



Avaya Solution & Interoperability Test Lab

Application Notes for Phybridge UniPhyer with Avaya Communication Server 1000E 7.6 – Issue 1.0

Abstract

These Application Notes describe the configuration steps required for Phybridge UniPhyer to interoperate with Avaya Communication Server 1000E 7.6. In the compliance testing, the Phybridge UniPhyer leveraged the existing single-pair telephony wiring to provide dedicated Ethernet voice path and Power over Ethernet (PoE) to Avaya UNISTim and SIP IP telephones registered to Avaya Communication Server 1000E (Avaya CS 1000E).

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 a compliance-tested configuration consisting of Phybridge UniPhyer, Phybridge PhyAdapters, Avaya Communication Server 1000E (Avaya CS 1000E) and Avaya IP telephones (UNISim and SIP).

The Phybridge UniPhyer is a LAN appliance that leverages the existing single-pair telephony wiring to provide dedicated Ethernet and Power over Ethernet to Avaya IP telephones.

2. General Test Approach and Test Results

The compliance testing focused on the interoperability between Phybridge UniPhyer and Avaya IP telephones to ensure that the phones work as expected. Serviceability testing was also performed.

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

Testing consisted of typical call scenarios involving Avaya endpoints connected to UniPhyer. External call scenarios were also tested with a simulated PSTN connection. All tests were performed manually and the focus was on verifying interoperability compliance.

Feature testing included, registration, audio codec, basic calls, hold/reconnect, conference, transfer, display, DTMF, and message waiting indicator (MWI) scenarios.

The serviceability testing focused on verifying the ability of Phybridge UniPhyer to recover from adverse conditions, such as disconnecting and reconnecting the Ethernet cables to the Phybridge UniPhyer and to the Avaya IP telephones. Reboots and power cycling of Phybridge UniPhyer were also tested.

2.2. Test Results

All applicable test cases were executed and passed with the following observation:

The Avaya B179 Conference Phone (B179) and Avaya 2007 IP Deskphone (2007) were powered with their local power supplies and connected to their PhyAdapters with an Ethernet cable as per **Reference 4** in **Section 10**. This configuration was used because the B179 and 2007 phones required more PoE power than could be supplied by UniPhyer. Other Class 3 endpoints may also require this configuration. UniPhyer Switches can power Class 1, Class 2 and some Class 3 IEEE 802.3af compliant IP devices.

2.3. Support

Technical support for Phybridge UniPhyer can be obtained through the following:

- **Phone:** (888) 901-3633
- **Email:** Support@Phybridge.com

3. Reference Configuration

In the test configuration shown in **Figure 1**, Avaya IP telephones (UNISlim and SIP) are connected to the network via the Phybridge UniPhyer leveraging the existing CAT3 cabling that was previously used for Analog and Digital phones. For each station user, one end of the CAT3 cable is changed to connect to the Phybridge UniPhyer instead of the Analog or Digital Line circuit pack on Avaya CS 1000E. The other end of the CAT3 cable connects to a Phybridge PhyAdapter with an RJ11 connector. Each PhyAdapter is connected using a standard CAT5 Ethernet cable to an Avaya IP telephone.

The Phybridge UniPhyer provides power to the Avaya IP telephones, and is transparent to the telephones in terms of the telephones' network settings.

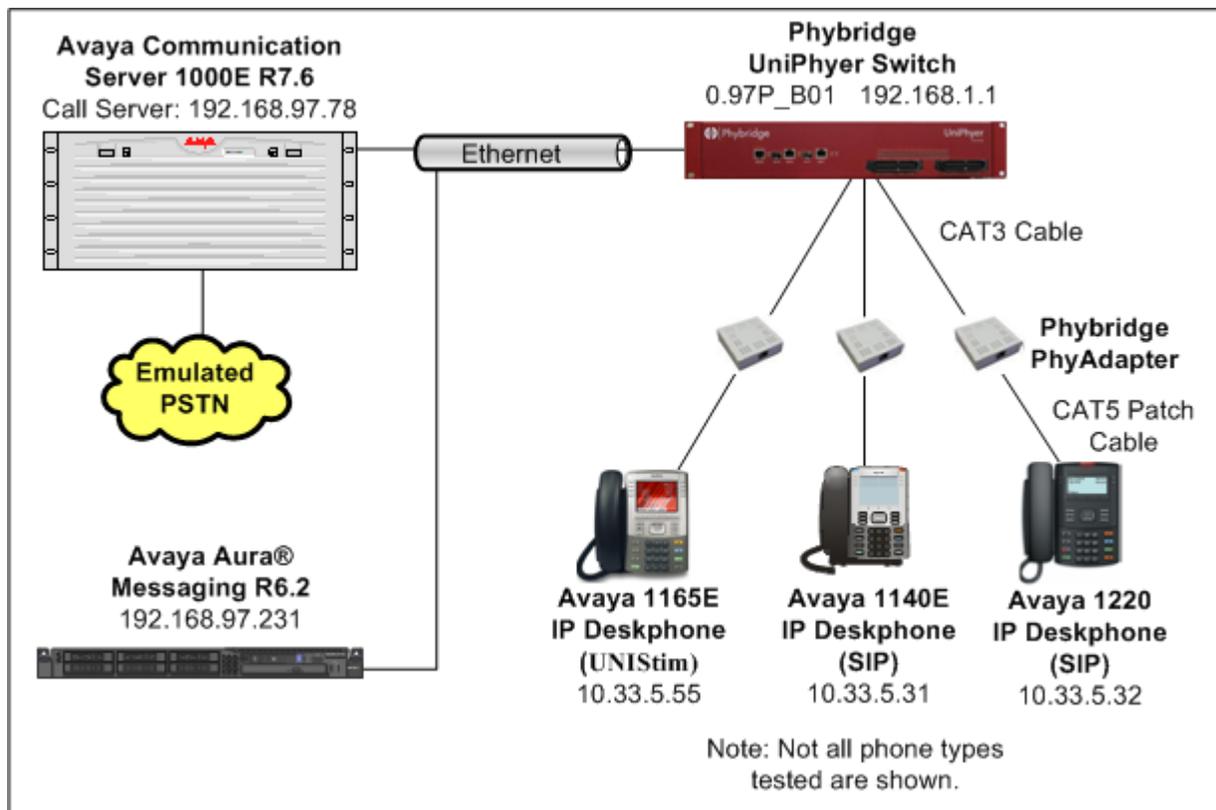


Figure 1: Phybridge UniPhyer with Avaya Communication Server 1000E

4. Equipment and Software Validated

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

Equipment/Software	Release/Version
Avaya Communication Server 1000E CPPM co-resident server	Call Server (CPPM): 7.65 P + Signaling Server (CPPM): 7.65.16.00
Avaya Aura® System Manager running on S8800 Server	6.3.0 - FP2 Build No. - 6.3.0.8.5682-6.3.8.1627
Avaya 2007 IP Deskphone (UNISlim)	5.5.1 (0621C8T)
Avaya 1165E IP Deskphone (UNISlim)	5.5.1 (0626C8T)
Avaya 1140E IP Deskphone (SIP)	4.4 (SIP1140e04.04.10.00)
Avaya 1210 IP Deskphone (UNISlim)	5.5.1 (062AC8T)
Avaya 1220 IP Deskphone (SIP)	4.4 (SIP12x004.04.10.00)
Avaya B179 Conference Phone (SIP)	2.3.8
Phybridge PhyAdapter	LB-PA111
Phybridge UniPhyer Switch LB-UA2324	0.97P_B01

5. IP Phone Configuration on Avaya Communication Server 1000E

No special configuration is required for Avaya UNISlim and SIP IP phones to interoperate with the UniPhyer switch. It is assumed that Avaya CS 1000E has already been installed and is functioning. For more information refer to documents listed in **Section 10**.

In a typical installation of Phybridge UniPhyer, analog and digital telephones using existing CAT3 cabling would be replaced with new IP telephones as described in **Section 3**. This section shows an example of configuring a new Avaya UNISlim IP telephone.

5.1. Log in to Avaya Communication Server 1000E Element Manager

Access the browser-based GUI of System Manager, using the URL <http://<FQDN>/SMGR>, where <FQDN> is the fully qualified domain name of System Manager. Log in to System Manager with the appropriate credentials (not shown).

On the System Manager home screen under the **Elements** column select **Communication Server 1000**.

The screenshot displays the Avaya Aura System Manager 6.3 interface. At the top left is the AVAYA logo. The main title is 'Avaya Aura System Manager 6.3'. On the top right, it shows 'Last Logged on at March 12, 2014 4:34 PM' and 'Log off admin'. The main content area is organized into three columns: 'Users', 'Elements', and 'Services'. The 'Elements' column is highlighted with a blue background and contains the following items:

- Communication Manager**: Manage Communication Manager 5.2 and higher elements
- Communication Server 1000**: Manage Communication Server 1000 elements
- Conferencing**: Manage Conferencing Multimedia Server objects
- IP Office**: Manage IP Office elements
- Meeting Exchange**: Manage Meeting Exchange and Avaya Aura Conferencing 6.0 elements
- Messaging**: Manage Avaya Aura Messaging

The 'Users' column includes:

- Administrators**: Manage Administrative Users
- Directory Synchronization**: Synchronize users with the enterprise directory
- Groups & Roles**: Manage groups, roles and assign roles to users
- User Management**: Manage users, shared user resources and provision users

The 'Services' column includes:

- Backup and Restore**: Backup and restore System Manager database
- Bulk Import and Export**: Manage Bulk Import and Export of Users, User Global Settings, Roles, Elements and others
- Configurations**: Manage system wide configurations
- Events**: Manage alarms, view and harvest logs
- Geographic Redundancy**: Manage Geographic Redundancy
- Inventory**: Manage, discover, and navigate

The **Elements** screen is then displayed. Click on the element Name of the Avaya CS 1000E **Element Manager (EM)** as in the figure below.

Host Name: devsmgr.bwwdev.com User Name: admin

Elements

New elements are registered into the security framework, or may be added as simple hyperlinks. Click an element name to launch its management service. You can optionally filter the list by entering a search term.

Search Reset

<input type="checkbox"/>	Element Name	Element Type	Release	Address	Description
<input type="checkbox"/>	devsmgr.bwwdev.com (primary)	Base OS	7.6	192.168.97.196	Base OS element.
<input type="checkbox"/>	EM on sip175	CS1000	7.6	192.168.97.78	New element.
<input type="checkbox"/>	cpm3.bwwdev.com (member)	Linux Base	7.6	192.168.97.150	Base OS element.
<input type="checkbox"/>	sip175.bwwdev.com (member)	Linux Base	7.6	192.168.97.136	Base OS element.
<input type="checkbox"/>	192.168.97.79	Media Gateway Controller	7.6	192.168.97.79	New element.

5.2. Confirm Node and IP Address

These Application Notes assume that the basic configuration has already been administered and a Node has already been created. This section describes the steps to obtain the Node ID of the Avaya CS 1000E IP network to be used with this sample configuration. For further information on Avaya Communications Server 1000E, please consult references in **Section 10**.

From the Element Manager page, Select **System** → **IP Network** → **Nodes: Servers, Media Cards** and then click on the appropriate **Node ID**. In this sample configuration Node **511** was used.

Managing: System » IP Network » IP Telephony Nodes Username: admin

IP Telephony Nodes

Click the Node ID to view or edit its properties.

Add... Import... Export... Delete Print Refresh

<input type="checkbox"/>	Node ID	Components	Enabled Applications	ELAN IP	Node/TLAN IPv4	Node/TLAN IPv6	Status
<input type="checkbox"/>	511	1	LTPS, Gateway (SIPGw)	-	192.168.97.149	-	Synchronized
<input type="checkbox"/>	512	1	SIP Line, LTPS	-	192.168.97.187	-	Synchronized

Show: Nodes Component servers and cards IPv6 address

Click on the Node number link. The **Node Details** screen is then displayed with additional details as shown below. Make a note of the **Node IPv4 address** below as it will be used in other sections of this document. In this sample configuration it is **192.168.97.149**.

Node Details (ID: 511 - LTPS, Gateway (SIPGw))

Node ID:	<input type="text" value="511"/>	* (0-9999)	TLAN address type:	<input checked="" type="radio"/> IPv4 only
Call server IP address:	<input type="text" value="192.168.97.78"/>	*		<input type="radio"/> IPv4 and IPv6
Embedded LAN (ELAN)			Telephony LAN (TLAN)	
Gateway IP address:	<input type="text" value="192.168.97.65"/>	*	Node IPv4 address:	<input type="text" value="192.168.97.149"/>
Subnet mask:	<input type="text" value="255.255.255.192"/>	*	Subnet mask:	<input type="text" value="255.255.255.192"/>
			Node IPv6 address:	<input type="text"/>

* Required Value.

5.3. IP Sets Configuration

To create an IP Set on Avaya CS 1000E, use an SSH terminal emulator to connect to Avaya CS 1000E and log in with the appropriate credentials. Overlay 11 is used to enter the new set configuration. Enter **ld 11** to enter overlay 11 and then enter the appropriate data as shown in red below. In this sample configuration defaults were used for the remaining prompts.

```
>ld 11
...
REQ: new           ← Enter new to add a new phone
TYPE: 1210        ← Enter the phone type
TN   096 0 01 26 ← Enter an available TN
DES  1210        ← Enter a description
CUST 0           ← Enter the Customer number
NUID
NHTN
ZONE 1           ← Enter the Zone to use
MRT
ERL
ECL
FDN
TGAR
LDN
NCOS
RNPG
SSU
SCPW
SGRP
SFLT
CAC_MFC
CLS
HUNT
SCI
PLEV
DANI
AST
IAPG
MLWU_LANG
MLNG
DNDR
KEY 0 scr 54715 ← Configure Key 0 to use extension (DN) 54715
  MARP
  CPND
  VMB
KEY
...
REQ:
```

6. Configure an IP Telephone

First configure the IP set to either get a valid IP address using DHCP or assign a static address. Next configure the **S1** and **S2** IP values to be the **Node IP** from **Section 5.2** In this sample configuration it is 192.168.97.149. Set the **Port** to **4100**.

Now reboot the IP set. When booting up, the phone will prompt for Node ID and TN. Enter the **Node ID** from **Section 5.2** and **TN** that was used in **Section 5.3**.

7. Configure Phybridge UniPhyer

This section provides the procedures for configuring UniPhyer. The procedures fall into the following areas:

- Launch web interface
- Administer Phybridge UniPhyer IP Address
- Save Running Configuration

All remaining configuration settings on UniPhyer were left as default in this sample configuration.

7.1. Launch Web Interface

Access the UniPhyer web interface by using the URL “http://ip-address” in an Internet browser window, where “ip-address” is a valid IP address of the UniPhyer switch. The default IP address of the UniPhyer management port is “192.168.1.1” and the default IP address of the UniPhyer GBE ports is “192.168.100.1”. In this example the web interface of the UniPhyer switch was accessed by the management port. The **Web Interface Login** screen is displayed as shown below. Log in using the appropriate credentials.



7.2. Administer Phybridge UniPhyer IP Address

In the subsequent screen (not shown), select **System** → **Board IP Setup** from the left panel. In the **Board IP Setup** panel on the right, the IP Address configuration of the UniPhyer switch can be changed as needed. Click **Save** when finished. See below for a sample configuration of the UniPhyer switch.

The screenshot shows the 'Board IP Setup' configuration page for a UniPhyer switch. The left sidebar contains a navigation menu with the following items: System (expanded), System Info, Board IP Setup, Ethernet Port Service, ADSL Port Service, CLI Setup, Cluster Setup, System Inventory, System Contact Info, SNMP, TACACS+ Setup, TACACS+ Privilege Mapping, IP Routes, Management ACL, User Administration, Duplicator, Logout, Bridge, ADSL, Traffic, SNMP, and Maintenance. The main content area is titled 'Board IP Setup' and includes a 'Save' button at the top left. Below it is the 'Address Management' section, which is divided into 'GBE (In Band)' and 'MGMT (Out Band)' configurations. The GBE (In Band) configuration shows an IP Address of 192.168.100.1 and a Subnet Mask of 255.255.255.0. The MGMT (Out Band) configuration shows an IP Address of 192.168.1.1 and a Subnet Mask of 255.255.255.0. Other settings include 'NO Limit VID' checked, 'Limit VID' set to an empty field, 'Priority' set to 0, 'DHCP Client' set to 'Disable DHCP Client', 'DHCP Timeout' set to 60, and 'DHCP Lease' set to 4294967295. At the bottom, there are fields for 'HTTP Port' (80), 'MGMT Speed' (Auto Negotiate), 'Remote IP' (192.168.1.2), and 'System Name' (UniPhyer). A red warning message at the bottom states: 'Modifying the configuration may cause a connection loss'.

7.3. Save Running Configuration

Next, navigate to **Maintenance** → **Database** to save the running configuration to flash. In the **DB Config Select** field, select option **D** and click the **Write_Running** button.

The screenshot shows the 'Database Configuration' page for a UniPhyer switch. The left sidebar contains a navigation menu with the following items: System, Bridge, ADSL, Traffic, SNMP, Maintenance (expanded), SYS Log Server, Database, Firmware Update, Boot Code Update, ATM Loopbacks, Fault Management, and Performance Monitoring. The main content area is titled 'Database Configuration' and includes a 'DB Config Select' dropdown menu with the option '(D)Save Running Config to Flash(System Config)' selected. A 'RESTART' button is located to the right of the dropdown. Below the dropdown is a 'Write_Running' button.

8. Verification Steps

This section provides the tests that can be performed to verify proper configuration of Avaya CS 1000E and UniPhyer.

8.1. Verify Avaya Communication Server 1000E

The status of UNISlim IP phones can be verified as follows. Use an SSH terminal emulator to connect to the IP address of the Signalling Server and log in with the appropriate credentials. Now run the command “isetShow” to verify that the UNISlim IP phones have registered to Avaya CS 1000E successfully. The phone from **Section 5** is shown below in red. Verify that the **State** of the phone is **online**.

```
[admin@cppm3 ~]$ isetShow
=== TPS ===

Set Information
-----
IP Address      NAT Model Name      Type      RegType State      Up Time      Set-TN      Regd-TN
HWID           FWVsn UNISlimVsn SrcPort DstPort RFC2833PTTx
-----
10.33.5.40      1110 IP Deskphone      1110      Regular online      70 17:20:50 096-00-00-21 096-00-00-21
18-0016ca00cfe2-6623 C8Q 5.0 5100 5000 255
10.33.5.7       2004 Phase 2 IP Deskphone 2004P2    Regular online      70 17:25:06 096-00-00-18 096-00-00-18
18-000ae40d9458-6602 DCO 3.0 5100 5000 255
10.33.5.48      IP Phone 2004 Phase 0/1 2004P1    Regular online      29 21:48:07 096-00-00-00 096-00-00-00
18-000ae405c8a5-6600 B76 2.9 5100 5000 255
192.168.245.36 C 2004 Phase 2 IP Deskphone 2004P2    Branch online      0 20:37:45 096-00-01-22 096-00-01-22
18-000ae474d299-6602 DCO 3.0 5100 5000 255
192.168.245.104 C 2004 Phase 2 IP Deskphone 2004P2    Regular online      0 20:37:26 096-00-01-24 096-00-01-24
18-000ae474d30c-6602 DCO 3.0 5100 5000 255
10.33.6.3       1120E IP Deskphone      1120      Regular online      29 17:01:47 104-00-01-00 104-00-01-00
18-001765fdbf55-6624 C8Q 5.0 5100 5000 255
192.168.98.148 1110 IP Deskphone      1110      Regular online      28 18:46:34 096-00-00-19 096-00-00-19
18-001765fda80f-6623 C8Q 5.0 5100 5000 255
192.168.98.146 1150E IP Deskphone      1150      Regular online      70 17:24:06 096-00-02-05 096-00-02-05
18-c8f406e01528-6627 C8Q 5.0 5100 5000 255
10.33.5.73      1210 IP Deskphone      1210      Regular online      0 17:08:52 096-00-01-26 096-00-01-26
18-0019e1e71fd1-662a C8T 5.0 5100 5000 255
10.33.5.55      1165E IP Deskphone      1165      Regular busy      6 20:44:09 096-00-02-06 096-00-02-06
18-ccf954967f92-6626 C8T 5.0 5100 5000 255

Total sets = 10
[admin@cppm3 ~]$
```

8.2. Verify Phybridge UniPhyer

From the UniPhyer web interface, select **SYSTEM** → **ADSL Port Service** from the left panel. Verify the **Current Status** for ports that have physically connected IP Phones is **ON**, as shown below for port 1.

The screenshot shows the UniPhyer web interface for the ADSL Port Service configuration. The left sidebar contains a navigation menu with categories like System, Bridge, ADSL, Traffic, and SNMP. The main content area displays the ADSL Port Service configuration page, which includes a table of 12 ports. The table has columns for Select, Port, Admin Status, Current Status, Service Profile, Spectrum Profile, and TCA Profile. Port 1 is selected, and its Current Status is ON. The other ports have Current Status OFF. The interface also shows filters for Admin, Service Profile, Spectrum Profile, and TCA Profile, and a 'Query' button.

Select	Port	Admin Status	Current Status	Service Profile	Spectrum Profile	TCA Profile
<input checked="" type="radio"/>	1	ON	ON	2	2	2
<input type="radio"/>	2	ON	OFF	2	2	2
<input type="radio"/>	3	ON	OFF	2	2	2
<input type="radio"/>	4	ON	OFF	2	2	2
<input type="radio"/>	5	ON	OFF	2	2	2
<input type="radio"/>	6	ON	OFF	2	2	2
<input type="radio"/>	7	ON	OFF	2	2	2
<input type="radio"/>	8	ON	OFF	2	2	2
<input type="radio"/>	9	ON	OFF	2	2	2
<input type="radio"/>	10	ON	OFF	2	2	2
<input type="radio"/>	11	ON	OFF	2	2	2
<input type="radio"/>	12	ON	OFF	2	2	2

9. Conclusion

These Application Notes describe the configuration steps required for Phybridge UniPhyer to interoperate with Avaya UNISlim and SIP IP telephones registered to Avaya Communication Server 1000E 7.6. All feature and serviceability test cases were completed and passed as per **Section 2** with observations explained in **Section 2.2**.

10. Additional References

This section references the product documentation relevant to these Application Notes.

Documentation for Avaya products may be found at <http://support.avaya.com>.

Avaya Communication Server 1000E

- 1) *Communication Server 1000E Overview, Avaya Communication Server 1000*, Release 7.6, Document Number NN43041-110, Issue 06.01, March 2013
- 2) *Power over Ethernet Calculator*, document NN48500-520 Version 7.2, March 2011

Documentation for Phybridge products may be found at <http://phybridge.com>.

Phybridge UniPhyer Switch

- 3) *Phybridge – UniPhyer Web Configuration Tool Guide*, Part Number 8003-03, Issue 2, May 2009
- 4) *NON POE devices on a PhyAdater or PhyLink*, document 009-011 TS – 017 Version 002, 27 December 2012

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