



## **Avaya Solution & Interoperability Test Lab**

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# **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

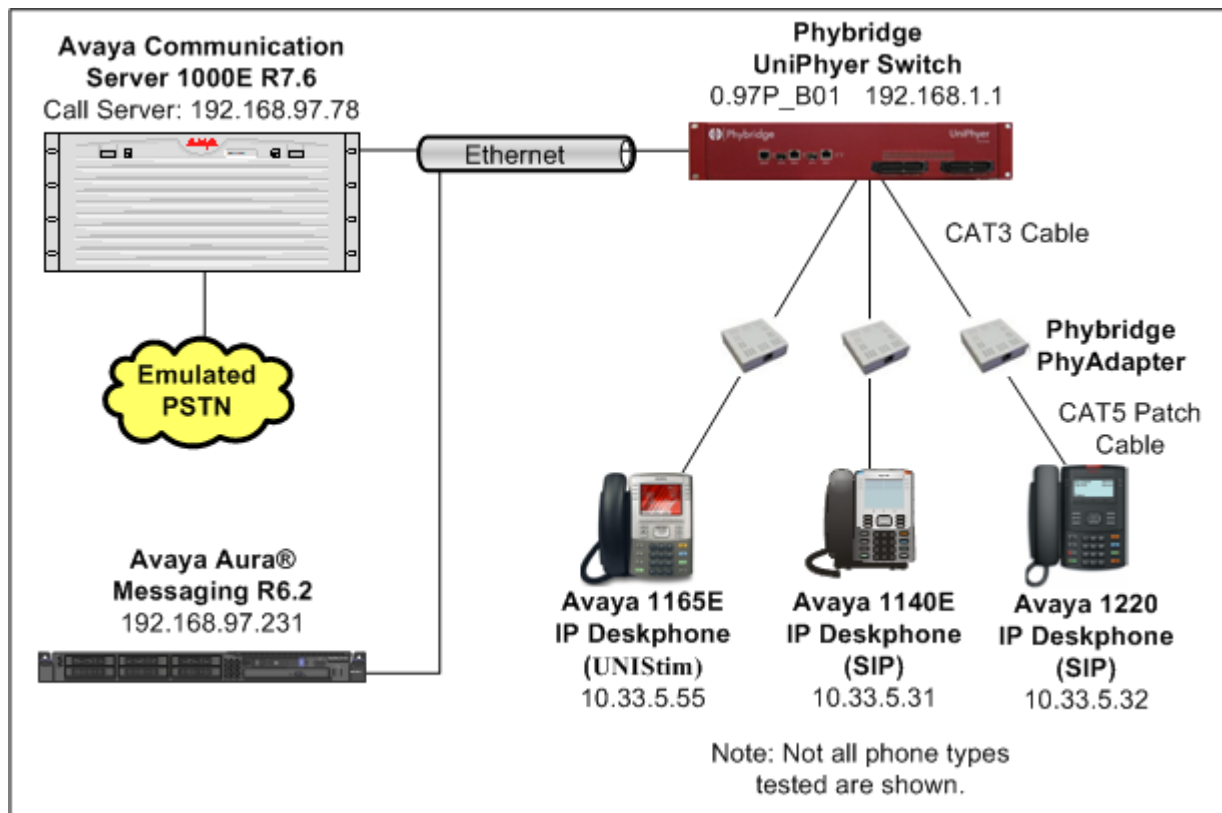
Technical support for Phybridge UniPhyer can be obtained through the following:

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

## 3. Reference Configuration

In the test configuration shown in **Figure 1**, Avaya IP telephones (UNISTim 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 (UNISim)	5.5.1 (0621C8T)
Avaya 1165E IP Deskphone (UNISim)	5.5.1 (0626C8T)
Avaya 1140E IP Deskphone (SIP)	4.4 (SIP1140e04.04.10.00)
Avaya 1210 IP Deskphone (UNISim)	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 UNISTim 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 UNISTim 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 **Elements** screen is then displayed. Click on the element Name of the Avaya CS 1000E **Element Manager (EM)** as in the figure below.

**AVAYA** Avaya Aura® System Manager 6.3 Help | Logout

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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.

	Element Name	Element Type	Release	Address	Description
1	<a href="#">devsmgr.bwwdev.com (primary)</a>	Base OS	7.6	192.168.97.196	Base OS element.
2	<b>EM on sip175</b>	CS1000	7.6	192.168.97.78	New element.
3	<a href="#">cpgm3.bwwdev.com (member)</a>	Linux Base	7.6	192.168.97.150	Base OS element.
4	<a href="#">sip175.bwwdev.com (member)</a>	Linux Base	7.6	192.168.97.136	Base OS element.
5	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.

**AVAYA** **CS1000 Element Manager** Help

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

### IP Telephony Nodes

Click the Node ID to view or edit its properties.

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

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)	
Call server IP address: <input type="text" value="192.168.97.78"/> *	TLAN address type: <input checked="" type="radio"/> IPv4 only <input type="radio"/> IPv4 and IPv6
<b>Embedded LAN (ELAN)</b>	<b>Telephony LAN (TLAN)</b>
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 Phybridge UniPhyer device. The left sidebar contains a menu with options: 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, and Logout. Under 'System', there are sub-options: Bridge, ADSL, Traffic, SNMP, and Maintenance. The main content area is titled 'Board IP Setup' and contains a 'Save' button, an 'Address Management' section, and a table for IP configuration. The table has two columns: 'GBE (In Band)' and 'MGMT (Out Band)'. The 'GBE (In Band)' column shows IP Address 192.168.100.1 and Subnet Mask 255.255.255.0. The 'MGMT (Out Band)' column shows IP Address 192.168.1.1 and Subnet Mask 255.255.255.0. Below the table, there are fields for 'NO Limit VID' (checked), 'Limit VID' (empty), 'Priority' (0), 'DHCP Client' (Disable DHCP Client), 'DHCP Timeout' (60), and 'DHCP Lease' (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'.

Address Management	
GBE (In Band)	MGMT (Out Band)
IP Address 192 . 168 . 100 . 1	IP Address 192 . 168 . 1 . 1
Subnet Mask 255 . 255 . 255 . 0	Subnet Mask 255 . 255 . 255 . 0
NO Limit VID <input checked="" type="checkbox"/>	DHCP Client Disable DHCP Client ▼
Limit VID	DHCP Timeout 60
Priority 0 ▼	DHCP Lease 4294967295
HTTP Port 80	MGMT Speed Auto Negotiate
	Remote IP 192.168.1.2
	System Name UniPhyer

[ System Inventory ]  
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 Phybridge UniPhyer device. The left sidebar contains a menu with options: System, Bridge, ADSL, Traffic, SNMP, and Maintenance (expanded). Under 'Maintenance', there are sub-options: 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 contains a 'DB Config Select' dropdown menu with the option '(D)Save Running Config to Flash(System Config)' selected. Below the dropdown is a 'Write\_Running' button. A red 'RESTART' button is also visible.

DB Config Select: (D)Save Running Config to Flash(System Config) ▼ RESTART  
Write\_Running

## 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@c ppm3 ~]$ 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						
18-0016ca00cfe2-6623		C8Q 5.0 5100 5000	255	Regular	online	70	17:20:50	096-00-00-21	096-00-00-21
10.33.5.7		2004 Phase 2 IP Deskphone	2004P2						
18-000ae40d9458-6602		DCO 3.0 5100 5000	255	Regular	online	70	17:25:06	096-00-00-18	096-00-00-18
10.33.5.48		IP Phone 2004 Phase 0/1	2004P1						
18-000ae405c8a5-6600		B76 2.9 5100 5000	255	Regular	online	29	21:48:07	096-00-00-00	096-00-00-00
192.168.245.36	C	2004 Phase 2 IP Deskphone	2004P2						
18-000ae474d299-6602		DCO 3.0 5100 5000	255	Branch	online	0	20:37:45	096-00-01-22	096-00-01-22
192.168.245.104	C	2004 Phase 2 IP Deskphone	2004P2						
18-000ae474d30c-6602		DCO 3.0 5100 5000	255	Regular	online	0	20:37:26	096-00-01-24	096-00-01-24
10.33.6.3		1120E IP Deskphone	1120						
18-001765fdbf55-6624		C8Q 5.0 5100 5000	255	Regular	online	29	17:01:47	104-00-01-00	104-00-01-00
192.168.98.148		1110 IP Deskphone	1110						
18-001765fda80f-6623		C8Q 5.0 5100 5000	255	Regular	online	28	18:46:34	096-00-00-19	096-00-00-19
192.168.98.146		1150E IP Deskphone	1150						
18-c8f406e01528-6627		C8Q 5.0 5100 5000	255	Regular	online	70	17:24:06	096-00-02-05	096-00-02-05
10.33.5.73		1210 IP Deskphone	1210						
18-0019e1e71fd1-662a		C8T 5.0 5100 5000	255	Regular	online	0	17:08:52	096-00-01-26	096-00-01-26
10.33.5.55		1165E IP Deskphone	1165						
18-ccf954967f92-6626		C8T 5.0 5100 5000	255	Regular	busy	6	20:44:09	096-00-02-06	096-00-02-06

Total sets = 10

```
[admin@c ppm3 ~]$
```

## 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 displays the UniPhyer web interface. The left sidebar shows a navigation menu with the following items:

- System
  - System Info
  - Board IP Setup
  - Ethernet Port Service
  - ADSL Port Service
  - CLI Setup
  - Cluster Setup
  - System Inventory
  - System Contact Info
  - SNTP
  - TACACS+ Setup
  - TACACS+ Privilege Map
  - IP Routes
  - Management ACL
  - User Administration
  - Duplicator
  - Logout
- Bridge
- ADSL
- Traffic
  - ATM Traffic Descriptor
- SNMP

The main content area is titled "ADSL Port Service". It includes a configuration section with the following fields:

- Admin: ☐ ON
- Service Profile:
- Spectrum Profile:
- TCA Profile:
- All: ☐
- Modify:

Below the configuration section, there is a table showing the status of ports 1 through 12. The table has the following columns: Select, Port, Admin Status, Current Status, Service Profile, Spectrum Profile, and TCA Profile.

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

At the bottom of the table, there are links for [SERVICE PROFILE](#), [SPECTRUM PROFILE](#), and [TCA PROFILE](#).

## 9. Conclusion

These Application Notes describe the configuration steps required for Phybridge UniPhyer to interoperate with Avaya UNISim 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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