
August 2010

Enhanced UBA End User Equipment Guide



telecom™

Wholesale

Enhanced UBA is a multiclass Layer 2 Ethernet broadband access product that has very specific end-user equipment requirements; these requirements are based on the ability to support 802.1p priority markings.

Service providers need to be aware that some end-user equipment may require specific (not 'out of the box') firmware.

Below is a checklist to guide service providers through key aspects that are recommended for consideration when selecting end-user equipment to be used with Enhanced UBA. This checklist is a guide only and does not replace or vary any provisions of the UBA Standard Terms Determination, the EUBA0 service description or EUBA Service Provider Guide.

END-USER EQUIPMENT REQUIREMENTS

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Multi Class Configuration

All end-user equipment will need to be configured to meet the Technical Interface specifications. It is likely that they will also need to be configured to match the service provider edge requirements such as soft switch protocols, routing protocols, tunnelling and security.

In addition there may be end-user specific configuration, such as username and password.

The following end-user equipment characteristics are required to support multiclass applications:

End-User Equipment Configuration

The key end-user equipment parameters are:

- > ADSL2+ (preferred) or ADSL
- > 802.1q frames with a maximum IP MTU of 1500B
- > VLAN tag of 10
- > 802.1p setting of '6' for Real Time
- > 802.1p setting of '0' for Best Efforts
- > RFC 2684 bridged Ethernet
- > Vpi/vci of 0/110

The 1500B limitation would include any encapsulation protocols such as PPPoE.

See relevant section of the Enhanced UBA Service Provider Guide for more information.

Service Provider Configuration

The key service provider configurations are:

- > GigE Ethernet handover
- > 802.1ad frames with a maximum IP MTU of 1500B
- > VLAN tag set by Telecom
- > 802.1p flags set in both outer and inner tags
 - > setting of '6' for Real Time
 - > setting of '0' for Best Efforts

See relevant section of the Enhanced UBA Service Provider guide for more information.

Note that Cisco QinQ is an alternative to 802.1ad but must be specifically requested as part of the Handover Link order. See the Handover Links Service Provider Guide for more information.

Multiclass Edge

Close attention to the service provider edge interfaces will be required to support multiclass traffic in an optimum manner.

The Real Time traffic class has been configured to support VoIP applications and includes a burst size of 3312 Bytes.

See relevant section of the Enhanced UBA Service Provider Guide for more information.



Migrating from UBS to Basic UBA

Because Enhanced UBA and Basic UBA have fundamentally different technical interfaces, migrating from one to the other will need careful planning.

The PPPoA Modem Support feature can be used as an intermediate step to reduce the impact on the end-user experience.

While some UBS/Basic UBA end-user equipment might be able to be configured to support Enhanced UBA VLANs, it is expected that most end-user equipment used for UBS/Basic UBA will not have the ability to support 802.1p priority markings.

It is therefore likely that a change of end-user equipment will be required to be able to take advantage of the Enhanced UBA multi class capability which provides significant benefits in terms of features and applications.

PPPoA Modem Support Configuration

PPPoA Modem Support provides three main benefits:

1. It eases transition from UBS/Basic UBA to Enhanced UBA
2. It provides a simple upgrade/downgrade path between single class and multiclass services
3. It allows a common service provider solution for Best Efforts traffic for Internet-only users and next generation multiclass users.

End-User Equipment Configuration

The key end-user equipment parameters are:

- > ADSL2+ (preferred) or ADSL
- > An IP MTU of 1492B
- > PPPoA (RFC 2364)
- > Vpi/vci of 0/100

See relevant section of the Enhanced UBA Service Provider Guide for more information.

Service Provider Configuration

The key service provider configurations are:

- > GigE Ethernet handover
- > 802.1ad frames with a maximum IP MTU of 1492B
- > VLAN tag set by Telecom.
The CVID will be the same as the Ethernet VLAN, offset by 1600.
- > 802.1p flags set in both outer and inner tags setting of '0' for Best Efforts

See relevant section of the Enhanced UBA Service Provider Guide for more information.

This is the same handover as Ethernet VLANs and thus Cisco QinQ is an alternative to 802.1ad.

Migrating from UBS to Basic UBA

End-user equipment configured for UBS/Basic UBA should work automatically on any Enhanced UBA connection without any change, provided the service provider handover can terminate PPP sessions.



However the Port ID included in the Calling Station ID will use the Enhanced UBA format.

Additional Considerations

Distribution

End-user equipment typically reaches end-users via three distribution options:

- > Purchase from a store
- > Couriered to the end-user premises
- > Distributed as part of an installer visit.

Based on the chosen distribution approach service providers will need to consider how the end-user equipment will be configured to work with the end-user solution. Options include:

- > Factory defaults
- > Configuring end-user equipment for distribution
- > Including configuration CD or guide with distribution
- > Installers configuring onsite
- > Remote configuration.

Port IDs

Port Ids are a mechanism that can support security, end-user configuration and remote configuration.

Port Ids uniquely identify an end-user site and are inserted by the network so are impossible to be spoofed or forged by an end-user. Thus they can be used as an additional authentication parameter.

For some applications this may be sufficient for end-user authentication and thus negate the need for per-user configuration of the end-user equipment. This is a service provider choice that should be based on what applications are being offered.

Port Ids can also be used to drive site-specific configuration rules.

Remote Configuration

The Broadband Forum (<http://www.broadband-forum.org/>) has issued a technical report, TR-069, which defines an application layer protocol for remote management of end-user devices.

The DHCP Option 82 insert feature is intended to support these protocols.

Security and Ownership

Key considerations are:

- > Is the end-user equipment purchased, rented or included in the service offer?
- > Is the end-user able to make configuration changes, if so what are the implications?
 - > What happens if an end-user makes a change and the service stops working?
 - > Some end-users may have a need for flexibility, such as business end-users, whereas residential end-users might be more turnkey.
- > Is the end-user equipment protected from attack, internally or externally?



Since next generation services tend to be more complex to configure than devices on UBS/Basic UBA, the potential for mis-configuration is correspondingly higher and needs to be carefully managed.

Faults and Diagnostics

The use of more advanced end-user equipment, depending on the configuration used, provides an opportunity to consider additional faults and diagnostic tools such as:

- > Keep alive polling
- > end-user equipment-generated alarms
- > Use of DHCP Option 82 parameters
- > Remote applications or firewalls.

A common problem is where the gateway device resets to default (factory settings). It is strongly recommended that a mechanism to recover service is available, such as a recovery configuration package, or using the factory defaults to talk to a remote configuration server to be set up correctly.

Premises Wiring

Next generation solutions may require a premises wiring strategy depending on the applications being deployed.

Points to consider include:

- > Premises Wiring Installation Options: an industry initiative is underway to develop a Code of Practice that will be used by professional installers involved in providing generic or “structured” cabling for telecommunications and other services in both residential and small office premises. For more information visit www.tcf.org.nz.
- > All devices connected to the underlying copper path need to have Telepermit compliance (www.telepermit.co.nz).

Home Gateway Initiative

The requirement for specialised for next generation solutions has been recognised internationally and a global initiative, Home Gateway Initiative, has been launched to create a universal specification for a Residential Gateway.

For more information please visit www.homegatewayinitiative.org

