VIEW Certified Configuration Guide

Xirrus Wi-Fi Array

XS-3500/3700/3900

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Introduction

Polycom's Voice Interoperability for Enterprise Wireless (VIEW) Certification Program is designed to ensure interoperability and high performance between SpectraLink Wireless Telephones and Xirrus Wi-Fi Array 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 XS-3500, XS-3700 and XS-3900 Wi-Fi Arrays with SpectraLink Wireless Telephones.

Certified Product Summary

Manufacturer:	Xirrus, Inc www.xirrus.com	
Approved products:	Wi-Fi Arrays XS-3500, XS-3700, XS-3900 †	
RF technology:	802.11b/g	
Radio:	2.4 – 2.484 GHz	
Security:	WPA-PSK and WPA2-PSK	
AP firmware version certified:	3.1 - 0515	
SVP Server software version certified:	17x.027	
SpectraLink handset models certified: **	e340/h340/i640	8020/8030
SpectraLink handset software certified:	089.127	122.010 or greater
SpectraLink radio mode:	802.11b	802.11b
Maximum telephone calls per AP:	12	12
Recommended network topology:	Switched Ethernet	

† 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 Xirrus technical support at 800-947-7871 or email us at support@xirrus.com.

Known Limitations

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

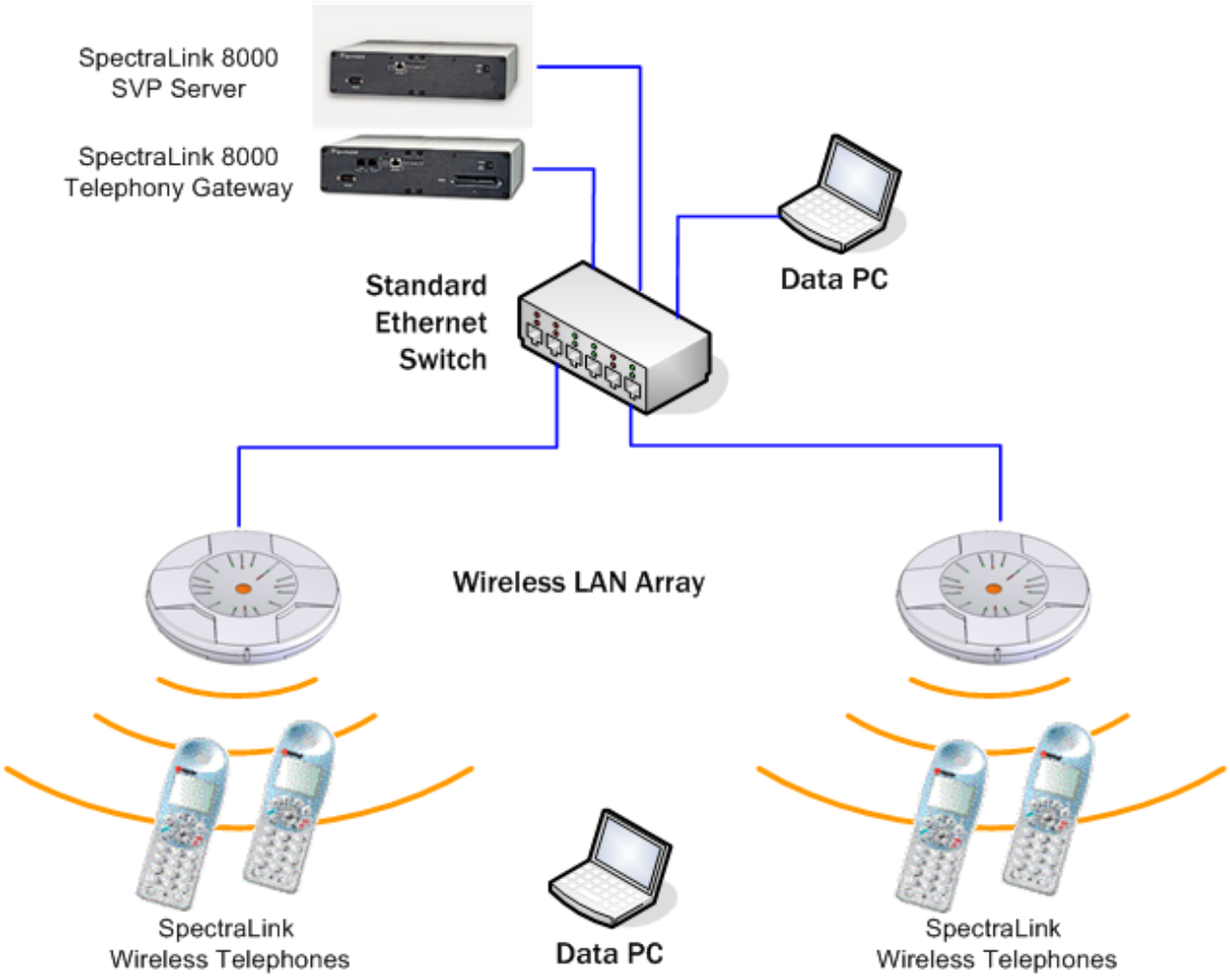
Access Point Capacity and Positioning

Please refer to the Polycom *Deploying Enterprise-Grade Wi-Fi Telephony* 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 *Best Practices Guide for Deploying SpectraLink 8020/8030 Wireless Telephones*. 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 for VIEW Certification testing.



Configuration Settings

Xirrus Arrays initially boot with all radios disabled except for the monitor radio. The monitor radio may be left enabled and in no way interferes with the SpectraLink Wireless Telephones; however it was disabled for the certification process for simplicity.

Disabling the monitor radio

If you wish to disable the monitor radio, use the following CLI commands:

```
Xirrus_WLAN_Array# configure
Xirrus_WLAN_Array(config)# interface iap
Xirrus_WLAN_Array(config-iap)# abg2 down
Xirrus_WLAN_Array(config-iap)# show

IAP Summary Table
                      Cell  TX          RX
IAP State Channel Antenna   Size  Power Threshold Stations WDS MAC address
--------- ------- -------- ---------------------- -------- --- -----------------
  a1 down     36   int-dir  manual   8dBm  -75dBm      0        00:0f:7d:03:63:11
  a2 down     52   int-dir  manual   8dBm  -75dBm      0        00:0f:7d:03:63:31
  a3 down    149   int-dir  manual   8dBm  -75dBm      0        00:0f:7d:03:63:41
  a4 down     40   int-dir  manual   8dBm  -75dBm      0        00:0f:7d:03:63:51
  a5 down     56   int-dir  manual   8dBm  -75dBm      0        00:0f:7d:03:63:71
  a6 down    157   int-dir  manual   8dBm  -75dBm      0        00:0f:7d:03:62:81
  a7 down     44   int-dir  manual   8dBm  -75dBm      0        00:0f:7d:03:62:91
  a8 down     60   int-dir  manual   8dBm  -75dBm      0        00:0f:7d:03:62:b1
  a9 down    153   int-dir  manual   8dBm  -75dBm      0        00:0f:7d:03:62:c1
 a10 down     48   int-dir  manual   8dBm  -75dBm      0        00:0f:7d:03:62:d1
 a11 down     64   int-dir  manual   8dBm  -75dBm      0        00:0f:7d:03:62:f1
 a12 down    161   int-dir  manual   8dBm  -75dBm      0        00:0f:7d:03:63:01
abg1 down     11   int-dir  medium  11dBm  -81dBm      0        00:0f:7d:03:63:21
abg2 down monitor int-omni manual  20dBm  -95dBm      0        00:0f:7d:03:63:61
abg3 down      1   int-dir  medium  11dBm  -81dBm      0        00:0f:7d:03:62:a1
abg4 down      6   int-dir  medium  11dBm  -81dBm      0        00:0f:7d:03:62:e1
```

The monitor radio may also be disabled with the Web Management Interface (WMI) as shown below.

1. In the navigation pane, click **IAP Settings**.
2. In the **IAP Settings** screen, clear the **Enabled** check box for **IAP abg2**.
3. Click the **Apply** button.

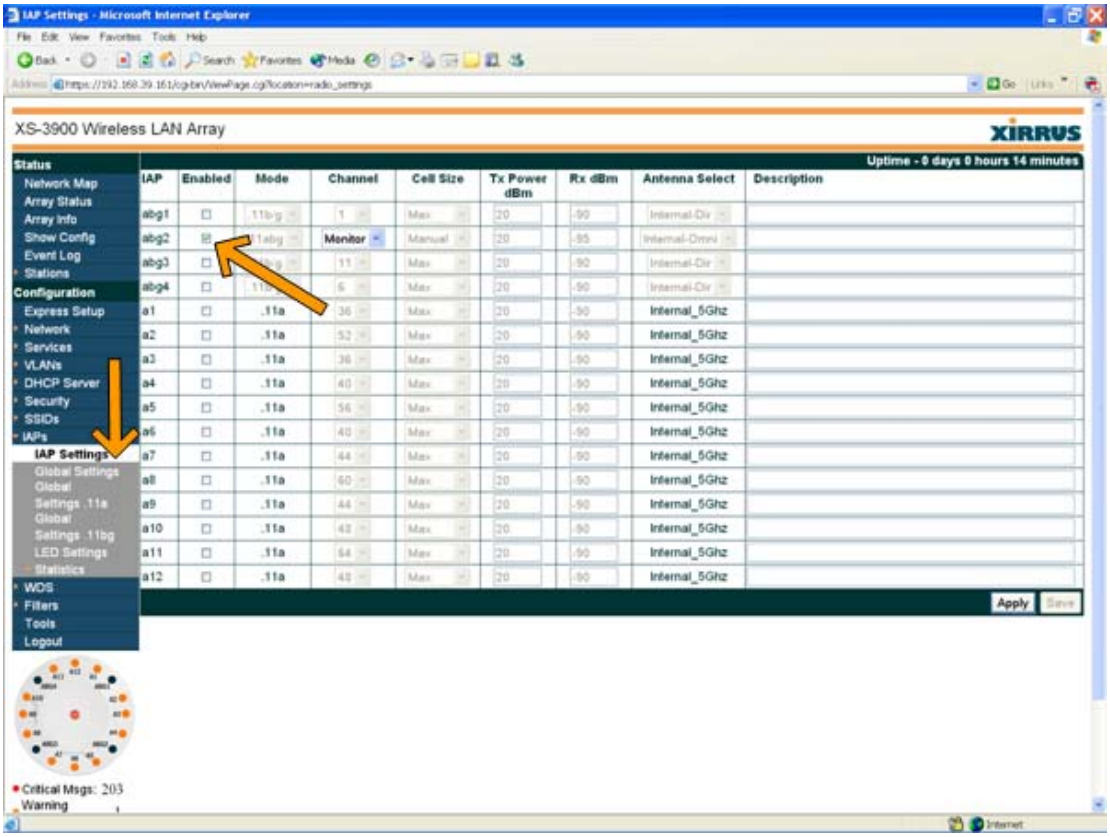


Figure 1: Disabling the Monitor Radio

Setting Radio Channels

With the SpectraLink Wireless Telephones operating in 802.11b mode, at least one of the Wireless LAN Array's Integrated Access Points (IAPs) must be set to the 2.4 GHz band. Any of the Array's four abg radios may be used, and up to three may be used simultaneously. However, the radios must be set to the non-overlapping channels 1, 6, and 11. This may be done using the following CLI commands:

```
Xirrus_WLAN_Array# configure
Xirrus_WLAN_Array(config)# interface iap
Xirrus_WLAN_Array(config-iap)# abg1 channel 11
Xirrus_WLAN_Array(config-iap)# abg3 channel 1
Xirrus_WLAN_Array(config-iap)# abg4 channel 6
```

Configuring an SSID

An SSID for the phones must be set on the Array. The following CLI commands show how to implement an SSID called 'spec'.

```
Xirrus_WLAN_Array(config)# ssid
Xirrus_WLAN_Array(config-ssid)# add spec
Xirrus_WLAN_Array(config-ssid-spec)# broadcast on
Xirrus_WLAN_Array(config-ssid-spec)# show

SSID "spec" Settings
================================================
State               Enabled
Active              Yes
Encryption          None
VLAN Name
VLAN Number         -
QoS Level           2
Active Band         802.11bg
Broadcast           On
DHCP Pool           none
Traffic Limit       Unlimited
Traffic/Station     Unlimited
Time on             Always
Time off            Never
Days on             All

Xirrus_WLAN_Array(config-ssid-spec)# exit
Xirrus_WLAN_Array(config-ssid)# show

SSID Summary Table

SSID Name                   Active  Encryption      QoS  Band  Broadcast
--------------------------  ------  --------------  ---  ----  --------
spec                        Yes     None            2    11bg  On
```

This screen shows how to set up the SSID in the WMI.

1. In the navigation pane, click **SSID Management**.
2. Type the name in the **New SSID Name**: field near the top of the **SSID Management** screen.
3. Click the **Create** button in the upper right corner of the screen.
4. The name appears in the **SSID** list toward the center of the page.
5. Click the name and select the appropriate features below.
6. Be sure to click the **Enable** option on the **Broadcast SSID** line.

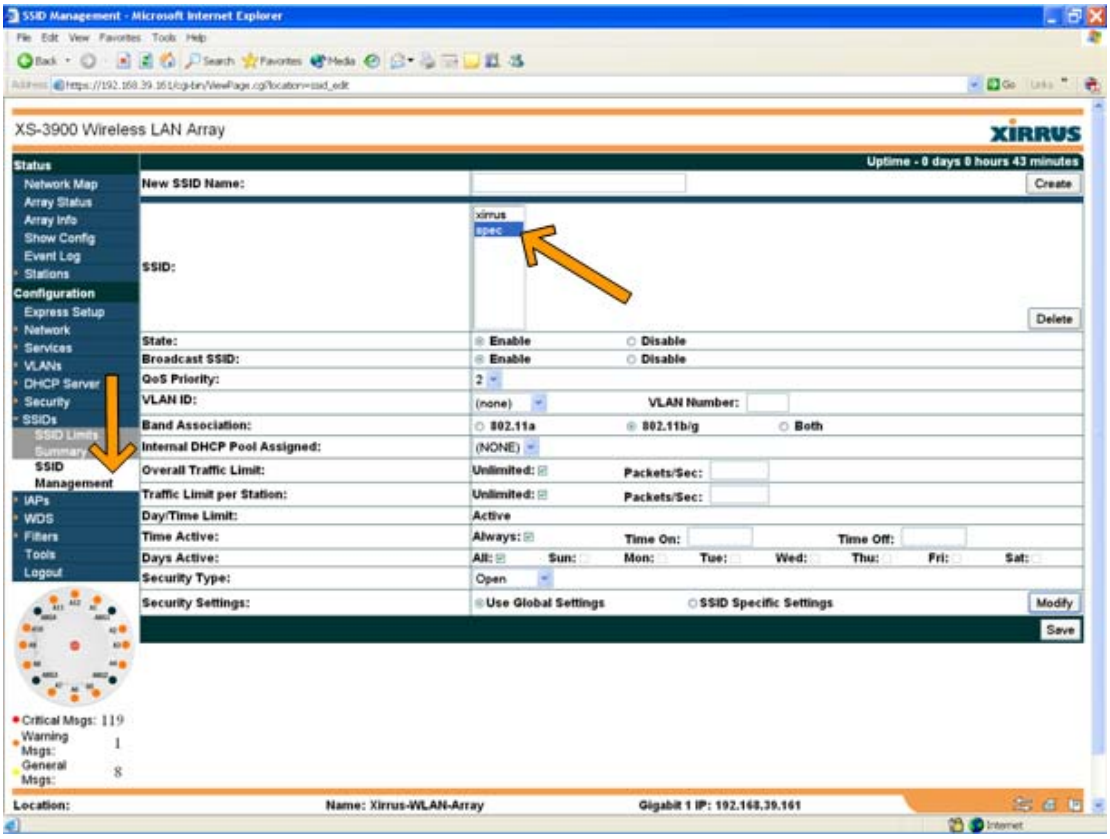


Figure 2: Configuring an SSID

Setting Radio Cell Size

The radio transmit powers and receive sensitivities should be set appropriately for the environment in which they are operating. The simplest way to do this is to pick an operating cell size for them. The following CLI commands illustrate how to set a small cell size on three of the abg radios.

Please see the *Xirrus Wi-Fi Array Users Guide* for a detailed explanation of radio transmit power, receive sensitivities and cell sizing.

```
Xirrus_WLAN_Array(config)# interface iap
Xirrus_WLAN_Array(config-iap)# abg1 cellsize small
Xirrus_WLAN_Array(config-iap)# abg3 cellsize small
Xirrus_WLAN_Array(config-iap)# abg4 cellsize small
Xirrus_WLAN_Array(config-iap)# abg1 up
Xirrus_WLAN_Array(config-iap)# show
IAP Summary Table
                            Cell   TX      RX
IAP State Channel Antenna   Size  Power Threshold Stations WDS MAC address / BSSID
--------- ------- -------- ---------------------- -------- --- -----------------
  a1 down     36   int-dir  manual   8dBm  -75dBm      0        00:0f:7d:03:63:11
  a2 down     52   int-dir  manual   8dBm  -75dBm      0        00:0f:7d:03:63:31
  a3 down    149   int-dir  manual   8dBm  -75dBm      0        00:0f:7d:03:63:41
  a4 down     40   int-dir  manual   8dBm  -75dBm      0        00:0f:7d:03:63:51
  a5 down     56   int-dir  manual   8dBm  -75dBm      0        00:0f:7d:03:63:71
  a6 down    157   int-dir  manual   8dBm  -75dBm      0        00:0f:7d:03:62:81
  a7 down     44   int-dir  manual   8dBm  -75dBm      0        00:0f:7d:03:62:91
  a8 down     60   int-dir  manual   8dBm  -75dBm      0        00:0f:7d:03:62:b1
  a9 down    153   int-dir  manual   8dBm  -75dBm      0        00:0f:7d:03:62:c1
 a10 down     48   int-dir  manual   8dBm  -75dBm      0        00:0f:7d:03:62:d1
 a11 down     64   int-dir  manual   8dBm  -75dBm      0        00:0f:7d:03:62:f1
 a12 down    161   int-dir  manual   8dBm  -75dBm      0        00:0f:7d:03:63:01
abg1  up      11   int-dir  small    5dBm  -75dBm      1        00:0f:7d:03:63:21
abg2 down monitor int-omni manual  20dBm  -95dBm      0        00:0f:7d:03:63:61
abg3 down      1   int-dir  small    5dBm  -75dBm      0        00:0f:7d:03:62:a1
abg4 down      6   int-dir  small    5dBm  -75dBm      0        00:0f:7d:03:62:e1
```

This screen shows how to set the cell size and enable the radios via the **IAP Settings** page of the WMI.

1. In the navigation pane, click **IAP Settings**.
2. In the **IAP Settings** page, click the **Enabled** check box for each radio you wish to enable.
3. In the **Cell Size** column, select the desired cell size for each radio.
4. Click **Apply** to initiate the changes to the Array.

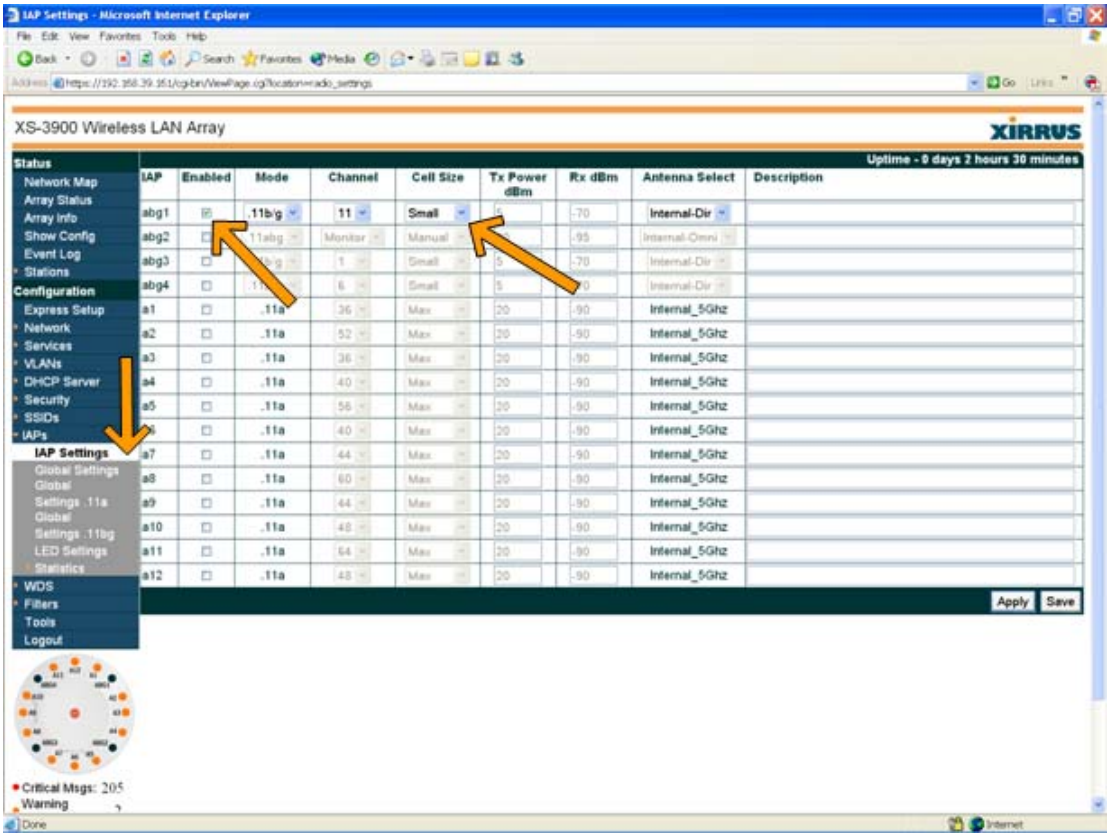


Figure 3: Configuring IAPs

The SpectraLink Wireless Telephones should now be fully operational and no further changes to the Array's default settings are required. However, a few extra steps are required to enable the security features if so desired. These are explained in the following sections.

Security

Enabling WPA-PSK

For WPA-PSK mode, the global encryption cipher method must be set to TKIP with the following CLI commands:

```
Xirrus_WLAN_Array(config)# security
Xirrus_WLAN_Array(config-security)# wpa tkip on
Xirrus_WLAN_Array(config-security)# wpa aes off
Xirrus_WLAN_Array(config-security)# show

Global Security Settings Summary
--------------------------------
WEP:  key 1 size : not set (default)
      key 2 size : not set
      key 3 size : not set
      key 4 size : not set

WPA:  cipher     : TKIP  on, AES off
      key mgmt   : EAP   on, PSK off
      rekey time : disabled
passphrase: not set
```

This screen shows how the global encryption cipher can be set through the WMI.

1. In the navigation pane, click **Global Settings**.
2. In the **Global Settings** screen, click the **Yes** option on the **TKIP Enabled** line.
3. Click the **Apply** button to save the settings.

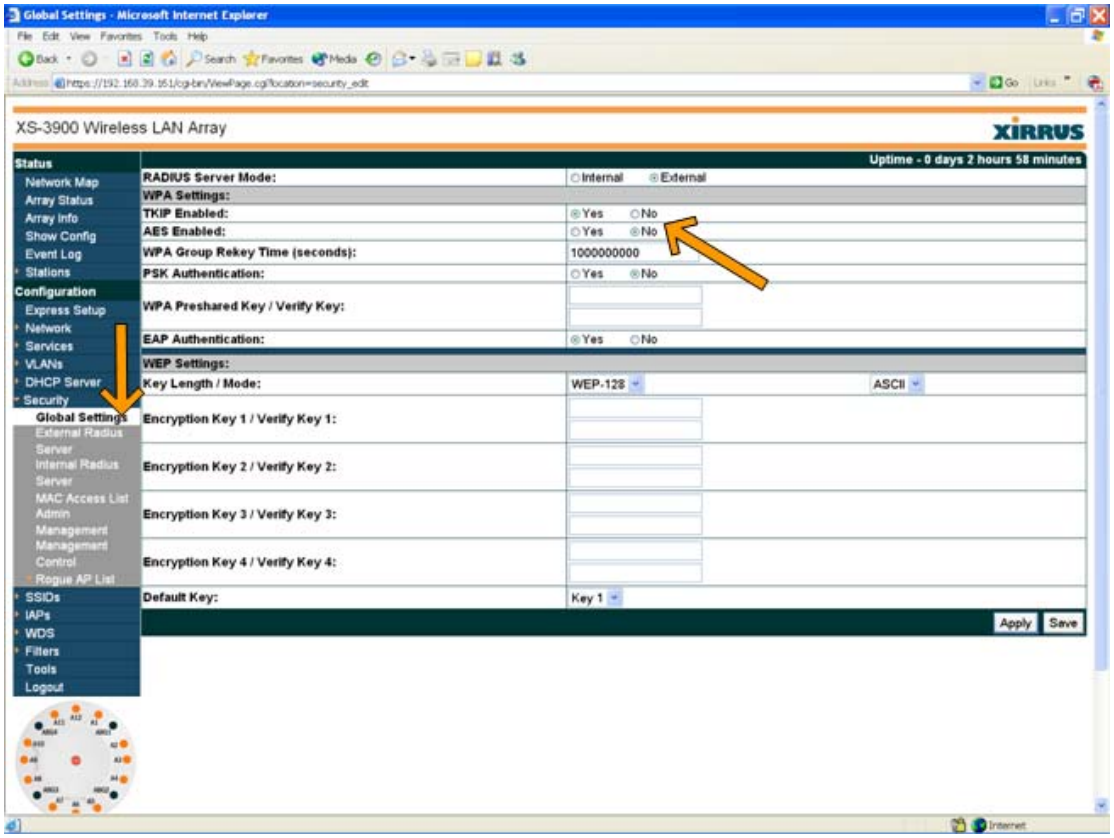


Figure 4: Global WPA Settings

Setting the Pre-Shared Key

The pre-shared key must be provided next. In the example below the passphrase is set to '11111111'. The passphrase is an attribute of the SSID and is set with the following CLI commands:

```
Xirrus_WLAN_Array(config)# ssid
Xirrus_WLAN_Array(config-ssid)# edit spec
Xirrus_WLAN_Array(config-ssid-spec)# encryption wpa ssid_specific
Xirrus_WLAN_Array(config-ssid-spec)# passphrase 11111111
Xirrus_WLAN_Array(config-ssid-spec)# show

SSID "spec" Settings
================================================
State               Enabled
Active              Yes
Encryption          SSID specific WPA
VLAN Name
VLAN Number         -
QoS Level           2
Active Band         802.11bg
Broadcast           On
DHCP Pool           none
Traffic Limit       Unlimited
Traffic/Station     Unlimited
Time on             Always
Time off            Never
Days on             All

Xirrus_WLAN_Array(config-ssid-spec)# exit
Xirrus_WLAN_Array(config-ssid)# show

SSID Summary Table
SSID Name                   Active  Encryption      QoS  Band   Broadcast
--------------------------  ------  --------------  ---  ----  ---------
spec                     Yes     WPA               2    11bg   On
```

This screen shows how to set the encryption and passphrase in the **SSID Management** page of the WMI.

1. In the navigation pane, click **SSID Management**.
2. Select the correct SSID from the list at the center top of the page.
3. On the **Security Type** line, select **WPA** from the drop-down list.
4. On the **Security Settings** line, click the **SSID Specific Settings** option.
5. On the **PSK Authentication** line, click the **Yes** option.
6. Enter and verify the **WPA Preshared Key**.
7. Click the **Apply** button to initiate the changes to the Array.

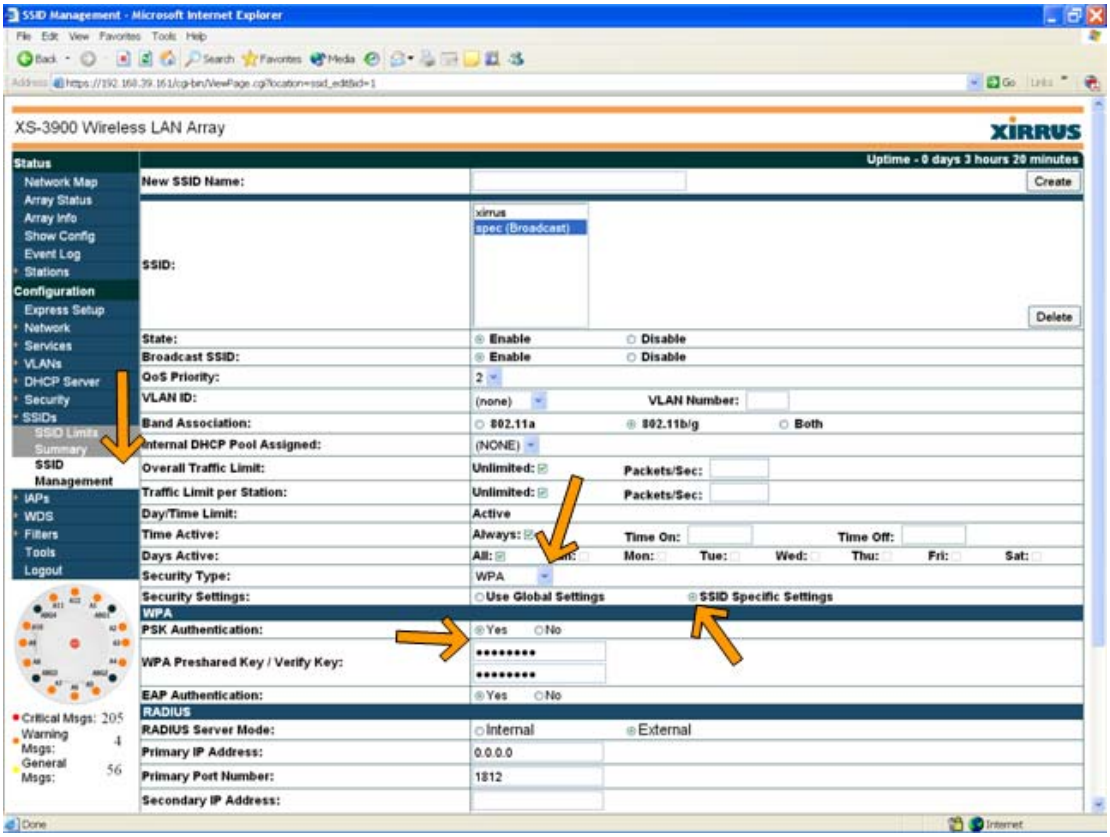


Figure 5: SSID Specific WPA Settings

The Array is now configured to use WPA-PSK security for the handsets' SSID. The SpectraLink Wireless Telephones will associate to the Array once they have been programmed for WPA use with the pre-shared key.

Enabling WPA2-PSK

If WPA2-PSK mode is desired then the global encryption cipher method should be set to AES with the following CLI commands:

```
Xirrus_WLAN_Array(config)# security
Xirrus_WLAN_Array(config-security)# wpa aes on
Xirrus_WLAN_Array(config-security)# wpa tkip off
Xirrus_WLAN_Array(config-security)# show

Global Security Settings Summary
--------------------------------
WEP:  key 1 size : not set (default)
      key 2 size : not set
      key 3 size : not set
      key 4 size : not set

WPA:  cipher     : TKIP off, AES  on
      key mgmt   : EAP   on, PSK off
      rekey time : disabled
      passphrase : not set
```

Now provide the pre-shared key (‘11111111’ in this example):

```
Xirrus_WLAN_Array(config)# security
Xirrus_WLAN_Array(config)# ssid
Xirrus_WLAN_Array(config-ssid)# edit spec
Xirrus_WLAN_Array(config-ssid-spec)# encryption wpa2 ssid_specific
Xirrus_WLAN_Array(config-ssid-spec)# passphrase 11111111
Xirrus_WLAN_Array(config-ssid-spec)# show

SSID "spec" Settings
================================================
State                Enabled
Active               Yes
Encryption           SSID specific WPA2
VLAN Name
VLAN Number          -
QoS Level            2
Active Band          802.11bg
Broadcast            On
DHCP Pool            none
Traffic Limit        Unlimited
Traffic/Station      Unlimited
Time on              Always
Time off             Never
Days on              All

Xirrus_WLAN_Array(config-ssid-spec)# exit
Xirrus_WLAN_Array(config-ssid)# show

SSID Summary Table
SSID Name                    Active  Encryption      QoS  Band  Broadcast
---------------------------  ------  --------------  ---  ----  ---------
spec                         Yes     WPA2            2    11bg  On
```

The global encryption cipher for WPA2-PSK can also be set through the WMI as illustrated in Figure 4 *Global WPA Settings*. The difference between the WPA-PSK and WPA2-PSK settings is that, for WPA2-PSK, **No** should be selected on the **TKIP Enabled** line, and **Yes** should be selected on the **AES Enabled** line.

Similarly, the SSID specific settings for WPA2-PSK may be applied as shown in Figure 5 *SSID Specific WPA Settings*. For **Security Type** select **WPA2** instead of WPA.

The array is now configured to use WPA2-PSK security for the handsets' SSID. The SpectraLink Wireless Telephones will associate to the array once they have been programmed for WPA2 use with the pre-shared key.