Configuring the Wi-Fi Management Interface

This chapter describes how to configure the Wi-Fi management interface on the ASR 901S Series Aggregation Services Router.

The Wi-Fi management interface is used to connect safely and securely to the ASR 901S router, which is deployed on lamp posts and walls. This interface allows authorized field technicians to connect remotely to the installed router to monitor and debug the device and modify the image or the configuration, if needed.

Note

The Wi-Fi management interface is supported on the Cisco ASR 901S routers form Cisco IOS 15.4(3)S onwards.

• Configuring the Wi-Fi Management Interface, on page 1
• Restrictions for the Wi-Fi Management Interface, on page 2
• Information About the Wi-Fi Management Interface, on page 2
• Configuring the Wi-Fi Management Interface, on page 2
• Verifying Wi-Fi Management Interface Configurations, on page 10
• Additional References, on page 15
• Feature Information for the Wi-Fi Management Interface, on page 15

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Note

The Wi-Fi management interface is supported on the Cisco ASR 901S routers form Cisco IOS 15.4(3)S onwards.
Restrictions for the Wi-Fi Management Interface

- Allows a maximum of two stations.
- Disallows traffic received from one station to be routed to another station.
- Disallows open system authentication.
- Supports only WPA2 PSK authentication mode.

Information About the Wi-Fi Management Interface

The Wi-Fi management interface on the ASR 901S router is based on IEEE 802.11b standards. An IP address is assigned to the Wi-Fi management interface and the router can provide the same subnet IP to the connected station based on these conditions: if the Wi-Fi management interface is configured as a DHCP relay agent and a DHCP server is connected with another Gigabit Ethernet interface of the router. The ASR 901S router receives IP traffic only from authenticated stations. Authorized stations can connect to the ASR 901S router and access the router CLI (user authentication is assumed). The router configuration can be modified using telnet/ssh over the Wi-Fi management interface.

To implement the Wi-Fi management interface, the ASR 901S router must be configured in the access point (AP) mode. Each ASR 901S router should be configured as an AP with a unique SSID. A station (STA) mode Wi-Fi capable device may be used to connect to the ASR 901S router via the air interface. For convenient debugging, all ASR 901S routers can be configured with a unique SSID derived from MAC address or serial number of the Wi-Fi interface. The presence of the ASR 901S router can be identified by checking the outgoing beacons from the router.

The ASR 901S router supports these authentication types: WPA2 pre-shared key and WPA2-Enterprise. In the Cisco IOS Release 15.4(3)S, only the Wi-Fi Protected Access II (WPA2) pre-shared key (PSK) mode is supported. The minimum length of a WPA2 pre-shared key should be 8 characters and a maximum of 63 characters.

The router can be configured to turn on the Wi-Fi interface as an 'always-on' feature or to be turned on when the backhaul connectivity is down. When the backhaul connectivity is down, the authentication of the station occurs over WPA-PSK. When the backhaul is up, then the authentication can be configured between either of WPA-PSK or WPA-Enterprise.

Note

In the Cisco IOS Release 15.4(3)S, the Wi-Fi interface is always enabled irrespective of backhaul connectivity.

Configuring the Wi-Fi Management Interface

- Enabling the Wi-Fi Interface, on page 3 (required)
- Assigning an IP Address, on page 4 (required)
- Configuring the WPA2 PSK, on page 6 (required)
- Configuring Virtual Access Point, on page 7 (required)
### Enabling the Wi-Fi Interface

**SUMMARY STEPS**

1. enable
2. show ip interface brief
3. show run interface dot0/0
4. configure terminal
5. interface dot11radio slot/port
6. no shut
7. end

**DETAILED STEPS**

<table>
<thead>
<tr>
<th>Step</th>
<th>Command or Action</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1</td>
<td><strong>enable</strong></td>
<td>Enables privileged EXEC mode.</td>
</tr>
</tbody>
</table>
|        | **Example:**
|        |    Router> enable                                                                 | • Enter your password if prompted.                                    |
| Step 2 | **show ip interface brief**                                                        | Displays brief details of all the interfaces on the router.           |
|        | **Example:**
|        |    Router# show ip interface brief                                                 |                                                                        |
|        |        Interface                  IP-Address   OK? Method        Protocol                     |                                                                        |
|        |        Status                     Protocol                     |                                                                        |
|        |    GigabitEthernet0/0             unassigned      YES NVRAM            |                                                                        |
|        |        up                         up                                  |                                                                        |
|        |    GigabitEthernet0/1             unassigned      YES NVRAM            |                                                                        |
|        |        down                       down                                |                                                                        |
|        |    GigabitEthernet0/2             unassigned      YES NVRAM            |                                                                        |
|        |        up                         up                                  |                                                                        |
|        |    GigabitEthernet0/3             unassigned      YES NVRAM            |                                                                        |
|        |        up                         up                                  |                                                                        |
|        |    GigabitEthernet0/4             unassigned      YES NVRAM            |                                                                        |
|        |        down                       down                                |                                                                        |
|        |    GigabitEthernet0/5             unassigned      YES NVRAM            |                                                                        |
|        |        up                         up                                  |                                                                        |
|        |    Dot11Radio0/0                  unassigned      YES unset             |                                                                        |
|        |        administratively down       down                                |                                                                        |
|        |    FastEthernet0/0                10.78.100.182 YES NVRAM           |                                                                        |
|        |        up                         up                                  |                                                                        |
|        |    Vlan1                          unassigned      YES NVRAM            |                                                                        |
|        |        down                       down                                |                                                                        |
| Step 3 | **show run interface dot0/0**                                                      | Displays details of the Wi-Fi (radio) interface. The Wi-Fi (radio) interface is shut down by default. |
|        | **Example:**
|        |    Router# show run interface dot0/0                                              |                                                                        |
|        |        Building configuration...                                                   |                                                                        |
|        |    Current configuration : 56 bytes                                               |                                                                        |
### Assigning an IP Address

**SUMMARY STEPS**

1. enable
2. configure terminal
3. interface dot11radio slot/port
4. ip address ip address mask
5. end

<table>
<thead>
<tr>
<th>Command or Action</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>interface dot11Radio0/0</td>
<td>Enters global configuration mode.</td>
</tr>
<tr>
<td>no ip address</td>
<td></td>
</tr>
<tr>
<td>shutdown</td>
<td></td>
</tr>
<tr>
<td>end</td>
<td></td>
</tr>
</tbody>
</table>

**Step 4**

```
configure terminal
```

**Example:**

```
Router# configure terminal
```

**Step 5**

```
interface dot11radio slot/port
```

**Example:**

```
Router# interface dot11radio 0/0
```

**Step 6**

```
o shut
```

**Example:**

```
Router(config-if)# no shut
Jun 17 16:32:25.918: %LINK-3-UPDOWN: Interface Dot11Radio0/0, changed state to up
Jun 17 16:32:26.918: %LINEPROTO-5-UPDOWN: Line protocol on Interface Dot11Radio0/0, changed state to up
```

**Step 7**

```
end
```

**Example:**

```
Router(config-if)# end
```

---

### What to do next

- To assign the IP address for the Wi-Fi management interface, see Assigning an IP Address, on page 4.
- To verify the Wi-Fi interface configuration details, see Verifying Wi-Fi Management Interface Configurations, on page 10.
## DETAILED STEPS

<table>
<thead>
<tr>
<th>Command or Action</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Step 1</strong> enable</td>
<td>Enables privileged EXEC mode.</td>
</tr>
<tr>
<td><strong>Example:</strong> Router&gt; enable</td>
<td>• Enter your password if prompted.</td>
</tr>
<tr>
<td><strong>Step 2</strong> configure terminal</td>
<td>Enters global configuration mode.</td>
</tr>
<tr>
<td><strong>Example:</strong> Router# configure terminal</td>
<td></td>
</tr>
<tr>
<td><strong>Step 3</strong> interface dot11radio slot/port</td>
<td>Enters the interface configuration mode for the Wi-Fi (radio) interface.</td>
</tr>
<tr>
<td><strong>Example:</strong> Router# interface dot11radio 0/0</td>
<td></td>
</tr>
<tr>
<td><strong>Step 4</strong> ip address ip address mask</td>
<td>Assigns the IP address and mask for the Wi-Fi (radio) interface.</td>
</tr>
<tr>
<td><strong>Example:</strong> Router(config-if)# ip address 2.2.2.2 255.255.0.0</td>
<td></td>
</tr>
<tr>
<td><strong>Step 5</strong> end</td>
<td>Exits configuration mode.</td>
</tr>
<tr>
<td><strong>Example:</strong> Router(config-if)# end</td>
<td></td>
</tr>
</tbody>
</table>

### What to do next
- To configure the WPA2 PSK, see Configuring the WPA2 PSK, on page 6.
- To verify the assigned IP address, see Verifying IP Address, on page 5.

## Verifying IP Address

To verify the IP address assigned to the Wi-Fi interface, use the `show ip interface brief` command.

```
Router# show ip int br
<p>|</p>
<table>
<thead>
<tr>
<th>Interface</th>
<th>IP-Address</th>
<th>OK? Method Status</th>
<th>Protocol</th>
</tr>
</thead>
<tbody>
<tr>
<td>GigabitEthernet0/0</td>
<td>unassigned</td>
<td>YES NVRAM down</td>
<td>down</td>
</tr>
<tr>
<td>GigabitEthernet0/1</td>
<td>unassigned</td>
<td>YES NVRAM down</td>
<td>down</td>
</tr>
<tr>
<td>GigabitEthernet0/2</td>
<td>unassigned</td>
<td>YES NVRAM down</td>
<td>down</td>
</tr>
<tr>
<td>GigabitEthernet0/3</td>
<td>unassigned</td>
<td>YES NVRAM down</td>
<td>down</td>
</tr>
<tr>
<td>GigabitEthernet0/4</td>
<td>unassigned</td>
<td>YES NVRAM up</td>
<td>up</td>
</tr>
<tr>
<td>GigabitEthernet0/5</td>
<td>unassigned</td>
<td>YES NVRAM up</td>
<td>up</td>
</tr>
<tr>
<td>Dot11Radio0/0</td>
<td>5.5.5.1</td>
<td>YES manual up</td>
<td>up</td>
</tr>
<tr>
<td>FastEthernet0/0</td>
<td>10.106.148.1</td>
<td>YES NVRAM up</td>
<td>up</td>
</tr>
<tr>
<td>Vlan1</td>
<td>unassigned</td>
<td>YES NVRAM down</td>
<td>down</td>
</tr>
<tr>
<td>Vlan1000</td>
<td>70.0.0.2</td>
<td>YES NVRAM up</td>
<td>up</td>
</tr>
<tr>
<td>Router#</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
```
Configuring the WPA2 PSK

**SUMMARY STEPS**

1. enable
2. configure terminal
3. interface dot11radio slot/port
4. wpa2 psk password
5. end

**DETAILED STEPS**

<table>
<thead>
<tr>
<th>Step</th>
<th>Command or Action</th>
<th>Purpose</th>
</tr>
</thead>
</table>
| Step 1 | enable | Enables privileged EXEC mode.  
Example:  
Router> enable |
| Step 2 | configure terminal | Enters global configuration mode.  
Example:  
Router# configure terminal |
| Step 3 | interface dot11radio slot/port | Enters the interface configuration mode for the Wi-Fi (radio) interface.  
Example:  
Router# interface dot11radio 0/0 |
| Step 4 | wpa2 psk password | Assigns the WiFi Protected Access II (WPA2), Pre-Shared Key (PSK) for the Wi-Fi (radio) interface.  
Example:  
Router(config-if)# wpa2 psk adminuser1 |
|       |                   | **Note** The minimum length of a WPA2 pre-shared key should be 8 characters and a maximum of 63 characters. Using the `no` form of this command does not disable the WPA2 PSK configuration unless the VAP configuration is disabled first. |
| Step 5 | end | Exits configuration mode.  
Example:  
Router(config-if)# end |

**What to do next**

To configure the router as a virtual access point, see Configuring Virtual Access Point, on page 7.
# Configuring Virtual Access Point

**Before you begin**

WPA2 PSK must be configured before configuring the Virtual Access Point (VAP).

## SUMMARY STEPS

1. enable
2. configure terminal
3. `interface dot11radio slot/port`
4. `vap ap wpa2 psk password [ssid] [channel channel number] [broadcast]`
5. end

## DETAILED STEPS

<table>
<thead>
<tr>
<th>Step</th>
<th>Command or Action</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1</td>
<td>enable</td>
<td>Enables privileged EXEC mode.</td>
</tr>
<tr>
<td>Example:</td>
<td>Router&gt; enable</td>
<td>* Enter your password if prompted.</td>
</tr>
<tr>
<td>Step 2</td>
<td>configure terminal</td>
<td>Enters global configuration mode.</td>
</tr>
<tr>
<td>Example:</td>
<td>Router# configure terminal</td>
<td></td>
</tr>
<tr>
<td>Step 3</td>
<td><code>interface dot11radio slot/port</code></td>
<td>Enters the interface configuration mode for the Wi-Fi (radio) interface.</td>
</tr>
<tr>
<td>Example:</td>
<td>Router# interface dot11radio 0/0</td>
<td></td>
</tr>
<tr>
<td>Step 4</td>
<td><code>vap ap wpa2 psk password [ssid] [channel channel number] [broadcast]</code></td>
<td>Configures the Wi-Fi (radio) interface as a virtual access point (AP) using the WPA2 PSK, broadcasts the specified SSID to stations that access the Wi-Fi interface.</td>
</tr>
</tbody>
</table>
| Example: | Router(config-if)# vap ap adminuser1 cisco 5 broadcast | **Note**  
* The default SSID configuration is hidden if the broadcast keyword is not specified.  
* The channel can be configured from 1 to 14 for any country. However, if the configured channel is not supported for a country, the country channel reverts to channel 1. This is reflected in the "show dot11radio vap" command output as "Configured" and "InUse" fields. |
| Step 5 | end | Exits configuration mode. |
| Example: | Router(config-if)# end | |
What to do next

- To configure the country code for the Wi-Fi management interface, see Configuring the Country Code, on page 8.
- To verify the VAP configuration, see Verifying the VAP Configuration, on page 8.

Verifying the VAP Configuration

To verify the virtual access point (VAP) configuration, use the `show dot11radio vap` command.

```
Router# show dot11radio vap
vap status : running
channel : 5[inUse],5[configured]
ssid : ssid[broadcast]
beacon-period : 100
auth-type : WPA2 PSK
max stations : 1
wifi-interface : non-routable
country : JAPAN

Router#
```

Configuring the Country Code

**SUMMARY STEPS**

1. `enable`
2. `configure terminal`
3. `interface dot11radio slot/port`
4. `world-mode dot11d [country-code [country code]]`
5. `end`

**DETAILED STEPS**

<table>
<thead>
<tr>
<th>Command or Action</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Step 1</strong> enable</td>
<td>Enables privileged EXEC mode.</td>
</tr>
<tr>
<td><strong>Example:</strong> Router&gt; enable</td>
<td></td>
</tr>
<tr>
<td><strong>Step 2</strong> configure terminal</td>
<td>Enters global configuration mode.</td>
</tr>
<tr>
<td><strong>Example:</strong> Router# configure terminal</td>
<td></td>
</tr>
<tr>
<td><strong>Step 3</strong> interface dot11radio slot/port</td>
<td>Enters the interface configuration mode for the Wi-Fi (radio) interface.</td>
</tr>
<tr>
<td><strong>Example:</strong> Router# interface dot11radio 0/0</td>
<td></td>
</tr>
</tbody>
</table>
### Purpose

**Command or Action**

<table>
<thead>
<tr>
<th>Step 4</th>
<th>world-mode dot11d [country-code [country code]]</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Example:</strong></td>
<td>Router(config-if)# world-mode dot11d country-code JP</td>
</tr>
</tbody>
</table>

Enables 802.11d world mode operation. The default country code is US. To check the country code options, use the `show dot11 country-code` command.

**Note**
Using the `no` command reverts the specified country code to the default country-code, that is, US.

### Step 5

<table>
<thead>
<tr>
<th>end</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Example:</strong></td>
</tr>
</tbody>
</table>

Exits configuration mode.

---

### What to do next

To verify the country code options available for the Wi-Fi management interface, see Verifying the Country Code, on page 9.

### Verifying the Country Code

To verify the available country codes for the Wi-Fi interface, use the `show dot11radio country-codes` command.

```
Router# show dot11radio country-codes
code country
AL ALBANIA
DZ ALGERIA
AR ARGENTINA
AM ARMENIA
AW ARUBA
AU AUSTRALIA
AT AUSTRIA
AZ AZERBAIJAN
BS BAHAMAS
BH BAHRAIN
BD BANGLADESH
BB BARBADOS
BY BELARUS
BE BELGIUM
BZ BELIZE
BM BERMUDA
BO BOLIVIA
BA BOSNIA AND HERZEGOVINA
BR BRAZIL
BN BRUNEI DARUSSALAM
BG BULGARIA
KH CAMBODIA
CA CANADA
CL CHILE
CN CHINA
CO COLOMBIA
CR COSTA RICA
...
UG UGANDA
UA UKRAINE
UG UGANDA
AE UNITED ARAB EMIRATES
```
Verifying Wi-Fi Management Interface Configurations

The following CLIs display the Wi-Fi management interface configurations.

Sample Output for the show interface dot11radio 0/0 command

Router# show interface dot11radio 0/0
Dot11Radio0/0 is up, line protocol is up
    Hardware is WiFi, address is 0022.3300.0003 (bia 0022.3300.0003)
    Internet address is 5.5.5.1/16
    MTU 1500 bytes, BW 11000 Kbit/sec, DLY 1000 usec,
        reliability 255/255, txload 1/255, rxload 1/255
    Encapsulation ARPA, loopback not set
    Keepalive set (10 sec)
    ARP type: ARPA, ARP Timeout 04:00:00
    Last input never, output never, output hang never
    Last clearing of "show interface" counters never
    Input queue: 0/2048/0/0 (size/max/drops/flushes); Total output drops: 2
    Queueing strategy: fifo
    Output queue: 2/40 (size/max)
    5 minute input rate 0 bits/sec, 0 packets/sec
    5 minute output rate 0 bits/sec, 0 packets/sec
    0 packets input, 0 bytes, 0 no buffer
    Received 0 broadcasts (0 IP multicasts)
    0 runts, 0 giants, 0 throttles
    0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored
    0 input packets with dribble condition detected
    7 packets output, 420 bytes, 0 underruns
    0 output errors, 0 collisions, 3 interface resets
    0 unknown protocol drops
    0 babbles, 0 late collision, 0 deferred
    0 lost carrier, 0 no carrier
    0 output buffer failures, 0 output buffers swapped out
Router#

Sample Output for the show interface dot11radio association command

Router# show dot11radio association
-------station 1-------
    address : 5C:B5:24:B6:87:4E
    assoc-id : 1
    state : 211
    channel : 1
    txrate : 2 M
    rxrate : 2 M
    rssi : 35

Sample Output for the show interface dot11radio mac-address command

Router# show dot11radio mac-address
0022.3300.002a
Sample Output for the `show interface dot11radio serial-number` command

Router# show dot11radio serial-number
FOC1703N79P

Sample Output for the `show interface dot11radio statistics` command

Router# show dot11radio statistics
******** ath dev stats ********
  2 recv eol interrupts
  27 # packets sent on the interface
  153 # packets receive on the interface
  21962 tx management frames
  40 tx failed 'cuz too many retries
  13 tx rssi of last ack
 12011 total number of bytes received
 3321 total number of bytes transmitted
 rssi of last ack[ctl, ch0]: 13
 rssi of last ack[ctl, ch1]: 2
 13 rx rssi from histogram [combined]
 rssi of last rcv[ctl, ch0]: 11
 rssi of last rcv[ctl, ch1]: 7
 21895 beacons transmitted
Radio profile:
  37 number of received data packets
 116 number of received num mgmt packets
 10 number of transmit retries in hardware
Antenna profile:
  1 switched default/rx antenna
   [0] tx 27 rx 1
   [1] tx 0 rx 152

11n stats
  67 total tx data packets
  0 tx drops in wrong state
  0 tx drops due to qdepth limit
  51 tx when h/w queue depth is low
  16 tx pkts when h/w queue is busy
  0 tx completions
  0 tx pkts filtered for requeueing
  0 txq empty occurrences
  0 tx no skbs for encapsulations
  0 tx no descriptors
  0 tx key setup failures
  0 tx no desc for legacy packets
  51 tx schedule pkt queue empty
  0 tx bars sent
  0 tx bar retries sent
  0 tx bar last frame failed
  0 tx bar excessive retries
  0 tx unaggregated frame completions
  0 tx unaggregated excessive retries
  0 tx unaggregated unacked frames
  0 tx unaggregated last frame failed
  0 tx aggregated completions
  0 tx block ack window advanced
  0 tx block ack window retries
  0 tx block ack window additions
  0 tx block ack window updates
  0 tx block ack window advances
  0 tx retries of sub frames
  0 tx excessive retries of aggregates
  0 tx no skbs for aggr encapsulation
  0 tx no desc for aggr
  0 tx enc key setup failures
Configuring the Wi-Fi Management Interface

Verifying Wi-Fi Management Interface Configurations

0 tx no frame scheduled: baw limited
0 tx frames not aggregated
0 tx frames aggregated for mimo
0 tx aggr good completions
0 tx aggr excessive retries
0 tx aggr unacked subframes
0 tx aggr old frames requeued
0 filtered aggr packet
0 fifo underrun of aggregate
0 txop exceeded for an aggregate
0 aggregate descriptor config error
0 data underrun for an aggregate
0 delimiter underrun for an aggregate
0 tx aggr: last sub-frame failed
0 tx aggr: h/w long retries
0 tx aggr: h/w short retries
0 tx aggr: tx timer expired
0 tx aggr: BA state is not updated
0 tx aggr: BA bad tid
0 tx frames not aggregated
0 tx rifs: BA state is not updated
0 tx rifs: unacked subframes
0 tx rifs: bar frames allocated
0 tx rifs: bar frames freed
0 tx rifs: good completions
0 tx rifs completions
0 tx non-rifs frame completions
0 tx rifs old frames requeued
153 rx pkts
0 rx aggregated packets
0 rx pkts with bad version
0 rx bars
0 rx non gos-data frames
0 rx sequence resets
0 rx old packets
0 rx block ack window reset
0 rx pts indicated due to baw resets
0 rx duplicate pkts
0 rx block ack window advanced
0 rx pkt completions
0 rx bar discarded
0 rx pkts unblocked on bar reception
0 rx pkt completions on bar reception
0 rx pkt sequences skipped on timeout
0 rx indications due to timeout
0 watchdog: tx is active
0 watchdog: tx is not active
0 watchdog: tx is hung
0 watchdog: spurious tx hang
0 filter & requeue on 20/40 transitions
0 draining tx queue on error
0 draining tid buf queue on error
68 draining tid buf queue on node cleanup
0 buffers drained from pending tid queue
0 tid paused
0 tid resumed
0 unaggregated tx pkts filtered
0 aggregated tx pkts filtered
0 total sub-frames filtered
0 rb on
0 rb off
0 rx descriptor status corrupted
0 tx unaggregated excessive retry percent
0 tx aggregated long retry percent
tx aggregated excessive retry percent
tx aggregate subframe retry percent
tx aggregate subframe excessive retry percent
******** ieee80211 stats ********
0 rx frame with bad version
0 rx frame too short
0 rx from wrong bssid
0 rx w/ wrong direction
0 rx discard 'cuz mcast echo
0 rx discard 'cuz sta !assoc
0 rx w/ wep but privacy off
0 rx decapsulation failed
0 rx discard mgmt frames
0 rx discard ctrl frames
0 rx beacon frames
0 rx rate set truncated
0 rx required element missing
0 rx element too big
0 rx element too small
0 rx element unknown
0 rx frame w/ invalid chan
0 rx frame chan mismatch
0 nodes allocated (rx)
49 rx frame ssid mismatch
0 rx w/ unsupported auth alg
0 rx sta auth failure
0 rx sta auth failure 'cuz of TKIP countermeasures
0 rx assoc from wrong bssid
0 rx assoc w/o auth
0 rx assoc w/ cap mismatch
0 rx assoc w/ no rate match
0 rx assoc w/ bad WPA IE
0 rx deauthentication
0 rx disassociation
0 rx action mgmt
0 rx frame w/ unknown subtype
0 rx failed for lack of sk_buffer
0 rx discard mgmt frame received in adhoc demo mode
0 rx bad authentication request
0 rx discard 'cuz port unauthorized
0 rx failed 'cuz bad cipher/key type
0 rx failed 'cuz key/cipher ctx not setup
0 rx discard 'cuz acl policy
0 rx fast frames
0 rx fast frame failed 'cuz bad tunnel header
0 tx failed for lack of sk_buffer
3 tx failed for no node
0 tx of unknown mgt frame
0 tx failed 'cuz bad cipher/key type
0 tx failed 'cuz no defkey
0 tx failed 'cuz no space for crypto hdrs
0 tx atheros fast frames successful
0 tx atheros fast frames failed
0 active scans started
0 passive scans started
0 nodes timed out inactivity
0 cipher context malloc failed
0 tkip crypto done in s/w
0 tkip tx MIC done in s/w
0 tkip rx MIC done in s/w
0 tkip dropped frames 'cuz of countermeasures
0 comp crypto done in s/w
0 wep crypto done in s/w
0 setkey failed 'cuz cipher rejected data
To clear or reset the statistic information for the Wi-Fi management interface, use the `clear dot11radio statistics` command.
### Additional References

The following sections provide references related to the Wi-Fi management interface.

#### Related Documents

<table>
<thead>
<tr>
<th>Related Topic</th>
<th>Document Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cisco IOS Commands</td>
<td>Cisco IOS Master Commands List, All Releases</td>
</tr>
<tr>
<td>ASR 901S Command Reference</td>
<td>Cisco ASR 901S Series Aggregation Services Router Command Reference</td>
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#### Standards

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<tr>
<th>Standard</th>
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#### MIBs

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<tr>
<th>MIB</th>
<th>MIBs Link</th>
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<tr>
<td>None</td>
<td>To locate and download MIBs for selected platforms, Cisco IOS releases, and feature sets, use Cisco MIB Locator found at the following URL: <a href="http://www.cisco.com/go/mibs">http://www.cisco.com/go/mibs</a></td>
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#### RFCs

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#### Technical Assistance

<table>
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<tr>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>The Cisco Technical Support website contains thousands of pages of searchable technical content, including links to products, technologies, solutions, technical tips, and tools. Registered Cisco.com users can log in from this page to access even more content.</td>
<td><a href="http://www.cisco.com/techsupport">http://www.cisco.com/techsupport</a></td>
</tr>
</tbody>
</table>

### Feature Information for the Wi-Fi Management Interface

The Feature Information for Wi-Fi management interface table lists the release history for this feature and provides links to specific configuration information.
Use Cisco Feature Navigator to find information about platform support and software image support. Cisco Feature Navigator enables you to determine which software images support a specific software release, feature set, or platform. To access Cisco Feature Navigator, go to http://www.cisco.com/go/cfn. An account on Cisco.com is not required.

The following table lists only the software release that introduced support for a given feature in a given software release train. Unless noted otherwise, subsequent releases of that software release train also support that feature.

<table>
<thead>
<tr>
<th>Feature Name</th>
<th>Releases</th>
<th>Feature Information</th>
</tr>
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<tbody>
<tr>
<td>Wi-Fi Management Interface</td>
<td>15.4(3)S</td>
<td>The following sections provide information about this feature:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Information About the Wi-Fi Management Interface, on page 2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Configuring the Wi-Fi Management Interface, on page 2</td>
</tr>
</tbody>
</table>