WHOLESALE

ETHERNET BACKHAUL

Whether you need to connect backhaul bandwidth into Telstra equipment buildings or backhaul National Broadband Network (NBN) traffic, our scalable solution will meet your needs. With extensive national coverage, Telstra Wholesale has your backhaul requirements covered now and into the future.

SUMMARY

MEF service types supported	E-Line, EVPL: VLAN-based bundling (Service Multiplexing) at the UNI. E-Line, EPL: Port-based bundling (No Service Multiplexing) at the UNI.
Physical access technology	Fibre-based.
Ingress Bandwidth Profiles (BWP)	Rate enforcement per UNI, per EVC or per-EVC-per-CoS as per MEF standards. CIR traffic delivered as per the Target Performance Objectives per CoS. EIR traffic is Discard Eligible and may not be delivered under all conditions. The BWP is colour-blind at the UNI.
EVC (service) bandwidth – PIR	2 Mbps to 2 Gbps per EVC (predefined fixed-bandwidth increments).
UNI (port) speed	100 Mbps/1 Gbps and 10 Gbps.
Service multiplexing	Supported on EVPL services only. It allows a UNI to terminate multiple EVCs, as per MEF standards.
UNI access availability target	99.90%: Single physical fibre access. 99.98%: Fully redundant[1].
Physical interface type	10GBase-LR, 10GBase-SR, 1000Base-LX, 1000Base-SX, 1000Base-T, 100Base-TX.
MAC layer	IEEE 802.3, auto-negotiated, full duplex.
Classes of service	**Expedited** (1:1 CIR:PIR): Short queues and strictly enforced rates, optimised for small frame sizes and low-jitter interactive bidirectional applications, like voice and videoconferencing. **Priority** (1:1 CIR:PIR): Medium queues with reliable delivery even if delayed. Used for selected 'real time' applications like SQL database queries and unidirectional streaming video. **Premium** (1:1 CIR:PIR): Small queues with low discard preference, used for key business applications like email and large file transfers. **Standard** (0:1 CIR:PIR): Deep queues with higher discard preference, used for best effort applications like internet browsing.
CoS identifiers	802.1p or DSCP.

CE 1.0 MEF CERTIFIED

SUMMARY CONTINUED

<table>
<tr><td>Target performance objectives</td><td>
TARGET NETWORK PERFORMANCE OBJECTIVE UNI-TO-UNI
<table>
<tr><th>Class of service</th><th>Frame loss ratio</th><th colspan="3">Average One-way frame delay</th><th>Average frame delay variation</th></tr>
<tr><td rowspan="2">Expedited</td><td rowspan="2"><0.01%</td><td>(0-161 km)</td><td>(162-1,609 km)</td><td>(1,610-16,093 km)</td><td rowspan="2"><1 msec</td></tr>
<tr><td><5.7 ms</td><td><14.5 ms</td><td><37.5 ms</td></tr>
<tr><td rowspan="2">Priority</td><td rowspan="2"><0.01%</td><td>(0-161 km)</td><td>(162-1,609 km)</td><td>(1,610-16,093 km)</td><td rowspan="2">Not specified</td></tr>
<tr><td><10 ms</td><td><20 ms</td><td><43ms</td></tr>
<tr><td>Premium</td><td><0.1%</td><td colspan="3">Not specified</td><td>Not specified</td></tr>
<tr><td>Standard</td><td colspan="5">Best effort</td></tr>
</table>
</td></tr>
<tr><td>Layer 2 control processing</td><td>EVPL: As per MEF specifications for EVPL, the following Layer 2 control protocols will be discarded at UNI ingress:
• xSTP
• PAUSE frames
• LACP/LAMP
• Link OAM
• Port Authentication
• E-LMI
• LLDP
• GARP/MRP
• CDP
• VTP
• UDLD.
EPL: As per MEF specifications for EPL the above-mentioned Layer 2 control protocols will be passed transparently at the UNI ingress, except for PAUSE frames which will be discarded.</td></tr>
<tr><td>CE-VLAN bundling support</td><td>One-to-one (one CE-VLAN ID mapped to one EVC at the UNI).
Many-to-one (many CE-VLAN ID's mapped to one EVC at the UNI).
All-to-one (All CE-VLAN ID's mapped to one EVC at the UNI, for EPL only).</td></tr>
<tr><td>CE-VLAN ID preservation</td><td>Yes: Enabled by default (CE-VLAN IDs preserved UNI to UNI).
No: CE-VLAN ID Tag re-write/translation for one-to-one bundling only.</td></tr>
<tr><td>CE-VLAN CoS preservation</td><td>Layer 2 priority (802.1p) and Layer 3 priority (DSCP) always preserved.</td></tr>
<tr><td>Q-in-Q</td><td>Mapping customer frames to EVC is performed via the outer-most tag within a multi-tagged frame.
When CE-VLAN ID Preservation is enabled: Multi-tagged frames at ingress to the UNI are passed transparently.
When CE-VLAN ID Preservation is disabled: Given multi-tagged frames are ingressing the UNI, the outer-most tag will be re-written.</td></tr>
<tr><td>Service frame delivery</td><td>Unicast: Supported
Broadcast: Supported
Multicast: Supported</td></tr>
<tr><td>L2 fault management/ service OAM</td><td>IEEE 802.1ag CFM is used for internal operational purposes. Customer Service OAM frames with MD-Level = 5, 6 or 7 will be transparently passed at the UNI.</td></tr>
<tr><td>EVC MTU</td><td>1596 bytes.
9000[2] bytes (Jumbo – subject to availability).</td></tr>
<tr><td>MEF certification</td><td>MEF 9 and MEF 14 compliance.</td></tr>
<tr><td>Relevant customer-facing standards</td><td>MEF 6.1, MEF 10.2, MEF 23.</td></tr>
</table>

1. 'Fully redundant' means that there is a second NTU that is dual-homed to the Layer 2 Edge of the pseudowire/VPLS cloud, with geographically diverse fibre access paths, enabling flexible customer-managed failover at Layer 3. Layer 1 failover mechanisms may be supported in some cases – consult your TW account manager for details. 2. Jumbo MTU size is not supported on the Expedited CoS because this CoS is targeted towards voice and other real-time applications which inherently use small frame sizes.

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