ETHERNET ACCESS

Data sheet for the MEF-Defined E-Line Service Type

IT'S HOW
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GENERAL

Related Documents	Telstra Wholesale fact sheet: ***https://www.telstrawholesale.com.au/products/data/ethernet.html*** Telstra Service Interface Specification (TSIS) [commercial-in-confidence] TSIS Addendum for E-Access [commercial-in-confidence]
Supported MEF Service Types [1]	E-Line: EVPL (CE-VLAN ID based at UNI)
Service Speeds [2]	2 Mbps to 2Gbps Telstra Fibre Accesses: 20 Mbps to 2Gbps Telstra Copper Accesses: 2 to 10Mbps NBN Accesses, FTTP: 5, 10, 20, 30, 40 & 50 Mbps FTTN, FTTB and FTTC: 5 Mbps & 10 Mbps Telstra Mobile Accesses: up to 2Mbps and up to 10Mbps[3]

UNI ATTRIBUTES (AGGREGATED HEAD-END)

Interface Types	1000Base-T 1000Base-SX 1000Base-LX 10GBASE-SR 10GBASE-LR
Interface Modes	Auto Negotiate (Default) Full Duplex
Access Type	Fibre-based
UNI Access Availability Target	99.90%: Single uplink (fibre-based access) 99.98%: Fully redundant [4] UNI pair (fibre-based access) The pair can either be co-located or geographically diverse [5]
Frame Formats	IEEE Std 802.1Q (0x8100)
UNI MTU Size[6]	Jumbo: 9000 bytes
UNI Service Multiplexing	Yes (≥1 EVC associated with the UNI)

[1] The MEF 33-defined E-Acess service type is also supported on the EA product and is described in a separate associated data sheet.

E-Line EPL services are described in a separate data sheet at ***https://www.telstrawholesale.com.au/products/data/ethernet.html***

[2] Actual speeds achieved are dependent on a range of factors described in the TSIS documents, including (but not limited to) distance from exchanges for accesses which are not on Telstra fibre

[3] When use as a backup for Telstra fibre access, the service speed on the Telstra mobile access cannot exceed the service speed on Telstra fibre

[4] 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

[5] Business rules apply to the locations of a fully redundant pair of head-end UNIs

[6] The MTU at the head-end UNI cannot be considered in isolation and needs to be cognisant of the tail UNI MTU and physical access (bearer) technology

UNI ATTRIBUTES (TAIL END)

Interface Types	**Telstra Fibre Access** 10Base-T 100Base-Tx 1000Base-T 1000Base-SX 1000Base-LX 10GBASE-SR 10GBASE-LR	**Telstra Copper Access** 10Base-T 100Base-Tx	**NBN Access** 100Base-Tx 1000Base-T 1000Base-SX 1000Base-LX	**Telstra Mobile Access** 10Base-T 100Base-Tx 1000Base-T 1000Base-SX 1000Base-LX
Interface Mode	Auto Negotiate (Default) Full Duplex Half Duplex			
Access Type	Telstra Fibre-based Telstra Copper-based : Premium CoS (1:1) and (1:4) NBN: FTTP, FTTN, FTTB, FTTC: Premium CoS (1:1) only Telstra Mobile: Use as a backup for a tail-end Telstra Fibre-based access type only			
UNI Access Availability Target	99.70%: Single uplink (NBN Access) 99.80%: Single uplink (Telstra copper accesses) 99.90%: Single uplink (Telstra fibre accesses) 99.95%: Single uplink with Mobile Backup (Telstra Fibre access + Telstra Mobile access) 99.98%: Fully redundant uplink (Telstra fibre accesses) [7]			
UNI MTU Size	Telstra Fibre accesses: 1596 bytes (standard) 9000 bytes (jumbo – requires approval) Telstra Copper Accesses: 1518 bytes NBN Accesses: 1522 bytes Mobile Accesses: 1596 bytes[8]			
UNI Shut Down	Disabled			
UNI Service Multiplexing	Telstra Fibre accesses: Yes (≥1 EVC associated with the UNI) Telstra Copper Accesses: No NBN Accesses: No Mobile Accesses: No (only 1 EVC associated with the UNI)[9]			
CE-VLAN ID Bundling	One-to-one: One CVID mapped to one EVC at the UNI Many-to-one: >1 CVIDs mapped to one EVC at the UNI (Telstra fibre and Telstra mobile accesses only)			

[7] Fully Redundant tail UNIs cannot be geo-diverse nor copper-based nor NBN-based

[8] Jumbo frames are not supported on Telstra mobile accesses and therefore should not be used as a backup for Telstra fibre accesses if Jumbo frames are required

[9] Only one EVC can be associated with the tail UNI on Telstra mobile accesses and therefore should not be used as a backup for Telstra fibre accesses if more than one EVC needs to be associated with the tail UNI

EVC ATTRIBUTES

<table>
<tr><td>Available Classes of Service</td><td>Expedited (1:1 CIR:PIR): Short queues and strictly enforced rates, optimised for small frame sizes and low-jitter interactive unidirectional applications, like VoIP and videoconferencing. Not available over Telstra copper accesses, NBN accesses and Telstra mobile accesses.

Priority (1:1 CIR:PIR): Short queues with reliable delivery even if delayed. Used for selected ‘real time’ applications like SQL database queries and unidirectional streaming video. Not available over Telstra copper accesses, NBN accesses and Telstra mobile accesses.

Premium (1:1 and 1:4 CIR:PIR): Medium queues with low discard preference, used for key business applications like email and large file transfers. Premium (1:1) is the only class of service available over NBN accesses, whereas Premium (1:1) and (1:4) are both available on Telstra copper accesses. Not available over Telstra mobile accesses.

Standard (0:1 CIR:PIR): Deep queues with higher discard preference, used for best effort applications like web browsing. Not available over Telstra copper accesses or over NBN accesses. This is the only Class of Service available over Telstra mobile accesses[10].</td></tr>
<tr><td>Class of Service Operation</td><td>Single CoS: Any one of the four available CoS can be used within the EVC, subject to the access type as above
Multi-CoS[11]: Up to four CoS are concurrently supported within the same EVC. (Only supported on Telstra fibre accesses)</td></tr>
<tr><td>EVC Frame Mapping</td><td>Single-CoS: Frames are C-VID mapped to the EVC irrespective of customer CoS marking
Multi-CoS[11]: Frames can be either C-tag mapped (C-VID and PCP) or DSCP-mapped</td></tr>
<tr><td>Target Network Performance Objectives, (UNI-to-UNI)</td><td>
<table>
<tr><th rowspan="2">Class of Service</th><th rowspan="2">Frame Loss Ratio</th><th colspan="3">Average One-way Frame Delay</th><th rowspan="2">Average Frame Delay Variation</th></tr>
<tr><th>0-161km</th><th>162-1609km</th><th>1610-16093km</th></tr>
<tr><td>Expedited</td><td><0.01%</td><td><5.7ms</td><td><14.5ms</td><td><37.5ms</td><td><1ms</td></tr>
<tr><td>Priority</td><td><0.01%</td><td><10ms</td><td><20ms</td><td><43ms</td><td>Not Specified</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>
</table>

[10] When the traffic fails over from Telstra fibre access to Telstra mobile access, the traffic is carried in a best-effort capacity only. There is no Class of Service differential treatment in the Telstra mobile network. Traffic failover occurs when the physical fibre between the tail-end NTU and the aggregation switch located in the Telstra exchange is down.

[11] Multi-CoS is not supported on Telstra mobile accesses and therefore should not be used as a backup for Telstra fibre accesses if Multi-Cos is being enabled.

Bandwidth Profile Rates [12]	For single-CoS EVC: Per UNI.EVC For multi-CoS[11] EVC: Per UNI.EVC.CoS
Colour Mode	Colour blind [13]: Expedited: 1:1 (CIR Only) Priority: 1:1 (CIR Only) Premium: 1:1 (CIR Only) and 1:4 (CIR:PIR) Standard: 0:1 (EIR only)
Colour Forwarding [14]	Yes
CoS Marking Preservation	Layer 2 priority (802.1p) and Layer 3 priority (DSCP) always preserved end-to-end
CE-VLAN ID Preservation	For Telstra fibre accesses: Yes : CE-VLAN IDs are preserved UNI to UNI No: CE-VLAN ID re-write/translation occurs (one-to-one bundling only) For Telstra copper accesses: Untagged at tail-end results in tagged at head-end (Tagged tail-end not permitted) For NBN Accesses: Untagged at tail-end results in tagged at head-end When tagged at tail-end, CE-VLAN preservation must be "Yes" (i.e. no translation) For Mobile accesses: Yes : CE-VLAN IDs are preserved UNI to UNI When tagged at tail-end, CE-VLAN preservation must be "Yes" (i.e. no translation) No: Untagged at tail-end results in tagged at head-end
Layer 2 Control Processing	As per MEF specifications for EVPL, the following Layer 2 control protocols will be discarded at UNI ingress: xSTP, LLDP, PAUSE frames, GARP/MRP, LACP/LAMP, CDP, Link OAM, VTP, Port Authentication, UDLD, E-LMI.
Service Frame Delivery	Known Unicast: Unconditionally supported [15] Unknown Unicast: Unconditionally supported Broadcast: Unconditionally supported Multicast: Unconditionally supported
MAC Address Limit	50 (Enforced in the network)
EVC MTU	Fibre Accesses: 1596 bytes (default) 9000 bytes (requires approval) Copper Accesses: 1518 bytes NBN Accesses: 1522 bytes Mobile Accesses: 1596 bytes[8]
Service OAM Processing	IEEE 802.1ag CFM is used for internal operational and fault sectionalisation purposes

[12] Bandwidth Profiles are a method of characterising Service Frames for the purpose of rate enforcement or policing. Incorrectly shaped traffic ingressing a UNI towards Telstra will be policed accordingly. The policers are agnostic to any layer-2 marking for single CoS services so will discard traffic on an 'as they arrive' basis. This means non-conforming high-value and low-value traffic have similar probability of being discarded.

[13] A colour-blind profile is one where the ingress EVC policer at the UNI ignores any existing colour indication that the service frame is already conformant to CIR (green) or EIR (yellow)

[14] Colour Forwarding describes the relationship between the colour on an ingress frame into the Operator (Telstra) Network and the colour of the resulting egress Frame. When Colour Forwarding is Yes, the EVC cannot "promote" a frame from Yellow to Green

[15] Subject to the CoS performance objectives

	Customer Service OAM frames with MD-Level = 5, 6 or 7 will be transparently passed at the UNI
Relevant Specifications	MEF 10.2, MEF 23, IEEE802.3
MEF Certification	E-Line Services on Telstra fibre accesses [16] are CE2.0 certified

The contents of this document are subject to change with 20 Business Days notice. Telstra has made every effort to ensure the accuracy and completeness of the information in this technical specification, but Telstra does not make any warranties as to the accuracy or completeness of this information.

[16] There is no intent to MEF-certify services on copper accesses, NBN accesses or Telstra mobile accesses