


Wireless Network

Esercitazioni

Alessandro Villani

avillani@science.unitn.it



Configurazione AP CISCO Serie 1200

AP 1200: Features

- **Col firmware 12.3(2)JA l'AP supporta:**
 - SSID multipli (fino a 16), per ciascuno di essi si può impostare:
 - Se trasmettere in broadcast l'SSID (guests mode)
 - Il metodo di autenticazione
 - Il numero massimo di clienti
 - VLAN: Una VLAN per SSID
 - Metodi di autenticazione:
 - MAC
 - 802.1x
 - WPA

AP 1200: Configurazione iniziale

□ **Configurazione Seriale**

- 9600 baud
- 8 data bits
- Parity none
- stop bit 1
- flow control no

AP 1200: Configurazione iniziale

□ Comandi "standard" CISCO:

- enable
- *Password* → Cisco
- `configure [terminal]`
- `ip default-gateway 192.168.10.1`
- `interface FastEthernet 0`
- `ip address 192.168.10.40 255.255.255.0`
- exit
- Ctrl-z
- `copy running-config startup-config`
- reload

AP 1200: Configurazione iniziale

- **Per vedere la configurazione corrente:**
 - Enable
 - Password: Cisco
 - `show running-config`
- **L'interfaccia di rete da configurare obbligatoriamente nella nuova release del firmware non è FastEthernet 0 ma BVI 1**

AP 1200: Interfaccia HTTP

□ Risultato prima configurazione:

HOME
EXPRESS SET-UP
EXPRESS SECURITY
NETWORK MAP +
ASSOCIATION +
NETWORK +
INTERFACES +
SECURITY +
SERVICES +
WIRELESS SERVICES +
SYSTEM SOFTWARE +
EVENT LOG +

Hostname CISCO1200-NetworkLab

Express Set-Up

Host Name: CISCO1200-NetworkLab

MAC Address: 000d.2967.cef5

Configuration Server Protocol: DHCP Static IP

IP Address: 192.168.10.40

IP Subnet Mask: 255.255.255.0

Default Gateway: 192.168.10.1

SNMP Community: defaultCommunity

Read-Only Read-Write

Radio0-802.11B

Role in Radio Network: Access Point Root Repeater Non-Root

Optimize Radio Network for: Throughput Range [Custom](#)

Aironet Extensions: Enable Disable

AP 1200: Aggiornamento Firmware

□ Firmware scaricabile dal sito CISCO:

- <http://www.cisco.com/public/sw-center/sw-wireless.shtml>
- La versione attuale è: [c1200-k9w7-tar.123-2.JA.tar](#)
- Si può aggiornare via tftp o via http

AP 1200: Aggiornamento Firmware

□ Aggiornamento Firmware:

The screenshot displays the Cisco AP 1200 web interface during a firmware upgrade. A modal dialog box is centered on the screen, titled "Please wait...". The dialog contains the text: "The system is upgrading the software and restarting. This should take between 5 and 15 minutes depending on your network speed." Below this text is a progress indicator showing "00:15 time elapsed".

The background interface shows the "TFTP Upgrade" configuration page. The page title is "TFTP Upgrade" and it includes a "TFTP File Server" field with the value "192.168.10.10" and a "(server name or IP address)" label. Below this is the "Upgrade System Software Tar File" section, which includes an "Upgrade" button and a text field containing "c1200-k9w7-tar.123-2.JA.tar" with a "(path/filename)" label. The page also lists several software versions: "c1200-k9w7-tar.122-11.JA", "12.2(11)JA", and "12.2(8)JA".

The browser window title is "Status Window for Software Upgrade". The browser address bar shows "http://192.168.10.10". The browser's navigation bar includes "Back", "Forward", "Reload", and "Stop" buttons. The browser's menu bar includes "Home", "Support", "Shop", "Products", and "Training".

The page footer includes a "Close Window" button and a "Copyright" notice.

AP 1200: Password Administrator

- **Si possono avere più utenti con diversi diritti:**

The screenshot displays the configuration page for a Cisco Aironet 1200 Series Access Point. The page title is "Cisco Aironet 1200 Series Access Point". The hostname is "CISCO1200-NetworkLab" and the uptime is "2 da".

The left sidebar contains a navigation menu with the following items:

- HOME
- PRESS SET-UP
- PRESS SECURITY
- WORK MAP +
- SOCIATION +
- WORK +
- ERFACES +
- SECURITY
- Admin Access
- Encryption Manager
- SSID Manager
- Server Manager
- Local RADIUS Server
- Advanced Security
- VICES +
- TELESS SERVICES +
- STEM SOFTWARE +
- ENT LOG +

The main content area is titled "Security: Admin Access". It contains the following sections:

- Administrator Authenticated by:** A radio button selection with four options:
 - Default Authentication (Global Password)
 - Local User List Only (Individual Passwords)
 - Authentication Server Only
 - Authentication Server if not found in Local ListAn "Apply" button is located at the bottom right of this section.
- Default Authentication (Global Password):** This section contains two password fields:
 - Default Authentication Password: [*****]
 - Confirm Authentication Password: [*****]An "Apply" button is located at the bottom right of this section.
- Local User List (Individual Passwords):** This section contains a "User List" table with the following columns: Username, Password, Confirm Password, and Capability Settings.
 - User List:** A list box containing "Cisco" with a "Delete" button below it.
 - Username:** [Cisco]
 - Password:** [*****]
 - Confirm Password:** []
 - Capability Settings:** Read-Only Read-WriteAn "Apply" button is located at the bottom right of this section.

AP 1200: Configurazione Wireless

□ **Ruolo in una rete Wireless:**

- Root o repeater

□ **Speed:**

- Basic: traffico unicast e multicast, utilizzate dalla velocità più alta alla più bassa. Almeno una deve essere settata.
- Enabled: solo traffico unicast
- Disabled: non utilizzabile

□ **Power:**

- Si può anche limitare la potenza (in trasmissione) dei client (estensioni CISCO).

AP 1200: Configurazione Wireless

▣ Configurazione parametri base:

The screenshot shows the configuration page for the Radio0-802.11B interface. The page is divided into several sections: RADIO0-802.11B STATUS, DETAILED STATUS, SETTINGS, and CARRIER BUSY TEST. The current page is the SETTINGS section. The hostname is CISCO1200-NetworkLab and the uptime is 3 minutes. The main heading is "Network Interfaces: Radio0-802.11B Settings".

Enable Radio: Enable Disable

Current Status (Software/Hardware): Enabled ↑ Up ↑

Role in Radio Network: (Fallback mode upon loss of Ethernet connection)

- Access Point Root (Fallback to Radio Island)
- Access Point Root (Fallback to Radio Shutdown)
- Access Point Root (Fallback to Repeater)
- Repeater Non-Root

Data Rates: Best Range Best Throughput

Data Rate	Require	Enable	Disable
1.0Mb/sec	<input checked="" type="radio"/> Require	<input type="radio"/> Enable	<input type="radio"/> Disable
2.0Mb/sec	<input checked="" type="radio"/> Require	<input type="radio"/> Enable	<input type="radio"/> Disable
5.5Mb/sec	<input checked="" type="radio"/> Require	<input type="radio"/> Enable	<input type="radio"/> Disable
11.0Mb/sec	<input checked="" type="radio"/> Require	<input type="radio"/> Enable	<input type="radio"/> Disable

Transmitter Power (mW): 1 5 20 30 50 Max [Power Translation Table \(mW/dB\)](#)

Limit Client Power (mW): 1 5 20 30 50 Max

Default Radio Channel: Least Congested Frequency Channel 10 2457 MHz

Least Congested Channel Search: (Use Only Selected Channels)

- Channel 1 - 2412 MHz
- Channel 2 - 2417 MHz
- Channel 3 - 2422 MHz
- Channel 4 - 2427 MHz
- Channel 5 - 2432 MHz
- Channel 6 - 2437 MHz
- Channel 7 - 2442 MHz
- Channel 8 - 2447 MHz
- Channel 9 - 2452 MHz
- Channel 10 - 2457 MHz

AP 1200: Configurazione Wireless

□ **World Mode:**

- I client possono ricevere informazioni sui setting "nazionali". Legacy per compatibilità CISCO, 802.11d nuovo standard

□ **Antenna:**

- Diversity: vengono usate ambedue le antenne e scelta quella che riceve il miglior segnale

□ **Encapsulation:**

- Per gestire i pacchetti non 802.3 questi vanno incapsulati. RFC1042 interoperabilità con altri, 802.1H ottimizzato per CISCO

AP 1200: Configurazione Wireless

□ **RTS:**

- Valori bassi in particolare se non tutti i clienti riescono a sentirsi fra loro

□ **Fragmentation:**

- Valori bassi se area disturbata o con qualità bassa della trasmissione

□ **Estensioni proprietarie CISCO:**

- Utilizzate per supportare features speciali

AP 1200: Configurazione Wireless

□ Configurazione parametri base:

World Mode Multi-Domain Operation:	<input type="radio"/> Disable	<input type="radio"/> Legacy	<input checked="" type="radio"/> Dot11d
Country Code:	Italy	<input checked="" type="checkbox"/> Indoor	<input checked="" type="checkbox"/> Outdoor
Radio Preamble:	<input checked="" type="radio"/> Short	<input type="radio"/> Long	
Receive Antenna:	<input checked="" type="radio"/> Diversity	<input type="radio"/> Left (Secondary)	<input type="radio"/> Right (Primary)
Transmit Antenna:	<input checked="" type="radio"/> Diversity	<input type="radio"/> Left (Secondary)	<input type="radio"/> Right (Primary)
External Antenna Configuration:	<input type="radio"/> Enable	<input checked="" type="radio"/> Disable	
	Antenna Gain(dB):	DISABLED (-128 - 128)	
Aironet Extensions:	<input checked="" type="radio"/> Enable	<input type="radio"/> Disable	
Ethernet Encapsulation Transform:	<input checked="" type="radio"/> RFC1042	<input type="radio"/> 802.1H	
Reliable Multicast to WGB:	<input checked="" type="radio"/> Disable	<input type="radio"/> Enable	
Public Secure Packet Forwarding:	<input type="radio"/> Enable	<input checked="" type="radio"/> Disable	
Beacon Period:	100 (20-4000 Kusec)	Data Beacon Rate (DTIM):	2 (1-100)
Max. Data Retries:	64 (1-128)	RTS Max. Retries:	64 (1-128)
Fragmentation Threshold:	2346 (256-2346)	RTS Threshold:	2312 (0-2347)
Repeater Parent AP Timeout:	0 (0-65535 sec)		
Repeater Parent AP MAC 1 (optional):	(HHHH.HHHH.HHHH)		
Repeater Parent AP MAC 2 (optional):	(HHHH.HHHH.HHHH)		
Repeater Parent AP MAC 3 (optional):	(HHHH.HHHH.HHHH)		
Repeater Parent AP MAC 4 (optional):	(HHHH.HHHH.HHHH)		

AP 1200: Configurazione Wireless

▣ Selezione Canale:

- Si può far selezionare in automatico dall'AP
- Si può fissare manualmente
- Si può fare un survey per determinare lo stato dei canali nell'area

The screenshot displays the configuration page for a Cisco Aironet 1200 Series Access Point. The page title is "Cisco Aironet 1200 Series Access Point". The navigation menu on the left includes: HOME, EXPRESS SET-UP, EXPRESS SECURITY, NETWORK MAP (+), ASSOCIATION (+), NETWORK INTERFACES, IP Address, FastEthernet, Radio0-802.11B, Radio1-not installed, SECURITY (+), SERVICES (+), WIRELESS SERVICES (+), SYSTEM SOFTWARE (+), and EVENT LOG (+). The main content area shows the "RADIO0-802.11B STATUS" tab selected. Below the navigation, the hostname is "CISCO1200-NetworkLab" and the uptime is "CISCO1200-NetworkLab uptime i". The "Carrier Busy Test" section has a "Start" button. Below it, the "Carrier Busy Test Output" table shows the following data:

Frequency	Carrier Busy %
2412	2
2417	2
2422	1
2427	0
2432	0
2437	0
2442	0
2447	0
2452	0
2457	0
2462	1
2467	1
2472	1

AP 1200: Server Radius

□ **Configurazione Base:**

- Autenticazione MAC address clients
- IP server, porte per autenticazione ed accounting
- Password condivisa fra radius server e AP

AP 1200: Server Radius

▣ Configurazione Radius Server:

The screenshot displays the configuration page for a Cisco Aironet 1200 Series Access Point, specifically the 'Server Manager' section under 'GLOBAL PROPERTIES'. The page is titled 'Cisco Aironet 1200 Series Access Point' and shows the hostname 'CISCO1200-NetworkLab' and a uptime of 50 minutes.

The left sidebar contains a navigation menu with the following items: HOME, EXPRESS SET-UP, EXPRESS SECURITY, NETWORK MAP (+), ASSOCIATION (+), NETWORK INTERFACES (+), SECURITY, Admin Access, Encryption Manager, SSID Manager, Server Manager, Local RADIUS Server, Advanced Security, SERVICES (+), WIRELESS SERVICES (+), SYSTEM SOFTWARE (+), and EVENT LOG (+).

The main configuration area is divided into several sections:

- Security: Server Manager**
 - Backup RADIUS Server**
 - Backup RADIUS Server: (Hostname or IP Address)
 - Shared Secret:
 - Buttons: Apply, Delete, Cancel
 - Corporate Servers**
 - Current Server List**
 - Filter: RADIUS
 - Server List: (Selected), (Visible)
 - Buttons: Delete
 - Server: (Hostname or IP Address)
 - Shared Secret:
 - Authentication Port (optional): (0-65536)
 - Accounting Port (optional): (0-65536)
 - Buttons: Apply, Cancel
 - Default Server Priorities**
 - EAP Authentication**
 - Priority 1:
 - Priority 2:
 - Priority 3:
 - MAC Authentication**
 - Priority 1:
 - Priority 2:
 - Priority 3:
 - Accounting**
 - Priority 1:
 - Priority 2:
 - Priority 3:
 - Admin Authentication (RADIUS)**
 - Priority 1:
 - Priority 2:
 - Admin Authentication (TACACS+)**
 - Priority 1:
 - Priority 2:

AP 1200: SSID e Autenticazione

□ **SSID:**

- Si definisce l'SSID. Default tsunami
- Guest SSID: è quello che viene annunciato

□ **Tipi di autenticazione:**

- Open: tutti i device si possono autenticare ma comunicano solo se corrisponde la chiave WEP
- Shared: prevede scambi di un messaggio in chiaro e crittato. Non sicuro.
- EAP: la più sicura con mutua autenticazione

□ **Autenticazione MAC:**

- Open authentication → "With MAC Authentication"

AP 1200: SSID e Autenticazione

□ SSID e Radius Server:

- EXPRESS SECURITY
- NETWORK MAP +
- ASSOCIATION +
- NETWORK INTERFACES +
- SECURITY
 - Admin Access
 - Encryption Manager
 - SSID Manager**
 - Server Manager
 - Local RADIUS Server
 - Advanced Security
- SERVICES +
- WIRELESS SERVICES +
- SYSTEM SOFTWARE +
- EVENT LOG +

Security: SSID Manager

SSID Properties

Current SSID List

< NEW >	SSID:	WILMA-LAB
WILMA-LAB	VLAN:	< NONE > Define VLANs
	Network ID:	<input type="text"/> (0-4096)

Authentication Settings

Authentication Methods Accepted:

<input checked="" type="checkbox"/> Open Authentication:	<input type="text" value="with MAC Authentication"/>
<input type="checkbox"/> Shared Authentication:	<input type="text" value="< NO ADDITION >"/>
<input type="checkbox"/> Network EAP:	<input type="text" value="< NO ADDITION >"/>

Server Priorities:

EAP Authentication Servers	MAC Authentication Servers
<input checked="" type="radio"/> Use Defaults Define Defaults	<input checked="" type="radio"/> Use Defaults Define Defaults
<input type="radio"/> Customize	<input type="radio"/> Customize
Priority 1: <input type="text" value="< NONE >"/>	Priority 1: <input type="text" value="< NONE >"/>
Priority 2: <input type="text" value="< NONE >"/>	Priority 2: <input type="text" value="< NONE >"/>
Priority 3: <input type="text" value="< NONE >"/>	Priority 3: <input type="text" value="< NONE >"/>

AP 1200: SSID e Autenticazione

□ MAC Address Authentication:

The screenshot shows the configuration page for a Cisco Aironet 1200 Series Access Point. The page title is "Cisco Aironet 1200 Series Access Point" and the hostname is "CISCO1200-NetworkLab". The page is divided into three tabs: "MAC ADDRESS AUTHENTICATION", "TIMERS", and "ASSOCIATION ACCESS LIST". The "MAC ADDRESS AUTHENTICATION" tab is active.

The page is organized into a sidebar on the left and a main content area on the right. The sidebar contains the following menu items:

- HOME
- EXPRESS SET-UP
- EXPRESS SECURITY
- NETWORK MAP +
- ASSOCIATION +
- NETWORK INTERFACES +
- SECURITY
 - Admin Access
 - Encryption Manager
 - SSID Manager
 - Server Manager
 - Local RADIUS Server
 - Advanced Security
- SERVICES +
- WIRELESS SERVICES +
- SYSTEM SOFTWARE +
- EVENT LOG +

The main content area is titled "Security: Advanced Security- MAC Address Authentication" and "MAC Address Authentication". It contains the following sections:

MAC Addresses Authenticated by:

- Local List Only
- Authentication Server Only
- Authentication Server if not found in Local List

Local MAC Address List

Local List: [Empty list box] [Delete]

New MAC Address: [Input field] (HHHH.HHHH.HHHH)

At the bottom of the page, there is a "Close Window" button.

AP 1200: SSID e Autenticazione

MAC Address Authentication:

The screenshot displays the Cisco Aironet 1200 Series Access Point configuration interface. The page title is "Cisco Aironet 1200 Series Access Point". The hostname is "CISCO1200-NetworkLab" and the uptime is "3 hours, 25 minutes".

The "Event Log" section shows a table of events. The "Start Display at Index" is 1 and the "Max Number of Events to Display" is 20. The events are as follows:

Index	Time	Severity	Description
1	Mar 1 03:25:19.858	Information	Interface Dot11Radio0, Station WILMA-LAPTOP2 0002.8a9f.1ead Reassociated KEY_MGMT[NONE]
2	Mar 1 03:25:14.174	Debugging	Station 0002.8a9f.1ead Authentication failed
3	Mar 1 03:25:07.831	Debugging	Station 0002.8a9f.1ead Authentication failed
4	Mar 1 03:25:01.448	Debugging	Station 0002.8a9f.1ead Authentication failed
5	Mar 1 03:24:55.125	Debugging	Station 0002.8a9f.1ead Authentication failed
6	Mar 1 03:24:49.843	Debugging	Station 0002.8a9f.1ead Authentication failed
7	Mar 1 03:24:43.529	Debugging	Station 0002.8a9f.1ead Authentication failed
8	Mar 1 03:24:37.186	Debugging	Station 0002.8a9f.1ead Authentication failed
9	Mar 1 03:24:30.863	Debugging	Station 0002.8a9f.1ead Authentication failed
10	Mar 1 03:24:24.480	Debugging	Station 0002.8a9f.1ead Authentication failed
11	Mar 1 03:24:18.097	Debugging	Station 0002.8a9f.1ead Authentication failed
12	Mar 1 03:24:12.805	Debugging	Station 0002.8a9f.1ead Authentication failed
13	Mar 1 03:24:06.501	Debugging	Station 0002.8a9f.1ead Authentication failed
14	Mar 1 03:24:00.178	Debugging	Station 0002.8a9f.1ead Authentication failed
15	Mar 1 03:23:54.836	Debugging	Station 0002.8a9f.1ead Authentication failed
16	Mar 1 03:23:48.493	Debugging	Station 0002.8a9f.1ead Authentication failed
17	Mar 1 03:23:42.130	Debugging	Station 0002.8a9f.1ead Authentication failed

The terminal window shows the following output:

```
root@radiuswn:~# /etc/rc.d/init.d/radiusd restart
Stopping RADIUS server: [ OK ]
Starting RADIUS server: [ OK ]
[root@radiuswn root]# tail -f /var/log/radius/radius.log
Tue Jan 25 14:01:28 2005 : Auth: Login incorrect: [00028a9f1ead/00028a9f1ead] (from client APCisco1 port 325 cli 0002.8a9f.1ead)
Tue Jan 25 14:01:30 2005 : Auth: Login incorrect: [00028a9f1ead/00028a9f1ead] (from client APCisco1 port 326 cli 0002.8a9f.1ead)
Tue Jan 25 14:01:35 2005 : Auth: Login incorrect: [00028a9f1ead/00028a9f1ead] (from client APCisco1 port 327 cli 0002.8a9f.1ead)
Tue Jan 25 14:01:37 2005 : Auth: Login incorrect: [00028a9f1ead/00028a9f1ead] (from client APCisco1 port 328 cli 0002.8a9f.1ead)
Tue Jan 25 14:01:41 2005 : Info: Using deprecated naslist file. Support for this will go away soon.
Tue Jan 25 14:01:41 2005 : Info: Using deprecated clients file. Support for this will go away soon.
Tue Jan 25 14:01:41 2005 : Info: Using deprecated realms file. Support for this will go away soon.
Tue Jan 25 14:01:41 2005 : Info: Listening on IP address *, ports 1812/udp and 1813/udp, with proxy on 1814/udp.
Tue Jan 25 14:01:41 2005 : Info: Ready to process requests.
Tue Jan 25 14:01:42 2005 : Auth: Login OK: [00028a9f1ead] (from client APCisco1 port 328 cli 0002.8a9f.1ead)
```

AP 1200: Multi SSID e VLAN

□ Più SSID assegnati a differenti VLAN:

- Si possono definire più SSID
- Al più uno solo è annunciato
- Ciascun SSID può essere assegnato ad una differente VLAN
- Policy di autenticazione e di crittazione differenti per ciascun SSID
- È possibile configurare il radius server in modo tale che sia il sistema ad assegnare l'SSID/VLAN all'utente

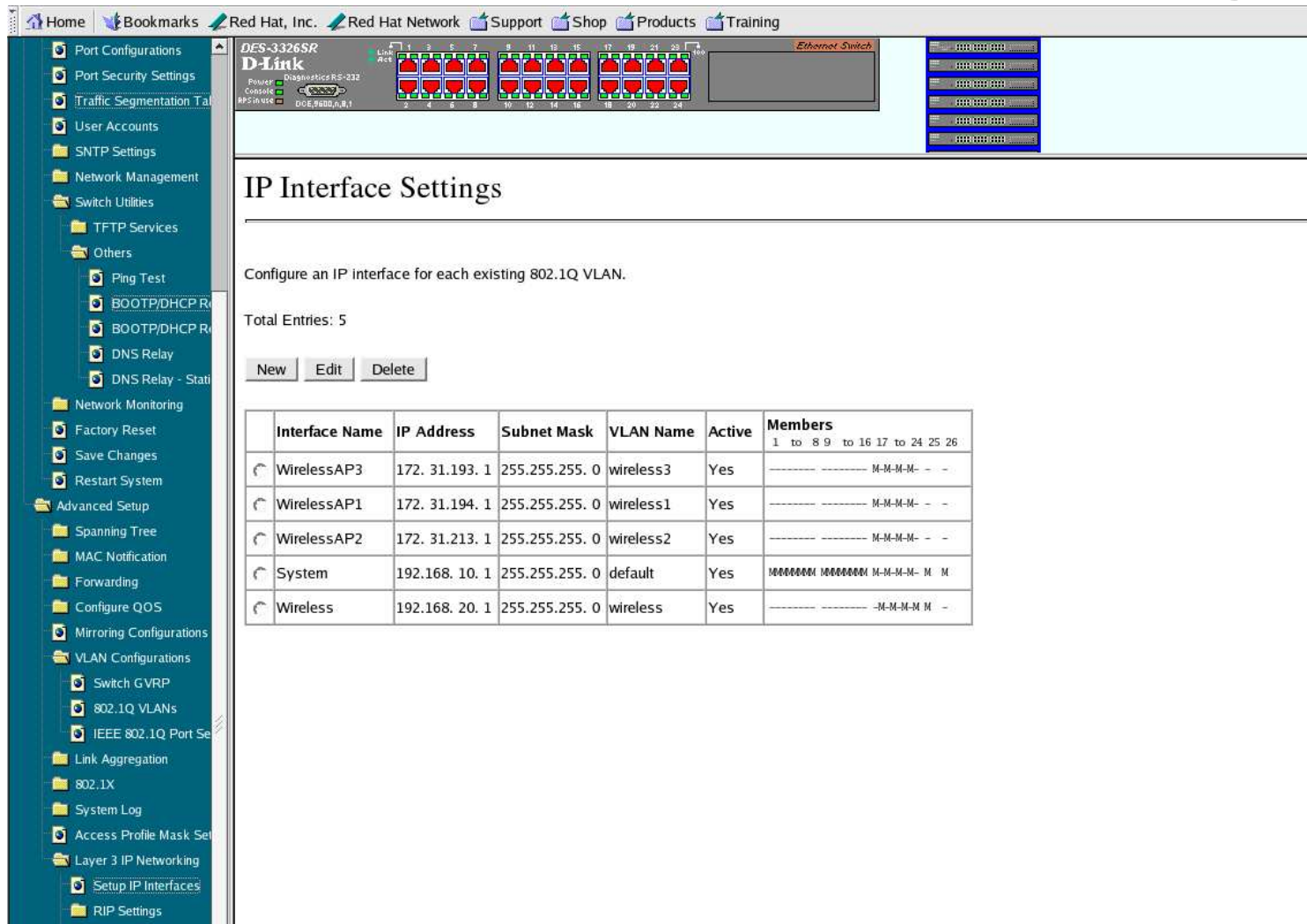
AP 1200: Multi SSID e VLAN

□ **Configurazione Switch Layer 3:**

- Supporto per VLAN abilitato
- Supporto per dhcp relay abilitato
- Tutte le VLAN supportate dall'AP devono essere definite
- Porta a cui è connesso l'AP taggata per tutte le VLAN supportate dall'AP, untagged la VLAN di default

AP 1200: SSID e Autenticazione

Switch Layer 3: Interface Settings



The screenshot shows the configuration interface for a D-Link DES-3326SR switch. The left sidebar contains a navigation tree with categories like Port Configurations, Network Management, and Layer 3 IP Networking. The main content area is titled "IP Interface Settings" and includes instructions to configure IP interfaces for existing 802.1Q VLANs. A table below lists the configured interfaces.

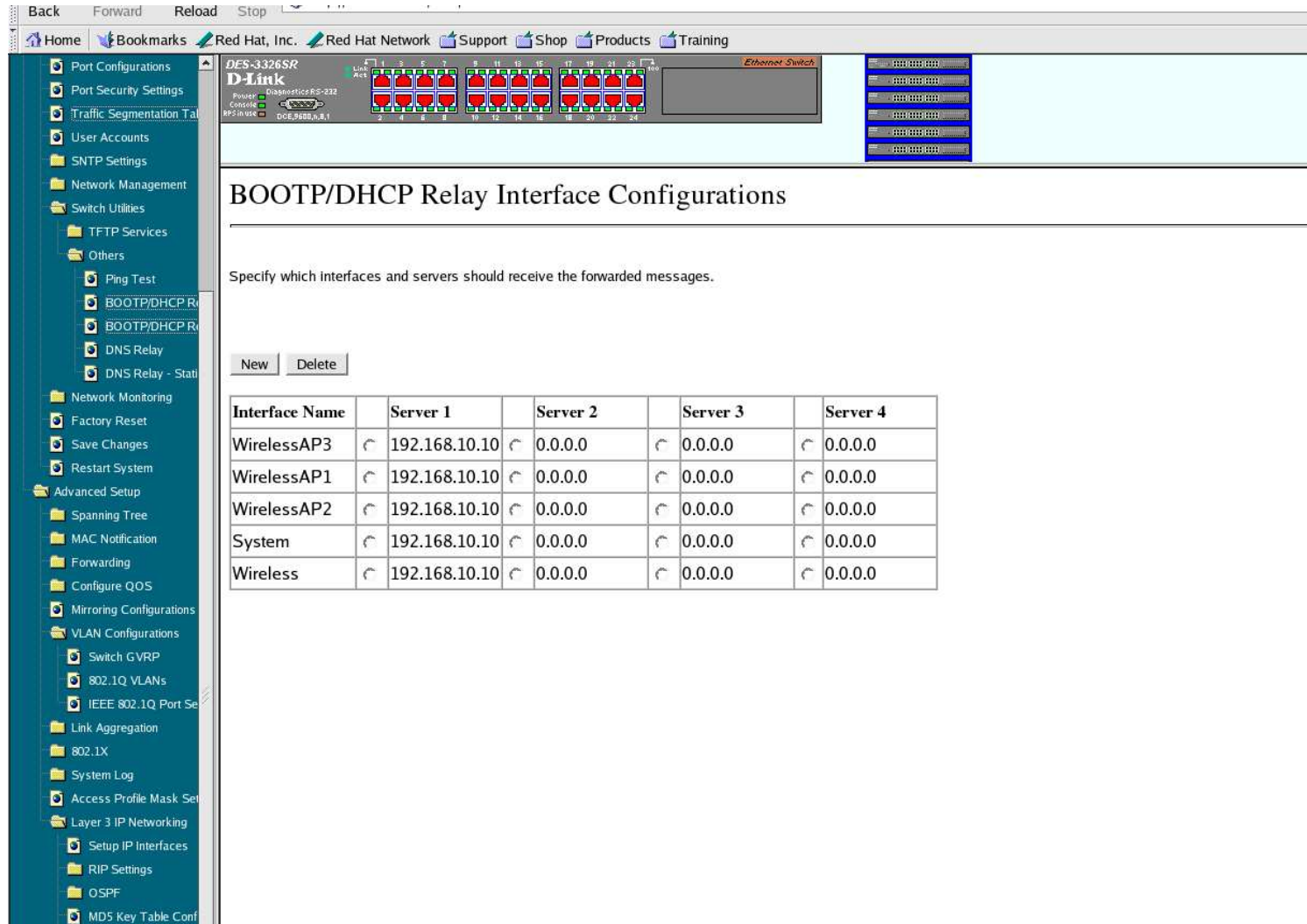
Configure an IP interface for each existing 802.1Q VLAN.

Total Entries: 5

Interface Name	IP Address	Subnet Mask	VLAN Name	Active	Members
WirelessAP3	172.31.193.1	255.255.255.0	wireless3	Yes	----- M-M-M- - -
WirelessAP1	172.31.194.1	255.255.255.0	wireless1	Yes	----- M-M-M- - -
WirelessAP2	172.31.213.1	255.255.255.0	wireless2	Yes	----- M-M-M- - -
System	192.168.10.1	255.255.255.0	default	Yes	100000001 100000001 M-M-M-M M M
Wireless	192.168.20.1	255.255.255.0	wireless	Yes	----- -M-M-M M M

AP 1200: SSID e Autenticazione

Switch Layer 3: Dhcp Relay



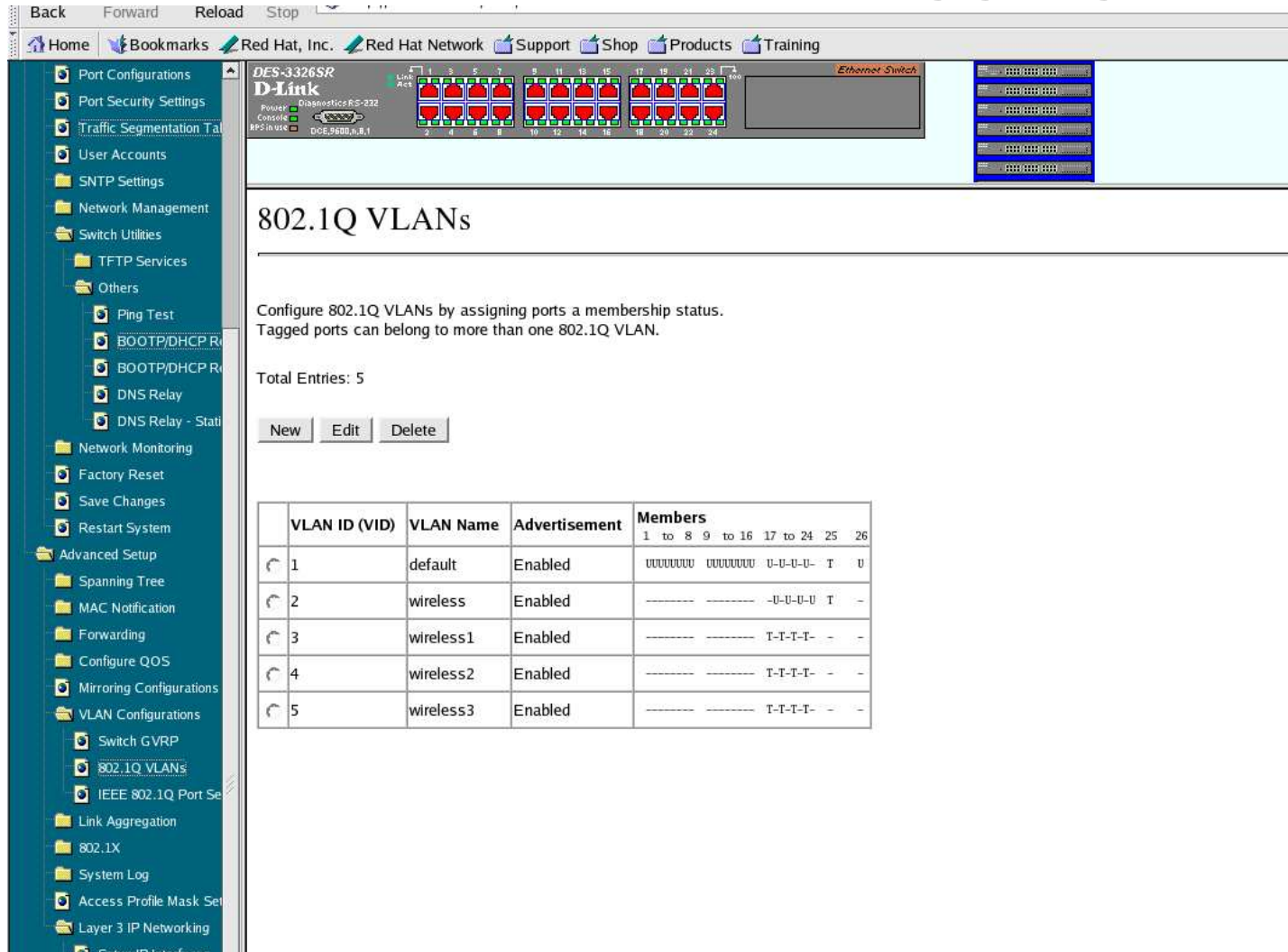
The screenshot shows a web-based configuration interface for a D-Link DES-3326SR switch. The left sidebar contains a navigation menu with categories like Port Configurations, Network Management, and Layer 3 IP Networking. The main content area is titled "BOOTP/DHCP Relay Interface Configurations" and includes a table for specifying which interfaces and servers should receive forwarded messages.

Specify which interfaces and servers should receive the forwarded messages.

Interface Name	Server 1	Server 2	Server 3	Server 4
WirelessAP3	192.168.10.10	0.0.0.0	0.0.0.0	0.0.0.0
WirelessAP1	192.168.10.10	0.0.0.0	0.0.0.0	0.0.0.0
WirelessAP2	192.168.10.10	0.0.0.0	0.0.0.0	0.0.0.0
System	192.168.10.10	0.0.0.0	0.0.0.0	0.0.0.0
Wireless	192.168.10.10	0.0.0.0	0.0.0.0	0.0.0.0

AP 1200: SSID e Autenticazione

Switch Layer 3: Port Tagging



The screenshot shows the web interface of a D-Link DES-3326SR switch. The left sidebar contains a navigation menu with categories like 'Port Configurations', 'Traffic Segmentation', 'User Accounts', 'Network Management', and 'VLAN Configurations'. The main content area is titled '802.1Q VLANs' and includes a diagram of the switch's 24 ports, a text description of VLAN configuration, and a table of existing VLAN entries.

802.1Q VLANs

Configure 802.1Q VLANs by assigning ports a membership status. Tagged ports can belong to more than one 802.1Q VLAN.

Total Entries: 5

VLAN ID (VID)	VLAN Name	Advertisement	Members
1	default	Enabled	1 to 8 9 to 16 17 to 24 25 26
2	wireless	Enabled	----- -U-U-U-U T -
3	wireless1	Enabled	----- T-T-T-T- - -
4	wireless2	Enabled	----- T-T-T-T- - -
5	wireless3	Enabled	----- T-T-T-T- - -

AP 1200: Multi SSID e VLAN

□ Definizione VLAN:

- Deve rispecchiare la configurazione dello switch: utilizzare gli stessi ID

The screenshot displays the configuration interface for a Cisco Aironet 1200 Series Access Point. The page title is "Cisco Aironet 1200 Series Access Point". The hostname is "CISCO1200-NetworkLab" and the uptime is "2 days, 1 hour, 35 minute".

The configuration is organized into sections:

- Services: VLAN**
 - Global VLAN Properties**
 - Current Native VLAN: Management VLAN 1
 - Assigned VLANs**
 - Current VLAN List**: A list box containing "< NEW >", "VLAN 3", "VLAN 4", and "VLAN 5". A "Delete" button is next to the list.
 - Create VLAN**
 - VLAN ID: 3 (1-4095)
 - VLAN Name (optional): wireless3
 - Native VLAN
 - Enable Public Secure Packet Forwarding
 - SSID: WILMA-LAB (with a "Define SSID" link)

At the bottom, there is an "Apply" button and a "Cancel" button. Below the configuration area is a section for "VLAN Information" with a dropdown menu set to "VLAN 4".

AP 1200: Multi SSID e VLAN

□ **Definizione degli SSID:**

- Definire SSID
- Associare la VLAN
 - VLAN è il numero della VLAN definita
 - Network ID: legato alla gestione di reti avanzate
- Definire il metodo di autenticazione
- Definire se fare l'accounting

AP 1200: SSID e Autenticazione

□ Definizione SSID

INTERNET
SECURITY
Admin Access
Encryption Manager
SSID Manager
Server Manager
Local RADIUS Server
Advanced Security
SERVICES +
WIRELESS SERVICES +
SYSTEM SOFTWARE +
EVENT LOG +

Current SSID List

< NEW >
CREATE-NET-TEST
WILMA-LAB
WILMA-LAB-TEST

Delete

SSID: CREATE-NET-TEST

VLAN: 4 [Define VLANs](#)

Network ID: 4 (0-4096)

Authentication Settings

Authentication Methods Accepted:

Open Authentication: with MAC Authentication

Shared Authentication: < NO ADDITION->

Network EAP: < NO ADDITION >

Server Priorities:

EAP Authentication Servers

Use Defaults [Define Defaults](#)

Customize

Priority 1: < NONE >

Priority 2: < NONE >

Priority 3: < NONE >

MAC Authentication Servers

Use Defaults [Define Defaults](#)

Customize

Priority 1: < NONE >

Priority 2: < NONE >

Priority 3: < NONE >

Authenticated Key Management

Key Management: < NONE > CCKM WPA

WPA Pre-shared Key: ASCII Hexadecimal

Accounting Settings

Enable Accounting

Accounting Server Priorities:

AP 1200: SSID e Autenticazione

□ Definizione Crittografia

The screenshot shows the configuration interface for a Cisco Aironet 1200 Series Access Point. The page title is "Cisco Aironet 1200 Series Access Point". The hostname is "CISCO1200-NetworkLab" and the uptime is "2 days, 49 minutes".

The main configuration area is titled "Security: Encryption Manager". It includes a section for "Set Encryption Mode and Keys for VLAN:" with a dropdown menu set to "3" and a link "Define VLANs".

The "Encryption Modes" section has three radio buttons: "None", "WEP Encryption", and "Cipher". "WEP Encryption" is selected. It has a "Mandatory" dropdown and "Cisco Compliant TKIP Features" with checkboxes for "Enable Message Integrity Check (MIC)" and "Enable Per Packet Keying (PPK)".

The "Cipher" mode has a "WEP 128 bit" dropdown.

The "Encryption Keys" section is a table with four columns: "Encryption Key", "Transmit Key", "Encryption Key (Hexadecimal)", and "Key Size".

Encryption Key	Transmit Key	Encryption Key (Hexadecimal)	Key Size
Encryption Key 1:	<input checked="" type="radio"/>	<input type="text" value="*****"/>	128 bit
Encryption Key 2:	<input type="radio"/>	<input type="text"/>	128 bit
Encryption Key 3:	<input type="radio"/>	<input type="text"/>	128 bit
Encryption Key 4:	<input type="radio"/>	<input type="text"/>	128 bit

The "Global Properties" section includes "Broadcast Key Rotation Interval:" with radio buttons for "Disable Rotation" and "Enable Rotation with Interval: [DISABLED] (10-10000000 sec)". It also has "WPA Group Key Update:" with checkboxes for "Enable Group Key Update On Membership Termination" and "Enable Group Key Update On Member's Capability Change".

AP 1200: SSID e Autenticazione

□ Configurazione finale SSID/VLAN

The screenshot displays the configuration page for a Cisco Aironet 1200 Series Access Point. The page title is "Cisco Aironet 1200 Series Access Point". The hostname is "CISCO1200-NetworkLab" and the uptime is "2 days, 51 minute".

The left sidebar shows the navigation menu with the following items: HOME, EXPRESS SET-UP, EXPRESS SECURITY, NETWORK MAP (+), ASSOCIATION (+), NETWORK INTERFACES (+), SECURITY, Admin Access, Encryption Manager, SSID Manager, Server Manager, Local RADIUS Server, Advanced Security, SERVICES (+), WIRELESS SERVICES (+), SYSTEM SOFTWARE (+), and EVENT LOG (+).

The main content area is divided into several sections:

- Security Summary**
 - Administrators**

Username	Read-Only	Read-Write
Cisco	✓	
 - Radio0-802.11B SSIDs**

SSID	VLAN	Open	Shared	Network EAP
CREATE-NET-TEST	4	with MAC		
WILMA-LAB	3	with MAC		
WILMA-LAB-TEST	5	with MAC		
 - Encryption Settings**

VLAN	Encryption Mode	WEP		Cipher				Key Rotation
		MIC	PPK	TKIP	WEP40bit	WEP128bit	CKIP	
3	WEP-Mandatory							
4	None							
5	None							
 - Server-Based Security**

Server Name/IP Address	Type	EAP	MAC	Proxy Mobile IP	Admin	Accounting
192.168.10.30	RADIUS		✓			✓

AP 1200: Multi SSID e VLAN

- **Autenticazione e configurazione Clients in base all'SSID:**
 - Assegnati a VLAN differenti
 - Devono avere la crittografia corrispondente
 - Ricevono IP differenti

AP 1200: SSID e Autenticazione

□ Clients assegnati a diversi SSID

The screenshot shows the configuration page for a Cisco Aironet 1200 Series Access Point. The page title is "Cisco Aironet 1200 Series Access Point". The hostname is "CISCO1200-NetworkLab" and the uptime is "2 days, 1 hour, 8 minutes".

The "Association" section shows the following information:

- Clients: 3
- Repeaters: 0

The "View" section shows "Client" and "Repeater" checkboxes, both of which are checked. An "Apply" button is present.

The "Radio0-802.11B" section shows the following SSID associations:

SSID CREATE-NET-TEST :						
Device Type	Name	IP Address	MAC Address	State	Parent	VLAN
unknown	-	172.31.213.250	0090.4b64.9150	MAC-Associated	self	4

SSID WILMA-LAB :						
Device Type	Name	IP Address	MAC Address	State	Parent	VLAN
unknown	-	172.31.194.251	000b.cd8d.303b	MAC-Associated	self	3

SSID WILMA-LAB-TEST :						
Device Type	Name	IP Address	MAC Address	State	Parent	VLAN
unknown	-	172.31.193.254	0009.5b54.78ea	MAC-Associated	self	5

Close Window Copyright (c) 1997-2004 by Cisco Systems, Inc.

AP 1200: SSID e Autenticazione

▣ Statistiche Client

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CISCO SYSTEMS

Cisco Aironet 1200 Series Access Point

STATISTICS PING/LINK TEST

Hostname: CISCO1200-NetworkLab CISCO1200-NetworkLab uptime is 2 days, 1 hour, 8 minutes

Association: Station View- Client

Station Information and Status			
MAC Address	000b.cd&d.303b	Name	NONE
IP Address	172.31.194.251	Class	unknown
Device	unknown	Software Version	NONE
CCX Version	NONE		
State	MAC-Associated	Parent	self
SSID	WILMA-LAB	VLAN	3
Hops To Infrastructure	1	Communication Over Interface	Radio0-802.11B
Clients Associated	0	Repeaters Associated	0
Key Mgmt type	NONE	Encryption	WEP
Current Rate (Mb/sec)	11.0	Capability	
Supported Rates(Mb/sec)	1.0, 2.0, 5.5, 11.0	Association Id	87
Signal Strength (dBm)	-40	Connected For (sec)	580
Signal Quality (%)	77	Activity TimeOut (sec)	44
Power-save	Off	Last Activity (sec)	16
Receive/Transmit Statistics			
Total Packets Input	79	Total Packets Output	29
Total Bytes Input	11046	Total Bytes Output	2386
Duplicates Received	0	Maximum Data Retries	0
Decrypt Errors	0	Maximum RTS Retries	0
MIC Failed	0		
MIC Missing	0		

Deauthenticate Clear Refresh

AP 1200: Configurazione via CLI

□ Tutte le configurazioni via HTTP sono possibili via CLI:

■ show running-config

```
interface Dot11Radio0
  no ip address
  no ip route-cache
  !
  encryption vlan 3 key 1 size 128bit 7 501B2057424875554B78965D207B
  transmit-key
  encryption vlan 3 mode wep mandatory
  !
  ssid CREATE-NET-TEST
    vlan 4
    authentication open mac-address mac_methods
    accounting acct_methods
    mobility network-id 4
    information-element ssid advertisement
  !
  ssid WILMA-LAB
    vlan 3
    authentication open mac-address mac_methods
    accounting acct_methods
    mobility network-id 3
    information-element ssid advertisement
  !
  ssid WILMA-LAB-TEST
    vlan 5
    authentication open mac-address mac_methods
    accounting acct_methods
    guest-mode
    mobility network-id 5
```

AP 1200: Multi SSID e VLAN

□ **Altre configurazioni importanti:**

- Syslog
- SNMP
- QoS