



# VIEW Certified Configuration Guide

Motorola

WS 2000 with AP 300

June 2008 Edition 1725-36066-001 Version D

### **Trademark Information**

Polycom® and the logo designs SpectraLink® LinkPlus Link NetLink SVP

Are trademarks and registered trademarks of Polycom, Inc. in the United States of America and various countries. All other trademarks used herein are the property of their respective owners.

### **Patent Information**

The accompanying product is protected by one or more US and foreign patents and/or pending patent applications held by Polycom, Inc.

### **Copyright Notice**

Copyright © 2006 to 2008 Polycom, Inc.

All rights reserved under the International and pan-American copyright Conventions.

No part of this manual, or the software described herein, may be reproduced or transmitted in any form or by any means, or translated into another language or format, in whole or in part, without the express written permission of Polycom, Inc.

Do not remove (or allow any third party to remove) any product identification, copyright or other notices.

Every effort has been made to ensure that the information in this document is accurate. Polycom, Inc. is not responsible for printing or clerical errors. Information in this document is subject to change without notice and does not represent a commitment on the part of Polycom, Inc.

### Notice

Polycom, Inc. has prepared this document for use by Polycom personnel and customers. The drawings and specifications contained herein are the property of Polycom and shall be neither reproduced in whole or in part without the prior written approval of Polycom, nor be implied to grant any license to make, use, or sell equipment manufactured in accordance herewith.

Polycom reserves the right to make changes in specifications and other information contained in this document without prior notice, and the reader should in all cases consult Polycom to determine whether any such changes have been made.

No representation or other affirmation of fact contained in this document including but not limited to statements regarding capacity, response-time performance, suitability for use, or performance of products described herein shall be deemed to be a warranty by Polycom for any purpose, or give rise to any liability of Polycom whatsoever.

### **Contact Information**

Please contact your Polycom Authorized Reseller for assistance.

Polycom, Inc. 4750 Willow Road, Pleasanton, CA 94588 http://www.polycom.com

# Introduction

Polycom's Voice Interoperability for Enterprise Wireless (VIEW) Certification Program is designed to ensure interoperability and high performance between SpectraLink Wireless Telephones and WLAN infrastructure products.

The products listed below have been thoroughly tested in Polycom's lab using the VIEW Certification Test Plan. This document details how to configure the WS 2000 Wireless Switch and the AP 300 access point (AP) with SpectraLink Wireless Telephones.

Manufacturer:	Motorola: http://support.symbol.com/support/product/manuals.do			nanuals.do
Approved products:	Wireless Switch Access Point		t	
	WS 2000 <sup>†</sup>		AP 300 <sup>†</sup>	
RF technology:	802.11b/g	2.11b/g		
Radio frequency:	2.4 – 2.484 GHz	Hz		
Quality of service:	SpectraLink Voic	SpectraLink Voice Priority (SVP)		
Security:	WPA-TKIP (PSK	A-TKIP (PSK), WPA2-CCMP (PSK)		
Wireless Switch firmware version certified:	2.2.1.0-018R			
SpectraLink handset models certified: **	e340/h340/i640	8020/8030		
SpectraLink handset software certified:	89.134	122.010 or greater		
SpectraLink radio mode:	802.11b	802.11b 802.11g 802.11		802.11a
Maximum telephone calls per AP:	8	8	Not c	ertified
Recommended network topology:	Switched Etherne	net		

# **Certified Product Summary**

<sup>†</sup> Denotes products directly used in VIEW Certification testing

\*\* SpectraLink handset models 8020/8030, e340/h340/i640 and their OEM derivates are VIEW Certified with the WLAN hardware and software identified in the table. Throughout the remainder of this document they will be referred to collectively as "SpectraLink Wireless Telephones".

# **Service Information**

If you encounter difficulties or have questions regarding the configuration process, please contact Motorola technical support at (800) 653-5350, or at <a href="http://www.symbol.com/services/contactsupport">http://www.symbol.com/services/contactsupport</a>.

# **Known Limitations**

Voice quality may be impaired in an environment with heavy wireless TCP traffic, such as FTP data transfers.

# **Access Point Capacity and Positioning**

Please refer to the Polycom <u>Deploying Enterprise-Grade Wi-Fi Telephony</u> white paper. This document covers the security, coverage, capacity and QoS considerations necessary for ensuring excellent voice quality with enterprise Wi-Fi networks.

For more detailed information on wireless LAN layout, network infrastructure, QoS, security and subnets, please see the <u>Best Practices</u> <u>Guide for Deploying SpectraLink 8020/8030 Wireless Telephones</u>. This document identifies issues and solutions based on Polycom's extensive experience in enterprise-class Wi-Fi telephony, and provides recommendations for ensuring that a network environment is adequately optimized for use with SpectraLink 8020/8030 Wireless Telephones.

# Network Topology

The following topology was used during VIEW Certification testing.



# **Configuration Settings**

### Installing a new image

The VIEW Certified firmware release can be obtained from Motorola 'Dev Zone'. Upgrading the WS 2000 Wireless Switch to the new firmware can be done through the Web interface or through the command line interface (CLI). Place the image on the FTP server, TFTP server or through Compact Flash card, depending on the file transfer mechanism chosen.

## Installing firmware through the CLI

- 1. Enter your username and password to log into the CLI. The defaults are user: **admin** password: **symbol**. The serial interface parameters are **19200,8,n,1,n**.
- **2.** Connect the FTP/TFTP server to subnet 1.

```
a. For TFTP, issue the following commands.
   admin>
   admin>system
   admin(system)>config
   admin(system.config)>set server 192.168.0.100
   admin(system.config)>set fw file
   mf_02010100009R.bin
   admin(system.config)>update tftp s1
```

b. For FTP, issue the following commands.

```
admin>
admin>system
admin(system)>config
admin(system.config)>set server 192.168.0.100
admin(system.config)>set fw file
mf_02010100009R.bin
admin(system.config)>set fw path /home/<user>
admin(system.config)>set user <username>
admin(system.config)>set passwd <password>
admin(system.config)>update ftp s1
```

3. The WS 2000 Wireless Switch will reboot and load the firmware.

## Installing firmware through the Web interface

- 1. Open the WS 2000 applet by entering the IP address of the wireless switch: http://192.168.0.1
- 2. In the navigation pane, click **Firmware Update**. The **Firmware Update** page will appear.
- **3.** Under **Filename**, enter the firmware file name from the TFTP server.
- 4. Click the **TFTP Server on Subnet** option.
- 5. At **IP Address**, enter the TFTP server IP address.
- 6. Click the **Apply** button.
- 7. Click the **Perform Update** button.
- **8.** The WS 2000 Wireless Switch will reboot and load the firmware from the location specified.

WS 2000 Wireless Swit	ch (1) (1) (1) (1) (1) (1) (1) (1) (1) (1)
P 😽 [Network Configuration]	Firmware Update
Carlington autority Carlington Settings Certificate Mgmt.]	Update Firmware
Coser Authentication	Filename mf_02010100009R.bin
DHCP Options (Sys Up     Firmware Update     Config Import/Export	Filepath(optional)
- 1 Logging Configuration	Get Firmware file from:
NTP Servers	O FTP Server on WAN.
🄄 🗇 [Status & Statistics]	IP Address 0 . 0 . 0
	Username symbol Password ######
	TFTP Server on Subnet1
	IP Address 192.168.0.100
	O CF Card Display CF
	Perform Update
	Status
	Apply Undo Changes Help Logout
System Name: WS2000	

# Configuring the Wireless Switch from the Default Configuration



Radio settings: The SpectraLink Wireless Telephones use an 802.11b radio; therefore VIEW Certification testing was done with the 802.11b mode only and not the b/g mode.

Commands	Default Settings	VIEW Tested Settings
Beacon-interval	100	100 *
DTIM-period	10	3 *
BG mode	B and G	B only *
Power level	20 dBm	20 dBm
Channel	1	1
Rates	1, 2, 5.5, 11	1, 2, 5.5, 11
Short preamble	Disabled	Disabled *

\* Denotes settings that are required for operation with SpectraLink Wireless Telephones

# Configuring radio settings through the CLI

To configure radio settings for the wireless switch, use the following commands. admin> admin>network admin(network)>ap admin(network.ap)> admin(network.ap)>set beacon intvl 1 100 admin(network.ap)>set dtim 1 3 admin(network.ap)>set rate 1 1,2,5.5,11 1,2,5.5,11

## Setting the channel



Regulatory parameter values depend on country of operation and radio type. Refer to documentation for regulatory product information.

#### **User selection**

You can specify the desired channel manually by using the following command.

```
admin(network.ap)>set reg 1 in 11 20 👞
```

set reg <access port index> <indoor/outdoor>

## Configuring radio settings through the Web interface

- 1. In the WS 2000 applet navigation pane, select AP1<index> [BG].
- 2. In the AP1 page, go to 802.11 b/g mode, and select B Only from the dropdown list.
- 3. Rates will be set automatically to 1, 2, 5.5, 11.
- **4.** From the **Channel** and **Power Level** dropdown lists, select the desired settings. Please consult your facility site survey to determine power and channel settings.

letwork Configuration)	AP1	
ð lan Ð vlan Ð wan	Location	Channel 1
© Wireless (†) WLAN1 Q Wireless QoS	MAC Address 00:A0:F8:BC:88:A/ Serial Number 00A0F8BCE793	100 mW 802.11 b/g mode B Only
Q WIPS     Access Ports)     Access Ports)     B02.11a Defaults     B02.11b Defaults     B02.11b Defaults     Hill: 802.11b/o Default	Ap Type AP 300 Radio Type 802.11 b/g Adopted By WLAN1 Adopt this Access Port	Set Rates B and G ction Mode G Only Remap Channel D Increase 0 O Ali
- 1 802.1x Port Authe - 1 AP1 (BG) - 1 AP2 (A) - 2 (Detector Access (Unadopted)	Antenna Settings Antenna Type External Antenna Diversity Full Diversity	Access Port Properties O no scan O Dedicate this AP as Detector AP O Perform On Channel Scan
- Segue AP Detection - Segue AP Detection - Firewall Port Config C Router	Advanced Properties	AP SIP Call Admission Control Allowed SIP session count 10

5. Click the **Apply** button.

- 6. In the WS 2000 applet navigation pane, select **AP<index> [BG]**.
- 7. In the **AP1** page, click the **Beacon Settings** button.
- 8. In the Beacon Settings dialog box, set the DTIM Period to 3 Beacons.
- 9. Click the **OK** button.
- **10.** Click the **Apply** button.

[Network Configuration]	AP1			
CAN	manne	INF I		
VLAN	Location Beacon Set	tings	x nnel 1	
🗭 Wireless	MAC Add	Beacon Settings	ver Level 20 🔻 dBm	
- (1) WLAN1	Serial Nu	Beacon Interval 100 K-us	100 mW	
- Q Wireless QoS - Q WIPS	Ар Туре	DTIM per BSS	.11 b/g mode B and G 💌	
- Riccess Ports]	Radio Ty	DOOID DTIM Deviced	t Rates Channel Selection Mod	de
- 🔭 802.11a Defaults - 😓 802.11b Defaults	Adopted I	(in Beacons)	Remap Channel	All
- 🕼 802.11b/g Defaul	1	1 3		
- 121 802.1x Port Authe	Antenna 8	2 10	Port Properties	
- 121 AP2 [A]	Anten	3 10	O no scan	
[Detector Access     [Unadopted]	Anten	4 10	<ul> <li>Dedicate this AP as Detector AP</li> <li>Perform On Channel Scan</li> </ul>	
Rogue AP Detection	Advanced	Ok Cancel Help	Call Admission Control	
Firewall	, Java Applet \	Vindow	Allowed RIP consists source 10	
Router			Allowed SIP session count	1
💈 IP Filtering	Beaco	n Settings		

# **Voice Prioritization Setting**

- **1.** In the WS 2000 Wireless Switch, voice prioritization on a WLAN is enabled by default.
- 2. Multicast Address 1 should be set to 01:00:5E:00:01:74 for SpectraLink multicast traffic.
- 3. Click the **Apply** button

🛏 🐝 [Network Configuration]	Wireless QoS	Configuration			
LAN		WLAN5	1 0.00		
		, WLAN6	1 0.00		
- S Wireless		MI AN7	1 0.00		
WLAN1		MAL ANIO	0.00		
- Q Wireless QoS		JVILANG.	10.00		
- Q WIPS	Voice Prioritization	and Multicast Address Se	ttings		
Access Ports]					- h
Rogue AP Detection	WLAN Name	Use Voice Prioritization	Multicast Address 1	Multicast Address 2	
Girauali	WLAN1		01:00:5E:00:01:74	09:00:0E:00:00:00	
- 😥 Port Config	WLAN2	~	01:00:5E:00:00:00	09:00:0E:00:00:00	
- X Router	WLAN3	V	01:00:5E:00:00:00	09:00:0E:00:00:00	
- 😵 (System Configuration)	WLAN4	V	01:00:5E:00:00:00	09:00:0E:00:00:00	=
System Settings	WLAN5	r	01:00:5E:00:00:00	09:00:0E:00:00:00	
- (User Authentication)	WLAN6	V	01:00:5E:00:00:00	09:00:0E:00:00:00	
- 🛠 Redundancy	WLAN7	r	01:00:5E:00:00:00	09:00:0E:00:00:00	
- (J [Ctg)Firmware Mgt.]	WLAN8	¥	01:00:5E:00:00:00	09:00:0E:00:00:00	
- ()¥ Logging Configuration ← 能 SNMP Access → MTP Servers	WLAN8	<b>*</b>	01:00:5E:00:00:00	09:00:0E:00:00:00	0.00

# **SSID Settings**

## Configuring SSID settings through the CLI

Commands	Default Settings	VIEW Tested settings
ESSID	101	spectralink

\* Denotes settings that are required for operation with SpectraLink Wireless Telephones

Configure the SSID settings of the wireless switch using the following commands.

admin>

admin>**network** 

admin(network)>wlan

admin(network.wlan)>set ess 1 spectralink

## Configuring SSID settings through the Web interface

- 1. In the WS 2000 applet navigation pane, under **Wireless**, select **WLAN1**.
- 2. Configure the ESSID (e.g. spectralink).
- **3.** Click the **Apply** button.

VLAN VLAN WAN Wireless Vir WLAN1 Q Wireless Qo8 Q WiPS Rogue AP Detection Rogue AP Detection Firewall Perf Config	Name ESSID Subnet Vlan	WLAN1 spectralink Subnet1 1
Wireless Wireless Wireless QoS Q WiPS WiPS Rogue AP Detection Firewall Pot Config	Name ESSID Subnet Vlan	WLAN1 spectralink Subnet1 1
Wireless  Wireless  Wireless QoS   Wireless QoS    Wireless QoS	ESSID Subnet Vlan	spectralink Subnet1
Wireless QoS     WiPS     Gue AP Detection     Git (HotSpot)     Firewall     Get Config	Subnet Vian	Subnet1
Wineless and     Wineless and     Wineless and     Wineless and     Wineless and     Mineless and     Wineless and     W	Subnet Vlan	Subnet1 -
Access Ports)     Rogue AP Detection     Willing (HotSpot)     Firewall     Ret Contine	Vlan	1
← ● Rogue AP Detection ↓ ☆ [HotSpot] ← ● Firewall =	Wall	1
← 🥪 (Hotspot) ≻ 💋 Firewall =		
Port Config		
- X Router		
- 🕏 IP Filtering		
System Configuration)		
System Settings		
🖓 (Certificate Mgmt.)	Disallow M	MU to MU Communications
🛏 🗃 (User Authentication)	Anewor Pr	roadcast ESS
- 🛠 Redundancy		Tuadcast 200
S [Cfg/Firmware Mgt]	Secure Be	eacon
- 🕜 Logging Configuration		
CNIND Accore		



# **Security Settings**

Enable WPA/WPA2 security mode.

## Configuring WPA/WPA2 TKIP through the CLI (when SpectraLink Wireless Telephones are configured for WPA-PSK)

To configure WPA-TKIP (PSK) as security option, use the following commands admin>**network** admin(network)>**wlan** admin(network.wlan)>**set enc 1 tkip** admin(network.wlan)>**set tkip phrase 1 12345678** admin(network.wlan)>**save** 

# Configuring WPA/WPA2 TKIP through the Web interface

(when SpectraLink Wireless Telephones are configured for WPA-PSK)

- **1.** In the WS 2000 applet navigation pane, double-click **WLAN1**, and then click **WLAN1 Security**.
- 2. Click the WPA/WPA2-TKIP option, and click the WPA/WPA2-TKIP Settings button. The WPA/WPA2-TKIP Settings dialog box will appear.



The WS 2000 Wireless Switch supports mixed-mode operation of WPA-TKIP and WPA2-TKIP. The steps below enable WPA-TKIP by default. WPA-TKIP was used for VIEW Certification testing.

WS 2000 Wireless Swit	cch	bol
P 🐝 [Network Configuration]	WLAN1 Security	
	Authentication Methods Encryption Methods	
O     WAN     O     Wireless     O     O     WIAN1     Y     Y     WLAN1     Y     Y     WLAN1 Security	O 802.1x EAP     O WEP 64 (40 bit key)       802.1x EAP Configuration     O WEP 128 (104 bit key)	
Wireless QoS	O KeyGuard Keyguard Settings	
802.11a Defaults	Kerberos     Kerberos Configuration     WPAWPA2-TKIP     WPAWPA2-TKIP     WPAWPA2-TKIP     WPAWPA2-TKIP	ə]
- 3 802.11b/g Defaul - 3 802.1x Port Authe - 3 AP1 [BG]	No Authentication     No Encryption	35
- (2) AP2 (A) - (Detector Access [Unadopted] • (Dradopted) • (Page AP Detection	Mobile Unit Access Control Allow  access for all Mobile Units, except:	
HotSpot]	Start MAC End MAC	
	<u> </u>	
♥ ♥ [Certificate Mgmt.] ♥	Add Del	
P→ (Cfg/Firmware Mgt.)		
DHCP Options ( Sys	Apply Undo Changes Help Lo	gout
System Name: WS2000		

- 3. In the WPA/WPA2-TKIP Settings page, under Key Settings, click the ASCII passphrase option to enter the ASCII passphrase.
- **4.** A warning dialog box will appear while you are trying to enter the key. Click **Yes.**
- **5.** Enter the ASCII passphrase. This will configure the WPA-TKIP (PSK) mode. Click the **OK** button.
- 6. Click the **Apply** button.

WS 2000 WPA/WP	A2-TKIP Settings	
	WPA/WPA2-TKIP Settings	
	WPA2 Configuration	Fast Roaming (802.1x only)
VLAN VAN VWAN Vireless	Use WPA2	Pre-Authentication  Poportunistic Key Caching
	-Key Rotation Settings	
P- IAccess Pr	Update broadcast keys	every 86400 (300-604800) seconds
	Key Settings	
- C AP1 [B - C AP2 [A] - E IDetect	12345678 Enter 8-63 ASCII characters	
CUnado	256-bit Key     #################################	
Firewall	Enter To nex characters per nero	Ok) Cancel Help
<ul> <li>System Configuration</li> <li>System Settin</li> <li>Java Applet</li> <li>Gertificate Mgrace</li> </ul>	Window	
←	Ac	dd Del
Congramware wight     DHCP Options (Sys		Apply Undo Changes Help Logout
System Name: WS2000		

### Configuring WPA2-CCMP through the CLI (when SpectraLink Wireless Telephones are configured for WPA2-PSK)

To configure WPA2-CCMP as a security option, use the following commands.

admin>**network** admin(network)>**wlan** admin(network.wlan)>**set enc 1 ccmp** admin(network.wlan)>**set ccmp phrase 1 12345678** admin(network.wlan)>**save** 

## Configuring WPA2-CCMP through the Web interface (when SpectraLink Wireless Telephones are configured for WPA2-PSK)

- 1. In the WS 2000 applet navigation pane, double-click **WLAN1**, and then click **WLAN1 Security**. The **WLAN1 Security** page will appear.
- 2. In the WLAN1 Security page, click the WPA2-CCMP (802.11i) option, and click the WPA2-CCMP Settings button.

WS 2000 Wireless Swit	uch	((* * *)) * *)) / (* * * * * * * * * * * * * * * * * *
P 🐝 [Network Configuration]	WLAN1 Security	
LAN VLAN	Authentication Methods	Encryption Methods
♥ Ø WAN ♥- ② Wireless ♥- ① WLAN1 ↓F 119 WLAN1 Security	O 802.1x EAP	O WEP 64 ( 40 bit key) O WEP 128 (104 bit key)
- O Wireless QoS P- E [Access Ports]	⊖ Kerberos	KeyGuard     Keyguard Settings
- 🕲 802.11a Defaults - 🕑 802.11b Defaults - 🖾 802.11b/g Defaults	Kerberos Configuration	WPAWPA2-TKIP     WPAWPA2-TKIP Se     WPA2-CCMP (802.11i)     WPA2-CCMP Settings
- 3 802.1x Port Authe - 2 AP1 [BG]	No Authentication	O No Encryption
Contraction (Contraction)	Mobile Unit Access Control	except
HotSpot]	Start MA	AC End MAC
Configuration     System Configuration		Ê
• @ [Certificate Mgmt.] • 1 [User Authentication]		Add Del
←≪ Redundancy ♀-③ [Cfg/Firmware Mgt.] ⊢ @ DHCP Ontions (Svs ▼		
		Apply Undo Changes Help Logout
System Name: WS2000		

- 3. In the WPA2-CCMP Settings dialog box, under Key Settings, click the ASCII passphrase option to enter the ASCII passphrase.
- 4. A warning dialog box will appear. Click Yes.
- 5. Enter the ASCII passphrase. Click the **OK** button.
- 6. Click the **Apply** button.

As V X	• / \// / // / // // // // // // // // //		Randal I
WS 200 WPA2-CCM	P Settings		
C-SE INetwork Cont	WPA2-CCMP Settings		
	Key Rotation Settings		
P (1) WLAN1	Update broadcast keys every 86400 (300-60480	IO) seconds	
	Key Settings		
	ASCII Passphrase		
801	##########		
	Enter 8-63 ASCII characters		
	O 256-bit Key	-1	
		******	
- © AP: 5	Enter 16 hex characters per field		
- 💽 (De	VVPA2-CCMP Mixed Mode	Fast Roaming (802.1x	only)
	Allow W/PAM/PA2 TI/IP cliente	🗌 Pre-Au	thentication
Rogue		Dpport 🗹	unistic Key Caching
🗢 🚮 Firewall			
Router			Ok Cancel Help
🗣 🔦 (System Confi			
System Se Java Appler w			Prove 1
Certificate Mgmt.j			<b>•</b>
Redundancy	Add	Del	
Provide the second			
DHCP Options (Sys		Apply	tuono Longes Heln Longout
		Copped Tot	ine onungeo [ neip ] Logout
System Name: WS2000			

Free Manuals Download Website <u>http://myh66.com</u> <u>http://usermanuals.us</u> <u>http://www.somanuals.com</u> <u>http://www.4manuals.cc</u> <u>http://www.4manuals.cc</u> <u>http://www.4manuals.cc</u> <u>http://www.4manuals.com</u> <u>http://www.404manual.com</u> <u>http://www.luxmanual.com</u> <u>http://aubethermostatmanual.com</u> Golf course search by state

http://golfingnear.com Email search by domain

http://emailbydomain.com Auto manuals search

http://auto.somanuals.com TV manuals search

http://tv.somanuals.com