Wireless Network Esercitazioni

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Installazione di un Access Point CISCO 350

Access Point: Cisco 350

- Access Point Cisco Serie 350
- Configurabili via seriale:
  - Cavo null-modem
  - Baud Rate: 9600
  - Parity: none
  - Data bit: 8
  - Stop bit: 1
  - Flow Control: none
  - Default passwd: vuota
  - Line feed con Carriage Returns

Access Point: Boot

```
Testing DRAM...
(press <esc> to bypass)
DRAM OK
Power-on reset.
Copyright 1996-2000 Cisco Systems, Inc.
Copyright 1984-2000 Wind River Systems, Inc.
System ID: 00409651F303
Motherboard: MPC855 50MHz, 8192KB FLASH, 16384KB DRAM, Revision B0
Bootstrap Ver. 1.09: FLASH, CRC 710B6415 (OK)
Initialization: OK
Memory Bank   total      used      left
  DRAM      16738168         0  16738168
  Config      524288       116    524172
  FLASH      7733248   1440032   6293216
Memory Bank:File                      address      size   encoding type  flags
  a) Config:AP Installation Key       FE020000        64  none     Key   0000
  b) Config:VAR Installation Key      FE020040        52  none     Key   0000
  c) FLASH :EnterpriseAP Sys 12.00    FE0A0000   1142188  gzip     Exec  0801
  d) FLASH :EnterpriseAP Web 12.00    FE1B6DAC    137972  .tar.gz  Web   0000
  e) FLASH :Inflate Ver. c14o         FE1D88A0      7556  gzip     Dcdr  0800
  f) FLASH :AWC PCMCIA FPGA 0.14      FE1DA624     37380  none     FPGA  0000
  g) FLASH :340 Series FWare 05.02B   FE1E3828     57412  .tar.gz  Data  0000
  h) FLASH :PC4800 Firmware 05.02B    FE1F186C     57408  .tar.gz  Data  0000
  i) FLASH :AP Installation Key       FE1FF8AC        64  none     Key   0000
  j) FLASH :VAR Installation Key      FE1FF8EC        52  none     Key   0000
Inflating "EnterpriseAP Sys 12.00"...
3127168 bytes OK
Loaded  driver for device "fec0", ifIndex=1.
Loaded  driver for device "awc0", ifIndex=2.
Configured device "fec0" as IP address "10.0.0.1", network mask 0xffffff00.
Attaching network interface lo0... done.
```

Access Point: Configurare via CLI

- L'interfaccia testuale simula quella WEB

```
AP350-51f303                Express Setup                Uptime: 00:02:05

  System [Name                ][AP350-51f303                    ]
 [Terminal Type               ][teletype]

  MAC Address                 : 00:40:96:51:f3:03

  Config. Server [Protocol    ][DHCP ]
  IP [Address                 ][10.0.0.1       ]
  IP [Subnet Mask             ][255.255.255.0  ]
  Default [Gateway            ][255.255.255.255]

 [Service Set ID (SSID)       ][tsunami                         ]
 [Role in Radio Network       ][Repeater Access Point             ]
 [Optimize Radio Network For ][Throughput]  [Hw Radio]
  Ensure Compatibility With:       [2Mb/sec Clients][_]
                                   [non-Aironet 802.11][_]

 [Security Setup]
 [SNMP Admin. Community       ][                                ]

 [Apply] [OK]   [Cancel] [Restore Defaults]
_____________________________________
[Home] - [Network] - [Associations] - [Setup] - [Logs] - [Help]
(Auto Apply On) :Top, :Up, ^R, =(Auto Apply On) :Top, :Up, ^R, =, <ENTER>, or [Link
Text]:
```

Access Point: Configurazione

- Gli AP Cisco hanno di default l'IP 10.0.0.1
- È quindi possibile raggiungerli anche via rete utilizzando un cross oppure uno switch/hub e mettendosi nella stessa sottorete
- Col software allegato c'è anche un tool per trovare gli AP installati

Access Point: Modifica IP Address

- Per assegnare un IP, utilizzando la CLI:

```
Pr n → Protocol none
Ad 192.168.91.124 → Address 192.168.91.124
G 192.168.91.1 → Gateway 192.168.91.1
```

- Per assegnare l'SSID:

```
Ser → Service Set ID (SSID) WNTEST
Ro Ro → Role in Radio Network Root Access Point
```

- Per salvare la configurazione:

```
Ap → Applay
Ad 192.168.91.124 → Address 192.168.91.124
G 192.168.91.1 → Gateway 192.168.91.1
```

Access Point: Interfaccia WEB

AP350-51f303 Express Setup - Microsoft Internet Explorer

File Edit View Favorites Tools Help

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Address http://192.168.91.124/SetExpress.shm?primaryifIndex=1 Go Links

AP350-51f303 **Express Setup**

Cisco Systems

Cisco 350 Series AP 12.00T

Home Map Help

Uptime: 00:23:45

System Name:	AP350-51f303
MAC Address:	00:40:96:51:f3:03
Configuration Server Protocol:	None
Default IP Address:	192.168.91.124
Default IP Subnet Mask:	255.255.255.0
Default Gateway:	192.168.91.1
AP Radio:	
Service Set ID (SSID):	WNTEST more...
Role in Radio Network:	Root Access Point
Optimize Radio Network For:	◉ Throughput ○ Range ○ Custom
Ensure Compatibility With:	☐ 2Mb/sec Clients ☐ non-Aironet 802.11
Security Setup	
SNMP Admin. Community:	

Apply OK Cancel Restore Defaults

[Home][Map][Login][Help]

Cisco 350 Series AP 12.00T

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credits

Internet

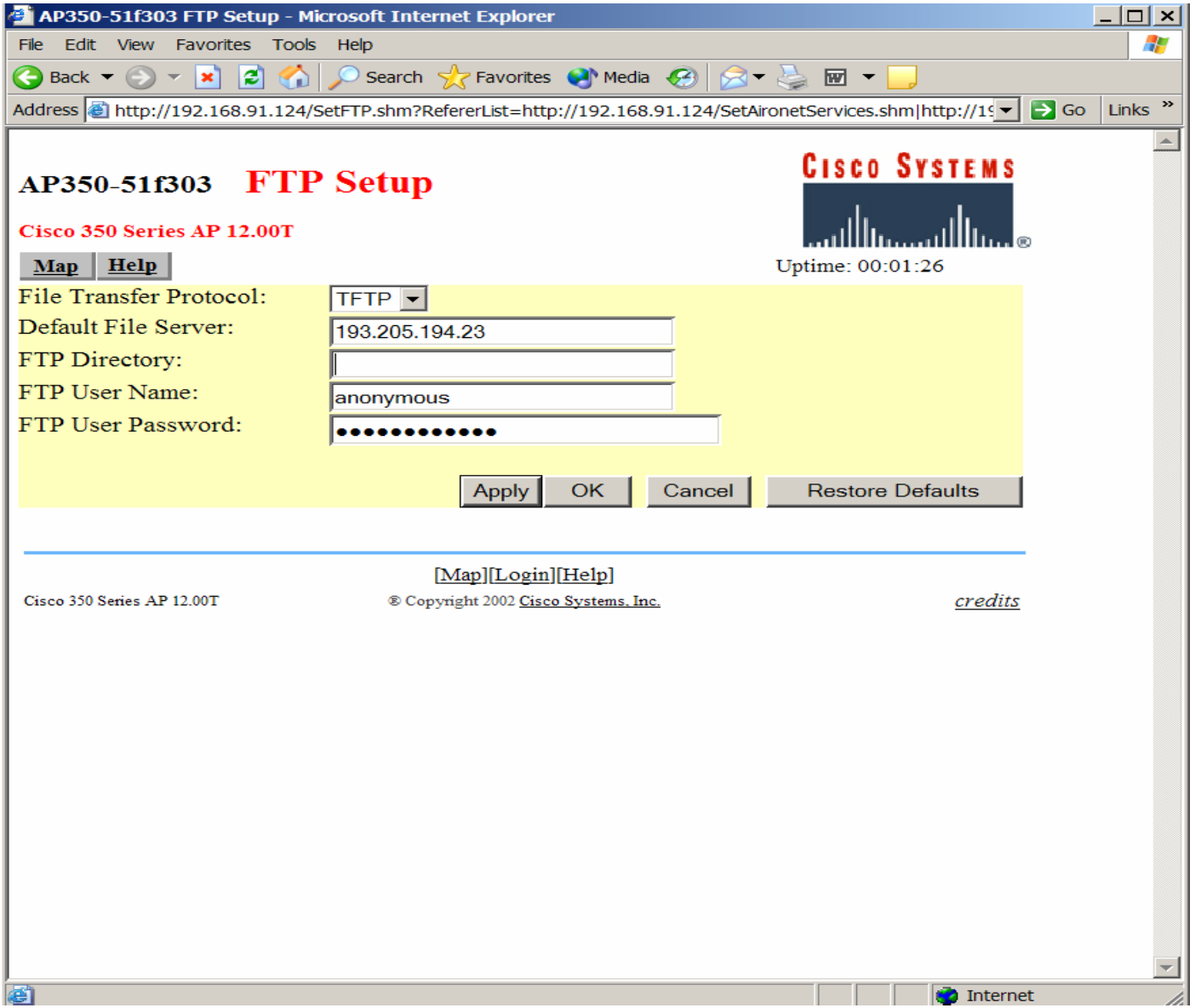
Access Point: Aggiornare il Firmware

- Il firmware è disponibile all'indirizzo:

http://www.cisco.com/public/sw-center/sw-wireless3.shtml

Per aggiornare il firmware si utilizza un server tftp (Trivial File Transfer Protocol)

Access Point: Aggiornare il Firmware



Access Point: Aggiornare il Firmware

AP350-51f303 Update All Firmware From File Server - Microsoft Internet Explorer

File Edit View Favorites Tools Help

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Address http://192.168.91.124/SetFirmwareAllFTP.shm?RefererList=http://192.168.91.124/Setup.shm Go Links

AP350-51f303 **Update All Firmware From File Server**

CISCO SYSTEMS

Cisco 350 Series AP 12.00T

Home | Map | Network | Associations | Setup | Logs | Help

Uptime: 00:36:03

Current Version of System Firmware:	12.00
Current Version of Web Pages:	12.00
Current Version of Radio Firmware:	5.02B

New File for All Firmware: Cisco/AP350.img

File Server Setup

Update From Server | Save To Server | Done | Cancel

[Map][Login][Help]

Cisco 350 Series AP 12.00T

credits

Done Internet

Access Point: Modifica IP Address

- Su questi AP si possono configurare:
  - Chiavi WEP da 40 e da 128 bit
  - La potenza trasmissiva (da 1mW a 50mW)
  - Quale antenna utilizzare in ricezione ed in trasmissione
  - Quali velocità sono richieste (basic), quali sono per unicast (yes), quali non utilizzate (no)
  - Fino a 16 SSID (utilizzando le VLAN)

Access Point: Modifica IP Address

- Altre configurazioni importanti:
  - Creare l'utente con diritti di amministrazione
  - Configurare un server con syslog o SNMP
  - Abilitare un server radius per il controllo dei MAC address
  - Abilitare un server 802.1x

Autenticazione del MAC su radius

Analisi pacchetti: ethereal

- Dump pacchetti utilizzando ethereal
- Si possono analizzare tutti i pacchetti oppure una selezione opprtuna

Autenticazione Radius

```
Frame 1 (107 bytes on wire, 107 bytes captured)
    Arrival Time: May  6, 2004 12:50:30.924943000
    Time delta from previous packet: 0.000000000 seconds
    Time since reference or first frame: 0.000000000 seconds
    Frame Number: 1
    Packet Length: 107 bytes
    Capture Length: 107 bytes
Ethernet II, Src: 00:00:cd:03:fe:7e, Dst: 00:80:5f:41:fb:95
Internet Protocol, Src Addr: 172.31.194.23 (172.31.194.23), Dst Addr:
radius.science.unitn.it (192.168.194.168)
User Datagram Protocol, Src Port: 6001 (6001), Dst Port: radius (1812)
    Source port: 6001 (6001)
    Destination port: radius (1812)
    Length: 73
    Checksum: 0x64fd (correct)
Radius Protocol
    Code: Access Request (1)
    Packet identifier: 0xbc (188)
    Length: 65
    Authenticator
    Attribute value pairs
        t:User Name(1) l:15, Value:"00028a-c1f100"
        t:User Password(2) l:18, Value:"XXXXXXXXX\000\000\000\000\000\000\000"
        t:NAS IP Address(4) l:6, Value:172.31.194.23
        t:NAS Port(5) l:6, Value:0
```

Autorizzazione Radius

```
Frame 2 (62 bytes on wire, 62 bytes captured)
    Arrival Time: May  6, 2004 12:50:30.928469000
    Time delta from previous packet: 0.003526000 seconds
    Time since reference or first frame: 0.003526000 seconds
    Frame Number: 2
    Packet Length: 62 bytes
    Capture Length: 62 bytes
Ethernet II, Src: 00:80:5f:41:fb:95, Dst: 00:00:cd:03:fe:7e
Internet Protocol, Src Addr: radius.science.unitn.it (192.168.194.168), Dst Addr:
172.31.194.23 (172.31.194.23)
User Datagram Protocol, Src Port: radius (1812), Dst Port: 6001 (6001)
    Source port: radius (1812)
    Destination port: 6001 (6001)
    Length: 28
    Checksum: 0x2b1a (correct)
Radius Protocol
    Code: Access Accept (2)
    Packet identifier: 0xbc (188)
    Length: 20
    Authenticator
```

Richiesta Accounting Radius

```
Frame 3 (132 bytes on wire, 132 bytes captured)
    Arrival Time: May  6, 2004 12:50:30.931190000
    Time delta from previous packet: 0.002721000 seconds
    Time since reference or first frame: 0.006247000 seconds
    Frame Number: 3
    Packet Length: 132 bytes
    Capture Length: 132 bytes
Ethernet II, Src: 00:00:cd:03:fe:7e, Dst: 00:80:5f:41:fb:95
Internet Protocol, Src Addr: 172.31.194.23 (172.31.194.23), Dst Addr:
radius.science.unitn.it (192.168.194.168)
User Datagram Protocol, Src Port: 6002 (6002), Dst Port: radius-acct (1813)
    Source port: 6002 (6002)
    Destination port: radius-acct (1813)
    Length: 98
    Checksum: 0xbbd9 (correct)
Radius Protocol
    Code: Accounting Request (4)
    Packet identifier: 0xbd (189)
    Length: 90
    Authenticator
    Attribute value pairs
        t:User Name(1) l:15, Value:"00028a-c1f100"
        t:Acct Session Id(44) l:15, Value:"00028a-c1f100"
        t:NAS identifier(32) l:10, Value:"Avaya-13"
        t:NAS IP Address(4) l:6, Value:172.31.194.23
        t:NAS Port(5) l:6, Value:2
        t:NAS Port Type(61) l:6, Value:Wireless IEEE 802.11(19)
        t:Acct Authentic(45) l:6, Value:Radius(1)
        t:Acct Status Type(40) l:6, Value:Start(1)
```

Ok Accounting Radius

```
Frame 4 (62 bytes on wire, 62 bytes captured)
    Arrival Time: May  6, 2004 12:50:30.935601000
    Time delta from previous packet: 0.004411000 seconds
    Time since reference or first frame: 0.010658000 seconds
    Frame Number: 4
    Packet Length: 62 bytes
    Capture Length: 62 bytes
Ethernet II, Src: 00:80:5f:41:fb:95, Dst: 00:00:cd:03:fe:7e
Internet Protocol, Src Addr: radius.science.unitn.it (192.168.194.168), Dst Addr:
172.31.194.23 (172.31.194.23)
User Datagram Protocol, Src Port: radius-acct (1813), Dst Port: 6002 (6002)
    Source port: radius-acct (1813)
    Destination port: 6002 (6002)
    Length: 28
    Checksum: 0xdd76 (correct)
Radius Protocol
    Code: Accounting Response (5)
    Packet identifier: 0xbd (189)
    Length: 20
    Authenticator
```