

# How to Use aIOS WGB with EAP–TLS Authentication in a Cisco Unified Wireless Network

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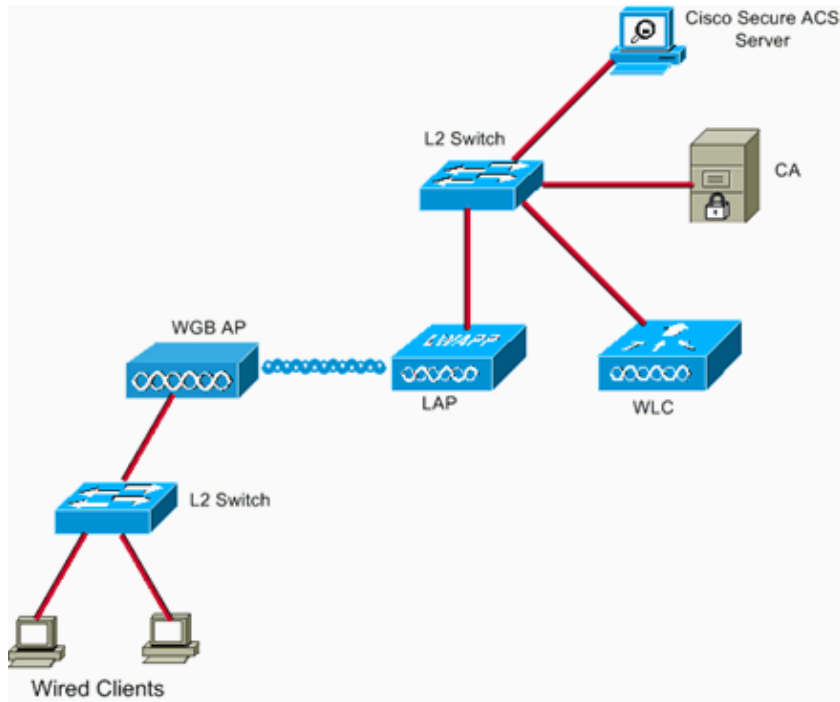
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## Introduction

This example shows how to configure and use an autonomous IOS (aIOS) AP, running in Workgroup Bridge (WGB) mode, with EAP–TLS authentication, in a Cisco Unified Wireless Network (CUWN). In this example, a Microsoft Certification Authority (Windows 2003) issued the certificates of the WGB and through the copy–and–paste method, these certificates are manually entered on the WGB. ACS acts as the RADIUS server. WPA1/TKIP encryption with 802.1X key management is used.



## Prerequisites

### Requirements

Ensure that you meet these requirements before you attempt this configuration:

- Knowledge of Cisco Autonomous solution and Cisco IOS–based Access Points.
- Knowledge of Light Weight Access Point Protocol (LWAPP)

### Components Used

The information in this document is based on these software and hardware versions:

- WGB that runs Cisco IOS® Software Release 12.4(10b)JA2

It is important to use Cisco IOS Software Release 12.4(10b)JA2 or later for these reasons:

- ◆ Cisco bug ID CSCsl85710 (registered customers only) 802.11a WGB cannot disable DFS channels or enable 'mobile station'
- ◆ Cisco bug ID CSCsl85798 (registered customers only) After DFS event, WGB does not rescan
- ◆ Cisco bug ID CSCsm37686 (registered customers only) WGB configured for TKIP–only cannot assoc to (WPA+TKIP)+(WPA2+AES)
- ◆ Cisco bug ID CSCsk85945 (registered customers only) WPA1 WGB can't associate to a WPA1+WPA2 WLAN
- ◆ Cisco bug ID CSCsk52437 (registered customers only) WGB retransmit fails when AP goes offchannel
- ◆ Cisco bug ID CSCsb85791 (registered customers only) ;130 crashes just after installation of the new image
- ◆ Cisco bug ID CSCsk63882 (registered customers only) Bad Id error with traceback seen when 12.4–Based 802.11 AP comes up
- ◆ Cisco bug ID CSCsl36227 (registered customers only) Tracebacks on WGB:

- ◆ %SM-4-BADEVENT: Event 'eapResp' is invalid
- ◆ Cisco bug ID CSCsl46209 (registered customers only) WGB 1242 11g radio stuck in reset, stops transmitting
- ◆ Cisco bug ID CSCsl58071 (registered customers only) WGB intermittently takes a long time to reauthenticate in EAP-TLS
- WLC that runs version 4.2.99.0

It is important to use 4.1.185.0 or later for this reason:

- ◆ Cisco bug ID CSCsk41360 (registered customers only) Controller continues processing EAPOL LOGOFF after receiving EAPOL

**Note:** You need to be a registered customer in order to view the details of the bug.

The ACS was running 4.1; the CA was running Microsoft Windows 2003 Advanced Server SP1. In all cases, when you browsed to the CA, the client browser was Internet Explorer with Active X enabled.

The information in this document was created from the devices in a specific lab environment. All of the devices used in this document started with a cleared (default) configuration. If your network is live, make sure that you understand the potential impact of any command.

## Conventions

Refer to the Cisco Technical Tips Conventions for more information on document conventions.

## Configuration Overview

1. Bring up the Microsoft CA (If Necessary)
2. Install the Server Certificate in the ACS
3. Install the CA Certificate on the ACS
4. Setup the ACS to Use the Server Certificate
5. Configure ACS to let the WGB authenticate in EAP-TLS
6. Configure the WLAN of the WLC to Authenticate to ACS
7. Configure the Certificates of the WGB
  - a. Set the hostname, domain name and time as needed
  - b. Configure the trustpoint.
  - c. Install the CA certificate.
  - d. Generate the AP certificate request.
  - e. Send the AP certificate request to the CA.
  - f. Issue the certificate.
  - g. Install the AP certificate.
8. Configure the WGB SSID, Supplicant and Radio as Needed
9. Configure Entries for a Passive Client (If Necessary)
10. Special Notes if 802.11a (5 GHz) is Used
11. Synchronize the Cisco IOS supplicant's clock and save its time to NVRAM (for systems with Cisco IOS Software Release 12.4(21a)JY)

## Configure

In this section, you are presented with the information to configure the features described in this document.

**Note:** Use the Command Lookup Tool (registered customers only) in order to obtain more information on the commands used in this section.

## Bring up the Microsoft CA (If Necessary)

Complete these steps in order to open the Microsoft CA with the use of Windows 2003 Advanced Server:

1. First, have IIS installed. Choose **Control Panel > Add/Remove Programs > Windows Components > Application Server**.
2. Then, install the CA. Choose **Control Panel > Add Remove Programs > Windows Components > Certificate Services**.
  - a. Choose an **Enterprise Root CA**.
  - b. Give the CA a name, and make a note of it.

## Install the Server Certificate in the ACS

Complete these steps in order to install the server certificate in the ACS.

1. From a browser that runs on the ACS server, browse to the CA: **http://ip.of.CA.server/certsrv**
  - a. Request a **Certificate > Advanced Request > Create and Submit a request to this CA**.
  - b. In the Name (CN) field, enter something. Make a note of it.
  - c. In the Type of Certificate Needed drop-down menu, choose **Server Authentication Certificate**.
  - d. Under key options, choose:
    - ◇ CSP Microsoft Base Cryptographic Provider v1.0
    - ◇ Key size 1024
    - ◇ Check **Mark keys as exportable**.
    - ◇ Check **Store cert in the local computer cert store**.
  - e. Leave everything else as default, and click **Submit**.
  - f. You should see a Certificate Pending status report that says Your certificate request has been received. If you have a problem, see MS KB 323172, or other things that can get in the way of Active X.
2. Now, on the CA, go into the CA admin utility and choose **Start > Administrative Tools > Certification Authority**.
  - a. On the left, expand the CA icon, and look under Pending Requests.
  - b. On the right, right-click the request from the ACS and choose **All Tasks > Issue**. The request should now appear under Issued Certificates.
3. Back on the ACS server, browse again to **http://ip.of.CA.server/certsrv**.
  - a. Click **View the status of a pending certificate request**.
  - b. Click **Server Authentication Certificate**.
  - c. Click **Install this certificate**.

## Install the CA Certificate on the ACS

Complete these steps:

From a browser that runs on the ACS server, browse to the CA: **http://ip.of.CA.server/certsrv**

- a. Click **Download a CA certificate, certificate chain, or CRL**.
- b. Choose **Encoding method: Base 64**.
- c. Choose **Download CA certificate**.
- d. Open the .cer file, then click **Install Certificate**.
- e. In the Certificate Import Wizard, click **Next**, then **Place all certificates in the following store**, then **Browse**.
- f. Check the **Show physical stores** box.
- g. Expand **Trusted root certification authorities**, choose **Local Computer**, and click **Ok**.
- h. Click **Next**, **FINISH**, and **OK** for The import was successful box.

## Setup the ACS to Use the Server Certificate

Complete these steps:

1. On the ACS server, choose **System Configuration**.
2. Choose **ACS Certificate Setup**.
3. Choose **Install ACS certificate**.
4. Choose **Use certificate from storage**.
5. Type in the CN name, the same name that was used in a previous step.
6. Click **Submit**.
7. In the ACS server, click **System configuration**.
8. Choose **ACS Certificate Setup**.
9. Choose **Edit Certificate Trust List**.
10. Check the box for the CA.
11. Click **Submit**.

## Configure ACS to Let the WGB authenticate in EAP-TLS

Complete these steps in order to configure the ACS to let the WGB authenticate in ACS:

1. Add the WLC as a NAS (AAA client).
  - a. In the ACS GUI, click **Network Configuration** on the left.
  - b. Under AAA Clients, click **Add Entry**.
  - c. Enter a name under AAA Client Hostname.
  - d. Enter the management interface IP address of the WLC under AAA Client IP Address.
  - e. Enter the RADIUS key under Shared Secret and make a note of it.
  - f. In the Authenticate Using drop-down menu, choose **RADIUS (Cisco Airespace)**.
  - g. Click **Submit+Apply**.
2. Enable EAP-TLS in ACS.
  - a. Choose **System Configuration > Global Authentication Setup**.
  - b. Under EAP-TLS, for example, the top-level EAP-TLS, after EAP-FAST, not the EAP-TLS under PEAP, check **Allow EAP-TLS**.
  - c. Check all three of the certificate verification options.
  - d. Choose **Submit + Restart**.
3. Add the WGB as an ACS.
  - a. In User Setup, enter the name of the WGB in the User panel, and click **Add/Edit**. This example uses "WGB".
  - b. Enter a hard-to-guess password. This is required, although not used in EAP-TLS.
  - c. Click **Submit**.

## Configure the WLAN of the WLC to Authenticate to ACS

Complete these steps:

1. Browse to the GUI of the WLC.
2. Add the ACS to the RADIUS server list:
  - a. Choose **Security > AAA > RADIUS > Authentication** and click **New**.
  - b. Enter the ACS IP address in the Server IP Address panel.
  - c. Enter the RADIUS shared secret from the previous step.
  - d. Click **Apply**.
3. Add a WLAN for the EAP-TLS clients:
  - a. Under WLANs, click **New**.
  - b. Enter the SSID as the Profile Name and the WLAN SSID.
  - c. In the General tab, check the **Enabled** checkbox, and Broadcast SSID (as desired).
  - d. Under the Security tab:
    - a. Under the Layer 2 tab, choose **WPA+WPA2** in the Layer 2 Security drop-down menu, check **WPA Policy with TKIP encryption**, uncheck **WPA2 policy with AES encryption**, and choose **802.1X for Auth Key Mgmt**.
    - b. Under the AAA Servers, add the ACS, unless the ACS is the global default RADIUS server.
  - e. Click **Apply**.

## Configure the Certificates of the WGB

Complete these steps:

**Note:** This method uses the copy-and-paste method. Refer to Configuring Certificates Using the crypto pki CLI in the *Cisco 3200 Series Wireless MIC Software Configuration Guide* for more information on how to use the TFTP and SCEP methods.

1. Set the hostname, domain name and time of the WGB as needed.
  - a. The hostname must match the username entered for it in ACS as in the previous step:

```
ap#configure terminal
ap(config)#hostname WGB
WGB(config)#
```
  - b. The time must be correct, for the certifications to work (clock set exec CLI, or configure an sntp server).
2. Configure the trustpoint for the CA:

```
WGB#config term
WGB(config)#crypto pki trustpoint CUT-PASTE
WGB(config)#enrollment terminal
WGB(config)#subject-name CN=WGB
```

**Note:** subject-name CN=<ClientName> is required. Without it, the Microsoft CA fails to issue the cert, with the The request subject name is invalid or too long. 0x80094001 error message.

```
WGB(config)#revocation-check none
```

**Note:** The **revocation-check none** command is necessary to avoid the problem described in Cisco bug ID CSCsl07349 (registered customers only) . WGB disassociates/reassociates often and takes a long time to reconnect.

```
WGB(config)#rsa keypair manual-keys 1024
```

### 3. Install the CA cert on the WGB:

a. Get a copy of the CA cert:

- a. Browse to the CA: **http://ip.of.CA.server/certsrv**
- b. Click **Download a CA certificate, certificate chain, or CRL.**
- c. Choose **Encoding method: Base 64.**
- d. Click **Download CA certificate.**
- e. Save the .cer file.

b. Install the CA cert:

```
WGB(config)#crypto pki authenticate CUT-PASTE
Enter the base 64 encoded CA certificate.
```

End with a blank line or the word "quit" on a line by itself

Now, paste in the text from the .cer file downloaded in the previous step.

```
-----BEGIN CERTIFICATE-----
[ ... ]
-----END CERTIFICATE-----
```

```
quit
```

```
Certificate has the following attributes:
```

```
Fingerprint: 45EC6866 A66B4D8F 2E05960F BC5C1B76
```

```
% Do you accept this certificate? [yes/no]: yes
```

```
Trustpoint CA certificate accepted.
```

```
% Certificate successfully imported
```

### 4. Request and install the client certificate on the WGB:

a. Generate the certificate request on the WGB:

```
WGB(config)#crypto pki enroll CUT-PASTE
% Start certificate enrollment ..
```

```
% The subject name in the certificate will include: CN=WGB
% Include the router serial number in the subject name? [yes/no]: no
% Include an IP address in the subject name? [no]: no
Display Certificate Request to terminal? [yes/no]: yes
Certificate Request follows:
```

```
MIIBjzCB+QIBADAvMQwwCgYDVQQDEwNXR0IxBzAdBgkqhkiG9w0BCQIWEFdhQI5j
Y2l1d2lmaS5jb20wgZ8wDQYJKoZIhvcNAQEBBQADgY0AMIGJAoGBAMuyZ0Y/xI3O
6Pwch3qA/JoBobYcvKHlc0B0qvqPgCmZgNb8nsFDV8ZFQKb3ySdIxlqOGtrn/Yoh
2LHzRKi+AWQHFGAB2vkFD0SJD8A6+YD/GqEdXGoo/e0eqJ7LgFq0wpUQoYlPxsPn
QUcK9ZDwd8EZNYdxU/jBtLG9MLX4gta9AgMBAAGgITAfBgkqhkiG9w0BCQ4xEjAQ
MA4GA1UdDwEB/wQEAWIFoDANBgkqhkiG9w0BAQQFAA0BgQAsCITCKRtul6JmG4rz
cDROO1QdmNYDuwkswHRgSHDMjVvBmoqA2bKeNsTj+svuX5S/Q2cGbzC6OLN/ftQ7
fw+RcKkM8+SpaEnU3eYGs3HhY7W9L4MY4JkY8I89ah15/V82SoIAOfCJDy5BvBP6
hk7GAPbMYkW9wJaNruVEvkYoLQ==
```

---End - This line not part of the certificate request---

```
Redisplay enrollment request? [yes/no]: no
WGB(config)#
```

b. Request the Client/User certificate to the CA with the output previously gathered. Use a PC with access to the CA and request the User certificate using this method:

- a. Browse to the CA: `http://ip.of.CA.server/certsrv`
- b. Choose the "Request a certificate" option.
- c. Choose the "advanced certificate request" option.
- d. Choose the "Submit a certificate request by using a base-64-encoded CMC or PKCS #10 files, or submit a renewal request by using a base-64-encoded PKCS #7 file" option.
- e. Paste in the certificate request that IOS generated from the "crypto pki enroll" command previously used, and just submit the request.
- f. Finally, just download the certificate as "Base 64 encoded".

**Note:** You need to make sure that the certificate was actually generated for the WGB, with the Subject having "WGB" (the username you provided to the WGB) as the CN.

c. Install the user certificate on the WGB:

```
WGB(config)#crypto pki import CUT-PASTE certificate
Enter the base 64 encoded certificate.
End with a blank line or the word "quit" on a line by itself
```

Now, paste in the text from the .cer file downloaded in the previous step.

```
-----BEGIN CERTIFICATE-----
[ ... ]
-----END CERTIFICATE-----
```

```
% Router Certificate successfully imported
```

5. Verify the certifications from the WGB CLI:

```
WGB#show crypto pki certificates
Certificate
  Status: Available
  Certificate Serial Number: 1379B07200000000000C
  Certificate Usage: General Purpose
  Issuer:
    cn=AARONLAB
  Subject:
    Name: WGB
    cn=WGB
  CRL Distribution Points:
    http://wswin/CertEnroll/AARONLAB.crl
  Validity Date:
    start date: 11:33:09 MST Mar 3 2008
    end date: 11:43:09 MST Mar 3 2009
  Associated Trustpoints: COPY-PASTE

CA Certificate
  Status: Available
  Certificate Serial Number: 612683248DBA539B44B039BD51CD1D48
  Certificate Usage: Signature
  Issuer:
    cn=AARONLAB
  Subject:
    cn=AARONLAB
  CRL Distribution Points:
    http://wswin/CertEnroll/AARONLAB.crl
```

Validity Date:  
start date: 16:34:48 MST Feb 28 2008  
end date: 16:41:25 MST Feb 28 2018  
Associated Trustpoints: COPY-PASTE

## Configure the WGB SSID, Supplicant and Radio as Needed

Complete these steps:

1. Configure the SSID. This should match the SSID configured on the WLC in this previous step:

```
dot11 ssid EAPTLS
 authentication network-eap eap_methods
 authentication key-management wpa version 1
 dot1x credentials EAPTLS
 dot1x eap profile EAPTLS
 infrastructure-ssid
```

2. Configure the EAP-TLS supplicant. The username must match the CN on the trustpoint and the username entry in ACS.

```
eap profile EAPTLS
 method tls
 !
 dot1x credentials EAPTLS
 username WGB
 pki-trustpoint CUT-PASTE
```

3. Configure the radio interface as needed. In this example, the 2.4 GHz radio (Dot11Radio0) is used.

```
interface Dot11Radio0
 encryption mode ciphers aes-ccm tkip
 ssid EAPTLS
 !
 packet retries 128 drop-packet
 station-role workgroup-bridge
```

**Note:** With `packet retries 128 drop-packet`, the WGB remains associated to its root AP as long as it can, so this is a suitable configuration for an immobile WGB. For a WGB that is physically roaming, these configurations can be used, in order of increasingly aggressive roaming:

```
packet retries 128
```

**Note:** or

```
packet retries 128
mobile station period 5 threshold 82
(tune the mobile station command as needed for a specialized application)
```

## Configure Entries for a Passive Client (If Necessary)

If one or more "passive clients" are behind the WGB, for example, wired devices that have static IP addresses and that do not continuously transmit unsolicited IP data, then special steps need to be taken in order to ensure that the WGB and the CUWN can find those clients. In this example, the client has an IP address of 10.0.47.66 and a MAC address of 0040.96b4.7e8f.

Complete these steps in order to use this method:

1. Configure a static bridge entry on the WGB for the client:

```
B(config)#bridge 1 address 0040.96b4.7e8f
```

```
forward fastethernet0
```

2. Configure a static MAC-to-IP address mapping on the WLC:

a. Configure the WLAN in order to enable MAC filtering, AAA override, and not to require DHCP:

```
(Cisco Controller) >show wlan summary
```

```
!--- Make a note of the WLAN ID for the SSID used for EAP-TLS.
```

```
(Cisco Controller) >config wlan disable 6
```

```
(Cisco Controller) >config wlan mac-filtering enable 6
```

```
(Cisco Controller) >config wlan aaa-override enable 6
```

```
(Cisco Controller) >config wlan dhcp_server 6 0.0.0.0
```

```
!--- Do not have DHCP required checked.
```

b. Add the MAC filter (MAC-to-IP mapping) for each client:

```
(Cisco Controller) >config macfilter add
```

```
0040.96b4.7e8f 6 management "client1" 10.0.47.66
```

## Special Notes if 802.11a (5 GHz) is Used

Since 802.11a supports many more channels than 802.11b/g (2.4 GHz), it can take the WGB much longer to scan all available channels. Therefore, outages while you roam in 5 GHz, or after a connectivity problem to the root AP, can last for several seconds. Additionally, if you use DFS channels, channel scanning can take much longer, and brief outages after a DFS radar detection event can occur.

It is therefore recommended that if you use 802.11a, you should avoid the use of DFS channels, for example, in the FCC domain, and to use only the UNII-1 and UNII-3 bands. The Dot11Radio1 interface of the WGB should also be configured to scan only the channels in use in the coverage area. For example:

```
WGB(config-if)#mobile station scan  
36 40 44 48 149 153 157
```

## Configurations

Here is an example WGB configuration for an AP1242, that uses Cisco IOS Software Release 12.4(10b)JA2, EAP-TLS authentication with WPA1-TKIP, 2.4 GHz.

**Note:** Some lines of this configuration have been moved to the second line due to space constraints.

```
version 12.4  
no service pad  
service timestamps debug datetime msec  
service timestamps log datetime msec  
no service password-encryption  
!  
hostname WGB  
!  
logging buffered 200000 debugging  
enable secret 5 $1$xPtX$hjxzdWVR9qa4ykoxLYba91  
!  
no aaa new-model  
clock timezone MST -7  
!
```

```
!  
!  
dot11 ssid EAPTLS  
    authentication network-eap eap_methods  
    authentication key-management wpa version 1  
    dot1x credentials EAPTLS  
    dot1x eap profile EAPTLS  
    infrastructure-ssid  
!  
power inline negotiation prestandard source  
eap profile EAPTLS  
    method tls  
!  
!  
crypto pki trustpoint COPY-PASTE  
    enrollment terminal  
    subject-name CN=WGB  
    revocation-check none  
    rsakeypair manual-keys 1024  
!  
!  
crypto pki certificate chain COPY-PASTE  
    certificate 1379B07200000000000C  
[...]  
    quit  
    certificate ca 612683248DBA539B44B039BD51CD1D48  
[...]  
    quit  
dot1x credentials EAPTLS  
    username WGB  
    pki-trustpoint COPY-PASTE  
!  
username Cisco password 0 Cisco  
!  
bridge irb  
!  
!  
interface Dot11Radio0  
    no ip address  
    no ip route-cache  
    !  
    encryption mode ciphers tkip  
    !  
    ssid EAPTLS  
    !  
    packet retries 128 drop-packet  
    station-role workgroup-bridge  
    no dot11 qos mode  
    bridge-group 1  
    bridge-group 1 spanning-disabled  
!  
interface Dot11Radio1  
    no ip address  
    no ip route-cache  
    shutdown  
    !  
    station-role root  
    bridge-group 1  
    bridge-group 1 subscriber-loop-control  
    bridge-group 1 block-unknown-source  
    no bridge-group 1 source-learning  
    no bridge-group 1 unicast-flooding  
    bridge-group 1 spanning-disabled  
!  
interface FastEthernet0  
    no ip address
```

```

no ip route-cache
duplex auto
speed auto
bridge-group 1
bridge-group 1 spanning-disabled
!
interface BV11
ip address dhcp client-id FastEthernet0
no ip route-cache
!
ip http server
no ip http secure-server
ip http help-path

bridge 1 route ip
!
!
!
line con 0
line vty 0 4
login local
!
sntp server 10.0.47.1
end

```

## Synchronize the Cisco IOS supplicant's clock and save its time to NVRAM (for systems with Cisco IOS Software Release 12.4(21a)JY)

A Cisco IOS device whose supplicant is configured to perform certificate-based authentication of its network connection, which device is hereafter referred to as *the Supplicant*, may be unable to connect to the network, unless these steps are taken.

In order to make sure that the Supplicant, after a reload but before it has connected to the network, knows approximately what time it is, so that it can validate the certificate of the server, you must configure the Supplicant to learn the time from an NTP server, and to write the time to its NVRAM. This is a requirement for any system that runs Cisco IOS Software Release 12.4(21a)JY.

Complete these steps:

1. Configure the Supplicant to synchronize its time to a known good NTP server, to which the Supplicant has network access, and to store its time into its NVRAM.

### Example 1.1. (on a system with SNTP, and without a hardware calendar):

```

Supp(config)#sntp server 10.0.47.1
Supp(config)#clock save interval 8
Supp(config)#end
Supp#write memory

```

### Example 1.2. (on a system with NTP, and with a hardware calendar):

```

Supp(config)#ntp server 10.0.47.1 iburst
Supp(config)#ntp update-calendar
Supp(config)#end
Supp#write memory

```

2. Make sure that the Supplicant has network connectivity to the NTP server and has synchronized its time.

### Example 2.1:

```
Supp#show sntp
SNTP server      Stratum   Version   Last Receive
10.0.47.1        3         1         00:00:09   Synced
```

### Example 2.2:

```
Supp#show ntp status
Clock is synchronized, stratum 4, reference is 10.95.42.129
[ ... ]
```

3. Make sure that the correct time is saved to the hardware calendar of the Supplicant if it has one, or to NVRAM if it does not.

### Example 3.1. On a system with no hardware calendar:

Reload the Supplicant in order to make sure that the time is saved to NVRAM. After it reloads, verify that the time is approximately correct, even when the NTP server is unavailable:

```
Supp#show clock detail
*08:24:30.103 -0700 Thu Apr 15 2010
No time source
```

### Example 3.2. On a system with hardware calendar:

Write the current, correct time to the hardware calendar:

```
Supp#clock update-calendar
```

Verify that the calendar is correct:

```
Supp#show calendar
```

## Verify

Use this section to confirm that your configuration works properly.

The Output Interpreter Tool (registered customers only) (OIT) supports certain **show** commands. Use the OIT to view an analysis of **show** command output.

Verify the WGB connection.

On the WLC, the radio MAC address of the WGB should appear as an Associated client. For example:

```
(Cisco Controller) >show client summary

Number of Clients..... 5

MAC Address          AP Name              Status      WLAN/   Auth Protocol Port Wired
                   AP Name              Status      Guest-Lan
-----
00:00:39:dd:4d:24   AP0019.e802.3034   Associated   6       Yes   N/A       4    No
00:0e:9b:cb:d3:9c   AP0019.e802.3034   Associated   1       No    802.11b   4    No
00:16:6f:50:e1:25   AP0019.e802.3034   Probing     N/A     No    802.11b   4    No
00:19:56:b0:7e:b6 AP0019.e802.3034 Associated   6       Yes   802.11b   4    No
00:40:96:b4:7e:8f   AP0019.e802.3034   Associated   6       Yes   N/A       4    No

Use "show client detail <MAC>" to see more information on the WGB:
(Cisco Controller) >show client detail 00:19:56:b0:7e:b6
Client MAC Address..... 00:19:56:b0:7e:b6
Client Username ..... WGB
```

```

AP MAC Address..... 00:19:a9:42:e4:10
Client State..... Associated
Workgroup Bridge..... 2 client(s)
Wireless LAN Id..... 6
BSSID..... 00:19:a9:42:e4:15
Channel..... 1
IP Address..... 10.0.47.23

```

On the WGB, you can use the **show dot11 associations** and **show dot11 associations all-clients** commands in order to see more detail about the association to the AP. Use the **ping w.x.y.z** command in order to ping the WGB's default gateway.

Verify the WGB's client connectivity.

On the WGB, you can use the **show bridge 1 fastethernet0** command in order to see addresses learned through the FastEthernet0 interface:

```

WGB.Cisco.COM#show bridge 1 fastethernet0

```

```

Total of 300 station blocks, 292 free
Codes: P - permanent, S - self

```

```

Bridge Group 1:

```

Address	Action	Interface	Age	RX count	TX count
0000.39dd.4d24	forward	FastEthernet0	1	328	71
0040.96b4.7e8f	forward	FastEthernet0	P	0	352

On the WLC, the WGB's wired clients will show up as associated clients with protocol "N/A":

```

(Cisco Controller) >show client summary

```

```

Number of Clients..... 5

```

MAC Address	AP Name	Status	WLAN/ Guest-Lan	Auth Protocol	Port	Wired
00:00:39:dd:4d:24	AP0019.e802.3034	Associated		Yes	N/A	No
00:0e:9b:cb:d3:9c	AP0019.e802.3034	Associated	1	No	802.11b	No
00:16:6f:50:e1:25	AP0019.e802.3034	Probing	N/A	No	802.11b	No
00:19:56:b0:7e:b6	AP0019.e802.3034	Associated	6	Yes	802.11b	No
00:40:96:b4:7e:8f	AP0019.e802.3034	Associated	6	Yes	N/A	No

```

(Cisco Controller) >show client detail 00:00:39:dd:4d:24

```

```

Client MAC Address..... 00:00:39:dd:4d:24
Client Username ..... N/A
AP MAC Address..... 00:19:a9:42:e4:10
Client State..... Associated
Workgroup Bridge Client..... WGB: 00:19:56:b0:7e:b6
Wireless LAN Id..... 6
BSSID..... 00:19:a9:42:e4:15
Channel..... 1

```

## Troubleshoot

This section provides information you can use to troubleshoot your configuration.

## Troubleshooting Commands

The Output Interpreter Tool (registered customers only) (OIT) supports certain **show** commands. Use the OIT to view an analysis of **show** command output.

**Note:** Refer to Important Information on Debug Commands before you use **debug** commands.

## Debugging Examples

- WGB-side example
- WLC-side example

### WGB-side example

On the WGB, this example assumes 2.4 GHz; if you use 5 GHz, specify `Dot11Radio1` instead of `Dot11Radio0`.

```
WGB#no debug dot11 dot11radio0 print printf

!--- This runs the radio debugs through
!--- the standard Cisco IOS logger.

WGB#debug dot11 dot11radio0 trace print mgmt uplink

!--- radio driver debugs: 802.11 management frames
!--- and uplink events

WGB#debug dot11 supp-sm-dot1x

!--- interface to the 802.1X supplicant
```

Here is an example of a normal association given in the previous configuration:

WGB-side Example	
Mar 4 23:22:39.427:	108DD0BF-0 Uplink: Enabling active scan
Mar 4 23:22:39.427:	108DD0D0-0 Uplink: Not busy, scan all channels
Mar 4 23:22:39.427:	108DD0DE-0 Uplink: Scanning
Mar 4 23:22:39.430:	108DDF83-0 Uplink: Rcvd response from 0019.a942.e415 channel 1 3237
<i>!--- WGB scans the 2.4 GHz channels, !--- found an AP on channel 1.</i>	
Mar 4 23:22:39.470:	108E7B31-0 Uplink: dot11_uplink_scan_done: ssnie_accept returns 0x0 key_mgmt 0x50F201 encrypt_type 0x20
Mar 4 23:22:39.470:	108E7B67-0 Uplink: ssid EAPTLS auth leap
Mar 4 23:22:39.471:	108E7B77-0 Uplink: try 0019.a942.e415, enc 20 key 1, priv 1, eap 11
Mar 4 23:22:39.471:	108E7B93-0 Uplink: Authenticating
Mar 4 23:22:39.479:	108E9C71 t 1 0 - B000 13A 42E415 B07EB6 42E415 D9E0  algorithm 128 sequence 1 status 0
Mar 4 23:22:39.480:	108EA160 r 1 73/ 26- B000 13A B07EB6 42E415 42E415 5E70 auth 1 37  algorithm 128 sequence 2 status 0 221 - 0 40 96 C 1 A 22 79 95 1A 7C 18 1 0 0 CA 4 0 0 0 0 74 52 EA 31 F4 9E 89 5A
<i>!--- WGB completes 802.11 authentication.</i>	

```
Mar 4 23:22:39.480: 108EA1EB-0 Uplink: Associating
Mar 4 23:22:39.481: 108EA951 t 1 0 - 0000 13A 42E415 B07EB6 42E415 D9F0
                        assreq 1 119
                        cap 431 infra privacy shorthdr
                        listen interval 200
                        ssid EAPTLS
                        rates 82 84 8B C 12 96 18 24
                        extrates 30 48 60 6C
                        aironet WGB.Cisco.COM load 0 clients 0 hops 0 device 7C-2700
                        refresh 15 CW 0-0 flags 0 distance 0
                        ccxver 5
                        221 - 0 40 96 14 0
                        IP 10.0.47.23 1
                        wpa1 mcst tkip ucst tkip keymgmt wpa cap 2800
                        221 - 0 40 96 6 2
Mar 4 23:22:39.484: 108EB2C6 r 1 80/77 19- 1000 13A B07EB6 42E415 42E415
                        5E80 assrsp 1 101
                        cap 31 infra privacy shorthdr
                        status 0
                        aid C003
                        rates 82 4 B 16
                        aironet AP0019.e802.303 load 0 clients 0 hops 0 device 8F-2700
                        refresh 15 CW 31-1023 flags 40 distance 0
                        IP 10.0.47.6 0
                        ccxver 5
                        221 - 0 40 96 14 0
                        221 - 0 40 96 C 1 A 22 7E 95 1A 7C 18 1 0 0 CB 4 0 0 0 0 FB 4C F3 7D D
                        29 71 E2
```

*!--- WGB completes 802.11 association.*

```
Mar 4 23:22:39.486: Uplink address set to 0019.a942.e415
Mar 4 23:22:39.486: Initialising common IOS structures for dot1x
Mar 4 23:22:39.486: Done.
Mar 4 23:22:39.486: DOT1X_SHIM: Start supplicant on Dot11Radio0
                        (credentials EAPTLS)
Mar 4 23:22:39.486: DOT1X_SHIM: Starting dot1x_mgr_auth (auth type 128)
Mar 4 23:22:39.486: DOT1X_SHIM: Initialising WPA [or WPA-PSK or CCKM]
                        key management module
```

*!--- Starting the EAP-TLS supplicant*

```
Mar 4 23:22:39.488: DOT1X_SHIM: Dot1x pkt sent (uplink)
                        with dest 0019.a942.e415
Mar 4 23:22:39.489: DOT1X_SHIM: No AAA client found for 0019.a942.e415
                        (on Dot11Radio0)
Mar 4 23:22:39.489: DOT1X_SHIM: Dot1x pkt sent (uplink)
                        with dest 0019.a942.e415
Mar 4 23:22:39.490: DOT1X_SHIM: No AAA client found for 0019.a942.e415
                        (on Dot11Radio0)
```

*!--- The "No AAA client found" message appears  
!--- to be a bogon and can be ignored.*

```
Mar 4 23:22:39.491: DOT1X_SHIM: Dot1x pkt sent (uplink)
                        with dest 0019.a942.e415
Mar 4 23:22:39.491: 108EB9B4-0 Uplink: EAP authenticating
Mar 4 23:22:39.491: 108EBD22 r 11 73/ 4 - 0802 13A B07EB6 42E415 42E415
                        5E90 164
```

0100 0034 0101 0034 0100 6E65 7477 6F72 6B69 643D 4541 5054 4C53 2C6E  
6173 6964 3D74 7563 736F 6E2D 776C 6332 3030 362C 706F 7274 6964 3D34 0000  
Mar 4 23:22:39.492: 108EC770 t 11 0 - 0801 13A 42E415 B07EB6 42E415  
DA00 168

EAPOL2 EAPOL start  
Mar 4 23:22:39.492: 108ECA4D r 11 74/ 18- 0802 13A B07EB6 42E415 42E415  
5EA0 164

0100 0034 0102 0034 0100 6E65 7477 6F72 6B69 643D 4541 5054 4C53 2C6E  
6173 6964 3D74 7563 736F 6E2D 776C 6332 3030 362C 706F 7274 6964 3D34 0000  
Mar 4 23:22:39.492: 108ECDE2 t 11 0 - 0801 13A 42E415 B07EB6 42E415  
DA10 168

EAPOL2 EAP id 1 resp ident "WGB"  
Mar 4 23:22:39.493: 108ED000 t 11 0 - 0801 13A 42E415 B07EB6 42E415  
DA20 168

EAPOL2 EAP id 2 resp ident "WGB"  
Mar 4 23:22:39.524: 108F50C4 r 11 74/ 18- 080A 13A B07EB6 42E415 42E415  
5EC0 131

0100 0013 01AF 0013 1101 0008 E23F 829E AE45 57EB 5747 4200 0000 0000  
0000 00

*!--- The WGB sends an EAPOL START,  
!--- the WLC authenticator sends an EAP ID Request,  
!--- and the WGB responds with an EAP ID response.*

Mar 4 23:22:39.525: DOT1X\_SHIM: No AAA client found for 0019.a942.e415  
(on Dot11Radio0)

Mar 4 23:22:39.525: DOT1X\_SHIM: Dot1x pkt sent (uplink)  
with dest 0019.a942.e415

Mar 4 23:22:39.526: 108F57D0 t 11 0 - 0801 13A 42E415 B07EB6 42E415  
DA30 168

EAPOL2 EAP id 175 resp nak 0D  
Mar 4 23:22:39.547: 108FA89C r 11 86/77 19- 080A 13A B07EB6 42E415 42E415  
5ED0 118

0100 0006 01B0 0006 0D20 0000 0000 0000 0000  
Mar 4 23:22:39.547: DOT1X\_SHIM: No AAA client found for 0019.a942.e415  
(on Dot11Radio0)

Mar 4 23:22:39.561: DOT1X\_SHIM: Dot1x pkt sent (uplink)  
with dest 0019.a942.e415

Mar 4 23:22:39.561: 108FE059 t 11 0 - 0801 13A 42E415 B07EB6 42E415  
DA40 186

EAPOL2 EAP id 176 resp tls 8000 0000 3216 0301 002D 0100 0029 0301 47CD  
D9BF CE1B 71B1 A815 CB99 8C80 8876 39F2 57A3 0F02 F382 147E 9D0C 657E 3AA7  
Mar 4 23:22:39.572: DOT1X\_SHIM: No AAA client found for 0019.a942.e415

Mar 4 23:22:39.573: DOT1X\_SHIM: Dot1x pkt sent (uplink)

Mar 4 23:22:39.573: 10900868 r 11 86/77 20- 0802 13A B07EB6 42E415 42E415

0100 03F4 01B1 03F4 0DC0 0000 079D 1603 0100 4A02 0000 4603 0147 CDD9  
B413 0683 9734 4D26 136F EC8F ECD3 5D3B 77C7 4D20 7DA1 9B17 D7D3 E4A6 1720  
Mar 4 23:22:39.574: 109012E6 t 11 1 - 0809 13A 42E415 B07EB6 42E415

EAPOL2 EAP id 177 resp tls 00  
Mar 4 23:22:39.582: DOT1X\_SHIM: No AAA client found for 0019.a942.e415

Mar 4 23:22:39.734: DOT1X\_SHIM: Dot1x pkt sent (uplink)  
with dest 0019.a942.e415

Mar 4 23:22:39.735: 1090317E r 11 /78 19- 0802 13A B07EB6 42E415 42E415  
5F00 1965

0100 03B9 01B2 03B9 0D00 C687 1DB6 065B 2467 2609 EE5F 9C64 F3A9 C199  
493E 2B79 F157 1765 6C2F C409 4D54 7DA4 6791 4859 ECAA 685B 0F66 C5E9 22A6  
Mar 4 23:22:39.736: 10928A31 t 11 0 - 0801 13A 42E415 B07EB6 42E415  
DA60 11239

EAPOL2 EAP id 178 resp tls 8000 0004 B316 0301 036D 0B00 0369 0003 6600

(on Dot11

with dest

(on Dot11

```

0363 3082 035F 3082 0247 A003 0201 0202 0A13 79B0 7200 0000 0000 0C30 0D06
Mar 4 23:22:39.755: 1092D464 r 11 /78 18- 0802 13A B07EB6 42E415
                                42E415 5F40 165
0100 0035 01B3 0035 0D80 0000 002B 1403 0100 0101 1603 0100 20B8 EBFA
2DD8 2E1A BF84 37A8 892C 84C5 50B2 B1A5 6F3E B2B5 981A 2899 1DE2 B470 6800
Mar 4 23:22:39.755: DOT1X_SHIM: No AAA client found for 0019.a942.e415
                                (on Dot11Radio0)
Mar 4 23:22:39.760: DOT1X_SHIM: Dot1x pkt sent (uplink)
                                with dest 0019.a942.e415
Mar 4 23:22:39.760: 1092E92C t 11 0 - 0801 13A 42E415 B07EB6 42E415
                                DA70 168
EAPOL2 EAP id 179 resp tls 00
Mar 4 23:22:39.770: 10930F50 r 11 75/80 19- 0802 13A B07EB6 42E415 42E415
                                5F60 116
0100 0004 03B3 0004 0000 0000 0000 0000
Mar 4 23:22:39.770: DOT1X_SHIM: No AAA client found for 0019.a942.e415
                                (on Dot11Radio0)
Mar 4 23:22:39.774: DOT1X_SHIM: Received Dot1x success - Authenticated
                                with EAP-TLS

!--- EAP-TLS authentication is successful,
!--- now come the keys.

Mar 4 23:22:39.774: DOT1X_SHIM: treat key material as wpa-v1 v2 pmk
Mar 4 23:22:39.774: DOT1X_SHIM: WPA PMK key size truncated from 64 to 32
Mar 4 23:22:39.777: DOT1X_SHIM: Got Eapol key packet from dot1x manager
Mar 4 23:22:39.777: DOT1X_SHIM: Passing key packet to KM module
Mar 4 23:22:39.777: supp_km_processKey: descriptor type = 254
Mar 4 23:22:39.777: supp_km_processKey: key length = 137
Mar 4 23:22:39.778: 109319B7 r 11 /77 16- 080A 13A B07EB6 42E415 42E415
                                5F70 1107
0103 005F FE00 8900 2000 0000 0000 0000 006E 64D0 C659 1C91 11D2 6040
C251 0592 E6B6 3799 0EDE B1BD B3A6 87B7 8C9B 0D5E DF00 0000 0000 0000 0000
Mar 4 23:22:39.779: 109332C2 t 11 1 - 0809 13A 42E415 B07EB6 42E415
                                DA80 1133
EAPOL key desc FE info 109 len 20 replay 0000000000000000
nonce 11AADA303F5F9B2357A932B3093483905E69F8408D019FB2EF56F7AD706F0759
iv 00000000000000000000000000000000 rsc 0000000000000000
id 0000000000000000 mic DBD06C383B83E3478F802844095E9444
datalen 1A key DD18 0050 F201 0100 0050 F202 0100 0050 F202 0100
                                0050 F201
2800
Mar 4 23:22:39.780: 109336C1 r 11 83/78 18- 0802 13A B07EB6 42E415 42E415
                                5F80 1133
0103 0079 FE01 C900 2000 0000 0000 0000 016E 64D0 C659 1C91 11D2 6040
C251 0592 E6B6 3799 0EDE B1BD B3A6 87B7 8C9B 0D5E DF6E 64D0 C659 1C91 11D2
Mar 4 23:22:39.781: DOT1X_SHIM: Got Eapol key packet from dot1x manager
Mar 4 23:22:39.781: DOT1X_SHIM: Passing key packet to KM module
Mar 4 23:22:39.781: supp_km_processKey: descriptor type = 254
Mar 4 23:22:39.781: supp_km_processKey: key length = 457
Mar 4 23:22:39.781: dot1x_pakio_plumb_keys: trying to plumb PTK key
Mar 4 23:22:39.782: 10933E11 t 11 0 - 0801 13A 42E415 B07EB6 42E415
                                DA90 1107
EAPOL key desc FE info 109 len 20 replay 0000000000000001
nonce 0000000000000000000000000000000000000000000000000000000000000000
iv 00000000000000000000000000000000 rsc 0000000000000000
id 0000000000000000 mic 3A59680D1130EC24B00F7246F9D0738F
datalen 0 key
Mar 4 23:22:39.785: 10934749 r 11 88/77 17- 0842 13A B07EB6 42E415 42E415
                                5F90 1155
IV 0103007F-FE039100 2000 0000 0000 0000 026E 64D0 C659 1C91 11D2 6040
C251 0592 E6B6 3799 0EDE B1BD B3A6 87B7 8C9B 0D5E D76E 64D0 C659 1C91 11D2
Mar 4 23:22:39.785: DOT1X_SHIM: Got Eapol key packet from dot1x manager
Mar 4 23:22:39.785: DOT1X_SHIM: Passing key packet to KM module

```



Tue Mar 4 16:45:56 2008: 00:19:56:b0:7e:b6 apfProcessAssocReq (apf\_80211.c:4149)  
Changing state for mobile 00:19:56:b0:7e:b6 on  
AP 00:19:a9:42:e4:10 from Assoc

*!--- WGB is associated in 802.11.  
!--- Note in this case that the WGB associated  
!--- when it was already associated.*

Tue Mar 4 16:45:56 2008: 00:19:56:b0:7e:b6 dot1x - moving  
mobile 00:19:56:b0:7e:b6 into Connecting state  
Tue Mar 4 16:45:56 2008: 00:19:56:b0:7e:b6 Sending EAP-Request/Identity to  
mobile 00:19:56:b0:7e:b6 (EAP Id 1)  
Tue Mar 4 16:45:56 2008: 00:19:56:b0:7e:b6 10.0.47.23 Removed NPU entry.  
Tue Mar 4 16:45:59 2008: 00:19:56:b0:7e:b6 Received EAPOL START from  
mobile 00:19:56:b0:7e:b6  
Tue Mar 4 16:45:59 2008: 00:19:56:b0:7e:b6 dot1x - moving  
mobile 00:19:56:b0:7e:b6 into Connecting state  
Tue Mar 4 16:45:59 2008: 00:19:56:b0:7e:b6 Sending EAP-Request/Identity to  
mobile 00:19:56:b0:7e:b6 (EAP Id 2)  
Tue Mar 4 16:45:59 2008: 00:19:56:b0:7e:b6 Received EAPOL EAPPKT from  
mobile 00:19:56:b0:7e:b6  
Tue Mar 4 16:45:59 2008: 00:19:56:b0:7e:b6 Received EAP Response packet with  
mismatching id (currentid=2, eapid=1) from mobile  
00:19:56:b0:7e:b6  
Tue Mar 4 16:45:59 2008: 00:19:56:b0:7e:b6 Received EAPOL EAPPKT from  
mobile 00:19:56:b0:7e:b6  
Tue Mar 4 16:45:59 2008: 00:19:56:b0:7e:b6 Received Identity Response (count=2) from  
mobile 00:19:56:b0:7e:b6

*!--- WGB sends EAPOL START while  
!--- WLC sends its EAP ID-request,  
!--- which confuses the state machines for a moment,  
!--- but eventually we get on track, and the WLC  
!--- gets its ID-response from the WGB supplicant.*

Tue Mar 4 16:45:59 2008: 00:19:56:b0:7e:b6 EAP State update from Connecting to  
Authenticating for mobile 00:19:56:b0:7e:b6  
Tue Mar 4 16:45:59 2008: 00:19:56:b0:7e:b6 dot1x - moving mobile  
00:19:56:b0:7e:b6 into Authenticating state  
Tue Mar 4 16:45:59 2008: 00:19:56:b0:7e:b6 Entering Backend Auth Response  
state for mobile 00:19:56:b0:7e:b6  
Tue Mar 4 16:45:59 2008: 00:19:56:b0:7e:b6 Successful transmission of  
Authentication Packet (id 17) to 10.0.47.42:1812,  
proxy state 00:19:56:b0:7e:b6-00:00  
Tue Mar 4 16:45:59 2008: 00000000: 01 11 00 9c 85 82 35 15  
62 0f 50 bd 32 60 0c e6 .....5.b.P.2`..  
Tue Mar 4 16:45:59 2008: 00000010: de 94 b2 40 01 05 57 47  
42 1f 13 30 30 2d 31 39 ...@..WGB..00-19  
Tue Mar 4 16:45:59 2008: 00000020: 2d 35 36 2d 42 30 2d 37  
45 2d 42 36 1e 1a 30 30 -56-B0-7E-B6..00  
Tue Mar 4 16:45:59 2008: 00000030: 2d 31 39 2d 41 39 2d 34  
32 2d 45 34 2d 31 30 3a -19-A9-42-E4-10:  
Tue Mar 4 16:45:59 2008: 00000040: 45 41 50 54 4c 53 05 06  
00 00 00 04 04 06 0a 00 EAPTLS.....  
Tue Mar 4 16:45:59 2008: 00000050: 2f 06 20 10 74 75 63 73  
6f 6e 2d 77 6c 63 32 30 /...tucson-wlc20  
Tue Mar 4 16:45:59 2008: 00000060: 30 36 1a 0c 00 00 37 63  
01 06 00 00 00 06 06 06 06....7c.....  
Tue Mar 4 16:45:59 2008: 00000070: 00 00 00 02 0c 06 00 00  
05 14 3d 06 00 00 00 13 .....=.....  
Tue Mar 4 16:45:59 2008: 00000080: 4f 0a 02 02 00 08 01 57  
47 42 50 12 c5 f3 f5 9c O.....WGBP.....

```

Tue Mar  4 16:45:59 2008: 00000090: c0 81 0e 3e 23 c0 a7 1b
                                03 f7 af 5b                ...>#.....[
Tue Mar  4 16:45:59 2008: 00000000: 0b 11 00 47 54 d3 b6 45
                                75 eb 83 b7 97 7c 80 1b  ...GT..Eu....|..
Tue Mar  4 16:45:59 2008: 00000010: 13 03 71 1d 4f 15 01 b0
                                00 13 11 01 00 08 3d 17  ..q.O.....=.
Tue Mar  4 16:45:59 2008: 00000020: 4a 94 eb c7 3b 3e 57 47
                                42 18 0c 53 56 43 3d 30  J...;>WGB..SVC=0
Tue Mar  4 16:45:59 2008: 00000030: 2e 36 34 37 3b 50 12 67
                                50 d3 ad 88 7d 16 8b 5b  .647;P.gP...}..[
Tue Mar  4 16:45:59 2008: 00000040: d1 25 57 56 b2 ec 76.%WV..v
Tue Mar  4 16:45:59 2008: ****Enter processIncomingMessages: response code=11
Tue Mar  4 16:45:59 2008: ****Enter processRadiusResponse: response code=11
Tue Mar  4 16:45:59 2008: 00:19:56:b0:7e:b6 Access-Challenge received from
                                RADIUS server 10.0.47.42 for mobile 00:19:56:b0:7e:b6
                                receiveId = 7
Tue Mar  4 16:45:59 2008: 00:19:56:b0:7e:b6 Processing Access-Challenge for
                                mobile 00:19:56:b0:7e:b6

!--- The WLC forwards the ID-request info,
!--- that it had received
!--- in 802.1X from the WGB supplicant, to the RADIUS server,
!--- in a RADIUS Access-Request packet.
!--- The RADIUS server responds with an Access-Challenge.
!--- If there is a configuration problem with RADIUS, then either
!--- the RADIUS server does not respond, or it responds
!--- with a RADIUS Access-Reject.

!--- If EAP-TLS goes well, there is much back and forth
!--- between the EAP exchange on the wireless
!--- link, and the RADIUS exchange between the WLC and ACS.

Tue Mar  4 16:45:59 2008: 00:19:56:b0:7e:b6 Entering Backend Auth Req state
                                (id=176) for mobile 00:19:56:b0:7e:b6
Tue Mar  4 16:45:59 2008: 00:19:56:b0:7e:b6 WARNING: updated
                                EAP-Identifer 2 ==> 176 for STA 00:19:56:b0:7e:b6
Tue Mar  4 16:45:59 2008: 00:19:56:b0:7e:b6 Sending EAP Request from AAA to
                                mobile 00:19:56:b0:7e:b6 (EAP Id 176)
Tue Mar  4 16:45:59 2008: 00:19:56:b0:7e:b6 Received EAPOL EAPPKT from
                                mobile 00:19:56:b0:7e:b6
Tue Mar  4 16:45:59 2008: 00:19:56:b0:7e:b6 Received EAP Response from
                                mobile 00:19:56:b0:7e:b6 (EAP Id 176, EAP Type 3)
Tue Mar  4 16:45:59 2008: 00:19:56:b0:7e:b6 Entering Backend Auth Response
                                state for mobile 00:19:56:b0:7e:b6
Tue Mar  4 16:45:59 2008: 00:19:56:b0:7e:b6 Successful transmission of
                                Authentication Packet (id 18) to 10.0.47.42:1812,
                                proxy state 00:19:56:b0:7e:b6-00:00
Tue Mar  4 16:45:59 2008: 00000000: 01 12 00 a6 d5 64 56 8a
                                e8 27 fa de ca 69 c4 2a  ....dV...'...i.*
Tue Mar  4 16:45:59 2008: 00000010: cd 06 26 0c 01 05 57 47
                                42 1f 13 30 30 2d 31 39  ..&...WGB..00-19
Tue Mar  4 16:45:59 2008: 00000020: 2d 35 36 2d 42 30 2d 37
                                45 2d 42 36 1e 1a 30 30  -56-B0-7E-B6..00
Tue Mar  4 16:45:59 2008: 00000030: 2d 31 39 2d 41 39 2d 34
                                32 2d 45 34 2d 31 30 3a  -19-A9-42-E4-10:
Tue Mar  4 16:45:59 2008: 00000040: 45 41 50 54 4c 53 05 06
                                00 00 00 04 04 06 0a 00  EAPTLS.....
Tue Mar  4 16:45:59 2008: 00000050: 2f 06 20 10 74 75 63 73
                                6f 6e 2d 77 6c 63 32 30  /...tucson-wlc20
Tue Mar  4 16:45:59 2008: 00000060: 30 36 1a 0c 00 00 37 63
                                01 06 00 00 00 06 06 06  06....7c.....
Tue Mar  4 16:45:59 2008: 00000070: 00 00 00 02 0c 06 00 00
                                05 14 3d 06 00 00 00 13  ....=.....
Tue Mar  4 16:45:59 2008: 00000080: 4f 08 02 b0 00 06 03 0d

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18 0c 53 56 43 3d 30 2e O.....SVC=0.
Tue Mar 4 16:45:59 2008: 00000090: 36 34 37 3b 50 12 43 6e
32 b6 e9 11 a3 47 8e 96 647;P.Cn2....G..
Tue Mar 4 16:45:59 2008: 000000a0: dc f0 37 a8 37 9e..7.7.
Tue Mar 4 16:45:59 2008: 00000000: 0b 12 00 4b 71 7a 36 1d
d9 24 16 8d c0 2f 45 52 ...Kqz6..$.../ER
Tue Mar 4 16:45:59 2008: 00000010: 82 3d 58 cf 4f 08 01 b1
00 06 0d 20 18 1d 45 41 .=X.O.....EA
Tue Mar 4 16:45:59 2008: 00000020: 50 3d 30 2e 32 30 32 2e
32 37 65 61 2e 31 3b 53 P=0.202.27ea.1;S
Tue Mar 4 16:45:59 2008: 00000030: 56 43 3d 30 2e 36 34 37
3b 50 12 71 bf 1f 5c c7 VC=0.647;P.q..\
Tue Mar 4 16:45:59 2008: 00000040: 69 7e e8 cc 9d 71 18 de
b7 e5 b7 i~...q.....
Tue Mar 4 16:45:59 2008: ****Enter processIncomingMessages: response code=11
Tue Mar 4 16:45:59 2008: ****Enter processRadiusResponse: response code=11
Tue Mar 4 16:45:59 2008: 00:19:56:b0:7e:b6 Access-Challenge received from
RADIUS server 10.0.47.42 for mobile 00:19:56:b0:7e
:b6 receiveId = 7
Tue Mar 4 16:45:59 2008: 00:19:56:b0:7e:b6 Processing Access-Challenge for
mobile 00:19:56:b0:7e:b6
Tue Mar 4 16:45:59 2008: 00:19:56:b0:7e:b6 Entering Backend Auth Req state
(id=177) for mobile 00:19:56:b0:7e:b6
Tue Mar 4 16:45:59 2008: 00:19:56:b0:7e:b6 Sending EAP Request from AAA to
mobile 00:19:56:b0:7e:b6 (EAP Id 177)
Tue Mar 4 16:45:59 2008: 00:19:56:b0:7e:b6 Received EAPOL EAPPKT from
mobile 00:19:56:b0:7e:b6
Tue Mar 4 16:45:59 2008: 00:19:56:b0:7e:b6 Received EAP Response from
mobile 00:19:56:b0:7e:b6 (EAP Id 177, EAP Type 13)
Tue Mar 4 16:45:59 2008: 00:19:56:b0:7e:b6 Entering Backend Auth Response
state for mobile 00:19:56:b0:7e:b6
Tue Mar 4 16:45:59 2008: 00:19:56:b0:7e:b6 Successful transmission of
Authentication Packet (id 19) to 10.0.47.42:1812,
proxy state 00:19:56:b0:7e:b6-00:00
Tue Mar 4 16:45:59 2008: 00000000: 01 13 00 ed 30 a2 b8 d3
6c 6a e9 08 04 f9 b9 32 ...0...lj.....2
Tue Mar 4 16:45:59 2008: 00000010: 98 fe 36 62 01 05 57 47
42 1f 13 30 30 2d 31 39 ..6b..WGB..00-19
Tue Mar 4 16:45:59 2008: 00000020: 2d 35 36 2d 42 30 2d 37
45 2d 42 36 1e 1a 30 30 -56-B0-7E-B6..00
Tue Mar 4 16:45:59 2008: 00000030: 2d 31 39 2d 41 39 2d 34
32 2d 45 34 2d 31 30 3a -19-A9-42-E4-10:
Tue Mar 4 16:45:59 2008: 00000040: 45 41 50 54 4c 53 05 06
00 00 00 04 04 06 0a 00 EAPTLS.....
Tue Mar 4 16:45:59 2008: 00000050: 2f 06 20 10 74 75 63 73
6f 6e 2d 77 6c 63 32 30 /...tucson-wlc20
Tue Mar 4 16:45:59 2008: 00000060: 30 36 1a 0c 00 00 37 63
01 06 00 00 00 06 06 06 06....7c.....
Tue Mar 4 16:45:59 2008: 00000070: 00 00 00 02 0c 06 00 00
05 14 3d 06 00 00 00 13 .....=.....
Tue Mar 4 16:45:59 2008: 00000080: 4f 3e 02 b1 00 3c 0d 80
00 00 00 32 16 03 01 00 O>...<.....2....
Tue Mar 4 16:45:59 2008: 00000090: 2d 01 00 00 29 03 01 47
cd df 36 c4 bc 40 48 75 -...).G..6..@Hu
Tue Mar 4 16:45:59 2008: 000000a0: f4 09 ea 60 0c 40 fc 99
a0 e7 11 15 00 7e ca 90 ...`.@.....~..
Tue Mar 4 16:45:59 2008: 000000b0: da 5a d3 39 45 be ca 00
00 02 00 04 01 00 18 1d .Z.9E.....
Tue Mar 4 16:45:59 2008: 000000c0: 45 41 50 3d 30 2e 32 30
32 2e 32 37 65 61 2e 31 EAP=0.202.27ea.1
Tue Mar 4 16:45:59 2008: 000000d0: 3b 53 56 43 3d 30 2e 36
34 37 3b 50 12 c0 6b 4c ;SVC=0.647;P..kL
Tue Mar 4 16:45:59 2008: 000000e0: 37 6c 1a 4f 58 89 18 2b
c4 0e 99 cd 0f 71.OX..+.....
Tue Mar 4 16:45:59 2008: 00000000: 0b 13 04 3f 5d 80 89 e2
e7 3f b0 c4 4c 99 d2 bd ...?].....?..L...

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Tue Mar 4 16:45:59 2008: 00000010: e5 e3 6e af 4f ff 01 b2  
03 f4 0d c0 00 00 07 9d ..n.O.....  
Tue Mar 4 16:45:59 2008: 00000020: 16 03 01 00 4a 02 00 00  
46 03 01 47 cd df 2a f3 ....J...F..G..\*.  
Tue Mar 4 16:45:59 2008: 00000030: 19 0f 6f 52 2f a7 c3 00  
d4 c8 f0 50 1c 8f 47 f4 ..oR/.....P..G.  
Tue Mar 4 16:45:59 2008: 00000040: 97 1b f2 a0 ca a9 f4 27  
0c 34 32 20 d9 33 c4 27 .....'.42..3.'  
Tue Mar 4 16:45:59 2008: 00000050: 81 91 e4 97 d7 a6 6b 03  
58 1a 4a c8 6d 4a e7 ef .....k.X.J.mJ..  
Tue Mar 4 16:45:59 2008: 00000060: 9d f8 fd ad c9 95 aa b5  
3e f5 1b dc 00 04 00 16 .....>.....  
Tue Mar 4 16:45:59 2008: 00000070: 03 01 07 37 0b 00 07 33  
00 07 30 00 03 c2 30 82 ...7...3...0...0.  
Tue Mar 4 16:45:59 2008: 00000080: 03 be 30 82 02 a6 a0 03  
02 01 02 02 0a 61 0f c8 ..0.....a..  
Tue Mar 4 16:45:59 2008: 00000090: d9 00 00 00 00 00 02 30  
0d 06 09 2a 86 48 86 f7 .....0...\*.H..  
Tue Mar 4 16:45:59 2008: 000000a0: 0d 01 01 05 05 00 30 13  
31 11 30 0f 06 03 55 04 .....0.1.0...U.  
Tue Mar 4 16:45:59 2008: 000000b0: 03 13 08 41 41 52 4f 4e  
4c 41 42 30 1e 17 0d 30 ...AARONLAB0...0  
Tue Mar 4 16:45:59 2008: 000000c0: 38 30 32 32 39 30 30 30  
32 35 30 5a 17 0d 30 39 80229000250Z..09  
Tue Mar 4 16:45:59 2008: 000000d0: 30 32 32 38 30 30 31 32  
35 30 5a 30 12 31 10 30 0228001250Z0.1.0  
Tue Mar 4 16:45:59 2008: 000000e0: 0e 06 03 55 04 03 13 07  
41 43 53 63 65 72 74 30 ...U....ACScert0  
Tue Mar 4 16:45:59 2008: 000000f0: 81 9f 30 0d 06 09 2a 86  
48 86 f7 0d 01 01 01 05 ..0...\*.H.....  
Tue Mar 4 16:45:59 2008: 00000100: 00 03 81 8d 00 30 81 89  
02 81 81 00 e4 cb 25 a1 .....0.....%.  
Tue Mar 4 16:45:59 2008: 00000110: 96 3f df 4f ff 0d de 8a  
89 6f 33 b1 b3 b9 fe 6e ?.O.....o3....n  
Tue Mar 4 16:45:59 2008: 00000120: df 6a 01 cf 7f b4 44 5b  
6b 4e 91 17 9c 88 d3 6c .j....D[kN.....l  
Tue Mar 4 16:45:59 2008: 00000130: 1a 44 5e 1e e7 c1 c5 ae  
c2 6f e7 ca 63 31 5f 3a .D^.....o..c1\_:  
Tue Mar 4 16:45:59 2008: 00000140: cf a9 da 83 0e c8 94 93  
35 2e c8 f1 21 b0 78 1c .....5....!..x.  
Tue Mar 4 16:45:59 2008: 00000150: a1 ca f7 e9 40 a7 d1 7a  
f1 85 d6 e9 36 46 51 a7 ....@..z....6FQ.  
Tue Mar 4 16:45:59 2008: 00000160: a7 bf 70 db a7 47 da db  
59 69 17 db 06 a3 7e b1 ..p..G..Yi....~.  
Tue Mar 4 16:45:59 2008: 00000170: 3c e5 ad 39 7f ee 61 cd  
ab 3e 0e 8a d5 c1 47 d4 <..9..a..>....G.  
Tue Mar 4 16:45:59 2008: 00000180: 65 62 09 22 f4 75 c5 5b  
b1 42 94 14 9f c7 02 03 eb."u.[.B.....  
Tue Mar 4 16:45:59 2008: 00000190: 01 00 01 a3 82 01 97 30  
82 01 93 30 0e 06 03 55 .....0...0...U  
Tue Mar 4 16:45:59 2008: 000001a0: 1d 0f 01 01 ff 04 04 03  
02 04 f0 30 44 06 09 2a .....0D...\*  
Tue Mar 4 16:45:59 2008: 000001b0: 86 48 86 f7 0d 01 09 0f  
04 37 30 35 30 0e 06 08 .H.....7050...  
Tue Mar 4 16:45:59 2008: 000001c0: 2a 86 48 86 f7 0d 03 02  
02 02 00 80 30 0e 06 08 \*.H.....0...  
Tue Mar 4 16:45:59 2008: 000001d0: 2a 86 48 86 f7 0d 03 04  
02 02 00 80 30 07 06 05 \*.H.....0...  
Tue Mar 4 16:45:59 2008: 000001e0: 2b 0e 03 02 07 30 0a 06  
08 2a 86 48 86 f7 0d 03 +....0...\*.H....  
Tue Mar 4 16:45:59 2008: 000001f0: 07 30 1d 06 03 55 1d 0e  
04 16 04 14 b3 fe c9 de .0...U.....  
Tue Mar 4 16:45:59 2008: 00000200: 52 60 44 c8 9a c2 4a c2  
b4 fd 98 2c 8b 39 5a a6 R`D...J.....,9Z.  
Tue Mar 4 16:45:59 2008: 00000210: 30 13 4f ff 06 03 55 1d  
25 04 0c 30 0a 06 08 2b 0.O...U.%..0...+

Tue Mar 4 16:45:59 2008: 00000220: 06 01 05 05 07 03 01 30  
1f 06 03 55 1d 23 04 18 .....0...U.#..  
Tue Mar 4 16:45:59 2008: 00000230: 30 16 80 14 f0 a4 3a c2  
cd f5 d4 c8 b4 5e ee 03 0.....:.....^..  
Tue Mar 4 16:45:59 2008: 00000240: 4f 83 79 b1 f2 d4 e0 19  
30 5f 06 03 55 1d 1f 04 O.y.....0\_...U...  
Tue Mar 4 16:45:59 2008: 00000250: 58 30 56 30 54 a0 52 a0  
50 86 25 68 74 74 70 3a X0V0T.R.P.%http:  
Tue Mar 4 16:45:59 2008: 00000260: 2f 2f 77 63 73 77 69 6e  
2f 43 65 72 74 45 6e 72 //wswin/CertEnr  
Tue Mar 4 16:46:00 2008: 00000270: 6f 6c 6c 2f 41 41 52 4f  
4e 4c 41 42 2e 63 72 6c oll/AARONLAB.crl  
Tue Mar 4 16:46:00 2008: 00000280: 86 27 66 69 6c 65 3a 2f  
2f 5c 5c 77 63 73 77 69 .'file://\\wswi  
Tue Mar 4 16:46:00 2008: 00000290: 6e 5c 43 65 72 74 45 6e  
72 6f 6c 6c 5c 41 41 52 n\CertEnroll\AAR  
Tue Mar 4 16:46:00 2008: 000002a0: 4f 4e 4c 41 42 2e 63 72  
6c 30 81 84 06 08 2b 06 ONLAB.crl0....+.  
Tue Mar 4 16:46:00 2008: 000002b0: 01 05 05 07 01 01 04 78  
30 76 30 38 06 08 2b 06 .....x0v08...+.  
Tue Mar 4 16:46:00 2008: 000002c0: 01 05 05 07 30 02 86 2c  
68 74 74 70 3a 2f 2f 77 ...0.,http://w  
Tue Mar 4 16:46:00 2008: 000002d0: 63 73 77 69 6e 2f 43 65  
72 74 45 6e 72 6f 6c 6c cswin/CertEnroll  
Tue Mar 4 16:46:00 2008: 000002e0: 2f 77 63 73 77 69 6e 5f  
41 41 52 4f 4e 4c 41 42 /wswin\_AARONLAB  
Tue Mar 4 16:46:00 2008: 000002f0: 2e 63 72 74 30 3a 06 08  
2b 06 01 05 05 07 30 02 .crt0:...+.....0.  
Tue Mar 4 16:46:00 2008: 00000300: 86 2e 66 69 6c 65 3a 2f  
2f 5c 5c 77 63 73 77 69 ..file://\\wswi  
Tue Mar 4 16:46:00 2008: 00000310: 6e 4f ff 5c 43 65 72 74  
45 6e 72 6f 6c 6c 5c 77 nO.\CertEnroll\w  
Tue Mar 4 16:46:00 2008: 00000320: 63 73 77 69 6e 5f 41 41  
52 4f 4e 4c 41 42 2e 63 cswin\_AARONLAB.c  
Tue Mar 4 16:46:00 2008: 00000330: 72 74 30 0d 06 09 2a 86  
48 86 f7 0d 01 01 05 05 rt0...\*.H.....  
Tue Mar 4 16:46:00 2008: 00000340: 00 03 82 01 01 00 67 35  
f2 80 42 b5 a8 be f7 c4 .....g5..B.....  
Tue Mar 4 16:46:00 2008: 00000350: 9b ea 19 10 67 39 78 cb  
38 fb 36 15 69 2a f0 80 ...g9x.8.6.i\*..  
Tue Mar 4 16:46:00 2008: 00000360: 1e a1 7d 63 72 6a e0 7e  
d4 51 7a 1d 64 ec ee b5 ..}crj.~.Qz.d...  
Tue Mar 4 16:46:00 2008: 00000370: 2a 73 dc b0 d1 eb 0f 28  
1d 66 7a bc 12 ef d8 61 \*s.....(.fz....a  
Tue Mar 4 16:46:00 2008: 00000380: 5d 05 7b 81 0f 57 20 4d  
49 37 4d ba 0b 5a 96 65 ].{..W.MI7M..Z.e  
Tue Mar 4 16:46:00 2008: 00000390: d6 a8 e1 bb 1f c6 0e 27  
4c 4b d6 3a 00 c7 8d 83 ..... 'LK.:.....  
Tue Mar 4 16:46:00 2008: 000003a0: 22 a5 29 61 36 19 19 33  
f2 41 18 f7 c6 42 23 36 ".)a6..3.A...B#6  
Tue Mar 4 16:46:00 2008: 000003b0: 92 66 4a d9 ef fa 32 d7  
a5 0a df 47 50 3c 72 23 .fJ...2....GP<r#  
Tue Mar 4 16:46:00 2008: 000003c0: f0 0a d5 59 eb a8 79 f2  
e0 56 a0 97 91 48 60 31 ...Y..y..V...H`l  
Tue Mar 4 16:46:00 2008: 000003d0: 56 8d 2f b2 69 45 e5 44  
3a 59 13 dd 66 eb c7 58 V./iE.D:Y...f..X  
Tue Mar 4 16:46:00 2008: 000003e0: 35 90 7c 79 69 ee dc 6e  
19 68 b3 c3 4c ba 7d b3 5.|yi..n.h..L.}|.  
Tue Mar 4 16:46:00 2008: 000003f0: 8f a0 b9 e0 cf df 67 93  
6f 01 d4 34 33 86 b6 95 .....g.o...43...  
Tue Mar 4 16:46:00 2008: 00000400: 77 1b 19 61 34 46 82 4c  
8e 6b b4 6b e2 4a c1 20 w..a4F.L.k.k.J..  
Tue Mar 4 16:46:00 2008: 00000410: 18 1d 45 41 50 3d 30 2e  
32 30 32 2e 32 37 65 61 ..EAP=0.202.27ea  
Tue Mar 4 16:46:00 2008: 00000420: 2e 32 3b 53 56 43 3d 30  
2e 36 34 37 3b 50 12 3a .2;SVC=0.647;P.:

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Tue Mar 4 16:46:00 2008: 00000430: f3 3b 7f 99 45 f4 e6 a6
29 c4 17 51 ce 97 df .;..E...)..Q...
Tue Mar 4 16:46:00 2008: ****Enter processIncomingMessages: response code=11
Tue Mar 4 16:46:00 2008: ****Enter processRadiusResponse: response code=11
Tue Mar 4 16:46:00 2008: 00:19:56:b0:7e:b6 Access-Challenge received from
RADIUS server 10.0.47.42 for mobile 00:19:56:b0:
7e:b6 receiveId = 7
Tue Mar 4 16:46:00 2008: 00:19:56:b0:7e:b6 Processing Access-Challenge for
mobile 00:19:56:b0:7e:b6
Tue Mar 4 16:46:00 2008: 00:19:56:b0:7e:b6 Entering Backend Auth Req state
(id=178) for mobile 00:19:56:b0:7e:b6
Tue Mar 4 16:46:00 2008: 00:19:56:b0:7e:b6 Sending EAP Request from AAA to
mobile 00:19:56:b0:7e:b6 (EAP Id 178)
Tue Mar 4 16:46:00 2008: 00:19:56:b0:7e:b6 Received EAPOL EAPPKT from
mobile 00:19:56:b0:7e:b6
Tue Mar 4 16:46:00 2008: 00:19:56:b0:7e:b6 Received EAP Response from
mobile 00:19:56:b0:7e:b6 (EAP Id 178, EAP Type 13)
Tue Mar 4 16:46:00 2008: 00:19:56:b0:7e:b6 Entering Backend Auth Response
state for mobile 00:19:56:b0:7e:b6
Tue Mar 4 16:46:00 2008: 00:19:56:b0:7e:b6 Successful transmission of
Authentication Packet (id 20) to 10.0.47.42:1812,
proxy state 00:19:56:b0:7e:b6-00:00
Tue Mar 4 16:46:00 2008: 00000000: 01 14 00 b7 e8 b0 94 59
96 a1 7f e5 af 22 0f 6c .....Y.....".1
Tue Mar 4 16:46:00 2008: 00000010: 1e 33 6e ee 01 05 57 47
42 1f 13 30 30 2d 31 39 .3n...WGB..00-19
Tue Mar 4 16:46:00 2008: 00000020: 2d 35 36 2d 42 30 2d 37
45 2d 42 36 1e 1a 30 30 -56-B0-7E-B6..00
Tue Mar 4 16:46:00 2008: 00000030: 2d 31 39 2d 41 39 2d 34
32 2d 45 34 2d 31 30 3a -19-A9-42-E4-10:
Tue Mar 4 16:46:00 2008: 00000040: 45 41 50 54 4c 53 05 06
00 00 00 04 04 06 0a 00 EAPTLS.....
Tue Mar 4 16:46:00 2008: 00000050: 2f 06 20 10 74 75 63 73
6f 6e 2d 77 6c 63 32 30 /...tucson-wlc20
Tue Mar 4 16:46:00 2008: 00000060: 30 36 1a 0c 00 00 37 63
01 06 00 00 00 06 06 06 06....7c.....
Tue Mar 4 16:46:00 2008: 00000070: 00 00 00 02 0c 06 00 00
05 14 3d 06 00 00 00 13 .....=.....
Tue Mar 4 16:46:00 2008: 00000080: 4f 08 02 b2 00 06 0d 00
18 1d 45 41 50 3d 30 2e O.....EAP=0.
Tue Mar 4 16:46:00 2008: 00000090: 32 30 32 2e 32 37 65 61
2e 32 3b 53 56 43 3d 30 202.27ea.2;SVC=0
Tue Mar 4 16:46:00 2008: 000000a0: 2e 36 34 37 3b 50 12 a2
aa c7 ed 12 84 25 db 4b .647;P.....%.K
Tue Mar 4 16:46:00 2008: 000000b0: 4c dc 45 09 06 44 c6 L.E..D.
Tue Mar 4 16:46:00 2008: 00000000: 0b 14 04 04 6b 98 3a 74
12 1f 77 54 77 d8 a8 77 ...k.:t..wTw..w
Tue Mar 4 16:46:00 2008: 00000010: 4e a8 a7 6b 4f ff 01 b3
03 b9 0d 00 c6 87 1d b6 N..kO.....
Tue Mar 4 16:46:00 2008: 00000020: 06 5b 24 67 26 09 ee 5f
9c 64 f3 a9 c1 99 49 3e .[$g&...d....I>
Tue Mar 4 16:46:00 2008: 00000030: 2b 79 f1 57 17 65 6c 2f
c4 09 4d 54 7d a4 67 91 +y.W.el/..MT}.g.
Tue Mar 4 16:46:00 2008: 00000040: 48 59 ec aa 68 5b 0f 66
c5 e9 22 a6 09 8d 36 cf HY..h[.f..."...6.
Tue Mar 4 16:46:00 2008: 00000050: e3 d9 00 03 68 30 82 03
64 30 82 02 4c a0 03 02 ...h0..d0..L...
Tue Mar 4 16:46:00 2008: 00000060: 01 02 02 10 61 26 83 24
8d ba 53 9b 44 b0 39 bd ...a&.$..S.D.9.
Tue Mar 4 16:46:00 2008: 00000070: 51 cd 1d 48 30 0d 06 09
2a 86 48 86 f7 0d 01 01 Q..H0...*.H.....
Tue Mar 4 16:46:00 2008: 00000080: 05 05 00 30 13 31 11 30
0f 06 03 55 04 03 13 08 ...0.1.0...U....
Tue Mar 4 16:46:00 2008: 00000090: 41 41 52 4f 4e 4c 41 42
30 1e 17 0d 30 38 30 32 AARONLAB0...0802
Tue Mar 4 16:46:00 2008: 000000a0: 32 38 32 33 33 34 34 38
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5a 17 0d 31 38 30 32 32 28233448Z..18022  
Tue Mar 4 16:46:00 2008: 000000b0: 38 32 33 34 31 32 35 5a  
30 13 31 11 30 0f 06 03 8234125Z0.1.0...  
Tue Mar 4 16:46:00 2008: 000000c0: 55 04 03 13 08 41 41 52  
4f 4e 4c 41 42 30 82 01 U....AARONLAB0..  
Tue Mar 4 16:46:00 2008: 000000d0: 22 30 0d 06 09 2a 86 48  
86 f7 0d 01 01 01 05 00 "0...\*.H.....  
Tue Mar 4 16:46:00 2008: 000000e0: 03 82 01 0f 00 30 82 01  
0a 02 82 01 01 00 c8 5a .....0.....Z  
Tue Mar 4 16:46:00 2008: 000000f0: 57 75 45 19 4a 8b 99 da  
35 6c cb e0 b6 a0 ff 66 WuE.J...5l.....f  
Tue Mar 4 16:46:00 2008: 00000100: e2 8f c1 44 89 09 32 13  
c7 d8 70 6c 6d 74 2d e5 ...D..2...plmt-..  
Tue Mar 4 16:46:00 2008: 00000110: 89 b8 23 4f ff ea 0a 0e  
2d 57 1b 62 36 05 90 92 ..#O....-w.b6...  
Tue Mar 4 16:46:00 2008: 00000120: e0 ea f9 a3 e2 fb 54 87  
f4 cf 69 52 86 be 0b ca .....T...iR....  
Tue Mar 4 16:46:00 2008: 00000130: 14 d1 88 9d 82 01 9a f7  
08 da ba cc c9 29 37 94 .....7).  
Tue Mar 4 16:46:00 2008: 00000140: 27 75 d4 6e ae 9e 60 06  
84 94 9b 42 f6 c7 5e e0 'u.n...`....B..^.  
Tue Mar 4 16:46:00 2008: 00000150: 29 34 b3 06 cb 24 b1 39  
73 84 ba be ba d8 6f bb )4...\$.9s.....o..  
Tue Mar 4 16:46:00 2008: 00000160: 94 f9 32 36 d6 68 68 f2  
b2 43 e6 0e a9 b6 4b 62 ..26.hh..C....Kb  
Tue Mar 4 16:46:00 2008: 00000170: b8 f9 6e 47 dc 0e c5 5b  
16 a3 94 e9 96 08 e5 18 ..nG...[.....  
Tue Mar 4 16:46:00 2008: 00000180: f0 38 ad a2 98 d3 7c 73  
39 80 4a ae 14 e3 f8 f7 .8....|s9.J.....  
Tue Mar 4 16:46:00 2008: 00000190: 1e 14 27 bb 6a ce a1 2a  
dc 18 66 59 ea b4 d9 b1 ..'.j...\*...fY....  
Tue Mar 4 16:46:00 2008: 000001a0: a7 50 e9 ff 56 09 ea 93  
df 31 08 09 17 ab e5 e9 .P..V....1.....  
Tue Mar 4 16:46:00 2008: 000001b0: 80 90 30 95 e4 54 90 75  
bc f0 7f 13 b1 e7 cd 0b ..0..T.u.....  
Tue Mar 4 16:46:00 2008: 000001c0: 88 33 81 e7 74 d2 81 d9  
97 ab b2 57 f4 5f f6 8b .3..t.....W.\_..  
Tue Mar 4 16:46:00 2008: 000001d0: 1e c2 62 d4 de 94 74 7f  
8a 28 3b 64 73 88 86 28 ..b...t..(;ds..(  
Tue Mar 4 16:46:00 2008: 000001e0: 92 74 b0 92 94 7e ce e1  
74 23 f2 64 da 9a 88 47 .t...~.t#.d...G  
Tue Mar 4 16:46:00 2008: 000001f0: 02 03 01 00 01 a3 81 b3  
30 81 b0 30 0b 06 03 55 .....0..0...U  
Tue Mar 4 16:46:00 2008: 00000200: 1d 0f 04 04 03 02 01 86  
30 0f 06 03 55 1d 13 01 .....0...U...  
Tue Mar 4 16:46:00 2008: 00000210: 01 ff 4f ff 04 05 30 03  
01 01 ff 30 1d 06 03 55 ..O...0....0...U  
Tue Mar 4 16:46:00 2008: 00000220: 1d 0e 04 16 04 14 f0 a4  
3a c2 cd f5 d4 c8 b4 5e .....:.....^  
Tue Mar 4 16:46:00 2008: 00000230: ee 03 4f 83 79 b1 f2 d4  
e0 19 30 5f 06 03 55 1d ..O.y.....0...U.  
Tue Mar 4 16:46:00 2008: 00000240: 1f 04 58 30 56 30 54 a0  
52 a0 50 86 25 68 74 74 ..XOV0T.R.P.%htt  
Tue Mar 4 16:46:00 2008: 00000250: 70 3a 2f 2f 77 63 73 77  
69 6e 2f 43 65 72 74 45 p://wswin/CertE  
Tue Mar 4 16:46:00 2008: 00000260: 6e 72 6f 6c 6c 2f 41 41  
52 4f 4e 4c 41 42 2e 63 nroll/AARONLAB.c  
Tue Mar 4 16:46:00 2008: 00000270: 72 6c 86 27 66 69 6c 65  
3a 2f 2f 5c 5c 77 63 73 rl.'file://\\wcs  
Tue Mar 4 16:46:00 2008: 00000280: 77 69 6e 5c 43 65 72 74  
45 6e 72 6f 6c 6c 5c 41 win\CertEnroll\A  
Tue Mar 4 16:46:00 2008: 00000290: 41 52 4f 4e 4c 41 42 2e  
63 72 6c 30 10 06 09 2b ARONLAB.crl0...+  
Tue Mar 4 16:46:00 2008: 000002a0: 06 01 04 01 82 37 15 01  
04 03 02 01 00 30 0d 06 .....7.....0..  
Tue Mar 4 16:46:00 2008: 000002b0: 09 2a 86 48 86 f7 0d 01

```

01 05 05 00 03 82 01 01  .*H.....
Tue Mar  4 16:46:00 2008: 000002c0: 00 17 eb b2 43 da 02 66
05 cd 76 c0 7b 2a 16 83  ....C..f..v.{*..
Tue Mar  4 16:46:00 2008: 000002d0: 95 bb 5e bf d3 db fc 23
7e 14 6e 52 f8 37 01 7c  ..^....#~.nR.7.|
Tue Mar  4 16:46:00 2008: 000002e0: dd e9 bf 34 60 49 f1 68
7e da 53 07 f6 b2 66 6d  ...4`I.h~.S...fm
Tue Mar  4 16:46:00 2008: 000002f0: 8c bd ca 26 f4 fa 3d 03
4f db be 92 33 7e 50 06  ...&...=O...3~P.
Tue Mar  4 16:46:00 2008: 00000300: 5e b3 b9 35 c6 83 3c 90
1e 42 54 3e 63 17 9a 8a  ^..5...<..BT>c...
Tue Mar  4 16:46:00 2008: 00000310: d0 4f c4 68 24 97 90 a1
77 c9 c8 93 1f 58 ab ca  .O.h$....w....X..
Tue Mar  4 16:46:00 2008: 00000320: f7 18 e6 8c 36 12 44 9d
a6 ca 43 5f 03 07 16 99  ....6.D...C_.....
Tue Mar  4 16:46:00 2008: 00000330: 1d a4 48 7d a4 e5 12 7c
d0 81 e7 35 9e ad 69 5e  ..H}...|...5...i^
Tue Mar  4 16:46:00 2008: 00000340: 15 d7 2a 7f 51 4e 8c 59
69 9f d1 41 9b 2e e1 05  ..*.QN.Yi..A....
Tue Mar  4 16:46:00 2008: 00000350: 95 15 bd b1 1a 97 a6 69
d3 9c 0b 93 00 16 e1 49  ....i.....I
Tue Mar  4 16:46:00 2008: 00000360: 66 e3 98 29 79 ba 14 69
cf 76 27 69 7d 43 d0 f4  f..)y..i.v'i}C..
Tue Mar  4 16:46:00 2008: 00000370: 86 3c 6b 58 55 d4 85 be
c5 da 71 e4 43 76 3d 0a  .<kXU.....q.Cv=.
Tue Mar  4 16:46:00 2008: 00000380: d3 4f 49 97 12 75 e3 7d
88 92 99 5d fc 7a 69 28  .OI..u.}...].zi(
Tue Mar  4 16:46:00 2008: 00000390: f6 f0 20 70 33 b7 22 5a
bf c5 e5 28 43 35 00 2f  ...p3."z...(C5./
Tue Mar  4 16:46:00 2008: 000003a0: 47 46 9a 5a 45 5c 56 d5
24 3d 44 bf e9 63 f2 05  GF.ZE\V.$=D...c..
Tue Mar  4 16:46:01 2008: 000003b0: 84 da 94 17 b7 ef c3 31
7d 04 30 87 e1 c3 31 8a  ....1}.0...1.
Tue Mar  4 16:46:01 2008: 000003c0: 2a e1 52 16 03 01 00 0d
0d 00 00 05 02 01 02 00  *.R.....
Tue Mar  4 16:46:01 2008: 000003d0: 00 0e 00 00 00 18 1d 45
41 50 3d 30 2e 32 30 32  ....EAP=0.202
Tue Mar  4 16:46:01 2008: 000003e0: 2e 32 37 65 61 2e 33 3b
53 56 43 3d 30 2e 36 34  .27ea.3;SVC=0.64
Tue Mar  4 16:46:01 2008: 000003f0: 37 3b 50 12 05 0e 3c e0
e4 5f 38 21 96 26 8e 39  7;P...<..._8!.&.9
Tue Mar  4 16:46:01 2008: 00000400: 96 a9 09 5d...]
Tue Mar  4 16:46:01 2008: ****Enter processIncomingMessages: response code=11
Tue Mar  4 16:46:01 2008: ****Enter processRadiusResponse: response code=11
Tue Mar  4 16:46:01 2008: 00:19:56:b0:7e:b6 Access-Challenge received from
RADIUS server 10.0.47.42 for mobile 00:19:56:b0:
7e:b6 receiveId = 7
Tue Mar  4 16:46:01 2008: 00:19:56:b0:7e:b6 Processing Access-Challenge for
mobile 00:19:56:b0:7e:b6
Tue Mar  4 16:46:01 2008: 00:19:56:b0:7e:b6 Entering Backend Auth Req state
(id=179) for mobile 00:19:56:b0:7e:b6
Tue Mar  4 16:46:01 2008: 00:19:56:b0:7e:b6 Sending EAP Request from AAA to
mobile 00:19:56:b0:7e:b6 (EAP Id 179)
Tue Mar  4 16:46:01 2008: 00:19:56:b0:7e:b6 Received EAPOL EAPPKT from
mobile 00:19:56:b0:7e:b6
Tue Mar  4 16:46:01 2008: 00:19:56:b0:7e:b6 Received EAP Response from
mobile 00:19:56:b0:7e:b6 (EAP Id 179, EAP Type 13)
Tue Mar  4 16:46:01 2008: 00:19:56:b0:7e:b6 Entering Backend Auth Response
state for mobile 00:19:56:b0:7e:b6
Tue Mar  4 16:46:01 2008: 00:19:56:b0:7e:b6 Successful transmission of
Authentication Packet (id 21) to 10.0.47.42:1812,
proxy state
00:19:56:b0:7e:b6-00:00
Tue Mar  4 16:46:01 2008: 00000000: 01 15 05 76 81 b7 fa 95
63 1f 50 6f 98 4d a3 6b  ...v....c.Po.M.k
Tue Mar  4 16:46:01 2008: 00000010: db 3c bc 1d 01 05 57 47

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Tue Mar 4 16:46:01 2008: 00000020: 42 1f 13 30 30 2d 31 39 .<....WGB..00-19
2d 35 36 2d 42 30 2d 37
Tue Mar 4 16:46:01 2008: 00000030: 45 2d 42 36 1e 1a 30 30 -56-B0-7E-B6..00
2d 31 39 2d 41 39 2d 34
Tue Mar 4 16:46:01 2008: 00000040: 32 2d 45 34 2d 31 30 3a -19-A9-42-E4-10:
45 41 50 54 4c 53 05 06
Tue Mar 4 16:46:01 2008: 00000050: 00 00 00 04 04 06 0a 00 EAPTLS.....
2f 06 20 10 74 75 63 73
Tue Mar 4 16:46:01 2008: 00000060: 6f 6e 2d 77 6c 63 32 30 /...tucson-wlc20
30 36 1a 0c 00 00 37 63
Tue Mar 4 16:46:01 2008: 00000070: 01 06 00 00 00 06 06 06 06....7c.....
00 00 00 02 0c 06 00 00
Tue Mar 4 16:46:01 2008: 00000080: 05 14 3d 06 00 00 00 13 .....=.....
4f ff 02 b3 04 bd 0d 80
Tue Mar 4 16:46:01 2008: 00000090: 00 00 04 b3 16 03 01 03 O.....
6d 0b 00 03 69 00 03 66
Tue Mar 4 16:46:01 2008: 000000a0: 00 03 63 30 82 03 5f 30 m...i..f..c0.._0
82 02 47 a0 03 02 01 02
Tue Mar 4 16:46:01 2008: 000000b0: 02 0a 13 79 b0 72 00 00 ..G.....y.r..
00 00 00 0c 30 0d 06 09
Tue Mar 4 16:46:01 2008: 000000c0: 2a 86 48 86 f7 0d 01 01 ....0...*.H.....
05 05 00 30 13 31 11 30
Tue Mar 4 16:46:01 2008: 000000d0: 0f 06 03 55 04 03 13 08 ...0.1.0...U....
41 41 52 4f 4e 4c 41 42
Tue Mar 4 16:46:01 2008: 000000e0: 30 1e 17 0d 30 38 30 33 AARONLAB0...0803
30 33 31 38 33 33 30 39
Tue Mar 4 16:46:01 2008: 000000f0: 5a 17 0d 30 39 30 33 30 03183309Z..09030
33 31 38 34 33 30 39 5a
Tue Mar 4 16:46:01 2008: 00000100: 30 0e 31 0c 30 0a 06 03 3184309Z0.1.0...
55 04 03 13 03 57 47 42
Tue Mar 4 16:46:01 2008: 00000110: 30 81 9f 30 0d 06 09 2a U....WGB0..0...*
86 48 86 f7 0d 01 01 01
Tue Mar 4 16:46:01 2008: 00000120: 05 00 03 81 8d 00 30 81 .H.....0.
89 02 81 81 00 a6 34 91
Tue Mar 4 16:46:01 2008: 00000130: 20 dd 58 df b2 60 c0 6c .....4...X..`l
d0 9d 10 86 01 a9 61 9f
Tue Mar 4 16:46:01 2008: 00000140: cb 2b 01 22 49 d7 38 ee .....a..+."I.8.
00 fe be c9 cd 48 4b 73
Tue Mar 4 16:46:01 2008: 00000150: a0 75 6d bb d0 c9 20 24 .....HKs.um....$
0f cc f0 76 2f ad ef 43
Tue Mar 4 16:46:01 2008: 00000160: 53 8f b7 ec c7 50 04 02 ...v/..CS....P..
d8 03 4a 7d 08 9e b4 f2
Tue Mar 4 16:46:01 2008: 00000170: 78 ab 36 06 ba f7 02 ab ..J}....x.6.....
a1 6e 26 6c 2d d4 10 08
Tue Mar 4 16:46:01 2008: 00000180: 0d 25 82 1a d2 fc 14 4f .n&l-....%.....O
ff 86 fa fd 84 ec de be
Tue Mar 4 16:46:01 2008: 00000190: 3c 3e f8 be d6 b6 7b 81 .....<>....{.
89 9a da a6 96 fd 7f e7
Tue Mar 4 16:46:01 2008: 000001a0: dd bf 7f 26 6e 20 03 63 .....&n..c
c4 a2 56 4c 8e 75 99 02
Tue Mar 4 16:46:01 2008: 000001b0: 03 01 00 01 a3 82 01 3c ..VL.u.....<
30 82 01 38 30 0e 06 03
Tue Mar 4 16:46:01 2008: 000001c0: 55 1d 0f 01 01 ff 04 04 0..80...U.....
03 02 05 a0 30 1d 06 03
Tue Mar 4 16:46:01 2008: 000001d0: 55 1d 0e 04 16 04 14 41 ....0...U.....A
97 b6 32 83 7f c0 88 11
Tue Mar 4 16:46:01 2008: 000001e0: 4d 59 d5 44 70 e9 0f c6 ..2.....MY.Dp...
3b a2 85 30 1f 06 03 55
Tue Mar 4 16:46:01 2008: 000001f0: 1d 23 04 18 30 16 80 14 ;..0...U.#..0...
f0 a4 3a c2 cd f5 d4 c8
Tue Mar 4 16:46:01 2008: 00000200: b4 5e ee 03 4f 83 79 b1 ...:.....^..O.y.
f2 d4 e0 19 30 5f 06 03
Tue Mar 4 16:46:01 2008: 00000210: 55 1d 1f 04 58 30 56 30 ....0_.U...X0V0
54 a0 52 a0 50 86 25 68
Tue Mar 4 16:46:01 2008: 00000220: 74 74 70 3a 2f 2f 77 63 T.R.P.%http://wc
73 77 69 6e 2f 43 65 72

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74 45 6e 72 6f 6c 6c 2f swin/CertEnroll/
Tue Mar 4 16:46:01 2008: 00000230: 41 41 52 4f 4e 4c 41 42
2e 63 72 6c 86 27 66 69 AARONLAB.crl.'fi
Tue Mar 4 16:46:01 2008: 00000240: 6c 65 3a 2f 2f 5c 5c 77
63 73 77 69 6e 5c 43 65 le://\\wswin\Ce
Tue Mar 4 16:46:01 2008: 00000250: 72 74 45 6e 72 6f 6c 6c
5c 41 41 52 4f 4e 4c 41 rtEnroll\AARONLA
Tue Mar 4 16:46:01 2008: 00000260: 42 2e 63 72 6c 30 81 84
06 08 2b 06 01 05 05 07 B.crl0....+.....
Tue Mar 4 16:46:01 2008: 00000270: 01 01 04 78 30 76 30 38
06 08 2b 06 01 05 4f ff ...x0v08...+...O.
Tue Mar 4 16:46:01 2008: 00000280: 05 07 30 02 86 2c 68 74
74 70 3a 2f 2f 77 63 73 ..0...,http://wcs
Tue Mar 4 16:46:01 2008: 00000290: 77 69 6e 2f 43 65 72 74
45 6e 72 6f 6c 6c 2f 77 win/CertEnroll/w
Tue Mar 4 16:46:01 2008: 000002a0: 63 73 77 69 6e 5f 41 41
52 4f 4e 4c 41 42 2e 63 cswin_AARONLAB.c
Tue Mar 4 16:46:01 2008: 000002b0: 72 74 30 3a 06 08 2b 06
01 05 05 07 30 02 86 2e rt0:..+.....0...
Tue Mar 4 16:46:01 2008: 000002c0: 66 69 6c 65 3a 2f 2f 5c
5c 77 63 73 77 69 6e 5c file://\\wswin\
Tue Mar 4 16:46:01 2008: 000002d0: 43 65 72 74 45 6e 72 6f
6c 6c 5c 77 63 73 77 69 CertEnroll\wswi
Tue Mar 4 16:46:01 2008: 000002e0: 6e 5f 41 41 52 4f 4e 4c
41 42 2e 63 72 74 30 0d n_AARONLAB.crt0.
Tue Mar 4 16:46:01 2008: 000002f0: 06 09 2a 86 48 86 f7 0d
01 01 05 05 00 03 82 01 ..*.H.....
Tue Mar 4 16:46:01 2008: 00000300: 01 00 2e a1 3f f3 52 52
97 b5 83 43 0f 61 20 64 ....?.RR...C.a.d
Tue Mar 4 16:46:01 2008: 00000310: 40 fd d3 16 38 4f d9 5f
64 94 a7 c2 59 53 53 52 @...80_...YSSR
Tue Mar 4 16:46:01 2008: 00000320: 90 5d ee 1c e0 2a 90 af
f4 e8 51 3e 87 38 9a ce .]...*....Q>.8..
Tue Mar 4 16:46:01 2008: 00000330: 88 0c 4f 1f ad f1 ef dd
96 44 6b 51 4e 9f 2c a1 ..O.....DkQN,..
Tue Mar 4 16:46:01 2008: 00000340: 8a c5 0e bd d0 f9 7e 34
fa 22 67 26 e1 26 e6 3e .....~4."g&.>
Tue Mar 4 16:46:01 2008: 00000350: bd b8 9f 64 f0 65 6f 23
f0 67 40 60 0f 4b f1 ff ...d.eo#.g@`.K..
Tue Mar 4 16:46:01 2008: 00000360: c1 9c 3c 11 81 be b2 7a
45 b6 bd f2 26 76 2a 3a ..<....zE...&v*:
Tue Mar 4 16:46:01 2008: 00000370: 52 32 65 cf 62 0b 47 65
b4 b5 fa db b4 4f ff 07 R2e.b.Ge.....O..
Tue Mar 4 16:46:01 2008: 00000380: ae 54 58 11 d8 52 8f f8
e3 e5 00 f1 c4 1d 2a a4 .TX..R.....*.

```

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