ZyXEL

Firmware Release Note

ZyAIR G-3000

Release 3.50(HO.5)C0

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ZyXEL ZyAIR G-3000 Standard Version release 3.50(HO.5)C0 Release Note

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Supported Platforms:

ZyXEL ZyAIR G-3000

Versions:

ZyNOS F/W Version : V3.50(HO.5) | 09/08/2006 11:32:34
Bootbase Version: V1.03 | 11/01/2004 17:53:54

Notes:

1. ZyAIR G-3000 is a country dependent product. Please setup correct country code before shipping.
2. If the roaming is active, the wireless STA will not be able to associate with G-3000 unless the Ethernet port is connected and the IP is gotten from DHCP server while the IP assignment is configured as “Dynamic”.
3. AP firmware UMAC is 2.12.23.0, LMAC is 2.13.12.0.
4. In WPA-PSK, no Mix-Mode support.
5. Minimum Fragment and RTS Threshold of WLAN is 800.
6. When Authentication server is “Local user database only” or “Local first, then RADIUS”, accounting process will be disabled.
7. Accounting process will be disabled in WPA-PSK mode or embedded RADIUS used.
8. When AP is working under MESSID mode and security mode is WEP, 8021X-STATIC64, or 8021X-STATIC128 (which use static WEP key for encryption / decryption), only key1 is usable, no matter which key index is assigned in the security profile. This implies that all clients can only, and must set WEP key index 1. Other key index will be meaningless.
9. Please use eWC (WEB) or CI command to edit SSID profile properties. SMT doesn’t support SSID profile edit.
10. If STA1 and STA2 connected to same BSS, but got different VLAN number from RADIUS server, the traffic between STA1 and STA2 won’t be blocked when intra-BSS traffic is enabled.
11. WPA2 support of Windows XP service pack 2 may need to install **Update for Windows XP (KB893357)** manually. Additionally, please update latest wireless adapter driver from vender site in order to get WPA2 / WMM support.
12. Current MESSID mode can set different security mode for different SSID, but not all types of combinations can work if supplicant is windows wireless zero configuration

(shorten as WZC below). If AP is configured to a security combination which is not listed below, WZC may not connect to some SSID successfully. Please reference detailed information from the following table. Other supplicants (Funk Odyssey / ZyXEL client tool) may connect to security combination which is not listed on the table.

	NONE	WEP	8021X -ONLY	8021X -DYNAMIC64	8021X-DYNAMIC128	8021X -STATIC64	8021X-STATIC128	WPA	WPA -PSK	WPA -MIX	WPA2
NONE	●	●	●	●	●	●	●				
WEP	●	●	●	●	●	●	●				
8021X-ONLY	●	●	●	●	●	●	●				
8021X-DYNAMIC64	●	●	●	●	●	●	●				
8021X-DYNAMIC128	●	●	●	●	●	●	●				
8021X-STATIC64	●	●	●	●	●	●	●				
8021X-STATIC128	●	●	●	●	●	●	●				
WPA								●			
WPA-PSK									●		
WPA-MIX										●	
WPA2								●	●	●	
WPA2-PSK								●	●	●	
WPA2-MIX											
WPA2-PSK-MIX											
NO ACCESS	●	●	●	●	●	●	●				

Compatibility table of Security policies of windows XP supplicant

13. Under MESSID mode, while public SSID status change from enabled to disabled, some STA will cache this scan result in the space of three minute and user can find this SSID in the STA scan list. User can disable STA driver to delete the scan result which cache in the STA

Known Issues:

1. WinXP supplicant doesn't work when it configures as 802.1x authentication with static WEP key.
2. WPA interoperability issue : When centrino station configure as WPA (or WPA-PSK) mode and data encryption filed set as WEP, it can not work with G-3000 under WPA (or WPA-PSK) mode and using WEP as group key. In this case, user must configure the data encryption field as TKIP then stations will automatic switch the group key cipher as WEP after it received the WPA information element from G-3000.
3. WDS link with security enabled may break in heavy traffic, but system will recover it automatically.
4. Use G-3000 as RADIUS server which performs PEAP authentication and STA uses WZC to authenticate to G3000 through G-560 which act as AP, STA can't authenticate successful.
5. WMM/QoS is always enabled in this release.
6. When AP is configured with WPA2-MIX, or WPA2-PSK-MIX mode, the ZyXEL G-220F can't connect with WPA or WPA-PSK.

CI Command List:

Features:

Modification in 3.50(HO.5)C0 | 09/08/2006

1. [FEATURE CHANGED]
   Modify to FCS version.

Modification in 3.50(HO.5)b2 | 09/01/2006

1. [BUG FIXED]
   SPRID: 060815942
   Symptom: In GUI --> System --> password page, the background color is different to others.
2. [BUG FIXED]
   SPRID: 060815944
   Symptom: In RADIUS server page, the share secret length is up to 128 characters; it is different to HELP description.
3. [BUG FIXED]
   SPRID: 060821217
   Symptom: (Built-in or Removable module) In MESSID, WPA、WPA-MIX、WPA2、WPA2-MIX mode can't work; Wireless client can't associate to DUT.
4. [BUG FIXED]
   SPRID: 050408252
   Symptom: Unable to perform PEAP authentication with G-405
5. [BUG FIXED]
   SPRID: 050608407
   Symptom: WPA\802.1X STA cannot associate and authenticate successfully by automatically after DUT WLAN interface restarted.

Modification in 3.50(HO.5)b1 | 08/11/2006

1. [FEATURE ENHANCED]
   Symptom: Enlarge eight public SSID numbers on MSSID mode
2. [FEATURE CHANGED
   Symptom: Change WLAN channel usage of some countries.
   Condition:
   ch1 ~ ch11: USA, Philippines, Taiwan, India, Brazil.
   ch1 ~ ch13: Others

3 [FEATURE ENHANCED]
Symptom: Support centralized admin account (MD5)
Condition: Put the administrator into radius server. User can specify a account on radius server become the system administrator for this device

6. [BUG FIXED]

SPRID: 060112602
Symptom: Auto configuration by DHCP can't run with windows server 2003.

7. [BUG FIXED]
   SPRID: 060214602
   Symptom: WPA-PSK\WPA2-PSK cannot work (EAPOL MIC Error v1) after DUT changed security mode from WPA to WPA-PSK or WPA2-PSK mode
8. [BUG FIXED]
   SPRID: 060308648
   Symptom: When G3000 works in MESSID mode, wireless client can't get IP address from Win2003 DHCP server.
9. [BUG FIXED]
   SPRID: 060607392
   Symptom: G3000 crash on the firmware HO.4
   Condition: When G3000 enable roaming feature,if STA roaming between G3000s sometime will cause G3000 crash
10. [BUG FIXED]
    SPRID: 060626641
    Symptom: When configure the WAN subnet 255.255.248.0 on the WEB GUI, the system will pop up the error message "Subnet Mask Error
11. [BUG FIXED]
    Symptom: When G3000 enable accounting feature. STA disassociate form AP, or STA disassociate form AP irregularly and doesn't send disassociated message to AP, The accounting server doesn't stop accounting
12. [BUG FIXED]
    Symptom: When STA use WEP(Shared key) and reconnect to G3000 ,it can not work

Modification in 3.50(HO.4)C0 | 01/19/2006

2. [FEATURE CHANGED]
   Modify to FCS version.

Modification in 3.50(HO.4)b4 | 01/05/2006

1. [BUG FIXED]
   Click channel usage, DUT will reboot without message.
2. [BUG FIXED]
   The SNMP pwWlanTxPower (1.3.6.1.4.1.890.1.9.5.4) item doesn't work properly.
3. [FEATURE CHANGED]
   Removed some unused OID and description from proprietary MIB file.

Modification in 3.50(HO.4)b3 | 12/14/2005

1. [BUG FIXED]
   G3000 add the removable card first, in SMT 24.6, load the configuration, DUT will show some message and reboot..
2. [BUG FIXED]
   When configured with WPA or WPA-PSK ,WPA-Mixed the intra BSS traffic function failed.

3. [BUG FIXED]
   WDS: Two DUT make up a WDS-Link, STA1 associate to DUT1, STA2 associate to DUT2, 2 STA can access each other, After user change both DUT WDS Links setting(Example: Straight Topology to Mesh Topology), two STA can't access each other until reboot the system.
4. [BUG FIXED]
   WDS: Two DUT make up a WDS-Link(PSK), change both DUT security mode to non-security, WDS link will be no security, Let STA1 associate to DUT1, STA2 associate to DUT2, delete the ARP table in STA1 and STA2, STA1 only can ping to DUT1, it can't ping to DUT2 or STA2 even user restart the DUT1..
5. [BUG FIXED]
   In SMT 3.5.2 Roaming Configuration issue.
6. [BUG FIXED]
   SMT 16 VLAN setting, user input VLAN Name more than 32 characters, system only save 32 character.
7. [BUG FIXED]
   On VLAN mode, two STA associate to different SSID with same VLAN-id (MESSID mode), two STA can' t ping to each other. Only WPA、WPA-PSK、WPA2、WPA2-PSK get this issue, other security mode doesn' t..
8. [BUG FIXED]
   Enable VLAN mode, set DUT on AP mode, let STA associate to DUT with EAP-TLS or EAP-PEAP, RADIUS server assign VLAN-id to STA, DUT doesn't record it, if RADIUS server assign VLAN-Name string to STA, DUT still doesn't record it.
9. [BUG FIXED]
   The Enable intra-BSS Traffic check box isn't cleared when you enable layer-2 isolation.

Modification in 3.50(HO.4)b2 | 11/17/2005

1. [FEATURE ENHANCED]
   Add a selectable UI of public SSID profile for MESSID mode, both eWC and SMT menu.
2. [FEATURE ENHANCED]
   Add signal level (RSSI) display to wireless client association table and WDS link status.
3. [FEATURE ENHANCED]
   Extend length of shared secret key between device and RADIUS server from 32 to 128.
4. [FEATURE CHANGED]
   Change NTP activity. Device will always use the specified server if any is specified.
5. [FEATURE CHANGED]
   Change default preamble setting from long to dynamic.
6. [BUG FIXED]
   Fix various configuration will cause device reboot if the removable card inserted..
7. [BUG FIXED]
   From eWC, maintenance / association list, removable association list static show

error ESSID -- always show ZyXEL.

8. [BUG FIXED]
   RADIUS function fail -> 8021x WPA all can't work, supplicant show requesting authentication, when RADIUS index 1 is Internal.
9. [BUG FIXED]
   Fix some eWC help pages.

Modification in 3.50(HO.4)b1 | 10/17/2005

1. [FEATURE CHANGED]
   Change AP code from FullMAC to SoftMAC. UMAC is 2.12.23.0, LMAC is 2.13.12.0.
2. [FEATURE ENHANCED]
   Support multiple ESSID feature.
3. [FEATURE ENHANCED]
   Support WPA2 AES encryption.
4. [FEATURE ENHANCED]
   Add WMM support.
5. [FEATURE ENHANCED]
   Change configuration style to profile-based setting. eWC and SMT menu are changed as configuration style changes.
6. [FEATURE ENHANCED]
   Support for auto configuration, including TFTP client.
7. [FEATURE ENHANCED]
   Support encrypted auto configuration script file.
8. [FEATURE ENHANCED]
   Support for WLAN SNMP proprietary MIB.
9. [FEATURE CHANGED]
   Change MIB name from PROWIRELESS-MIB to ZYXEL-PROWIRELESS-MIB.
10. [FEATURE ENHANCED]
    Support VLAN assigned by RADIUS server.
11. [FEATURE ENHANCED]
    Support background AP scan.
12. [FEATURE ENHANCED]
    Support local user database authentication for some specific security mode.
13. [FEATURE CHANGED]
    Modify limitation of minimum RTS threshold from 0 to 800.
14. [FEATURE CHANGED]
    Modify eWC wizard setup. Now it will write appreciate setting to SSID profile 1 and security profile 1 automatically.
15. [FEATURE ENHANCED]
    Change MESSID operation. Now only the first selected SSID will response broadcast probing request. The others will act as their SSIDs are hidden.
16. [FEATURE ENHANCED]
    Support WLM EMS 1.0.

Modification in 3.50(HO.3)C0 | 11/04/2005

1. [FEATURE CHANGED]

Modify to FCS version.

Modification in 3.50(HO.3)b1 | 10/11/2005

1. [BUG FIXED]
   Fixed bug sometimes STA will take a long time to authenticate with AP when use WPA / WPA-PSK mode.

Modification in 3.50(HO.2)C0 | 06/21/2005

2. [FEATURE CHANGED]
   Change ZyNOS version from 3.50(HO.2)b1 to 3.50(HO.2)C0

Modification in 3.50(HO.2)b1 | 06/06/2005

1. [BUG FIXED]
   Symptom: Aegis client can't work with G3000.
   Condition: Configure the wireless security mode as WPA or 802.1X dynamic WEP and use internal PEAP server to authenticate STA with Aegis client, STA can't authenticate with G3000 successful.

2. [BUG FIXED]
   Symptom: G405 can't work with G3000.
   Condition: Configure the wireless security mode as WPA or 802.1X dynamic WEP and use internal PEAP server to authenticate STA (G405). G405 can't authenticate with G3000 successful.

3. [BUG FIXED]
   System: When G-3000 is configured as 802.1x with dynamic WEP key, STAs associated to the same G-3000 cannot communicate to each other.

Modification in 3.50(HO.1)C0 | 02/02/2005

1. [FEATURE CHANGED]
   Change ZyNOS version from 3.50(HO.1)b3 to 3.50(HO.1)C0

Modification in 3.50(HO.1)b3 | 01/12/2005

1. [FEATURE CHANGED]
   Accounting process will be disabled in WPA-PSK mode, embedded RADIUS used, and Local user database used.

2. [BUG FIXED]
   Symptom: Domain name will be erased when changed IP address assignment from dynamic to static.

Modification in 3.50(HO.1)b2 | 12/14/2004

1. [FEATURE ENHANCED]
   Support Layer-2 Isolation. See Appendix 8

2. [BUG FIXED]

Symptom: System exception and reboot occur when system name is up to 30 characters long and enable 802.1x.

3. [BUG FIXED]
   Symptom: External accounting server can work when enable internal RADIUS server.

4. [BUG FIXED]
   Symptom: WPA-PSK STA cannot associate with DUT successfully when DUT changed configuration from WPA with external RADIUS and accounting server enable.

Modification in 3.50(HO.1)b1 | 11/01/2004

1. [FEATURE ENHANCED]
   Support backup radius server. See Appendix 4

2. [FEATURE ENHANCED]
   Support Configurable Output Power for Built-in WLAN card. See Appendix 6

3. [FEATURE ENHANCED]
   Support Blocking Intra-BSS traffic. See Appendix 5

4. [FEATURE ENHANCED]
   Support Embedded PEAP server. See Appendix 3

5. [FEATURE ENHANCED]
   Add WDS link information into association list table in eWC.

6. [FEATURE ENHANCED]
   eWC supports HTTPS link.

7. [FEATURE ENHANCED]
   Add Remote Manager in SMT/eWC.

8. [FEATURE ENHANCED]
   Support Vantage WLC 200

9. [FEATURE CHANGED]
   Disable WPA Mix-mode in WPA-PSK mode.

10. [FEATURE CHANGED]
    In CI command, use “WLAN 0/1” to select which WLAN card will be configured. See CI command

11. [FEATURE CHANGED]
    Extend VLAN ID from 256 to 4094

12. [FEATURE CHANGED]
    Range of Fragment Threshold is from 800 to 2432.

13. [FEATURE CHANGED]
    Modify default ROM file value.
    - Change “ESSID” to “Name(SSID)”
    - Default SSID “Wireless” is changed to “ZyXEL”
    - Logs
      - ✓ Enable Send log: System Maintenance, System Error, PKI, SSL/TLS, 802.1x, Wireless and Internal RADIUA server.

14. [BUG FIXED]
    Symptom: SMT3.5:Available channel ID isn’t correct after changing sys country code on menu 24.8.
    Condition: MT3.5:Available channel ID isn’t correct after changing sys country code on menu 24.8.

15. [BUG FIXED]
    Symptom: eWC\Wizard setup:Pls add configurations of removable wireless LAN setup in the wizard setup.
    Condition: eWC\Wizard setup:Pls add configurations of removable wireless LAN setup in the wizard setup.

16. [BUG FIXED]
    Symptom: Wireless service was inactive sometimes
    Condition: Sometimes the wireless service will not work. When happened, the G-3000 will not issue beacon and the station card can not associate to G-3000 anymore.

17. [BUG FIXED]
    Symptom: WDS:After overnigh testing, FTP clients disconnect when running 6 AP+Bridge mode.
    Condition:
    (1). Setup the WDS link and enable RSTP(No WDS security) for 6 APs using AP+Bridge mode.
    (2). Setup the station1 that associate to AP1 and enable FTP server.
    (3). Setup the station2 that associate to AP2 and download/upload files to station1 by FTP_client.
    (4). Setup the station3 that connect to AP3 by Ethernet and download/upload files to station1 by FTP_client
    (5). after overnight test, you can find that all FTP clients disconnect.

18. [BUG FIXED]
    Symptom: SMT menu1:Sometime DNS server configuration cannot save to rom when set to ’User-Defined’.

Condition: SMT menu1:Sometime DNS server configuration cannot save to rom when set to 'User-Defined'.

19. [BUG FIXED]
    Symption: System crash when internal radios are dedicated to WDS bridge function with PSK security, removable radios implement AP only with WPA security and roaming enable.
    Condition: System crash when internal radios are dedicated to WDS bridge function with PSK security, removable radios implement AP only with WPA security and roaming enable.

Modification in 3.50(HO.0)C0 | 08/13/2004

1 [FEATURE CHANGE]
Change ZyNOS version from 3.50(HO.0)b6 to 3.50(HO.0)C0

Modification in 3.50(HO.0)b6 | 08/09/2004

1. [BUG FIXED]
   Symptom : The channel id field of WIRELESS LAN page in eWC is inconsistent after changing the channel id field in WIZARD SETUP page.

Modification in 3.50(HO.0)b5 | 07/26/2004

1. [BUG FIXED]
   Symptom : Low performance issue.
   Condition :
   (1) STA connected to removable WLAN adapter and PC connected to LAN port of G-3000.
   (2) Run Chariot to test the throughput between STA and PC, the result is lower than 18 Mbps.

2. [FEATURE CHANGED]
   Change the number of WDS links from 6 to 5.

3. [FEATURE ENHANCED]
   The WEP fields in SMT3.5 will show N/A if WPA/WPA-PSK/802.1x with dynamic WEP key enabled in SMT23.4.

Modification in 3.50(HO.0)b4 | 07/02/2004

1. [BUG FIXED]
   Symptom : eWC\Maintenance\Association List :duplicate MAC address appear when enable both of built-in and removable WLAN.
   Condition :
   (1) STA1 connects to build-in WLAN adapter and then STA2 connects to removable WLAN adapter.
   (2) The association list in eWC will show STA2's MAC address in the two WLAN adapters.

2. [BUG FIXED]
   Symptom : Type error.
   Condition : eWC\system\Time Setting : Invalid string for 'Daylight Saving Setup'.

3. [BUG FIXED]
   Symptom : STA that configures as 802.1x mode with dynamic WEP key cannot associate with G-3000 which is set to WPA or WPA-PSK mode with mixed mode enabled.

4. [BUG FIXED]
   Symptom : eWC:\Wireless\802.1x/WPA: the configuration of Authentication Databases cannot be saved.
   Condition :
   (1) Configure the G-3000 as 802.1x mode with dynamic WEP key disabled.
   (2) Change the Authentication Databases field and then save it.
   (3) The setting is considered as an unchanged status and cannot perform saving process.

5. [FEATURE ENHANCED]
   Online help in eWC is updated.

6. [FEATURE ENHANCED]
   Log the same format for STA associated and disassociated.

7. [FEATURE ENHANCED]
   Warning message 'PSK field of WDS link cannot be empty' should appear on 802.1X/WPA web page when changing key management protocol to WPA(WPA-PSK) or 802.1x+dynamic WEP.

8. [BUG FIXED]
   Symptom : Build-in WLAN interface stopped working after running FTP 15 hours with WPA mode enabled in G-3000.
   Condition :
   (1) Configure G-3000 as AP mode and enable WPA.
   (2) STA1 associated with build-in WLAN and STA2 associated with removable WLAN by WPA.
   (3) Running FTP service between STA1 and STA2.
   (4) After 15 hours, STA1 disconnected with build-in WLAN and the error message, "Error: Management FreeQ not enough entries, fragments: 0x01", displayed in the SMT.

Modification in 3.50(HO.0)b3 | 06/07/2004

1. [BUG FIXED]
   Symptom : ESSID field can only key in 30 characters on Wizard Setup function. It should be 32 characters.

2. [BUG FIXED]
   Symptom : G-3000 can accept the 0.0.0.0 IP address on Wizard Setup function.

3. [BUG FIXED]
   Symptom : G-3000 can accept the illegal IP address (EX:225.1.1.1) on Wizard Setup function.

4. [BUG FIXED]
   Symptom : G-3000 can accept the 0.0.0.0 subnet mask on Wizard Setup function.

5. [BUG FIXED]
   Symptom : If the log items are more than 80, the display list doesn't work.

6. [BUG FIXED]
   Symptom : eWC\ADVANCED\WIRELESS\RADIUS: Shared secret key can accept 32 characters in Radius function but in help page it shows that the key accept up to 31 characters.

7. [BUG FIXED]
   Symptom : eWC\WIRELESS\RADIUS: IP Address field can accept the 0.0.0.0 and 255.255.255.255.

8. [BUG FIXED]
   Symptom : eWC\ADVANCED\SYSTEM\Time Setting: "Dalight Saving Setup" can accept invalid Date. For example, 0 month 0 day / 2 month 31 day

9. [BUG FIXED]
   Symptom : STA can not connect to G-3000 after changing WPA-PSK mode to static WEP mode.

10. [BUG FIXED]
    Symptom : STA can not access bridge link when enabling native VLAN ID.
    Condition :
    (1). Configure the WDS link with two APs (AP+Bridge mode) and don't enable WDS security/native VLAN ID. (AP1---AP2)
    (2). Establish the connection of STA1 to AP1.
    (3). Make sure STA1 can access AP1 and AP2.
    (4). Enable the same native VLAN ID on AP1 and AP2.
    (5). You can find STA1 can not access AP2.

11. [BUG FIXED]
    Symptom : 802.1x with dynamic WEP key can not work when shared secret of accounting server is invalid.

12. [BUG FIXED]
    Symptom : SMT22:SNMP Trap function can not work.

13. [BUG FIXED]
    Symptom : eWC: It does not remove left menu from screen when users logout.

14. [BUG FIXED]
    Symptom : eWC / Maintenance / Show Statistics: Bridge link status should be hidden when operating mode is AP.

15. [BUG FIXED]
    Symptom : eWC:Javascript error when entering IP address for DNS.

16. [BUG FIXED]
    Symptom : eWC:The statistics popup window contents are obscured at the bottom. System Up Time is only visible at the top half.

17. [BUG FIXED]
    Symptom : Show the ESSID when operating mode is bridge/repeater mode. It should be hidden.

18. [BUG FIXED]
    Symptom : eWC: Left menu area has horizontal scrollbar.

19. [BUG FIXED]
    Symptom : G-3000 can not get IP address from WDS link when dynamic IP is configured.

20. [FEATURE CHANGED]
    Upgrade uAP version from 1.0.2.0 to 1.0.4.3.

21. [FEATURE ENHANCED]
    Online help in eWC is ready.

22. [FEATURE CHANGED]
    Default value of time protocol is consistent between SMT and eWC.

23. [FEATURE ENHANCED]
    Show the associated WLAN adapter and its ESSID in Maintenance /Association List page.

24. [FEATURE ENHANCED]
    Add system name in the eWC generated tile.

25. [FEATURE ENHANCED]
    Add source address and destination address in the logs page of eWC when time synchronization is successful.

26. [FEATURE CHANGED]
    eWC\Show statistics: Instead of showing bridge link #1 through #16, the table is broken into two tables. One table is for Build-in card and another is for removable card.

27. [FEATURE ENHANCED]
    Add the logs of Bridge Association (Up/Down), Client Association/Disassociation.

Modification in 3.50(HO.0)b2 | 04/29/2004

1. [BUG FIXED]
   Symptom : Sometime the station can not associate with Built-in WLAN adapter by WPA after passing the WPA authentication with Removable WLAN adapter.
   Condition :
   (1). Establish the connection with Removable WLAN adapter by WPA.
   (2). Disconnect and then change the connection to Build-in WLAN adapter by WPA.
   (3). The client can not associate with Build-in WLAN adapter by WPA.

2. [BUG FIXED]
   Symptom : If the VLAN ID of WLAN adapter that STA associated with is different from RADIUS server, WPA(WPA-PSK) can not work after re-authentication timer expired.
   Condition :
   (1). Enable VLAN mechanism (SMT16) and set different VLAN ID for built-in and removable WLAN adapters (SMT 3.5). (Only one WLAN adapter's VLAN ID can be the same with device's native VLAN ID)
   (2). STA associated with the WLAN adapter that its VLAN ID is different from the device's VLAN ID.
   (3). The connection that STA established will be broken after re-authentication timer expired.

3. [BUG FIXED]
   Symptom : eWC\ADVANCED\WIRELESS: Operating mode will not be changed to correct mode.
   Condition :
   (1). Set the operation mode of built-in WLAN adapter to "access point" and then saved the configuration.
   (2). Then set the operation mode of removable WLAN adapter to "AP + bridge" and saved the configuration.
   (3). Select the built-in WLAN adapter, the operation mode change to "AP + bridge".

Modification in 3.50(HO.0)b1 | 04/09/2004

1. First release for C3 firmware

Appendix 1: CI Command List

Command Class List Table		
System Related Command	Exit Command	Ethernet Related Command
Wireless LAN Related Command	IP Related Command	Bridge Related Command
802.1x Related Command	RADIUS Related Command	Certificates Related Command
Vantage Related Command	Wireless LAN Profile Configuration Related Command	

System Related Command Home

Command				Description
sys				
	atsh			show firmware and system information
	callhist			
		display		display call history
		remove	<index>	remove entry from call history
	countrycode		[countrycode]	show/set country code
	datetime			
		date	[year] [month] [day]	show/set current date
		time	[hour] [minute] [second]	show/set current time
		period	[day]	show/set resync period
		sync		resync datetime with time server
	domainname			display domain name
	edit		<filename>	edit a text file
	extraphnum			maintain extra phone numbers for outcalls
		add	<set 1-3> <1st phone num> [2nd phone num]	add extra phone numbers
		display		display extra phone numbers
		node	<num>	set all extend phone number to remote node <num>
		remove	<set 1-3>	remove extra phone numbers
		reset		reset flag and mask
	feature			display feature bit
	hostname		[hostname]	display system hostname
	logs			
		category		
			[8021x|access|error|icmp|mten|packetfilter|ppp|cdr|pki|tls|remote|tcpreset|wireless] [0|1|2|3] [0|1]	set various category log type setting
			display	display current logs setting
		clear		clear log
		disp		display log
		errlog		
			clear	clear error log
			disp	display error log
			online [on|off]	turn on/off error log online display
		load		load log
		mail		
			alertAddr <mail address>	alert mail target address
			clearLog <no|yes>	set clear log after sending mail
			display	display current mail setting
			logAddr	log mail target address

			schedule		
				display	display current schedule setting
				hour <0-23>	set hourly schedule
				minute <0-59>	set minute
				policy <0-5>	set schedule policy
				week <0-6>	set weekly schedule
			server <domain|IP>		set mail server
			subject <subject>		set mail subject
		save			save log
		syslog			
			active <no|yes>		set syslog active
			display		display current syslog setting
			facility <1-7>		set log facility
			server <domain|IP>		set syslog server
		dupcheck	<0|1> [seconds]		set log duplicate check setting
		updateSvrIP	<minutes>		set minutes to update log server IP address
	rn				
		load	<entry no.>		load remote node information
		disp	<entry no.>(0:working buffer)		display remote node information
		nat	<none|sua|full_feature>		config remote node nat
		nailup	<no|yes>		config remote node nailup
		save	[entry no.]		save remote node information
	stdio		[second]		change terminal timeout value
	time		[hour [min [sec]]]		display/set system time
	trcdisp	parse, brief, disp			monitor packets
	trclog				
	trcpacket				
	version				display RAS code and driver version
	view		<filename>		view a text file
	wdog				
		switch	[on|off]		set on/off wdog
		cnt	[value]		display watchdog counts value: 0-34463
	romreset				restore default romfile
	pwderrtm		[minutes]		set password error timeout value
	debug				
	socket				display system socket information
	filter				
		netbios			
	cpu				
		display			display CPU utilization

Exit Command Home

Command				Description
exit				exit smt menu

Ethernet Related Command Home

Command				Description
ether				
	config			display LAN configuration information
	driver			

		cnt		
			disp <name>	display ether driver counters
		ioctl	<ch_name>	Useless in this stage.
		status	<ch_name>	see LAN status
	version			see ethernet device type
	edit			
		load	<ether no.>	load ether data from spt
		save		save ether data to spt

Wireless LAN Related Command Home

Command					Description
wlan					
	[0|1]				Select WLAN Card (0:Built-in, 1:Removable)
		active	<on|off>		set on/off wlan
		association			display association list
		chid	<channel id>		set channel
		essid	<ess id>		set ESS ID, only for the first ssid profile
		reset	<0>		reset wireless interface
		led	<0|1|2|3>		set wlan led setting
		scan			scan wireless channels
		state			show wireless statistics information
		version			display WLAN version information
		wds			show WDS information
		ssidprofile			
			set	<profile name 1> [profile name 2] …	select active SSID profiles
			show		display current selected SSID profiles
		bkscan	<period, 0:off>		set background scan period
		bkshow			show background scan result
		opmode	<0-3>		set WLAN operation mode (0=AP, 1=AP+Bridge, 2=Bridge only, 3=MESSID)
		plevel	<0-3>		set WLAN output power level (0=100%, 1=50%, 2=25%, 3=12.5%)

IP Related Command Home

Command				Description
ip				
	address		[addr]	display host ip address
	arp			
		status	<iface>	display ip arp status
	dhcp		<iface>	
		client		
			release	release DHCP client IP
			renew	renew DHCP client IP
		status	[option]	show dhcp status
	dns			
		query		
		stats		
	httpd			
	icmp			
		status		display icmp statistic counter

		discovery	<iface> [on|off]	set icmp router discovery flag
	ifconfig		[iface] [ipaddr] [broadcast <addr> |mtu <value>|dynamic]	configure network interface
	ping		<hostid>	ping remote host
	route			
		status	[if]	display routing table
		add	<dest_addr|default>[/<bits>] <gateway> [<metric>]	add route
		addiface	<dest_addr|default>[/<bits>] <gateway> [<metric>]	add an entry to the routing table to iface
		addprivate	<dest_addr|default>[/<bits>] <gateway> [<metric>]	add private route
		drop	<host addr> [/<bits>]	drop a route
	status			display ip statistic counters
	udp			
		status		display udp status
	rip			
	tcp			
		status	[tcb] [<interval>]	display TCP statistic counters
	telnet		<host> [port]	execute telnet clinet command
	tftp			
	traceroute		<host> [ttl] [wait] [queries]	send probes to trace route of a remote host
	xparent			
		join	<iface1> [<iface2>]	join iface2 to iface1 group
		break	<iface>	break iface to leave ipxparent group
	stroute			
	dropIcmp		<0:no|1:yes>	set drop fragment ICMP packets

Bridge Related Command Home

Command					Description
Bridge					
	cnt				related to bridge routing statistic table
		disp			display bridge route counter
		clear			clear bridge route counter
	stat				related to bridge packet statistic table
		disp			display bridge route packet counter
		clear			clear bridge route packet counter
	rstp				
		bridge			
			enable		enable RSTP
			disable		disable RSTP
			priority	<priority>	set RSTP priority value
			maxAge	<max age>	set RSTP max age value
			helloTime	<hello time>	set RSTP hello time value
			forwardDelay	<delay>	set RSTP forwarding delay value
			version		display RSTP version
		port			
			enable	<port no.>	enable RSTP port
			disable	<port no.>	disable RSTP port
			pathCost	<port no.> <Cost|0:Auto>	set port pathCost, 0 = auto value
			priority	<port no.>	set port priority

				<priority>	
			edgePort	<port no.> <0|1>	set port is edgeport or not
			p2pLink	<port no.> <0|1|2>	set p2pLink, 2 = auto, 1 = true, 0 = false
			mcheck	<port no.>	set port mcheck
		disp			show current RSTP detaied information
		trace	<debug level>		set RSTP debug flag
		state			show current RSTP brief status

802.1x Related Command Home

Command				Description
8021x	debug			
		reauth	<0:off 1:on>	set IEEE802.1x re-authentication method
		level	[debug level]	set ieee802.1x debug message level
		trace		show all supplications in the supplication table
		user	[username]	show the specified user status in the supplicant table

RADIUS Related Command Home

Command				Description
radserv				
	time_out	[time out value (ms)]		Time out value for one session (in millisecond)
	authenticator	Set	[entry_no] [active]	Activate/deactivate the authenticator of entry_no
			[entry_no] [active] [IP] [secret]	Set the information of the authenticator
		Remove	[entry_no]	Remove authenticator of entry_no
		List		Show all the setting of authenticators

Certificates Related Command Home

Command				Description
certificates				
	my_cert	create		Create Self-Signed Certificate
		import		Import Self-Signed Certificate
		export	<name>	Export Self-Signed Certificate
		view		Display Self-Signed Certificate
		delete	<name>	Delete Self-Signed Certificate
		list		List Self-Signed Certificate
	ca_trusted	create		Create Trusted Certificate

Vantage Related Command Home

Command				Description
cnm	active	[0/1]		Display or set the CNM features to enable or disable . 0: disable 1: enable CNM features and communicate through WAN interface.
	sgid			Display sgid which is the unique ID of the device in Vantage.
	managerIP	[addr]		Display or set the IP of Vantage server/COMServer which manage this device. [addr] specifies the IP of the Vantage

				serve/COMServer.
	debug	[0/1]		Display or set the way of outputting CNM debug messages. 0: disable debug messages. 1: output the debug messages to console and can accept SGMP inquire message only after the device is registered to Vantage server.
	reset			Reset the state machine of SGMP and return to the state of SGMP_STATE_UNKNOWN. Device will re-register to Vantage server if CNM is active.
	encrykey	[string]		Display or set encryption key. [string] specifies the encryption key. to be set. Key length can not less than 8 alphanumeric characters long, if ecrymode is DES. Key length can not less than 24 alphanumeric characters long, if ecrymode is 3DES.
	encrymode	[0/1/2]		Display or set the encryption mode for SGMP messages. [0:NONE /1:DES/2:3DES] specifies the encryption mode to be set.
	keepalive			Display the time(second) to report agent keepalive 0: disable. Set the time(second) to report agent keepalive; the valid range : 10 ~ 2147483647
	version			Display the Vantage agent version.

Wireless LAN Profile Configuration Related Command Home

Command						Description
wcfg						
	ssid					
		<1/2/3/…/16>				
			name		<profile name>	set name of the SSID profile
			ssid		<ssid>	set SSID
			vlan		<vlan ID>	set VLAN ID
			rxvlan		<rx vlan ID>	set Rx VLAN ID
			security		<security profile name>	set selected security profile index
			radius		<radius profile name>	set selected radius profile index
			qos		<qos profile name>	set selected qos profile index
			l2isolation		<enable | disable>	set L2 isolation enable / disable
			macfilter		<enable | disable>	set macfilter enable / disable
			clear			clear profile setting to default
			save			save current profile to flash
			show			display current profile information
		display				display a brief list of all SSID profiles
		saveall				save all changed profiles into flash
	security					
		<1/2/3/…/16>				
			name		<profile name>	set name of the security profile
			mode		<security mode>	security system mode selection.

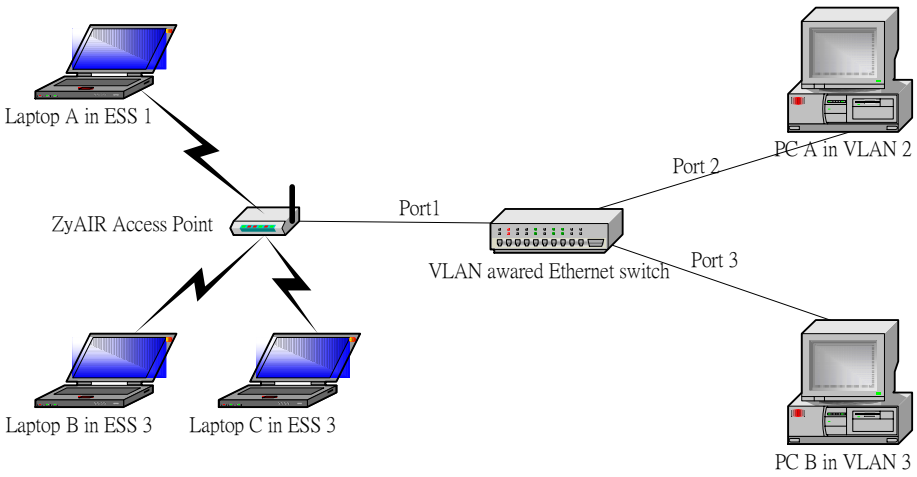
			wep			
				keysize	<64 | 128> < ascii | hex >	set WEP keysize (64-bits / 128-bits) and WEP key encoding
				auth	<open | shared | auto>	set WEP authentication method
				key1		set WEP key string 1
				key2		set WEP key string 2
				key3		set WEP key string 3
				key4		set WEP key string 4
				keyindex		key index (1~4)
			reauthtime		<seconds>	time for re-authentication
			idletime		<seconds>	idle time before force de-association
			groupkeytime		<seconds>	time for group key update
			passphrase		<key string>	passphrase for WPA-PSK and WPA2-PSK
			bkserver		<local-only|radius-only|local-first|radius-first>	set backend server type
			clear			clear profile setting to default
			save			save current profile to flash
			show			display current profile information
		display				display a brief list of all security profiles
		saveall				save all changed profiles into flash
	radius					
		<1/2/3/4>				
			name		<profile name>	set name of the radius profile
			primaryauth		<host> <port> <shared secret> <enable | disable>	set primary radius authentication server setting
			primaryacct		<host> <port> <shared secret> <enable | disable>	set primary radius accounting server setting
			backupauth		<host> <port> <shared secret> <enable | disable>	set backup radius authentication server setting
			backupacct		<host> <port> <shared secret> <enable | disable>	set backup radius accounting server setting
			clear			clear profile setting to default
			save			save current profile to flash
			show			display current profile information
		display				display a brief list of all radius profiles
		saveall				save all changed profiles into flash
	autocfg					
		server			<IP> <filename>	setup auto configuration TFTP server IP and filename, only works when static IP is used
		dhcp			[enable | disable]	control auto configuration through DHCP setting

Appendix 2: Multi-ESS with VLAN

Since G-3000 supports 2 WLAN adapters to enhance wireless access, it can work with VLAN to extend the group of users from wireless LAN to wired Ethernet. Compared with the function of multiple ESSID that supported by ZyDAS, some differences exist. G-3000 just assigns VLAN ID to each WLAN adapters to separate the user group. The following graph is an illustration to test the function. Please refer to the document “Multi-ESS with VLAN test plan” for detail information.

Note:

Take the following graph for example. If ESS1 and ESS3 are configured to same VLAN ID, laptop A can communicate with laptop B or laptop C, no matter VLAN is enabled or not on ZyAIR AP. ZyAIR AP will forward the traffic. On the other hand, if ESS1 and ESS3 have different VLAN IDs, the traffic between laptop A and laptop B/laptop C will be blocked. This make administrator can group the user much more effectively.



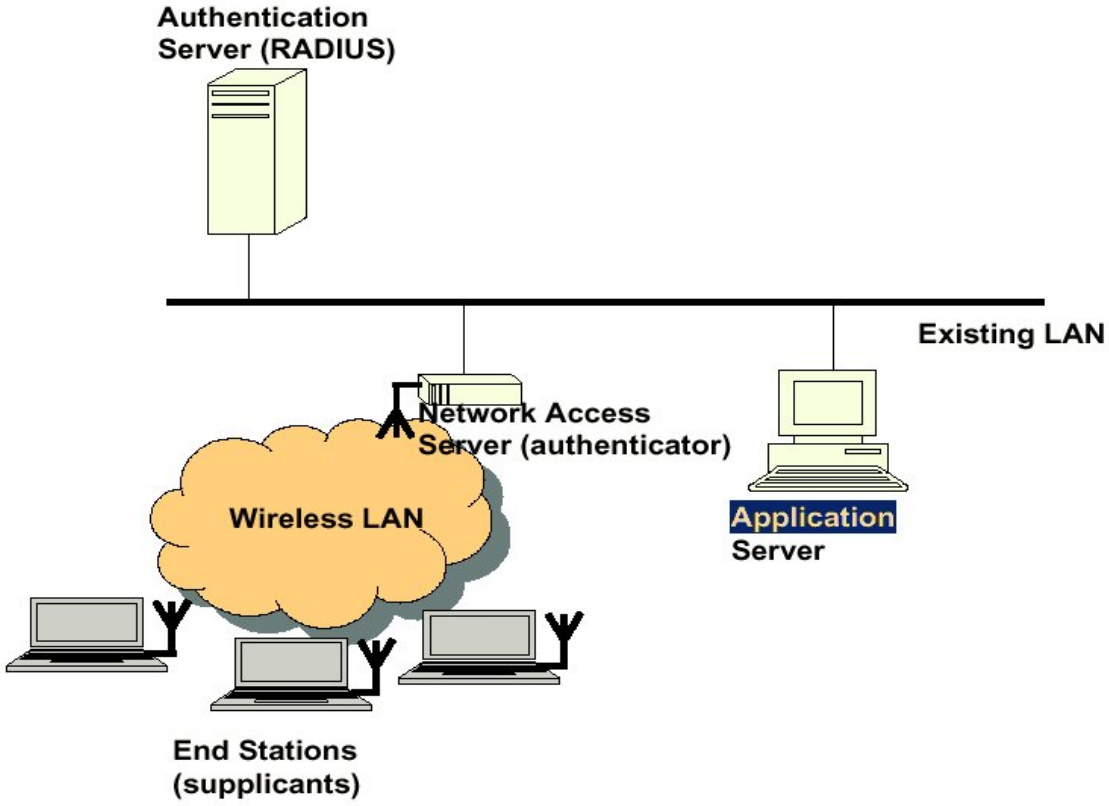
Appendix 3: Embedded RADIUS Server (PEAP)

1. Introduction

Security has always been one of the crucial issue of network connection. To assure information safety, the identities of the peers must be authenticated first. RADIUS stands for Remote Access Dial-In User Service, which has a database of all the peers and is responsible for authentication. The RADIUS server plays the role of the authentication server of an authentication protocol like IEEE 802.1X. Extensible Authentication Protocol (EAP) was first invented to deal with PPP link authentication. With its flexibility, EAP can carry almost every user authentication protocols, for example, PEAP (Protected EAP) and MD5-Challenge. Because of this advantage, IEEE 802.1X uses EAP on the link between supplicant and authenticator, and the RADIUS extension has set EAP as a standard attribute as well. To provide EAP with advanced security, engineers from Microsoft proposed PEAP that utilizes TLS (Transport Layer Security) to protect all the authenticating information. By embedding the RADIUS server in our APs (Access Points), customers can take advantage of better wireless security with lower cost than buying an extra standalone RADIUS server.

2. IEEE 802.1X

[IEEE Std 802.1X-2001] defines a mechanism for Port based network access control that makes use of the physical access characteristics of IEEE 802 LAN infrastructures in order to provide a means of authenticating and authorizing devices attached to a LAN port that has point-to-point connection characteristics, and of preventing access to that port in cases where the authentication and authorization process fails.



3. RADIUS

Remote Access Dial-In User Service or RADIUS is an access-control protocol that verifies and authenticates users based on the commonly used challenge/response method. While RADIUS has a prominent place among Internet service providers, it also belongs in any environment where central authentication, regulated authorization, and detailed user accounting is needed or desired.

Fig. IEEE 802.1X w/ Standalone RADIUS server

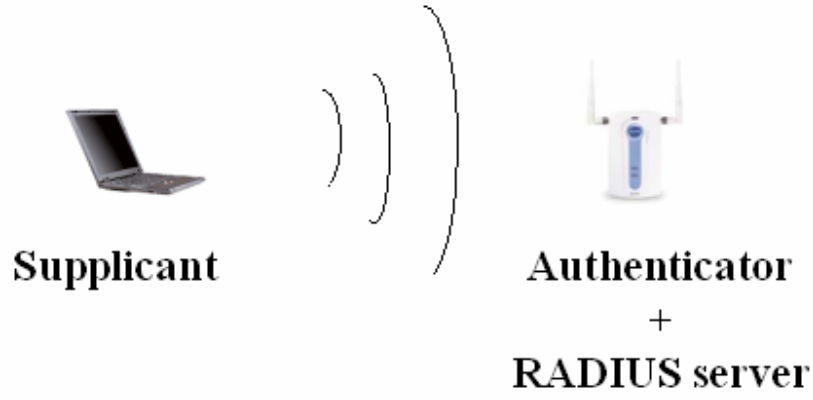


Fig. IEEE 802.1X w/ Embedded RADIUS server

4. EAP

Extensible Authentication Protocol (EAP) is a general protocol for authentication which supports multiple authentication mechanisms. EAP does not select any specific authentication mechanism at first. This allows the authenticator to request more information before determining the specific authentication mechanism. This also permits the use of a “back-end” server which actually implements the various mechanisms while the authenticator merely passes through the authentication exchange.

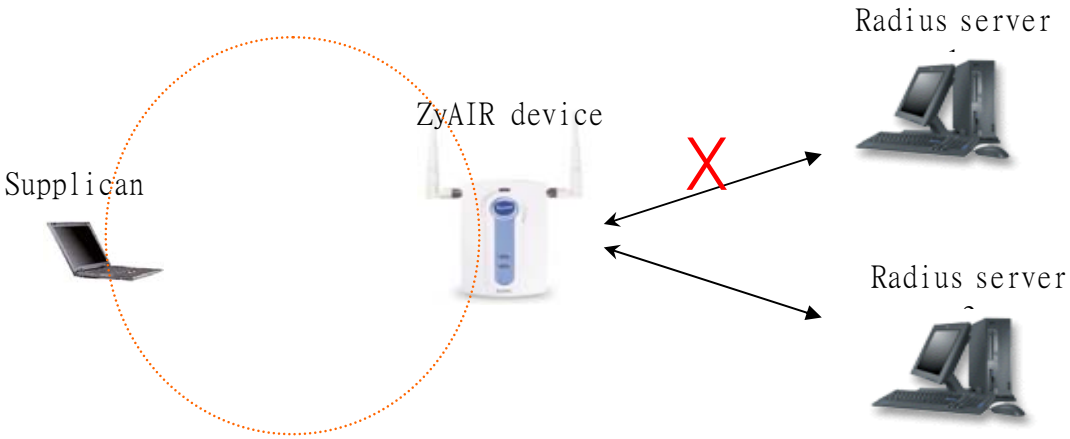
5. PEAP

EAP was developed or used on wired networks, where physical security was presumed. Where an attacker can easily gain access to the medium (such as on a wireless network or where EAP is run over IP), the presumption of physical security is no longer valid. Since the EAP method negotiation is unprotected, an attacker can inject packets in order to cause the negotiation of a method with lesser security. Denial of service attacks

are also possible. PEAP is an EAP type that addresses this security issue by first creating a secure channel that is both encrypted and integrity-protected with Transport Level Security (TLS). Then, a new EAP negotiation with another EAP type occurs, authenticating the network access attempt of the client. Because the TLS channel protects EAP negotiation and authentication for the network access attempt, password-based authentication protocols that are normally susceptible to an offline dictionary attack can be used for authentication in wireless environments.

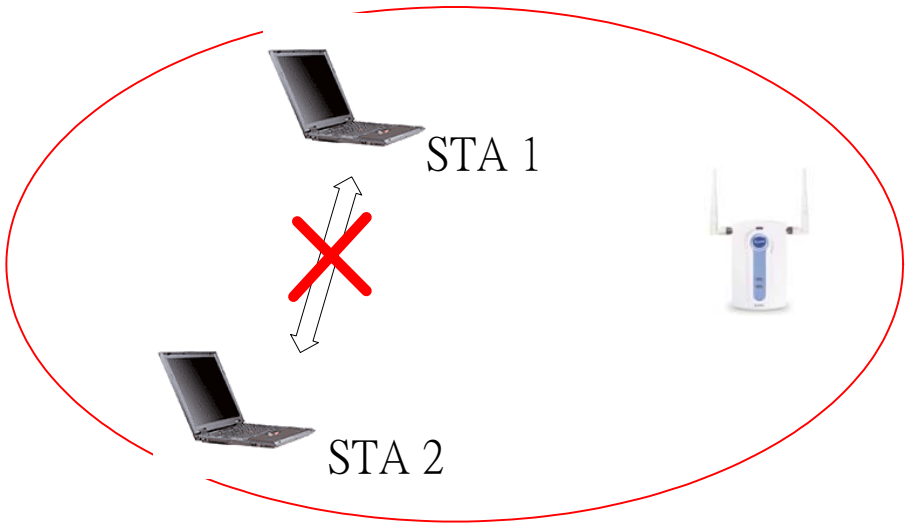
Appendix 4: Backup RADIUS Server

ZyAIR devices support backup radius server and accounting servers setting. ZyAIR devices use the first radius server setting as the default configuration. Figure shows the backup radius server concept. There are two radius servers can be reached by ZyAIR device. If supplicant issue an authentication request to ZyAIR device and trying to authenticate with radius server, ZyAIR device will keep trying forward this request to radius server 1. If ZyAIR device keep trying for 3 times and radius server still doesn't response the request then ZyAIR device will auto switch the authentication request packet to radius server 2. The trying time interval is depending on the supplicant re-try interval.



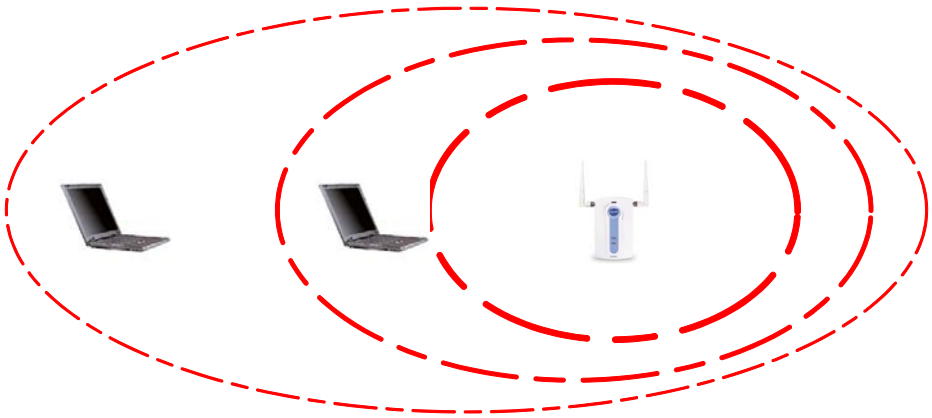
Appendix 5: Blocking Intra-BSS traffic

For performance and security issues, G-3000 supports Blocking Intra-BSS Traffic feature. In public access WLAN, the users are not necessary to receive others' traffic. Therefore, Blocking Intra-BSS Traffic feature make AP not to forward STAs' traffic in a BSS area. This feature raises the security and performance obviously.



Appendix 6: Configurable Output Power

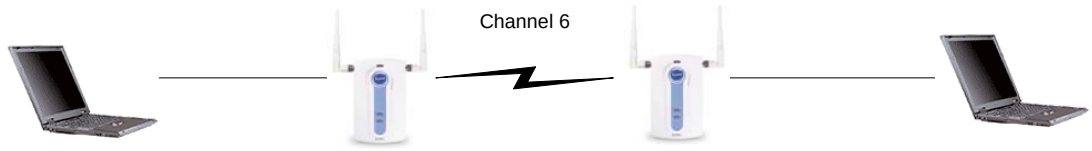
G-3000 provides configurable power to adjust AP's output power dynamically. This feature makes operator could limit AP's signal range and reduce the signal interference. On the other hand, it also strengthens the network security because the wireless signal will not leak out the undesired place.
G-3000 uses 4 output power levels (12.5% - 100%) to configure the RF's output power. 100% for max. and 12.5% for min..



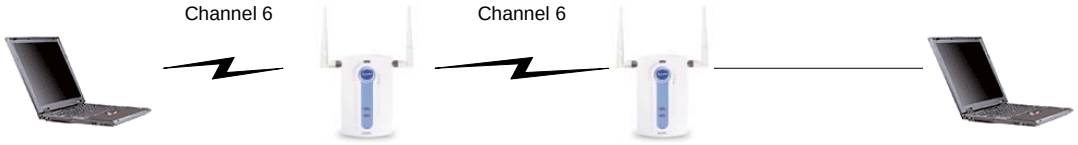
Appendix 7: WDS

G-3000 can maintain up to 5 different wireless connections to other APs. For that to be possible the channel will need to be the same for the wireless links to the other APs. The following diagrams provides the test scenarios :

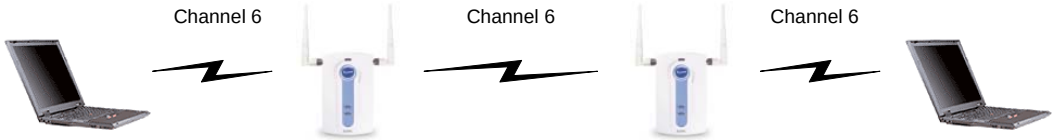
(1)



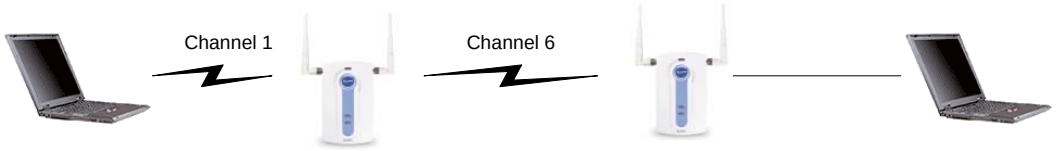
(2)



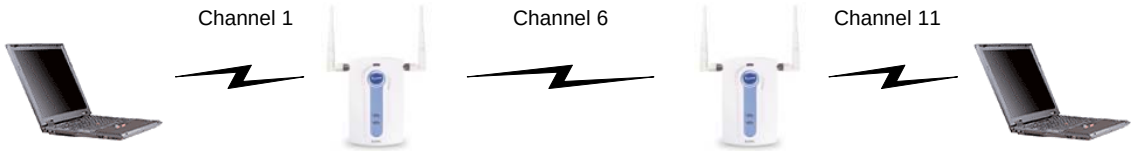
(3)



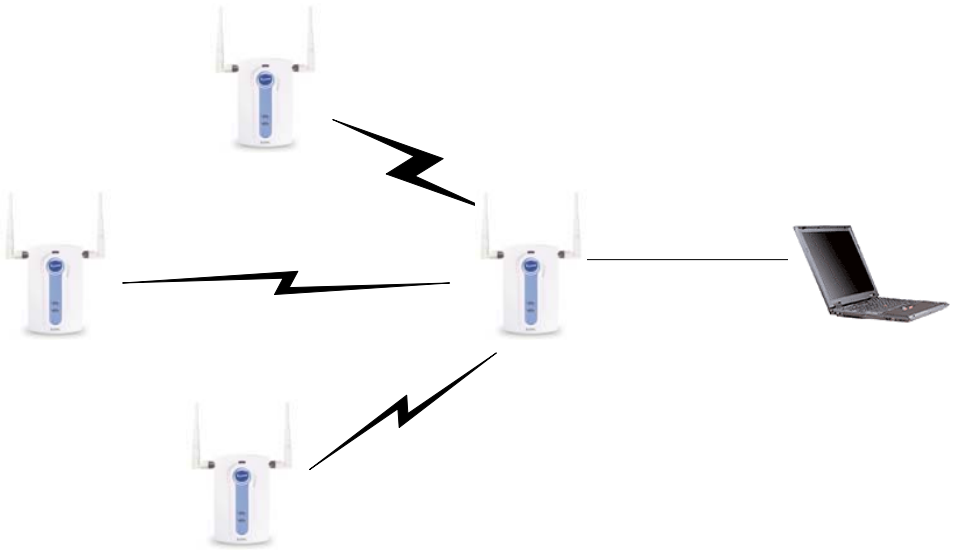
(4)



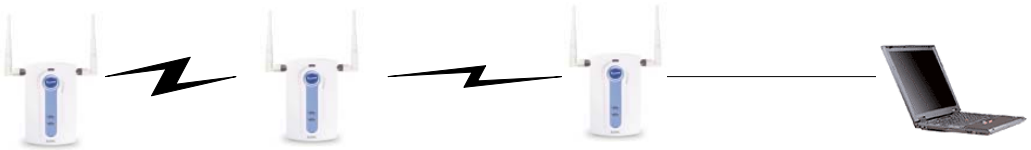
(5)



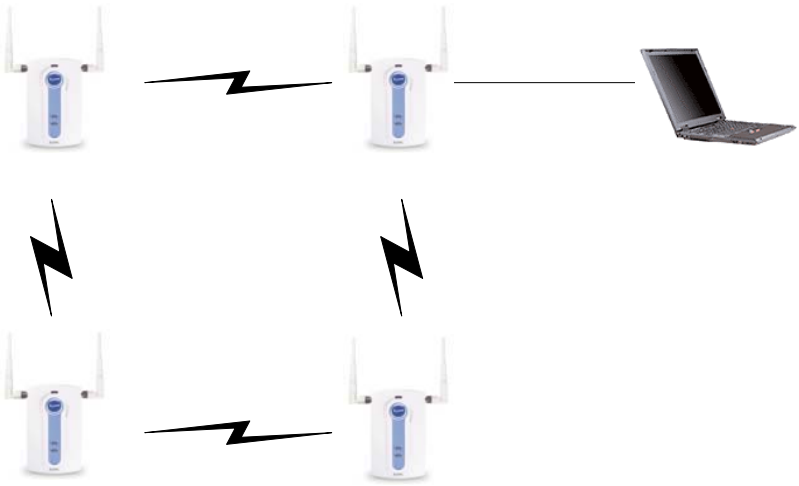
(6)



(7)



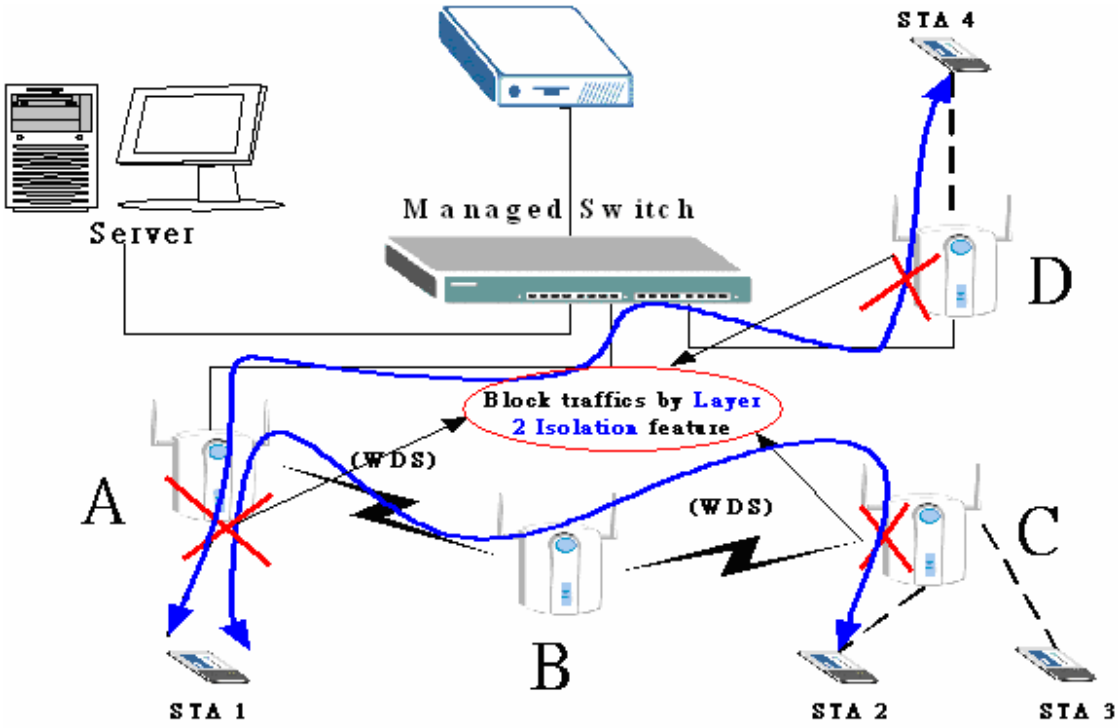
(8)



Appendix 8: Layer-2 Isolation

In Layer-2 isolation mode, all frames received from wireless clients that want to be forwarded to the connected AP or another interfaces will be dropped. AP will perform the packet filtering function to drop the client's traffics.

G-3000 can configure up to 32 different MAC addresses to which the G-3000 allows to forward wireless packets.

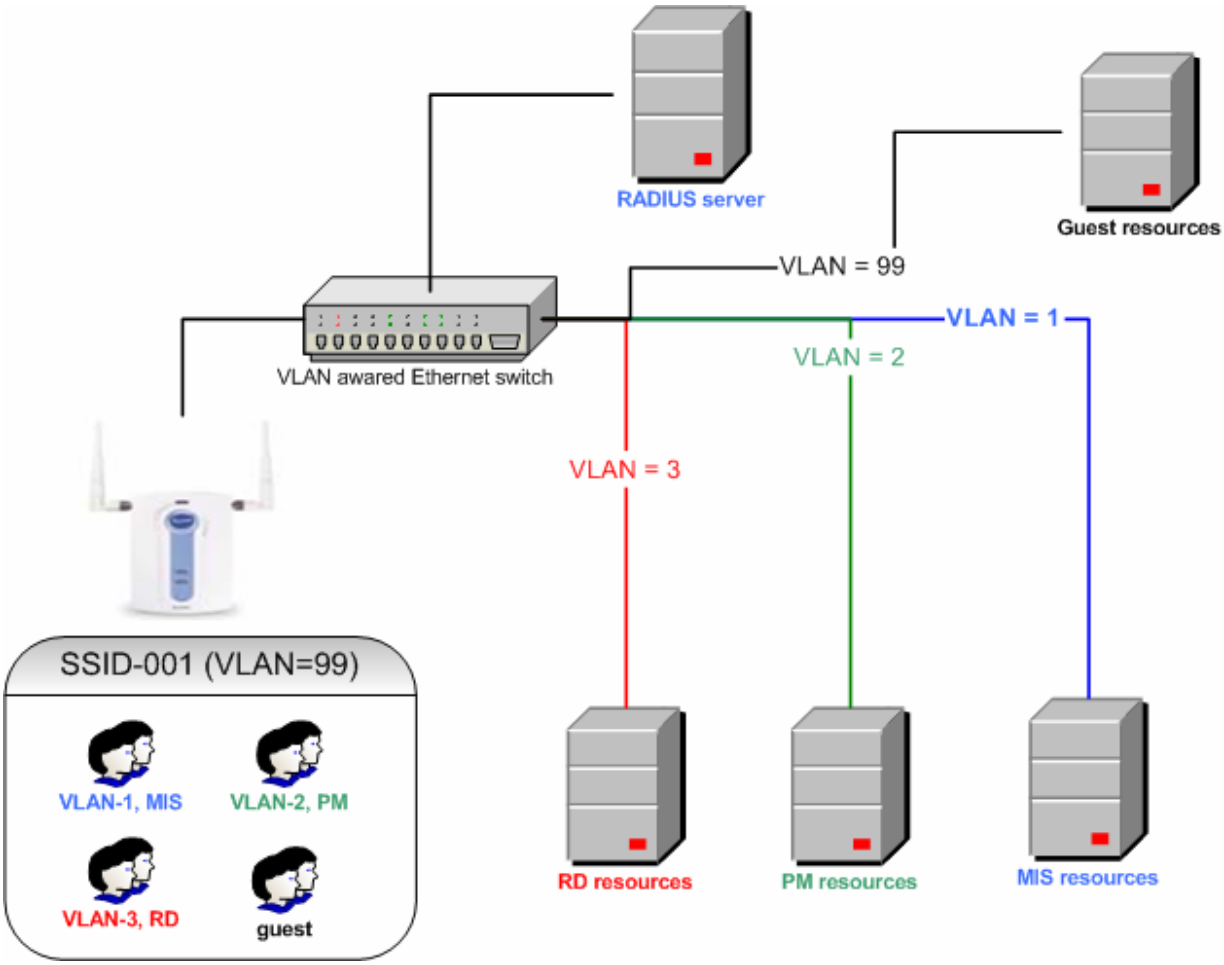


Appendix 9: Dynamic VLAN group assignment by RADIUS server

For each wireless client, it will be assigned to a default VLAN group ID configured by each SSID. But if there is a RADIUS server used to authenticate wireless client, and configured with some specific attributes about the VLAN group ID, G-3000 will follow the setting from RADIUS server and overrides default VLAN group ID of the SSID. This feature can be used with MESSID.

Note:

Take the following graph for example. If a user is authenticated and identified as a MIS / PM / RD, and there exists the required setting on the RADIUS server, G-3000 will assign the user as VLAN group assigned by RADIUS server. If a user is authenticated as a guest (RADIUS server doesn't configured with specific attributes), he/she will be assigned to default VLAN group of the service set. Therefore the administrator can control the VLAN group at RADIUS server.

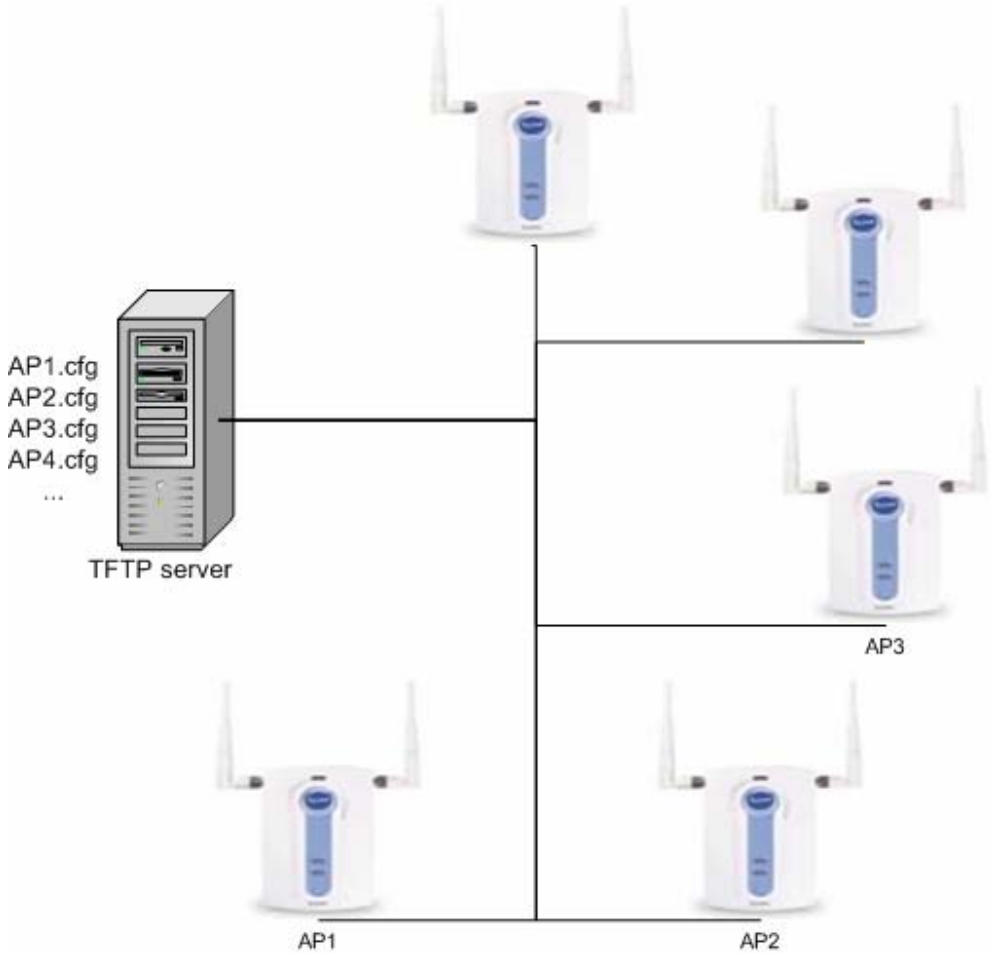


Appendix 10: Text file based auto configuration

When there are many G-3000 need to configure and administrator wants to collect those setting in order to management, G-3000 can get configuration file automatically from assigned TFTP server after reboot or DHCP renew.

The configuration test file is a set of CI commands with special header and version information. It can be encrypted as a zip file with password used to login the G-3000.

Note: Only wlan and wcfg CI commands are available for this feature.



Appendix 11:Centralized admin account

When user want to manage the G3000 via WEB, FTP or telnet, Centralized admin account support an easy way to synchronize the password. User can specify an account on radius server become the system administrator for G3000.
User can use G3000 internal radius server or external radius server to manage the administrator account.
G3000 also provide a hardware console port, this will be always active with the local password stored in device. This feature will allow user can still access the device when network connection to the radius server does not exist.