facilitated by a CDR interface to Avaya Communication Server 1000, while the Hospitality features are enabled by a PMS data link to Avaya Communication Server 1000. The data link used between Avaya CS 1000 and Unicorn server is Rlogin via ELAN of CS 1000 Call Server and RS232 serial cable that connects from the RS232 port of Media Gateway Controller (MGC) card on CS 1000 to serial COM port on the Unicorn server for CDR.

2. General Test Approach and Test Results

Feature functionality testing was performed manually. Inbound calls were made to the Avaya IP Telephones (i.e. the guest telephones) over PRI and SIP trunks, as well as from other local extensions (analog, digital, and IP Telephone). A simulated PMS application was used to launch changes to telephone message waiting lamps and phone privileges during room check in / checkout / move requests, receive room status updates, and activate/deactivate DND.

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

2.1. Interoperability Compliance Testing

Interoperability compliance testing focused on FCS Unicorn's ability to work with Avaya Communication Server 1000. FCS Unicorn features and capabilities that were verified included the following:

- Receipt and processing of Call Detail Records: internal, incoming, transfer, and local calls with charge code and authorization code.
- Property Management System features: check-in/check-out/room change for guest extensions, receipt of Housekeeping/Room Status changes initiated at guest telephones and forwarding to a simulated Property Management System, MWL activation for incoming voicemail, and DND activation/deactivation.

2.2. Test Results

All executed test cases were completed successfully.

2.3. Support

For technical support on FCS Unicorn, contact FCS Computer Systems at Support Hotline at +632-857-4000.

- Webite: http://www.fcscs.com/product_hospitality.php

3. Reference Configuration

Figure 1 below illustrates the test configuration diagram that has a serial cable for CDR connected from RS232 port on MGC card to serial com port on the Unicorn server and Rlogin via ELAN IP for PMS connected from Unicorn server to ELAN of CS 1000 Call server. The diagram also has the SIP trunk between two Avaya CS 1000 systems and the T1 trunk from the main CS 1000 to the simulated PSTN. The SIP and T1 trunks are used for outbound and inbound calls to the tested CS 1000 for testing purposes only.

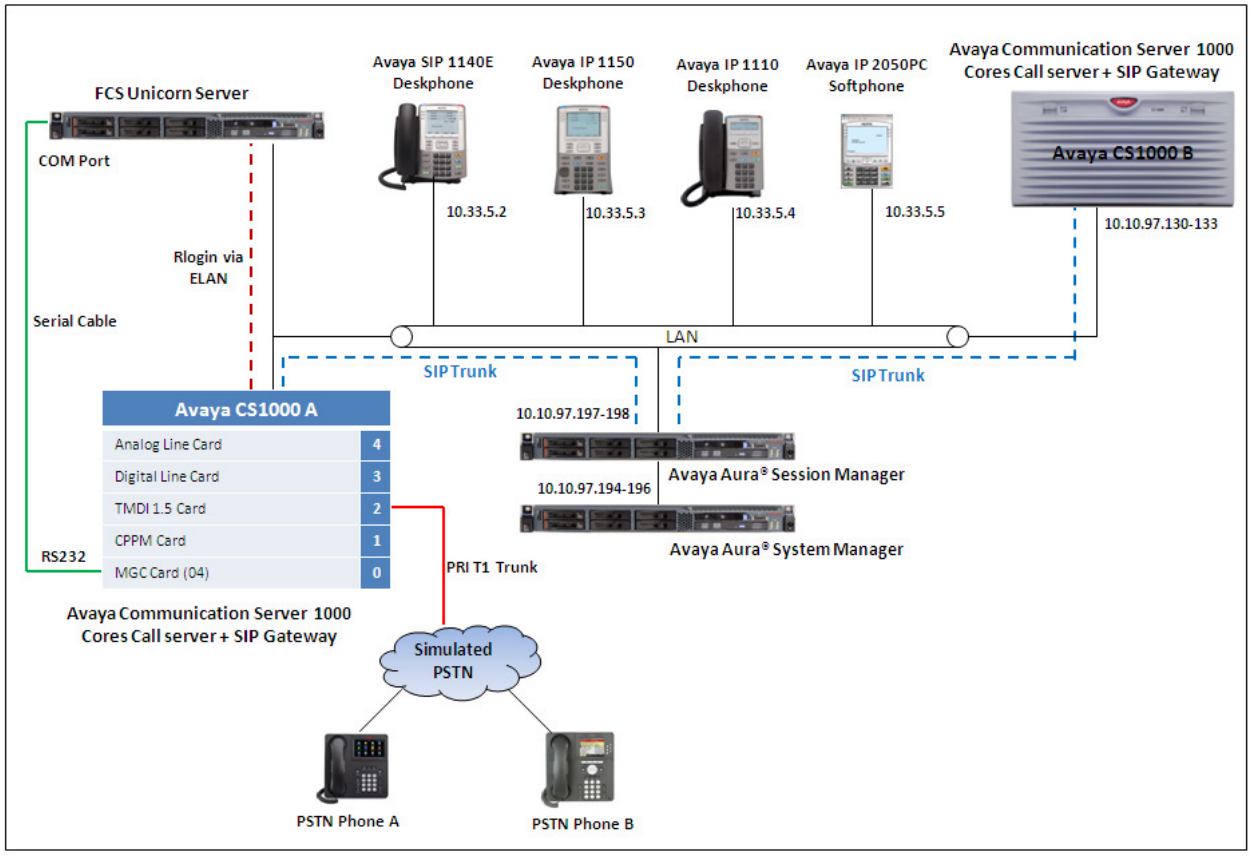


Figure 1: Test Configuration Diagram

4. Equipment and Software Validated

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

Equipment	Software
Avaya S8800 server running Avaya Aura® Session Manager Server	6.3 (Build No 6.3.2.0.632023)
Avaya S8800 server running Avaya Aura® System Manager Server	6.3 (Build No: 6.3.0.8.5682-6.3.8.1627)
Avaya Communication Server 1000E/CPPM	Avaya Communication Server Release 7.6 Q+ Deplist 1 (created: 2012-09-20) and Service Update 1 (Created: Sept 19, 2012)
Avaya IP SIP Phone 1140E	4.3
Avaya IP Unistim Phone 1165E	0x25C8J
Avaya IP Unistim Phone 1150E	0x27C8J
Avaya IP Unistim Phone 2004	0604DCN
Unicorn IBM Server x3350	Windows 2008 64-bit R2 Standard SP1
Unicorn software	1.2

5. Configure Avaya Communication Server 1000

This document assumes that the CS 1000 system used for the compliance test was already installed and configured. This section just provides necessary procedure to configure for CS 1000 to work with Unicorn application. For more detail on how to administer the CS 1000 system, please refer to **Section 9[3]**.

5.1. Configure Property Management System Interface (PMSI)

The Property Management System Interface is an optional software package that allows the CS 1000 system to interface directly with a customer-provided Property Management System (PMS) through Rlogin via Embedded LAN (ELAN). This provides an effective means of information between the PMS and the CS 1000 system.

This section provides the procedure how to check the software package and to configure the Property Management System Interface on the CS 1000. Log in the CS 1000 Call Server and execute the following overlay (LD) commands.

1. Use overlay LD 22 to check all necessary software packages that are required for the PMS feature on the CS 1000.

Prompt	Response	Comment
REQ	PRT	Request: Print
TYPE	PKG	Type: package
DNDI	9	Do Not Disturb Individual package
DNDG	16	Do Not Disturb Group package
MWC	46	Message Waiting Center package
CCOS	81	Controlled Class of Service package
BGD	99	Background Terminal package
RMS	100	Room Status package
MR	101	Mange Registration package
AWU	102	Automatic Wake UP package
PMSI	103	Property Management Service Interface

2. Use overlay LD 17 to create a TTY port number for a PTY connection on the CS 1000. This PTY port was used for Unicorn application to connect to the Call Server via ELAN.

Prompt	Response	Comment
REQ	CHG	Request: Change
TYPE	ADAN	Action Device and Number
ADAN	NEW TTY 7	Add a new TTY port
CTYP	PTY	Card type: Pseudo TTY
DNUM	7	Device number for I/O port
PORT	7	Port number
FLOW	NO	Flow control capability
USER	BGD PMS	Output message type

3. Use overlay (LD) 17 to enable the PMS interface in the CS 1000 system.

Prompt	Response	Comment
REQ	CHG	Request
TYPE	PARM	System Parameters
PMSI	YES	Modify properties management system interface
MANU	PMS1	PMS interface
PMCR	20	Number of call registers used for PMSI
PORT	7	Port number
XTMR	2	PMS acknowledgment time
XNUM	1	Number of retransmissions per message
PMIN	YES	Minor alarm when link is not responding
PTMR	0	Polling time for PMSI

4. Use overlay (LD) 15 to enable the Controlled Class of Service (CCOS) feature in the customer data block.

Prompt	Response	Comment
REQ	CHG	Request change
TYPE	CCS	Controlled class of service
CUST	0	Customer
CCRS	UNR	Restricted Service
ECC1	UNR	Enhance Level 2
ECC2	UNR	Enhance Level 2

5. Use overlay (LD) 15 to enable Automatic Wake Up feature in the customer data block. Note that RAN routes 16, 17, and 18 below were used just for example and they need to be defined in LD 16 before it can be used in the Automatic Wake Up feature.

Prompt	Response	Comment
REQ	CHG	Request change
TYPE	AWU	Type of data block: Automatic wake up
CUST	0	Customer 0
AWU	YES	Automatic wake up
RANF	16	Music route
RAN1	17	Primary RAN route
RAN2	18	Secondary RAN route

6. User overlay (LD) 15 to enable Do Not Disturb feature in the customer data block.

Prompt	Response	Comment
REQ	CHG	Request change
TYPE	FTR	Features and options
CUST	0	Customer 0
DNDL	YES	Do not disturb lamb

7. Use overlay (LD) 15 to enable Message Waiting Indicator feature in the customer data block (CDB).

Prompt	Response	Comment
REQ	CHG	Request change
TYPE	FTR	Features and options
CUST	0	Customer 0
OPT	MCI	Options: Message center included

8. Use overlay (LD) 10 and 11 to administer analog, digital and IP phone.

Prompt	Response	Comment
REQ	CHG	Request change
TYPE	1165	Type of set
CUST	0	Customer ID
ECHG	YES	Easy change
ITEM	CLS CCSA MWA	Class of service
ITEM	KEY 1 RMK	Room status key
ITEM	KEY 2 WUK	Wakeup key

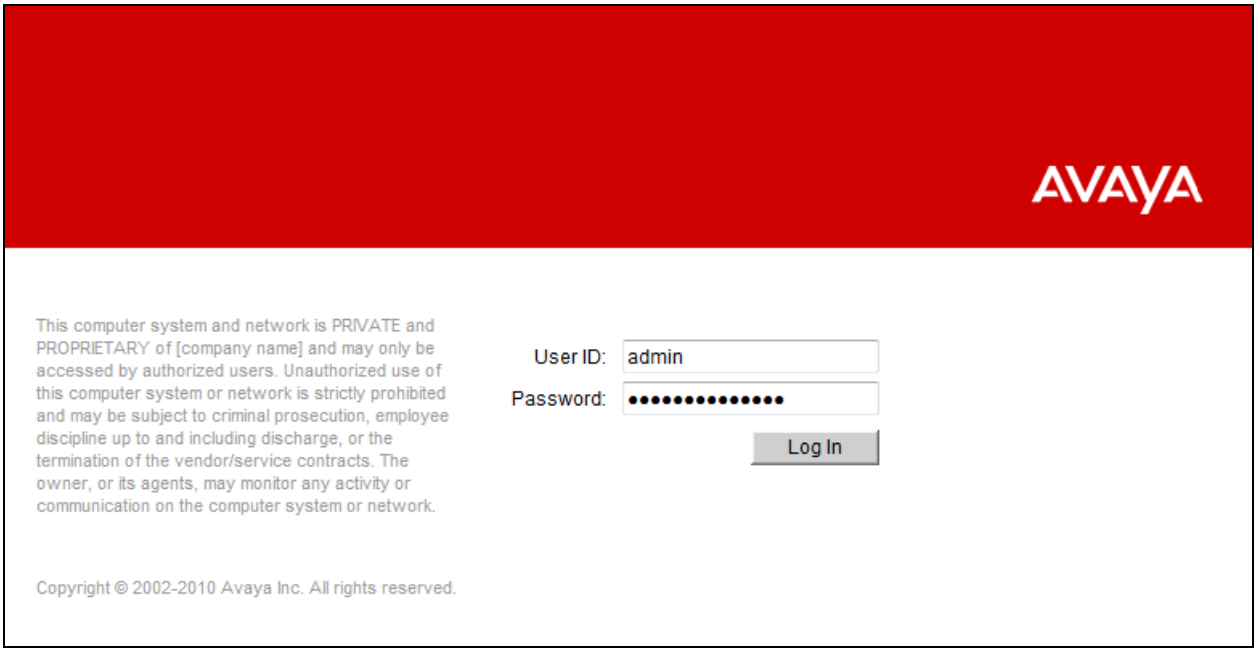
With definitions for class of services:

- **CCSA**: Controlled Class of service Allowed.
- **MWA**: Messaging Waiting Indicator Allowed.

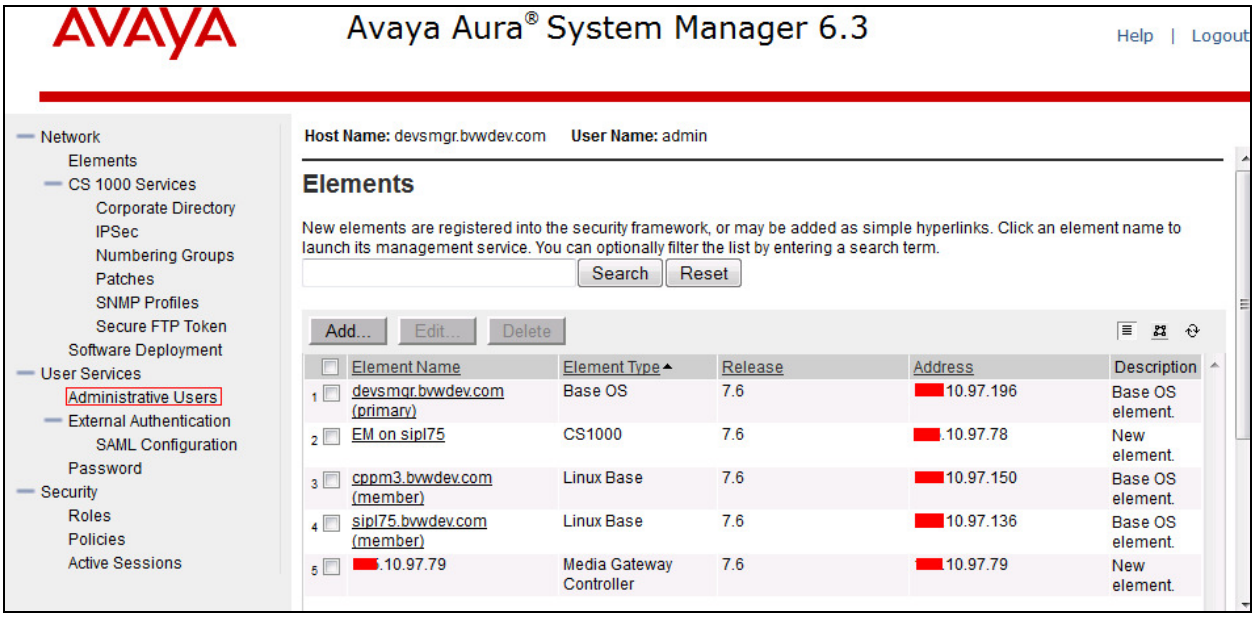
9. Configure Username in Unified Communications Management (UCM)

In order integrate Unicorn application logs in to the Call server via Rlogin with the dedicated PTY port 7 above they must use a dedicated username created in the Unified Communications Management (UCM). This special username has to be named like "**pty7**" which is matched with port 7 in the PTY port above. (See **Section 5.1** – Step 2).

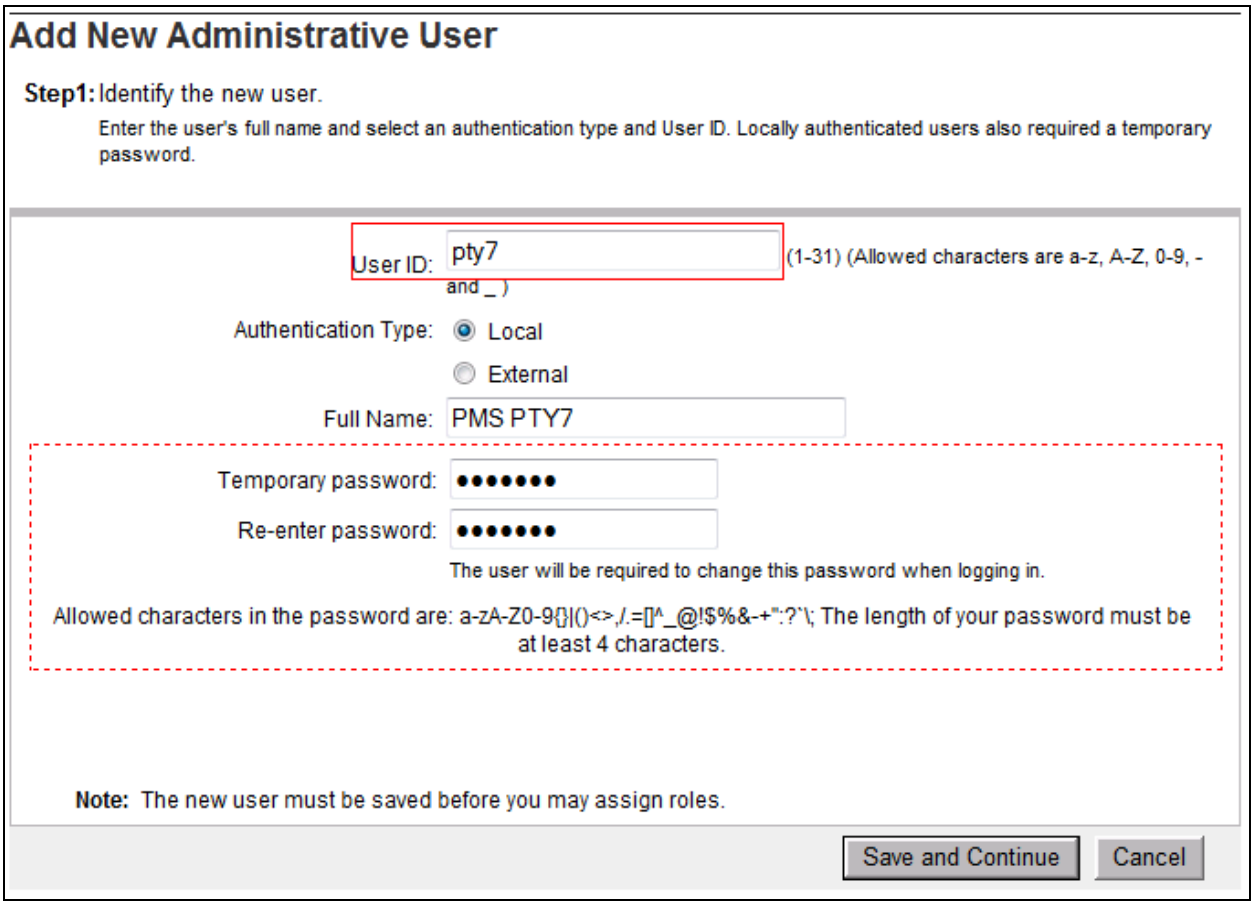
Log in to the UCM by using administrator privilege; enter the user name **admin** in the **User ID** field and the password in to the **Password** field. Click **Log In** button.



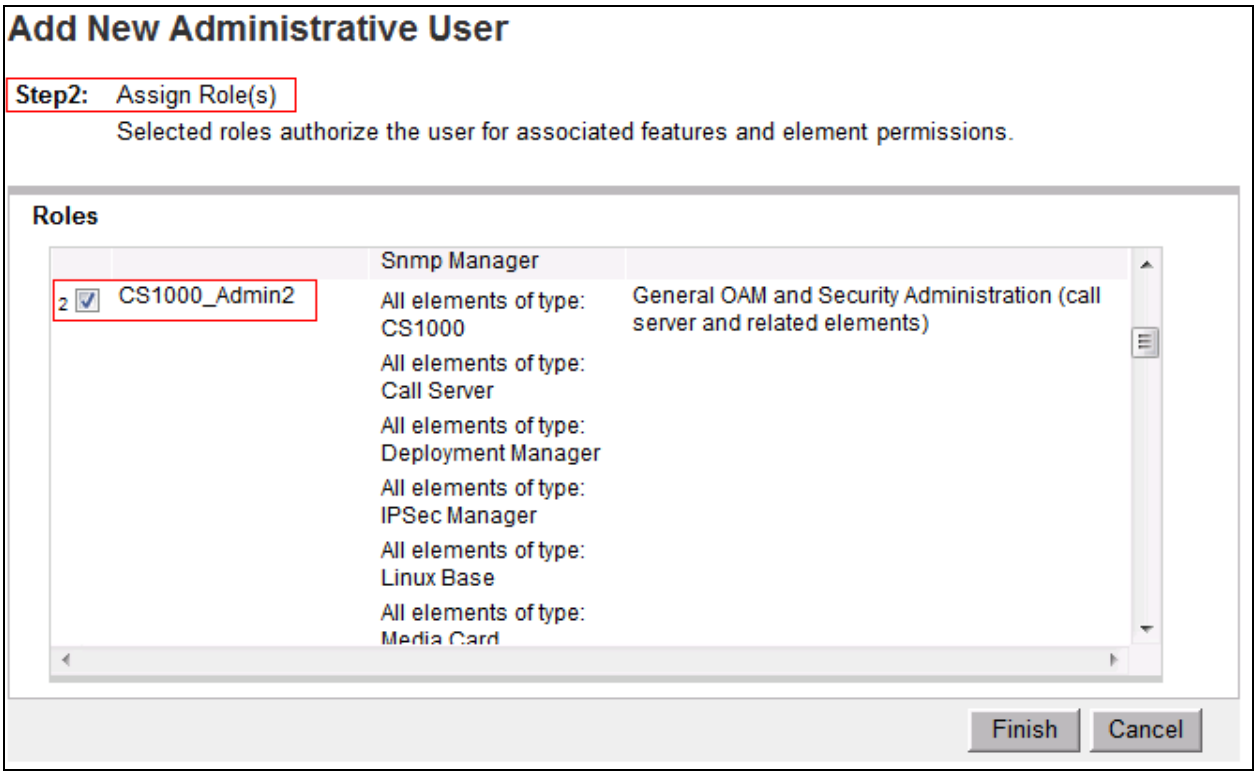
The Avaya Unified Communications Management homepage is displayed as per the screen shot below. Click on the **Administrative Users** in the left navigation pane.



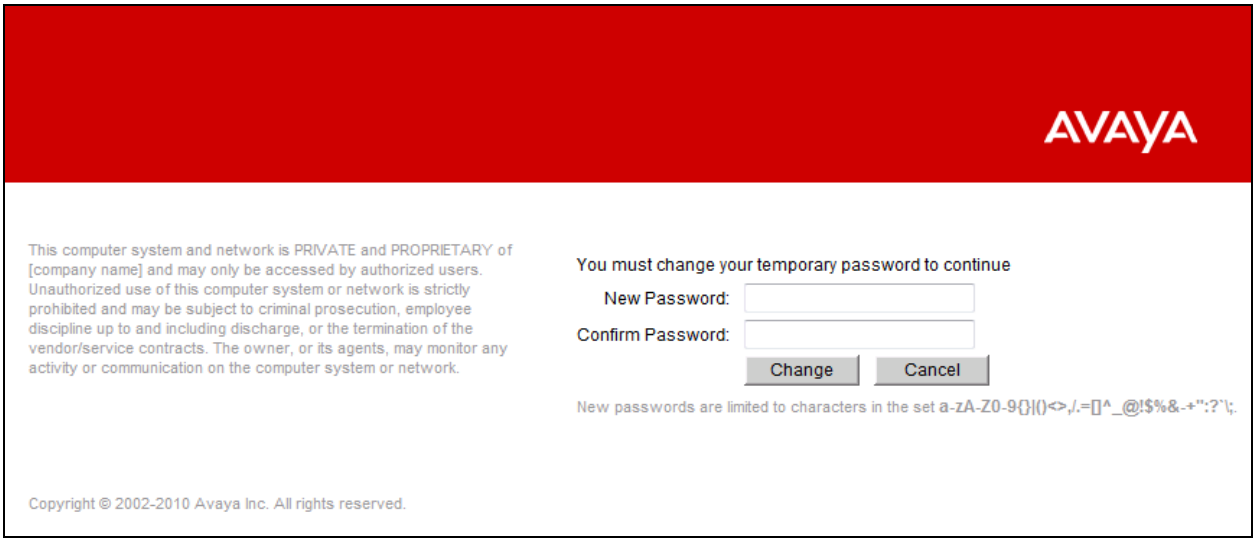
The **Administrative Users** page is displayed in the right. Click on **Add** button to add a new user name (not shown). The **Add New Administrative User** page is displayed. Enter "**pty7**" in the **User ID** field and select "Local" radio option. Enter a descriptive name in the **Full Name** field and a password in the **Temporary password** and **Re-enter password** fields. Click on **Save and Continue** button to go to next page.



In the **Step2: Assign Role(s)** page, assign **CS1000_Admin2** and **Network Administrator** roles to this user as shown below. Click on **Finish** button to save and complete.



The temporary password of the new **pty7** user must be changed before it can be used to Rlogin to CS 1000 Call server. To change the temporary password, launch the UCM webpage and use the "**pty7**" username and its temporary password to log in. Enter a new password in both **New Password** and **Confirm Password** fields and click on the **Change** button to change it to new one.



5.2. Configure Call Detail Recording

The Call Detail Recording (CDR) feature provides information on incoming and outgoing calls for accounting and administration purposes. The information is assembled by software and sent through Serial Data Interface (SDI) ports to any EIA RS-232 compatible output or storage device. This section provides the steps to configure the Call Detail Recording feature to work with Unicorn application via serial cable.

1. Use overlay LD 22 to print and check all necessary software packages that are required for the CDR feature on the CS 1000.

Prompt	Response	Comment
REQ TYPE	PRT PKG	Request Print Software Packages
CDR CTY CHG BAUT ICDR CDRE FCDR SCDR CDRX	4 5 23 25 108 151 234 251 259	Basic Call Detail Recording package CDR on Teletype Terminal Charge Account for CDR Basic Authorization Code Internal CDR Call Detail Recording Expansion New Format CDR Station Activity Records Call Detail Recording Enhancement

2. Use overlay (LD) 17 to create a TTY port number for a CDR connection on the MGC card of CS 1000. This TTY port was used to connect to serial COM port on Unicorn server via a serial cable.

Prompt	Response	Comment
REQ	CHG	Request Change
TYPE	ADAN	Action Device and Number
ADAN	NEW TTY 8	Add a new TTY port
CTYP	MGC	Card type MGC
IPMG	4 0	Physical slot number of MGC in the IPMG
PORT	1	Port 1 in MGC card
DES	CDR	Designator
BPS	9600	Bit per second
BITL	8	Data bit length
STOP	1	Number of stop bits
PARY	NONE	Parity Type
FLOW	NO	Flow control
USER	CTY	Output message type

3. Use overlay (LD) 15 to enable CDR feature on customer data block of CS 1000 system.

Prompt	**Response**	**Comment**
REQ	CHG	Request: Change
TYPE	CDR	Type of data block: CDR
CUST	0	Customer 0
IMPH	NO	CDR for Incoming Packet data call
OMPH	NO	CDR for Outgoing Packet data call
AXID	YES	Auxiliary Identification output in CDR record
TRCR	NO	Carriage Return sent after each CDR message
CDPR	YES	Coordinated Dialing Plan Record option
ECDR	YES	End-to-End Signaling digits in CDR record
BDI	YES	Buffer Data Interface for CDR
OTCR	YES	CDR provided, based on Originally dialed Trunk Route
PORT	8	Port Number as configured in the step above

4. Use overlay (LD) 16 to configure CDR in the route data block for PRI and SIP routes.

Prompt	Response	Comment
REQ	CHG	Request: Change
TYPE	RDB	Type: Route Data Block
CUST	0	Customer 0
ROUT	1	Route number 1
CDR	YES	Call Detail Recording
INC	YES	CDR records generated on incoming calls
LAST	YES	CDR record printing content option for redirected calls
TTA	YES	Time To Answer output in CDR
ABAN	YES	Abandoned call records output for this route
CDRB	YES	Abandoned call on busy tone records
QREC	YES	CDR ACD Q initial connection records
OAL	YES	CDR on outgoing calls
AIA	YES	CDR on Outgoing Toll calls
OAN	YES	Answered call Identification Allowed
ODP	YES	Outpulsed Digits in CDR
NDP	EXC 0	Number of Digits Printed

5. User overlay (LD) 11 to configure class of service (CLS) for CS 1000 phone to enable incoming call detail allowed and abandon call allowed. These class of services allow to issue call record for incoming call and abandon call.

Prompt	Response	Comment
REQ	CHG	Request change
TYPE	1165	Type of station
CUST	0	Customer 0
ECHG	YES	Easy change
ITEM	CLS ICDA ABDA	Class of service
ITEM	KEY 1 RMK	Key 1 Room status
ITEM	KEY 2 WUK	Key 2 Wakeup

6. Configure FCS Unicorn Application

This section details the essential portion of the FCS Unicorn configuration to interoperate with Avaya Communication Server 1000. These Application Notes assume that the FCS Unicorn application has already been properly installed by FCS services personnel. Further details of the FCS Unicorn setup can be found in the Unicorn (Standard) v1.1 - Installation Manual v1.0 in **Section 9**.

1. The Unicorn Avaya PMS interface module port and data configuration is defined in the Nortel-PBX.xml located in "C:\Program Files (x86)\FCS\Unicorn\Control\" directory. The parameter of the TCP/IP setting has to be matched with the TTY connection configured in **Section 5.1**.

```
?xml version="1.0" encoding="utf-8"?>
<!-- <?xml version="1.0"?> -->
<PBX ID="Nortel">
<CommunicationSetting>
<Name>Nortel PMS</Name>
     <InterfaceType>2</InterfaceType>
      <ProtocolFormat>2</ProtocolFormat>
      <InterfaceSetting>C,10.10.97.78:513</InterfaceSetting>
      <UDPSvrInterfaceSetting></UDPSvrInterfaceSetting>
     <InterPacketDelay>100</InterPacketDelay>
      <CheckRTSSignal>No</CheckRTSSignal>
      <CheckDTRSignal>No</CheckDTRSignal>
     <CheckCTSSignal>No</CheckCTSSignal>
       <CheckSumMethod>1</CheckSumMethod>
      <ReceiveCheckSum>Yes</ReceiveCheckSum>
      <InterCharDelay>10</InterCharDelay>
      <InterStringDelay>100</InterStringDelay>
     <SendRetry>1</SendRetry>
      <SendTimeout>3</SendTimeout>
     </CommunicationSetting>
```

And modify on the child PBX1:

```
<Child Id="PBX1">
      <PropertyId>PropertyID</PropertyId>
      <EXEName>Nortel.PBX.exe</EXEName>
      <LogFilePattern>PBX\PBX1-</LogFilePattern>
      <Description>Nortel PMS</Description>
      <XMLFile>Nortel-PBX.xml</XMLFile>
      <IntfInQueueName>.\Private$\PBX2In</IntfInQueueName>
      <IntfOutQueueName>.\Private$\PBX2Out</IntfOutQueueName>
     <IntfOutQueueFilterThresholdInHour>99999
</IntfOutQueueFilterThresholdInHour>
      <UnicornMotherIPPort>9203</UnicornMotherIPPort>
      <MemoryPage>3</MemoryPage>
</Child>
```

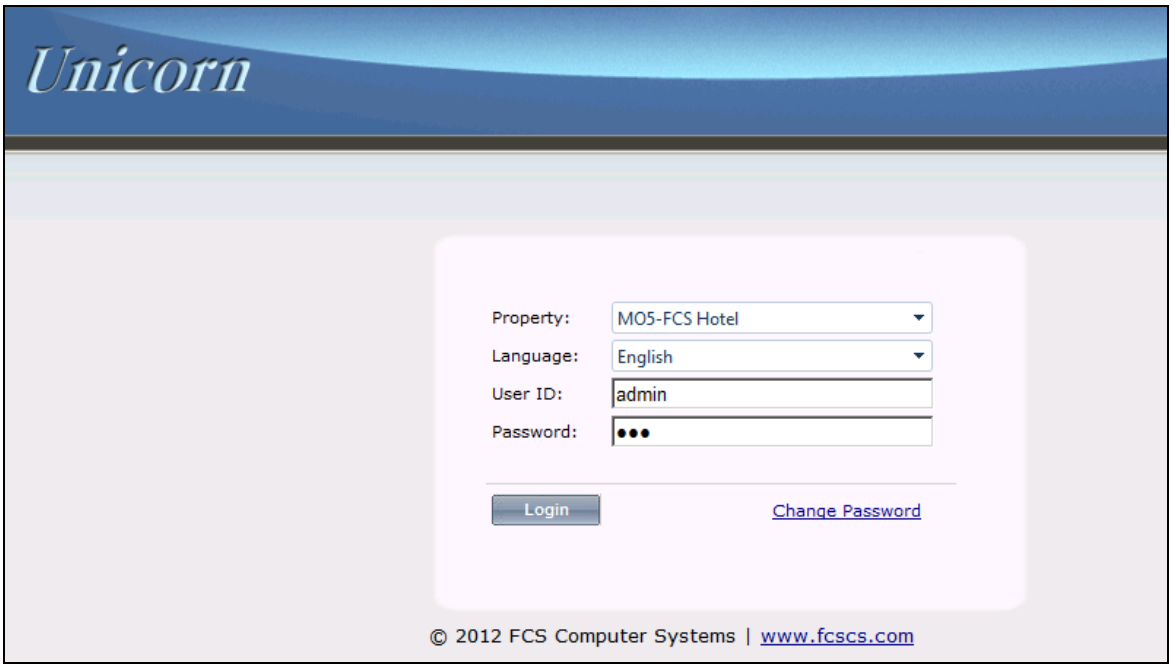
2. The Unicorn Avaya CDR interface module port & data configuration is defined in the Nortel-CDR.xml located in "C:\Program Files (x86)\FCS\Unicorn\Control\" directory. The parameter of the COM port has to be matched with the TTY connection configured in **Section 5.2**.

```
<?xml version="1.0" encoding="utf-8"?>
<!-- <?xml version="1.0"?> -->
<PBX ID="CDR1">
     <CommunicationSetting>
     <Name>Nortel CDR1</Name>
     <ProtocolFormat>1</ProtocolFormat>
     <InterfaceType>1</InterfaceType>
     <InterfaceSetting>1,9600,n,8,1</InterfaceSetting>
     <UDPSvrInterfaceSetting></UDPSvrInterfaceSetting>
     <InterPacketDelay>100</InterPacketDelay>
     <CheckRTSSignal>No</CheckRTSSignal>
     <CheckDTRSignal>No</CheckDTRSignal>
     <CheckCTSSignal>No</CheckCTSSignal>
     <CheckSumMethod>1</CheckSumMethod>
     <ReceiveCheckSum>Yes</ReceiveCheckSum>
     <InterCharDelay>10</InterCharDelay>
     <InterStringDelay>100</InterStringDelay>
     <SendRetry>1</SendRetry>
     <SendTimeout>3</SendTimeout>
     </CommunicationSetting>
```

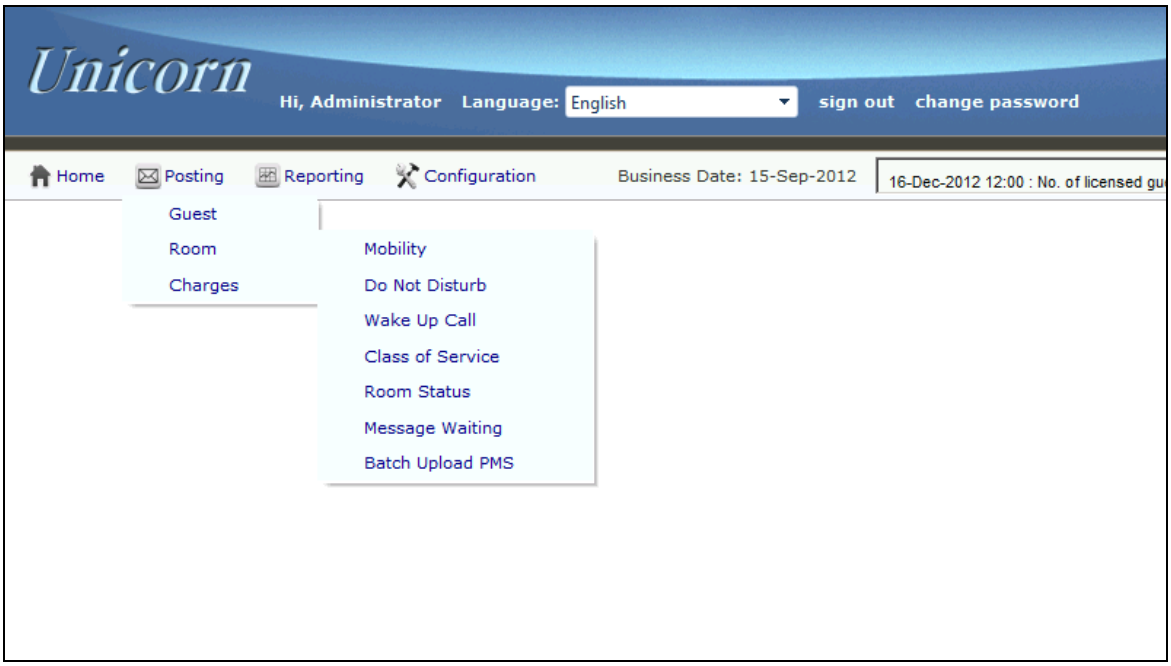
And modify on the child CDR1 file.

```
Child Id="CDR1">
<PropertyId> PropertyID </PropertyId>
             <LogFilePattern>CDR\CDR1-</LogFilePattern>
             <EXEName>Nortel.CDR.exe</EXEName>
             <Description>Nortel CDR Interface </Description>
             <XMLFile>Nortel-CDR.xml</XMLFile>
             <IntfInQueueName>.\Private$\SMDRIn</IntfInQueueName>
             <IntfOutQueueName>.\Private$\SMDROut
</IntfOutQueueName>
             <IntfOutQueueFilterThresholdInHour>99999
</IntfOutQueueFilterThresholdInHour>
             <UnicornMotherIPPort>4001</UnicornMotherIPPort>
             <MemoryPage>8</MemoryPage>
</Child>
```

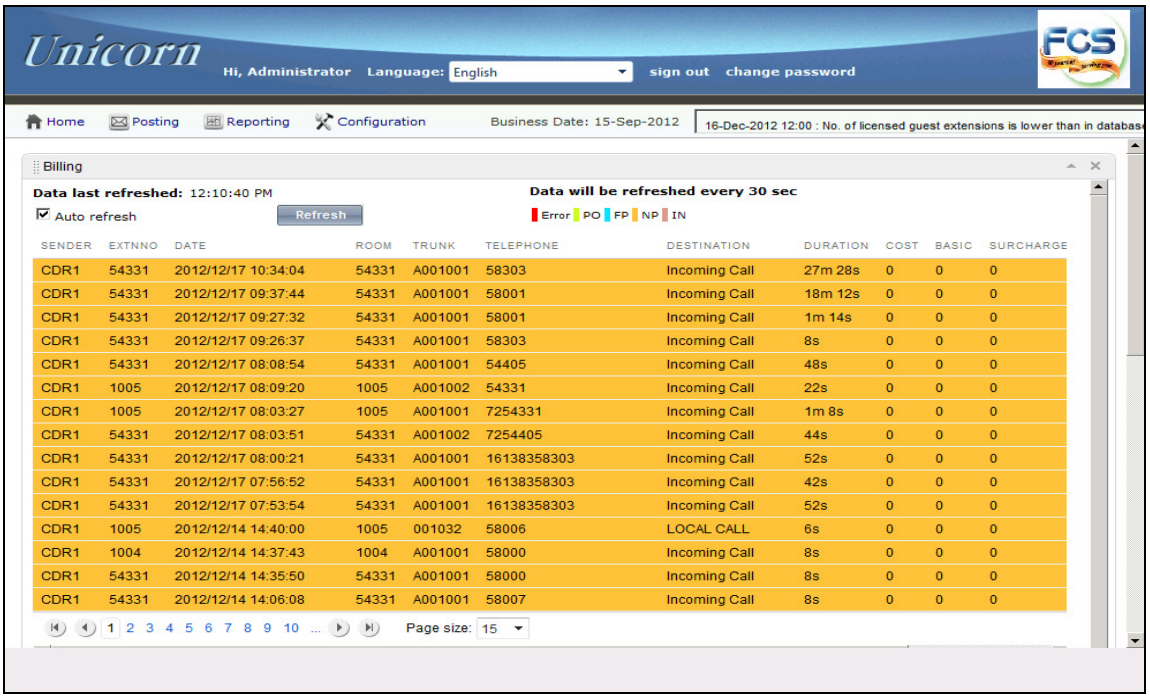
3. FCS Unicorn provides a web interface for posting and reporting. Administrator can login with the appropriate credentials from **http://<ipaddress>/Unicorn.Web/Login.aspx** as shown below by substituting the appropriate server IP address where the FCS Unicorn is installed.



4. The **Posting** tab below shows the various PMS features such as DND, Check In/Out, Guest Profile, etc that can be administered from the web interface. For further details refer to the "Unicorn (Standard) v1.1 - User Manual v1.2" **[2]**.



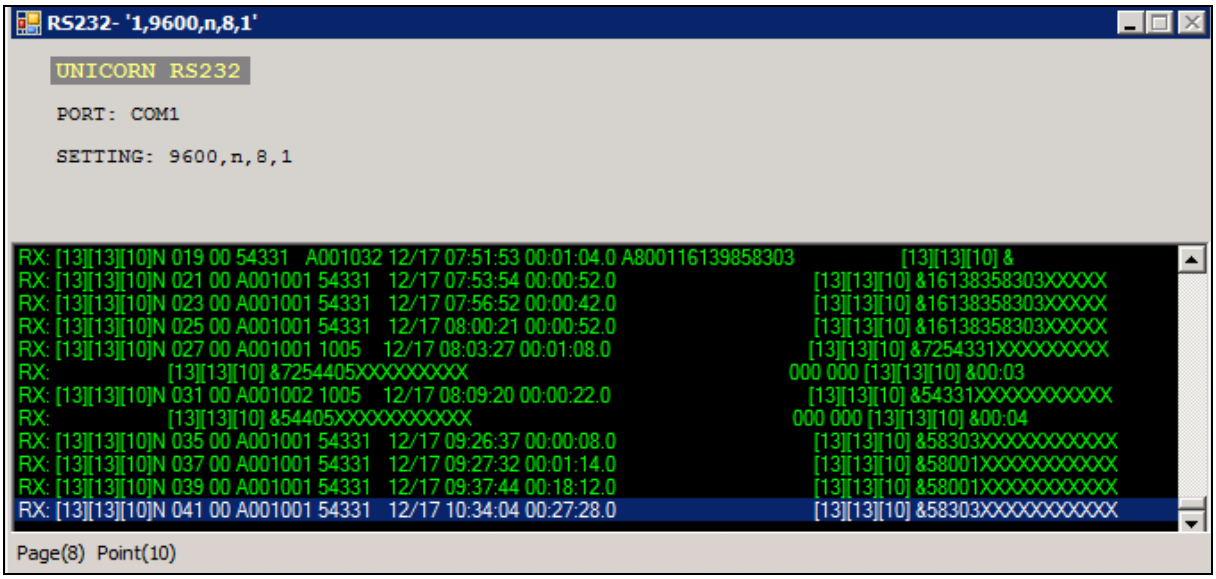
5. The **Billing** tab from **Home → System → Billing** below shows the CDR records that Unicorn application captures from the CS 1000 switch via serial port.



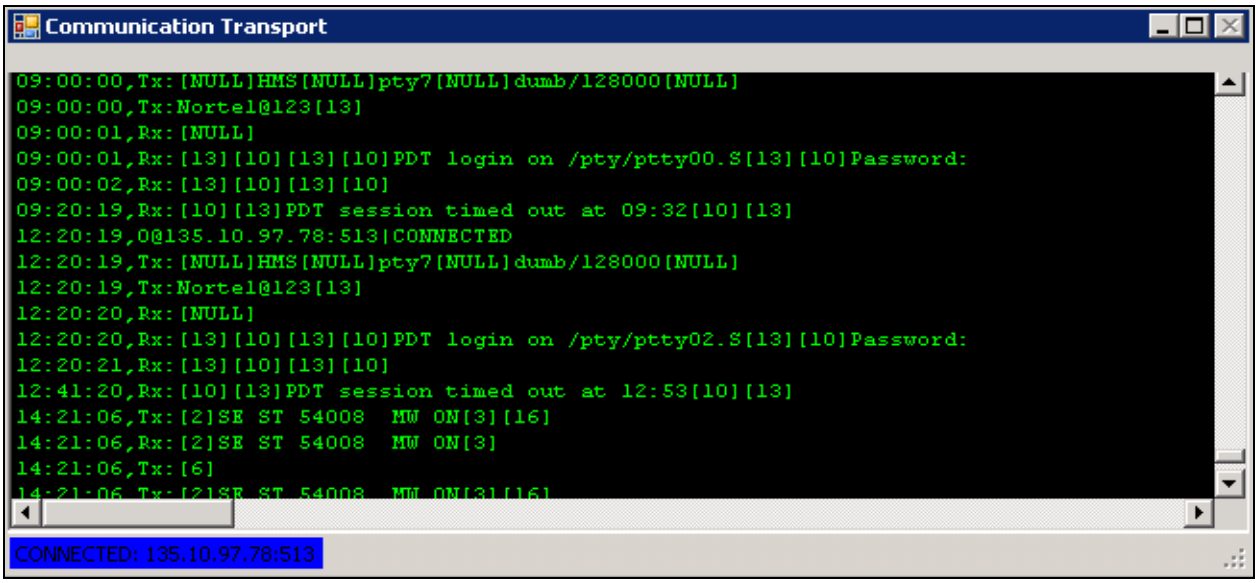
7. Verification Steps

The following steps might be used to verify the serial connection between Avaya CS 1000 switch and Unicorn and the configuration.

1. To verify the CDR records are outputted successfully to Unicorn terminal console; make some calls from the switch and ensure the CDR records are displayed in the terminal console as the screen below.



2. To verify the ELAN connection for PMS, from the Unicorn webpage do a room check-in with guest name for an extension and verify that the CPND name is updated on this extension. The screen below shows the Unicorn terminal console with the check-in command sent to the switch.



8. Conclusion

All These Application Notes describe the procedures for configuring FCS Unicorn to interoperate with Avaya Communication Server 1000. All interoperability compliance test cases executed against such a configuration were completed successfully.

9. Additional References

Product documentation for Avaya products may be found at http://support.avaya.com

[1] Hospitality Features Fundamentals, Release 7.0, Issue 04.01, Date June 2010.
[2] Call Detail Recording Avaya Fundamentals, Release 7.5, Issue 05.03, date Sep 2011.
[3] Software Input Output Reference — Administration Avaya Communication Server 1000, Release 7.6, Issue 04.02, Date Apr 04, 2013.

Product documentation for Unicorn products may be found at http://www.fcscs.com

[1] Unicorn (Standard) v1.2 - Installation Manual v1.2.
[2] Unicorn (Standard) v1.2 - User Manual v1.2.

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.