

# Ethernet access

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



## General

<b>Related Documents</b>	Telstra Wholesale fact sheet: <a href="https://www.telstrawholesale.com.au/products/data/ethernet.html">https://www.telstrawholesale.com.au/products/data/ethernet.html</a> Telstra Service Interface Specification (TSIS) [commercial-in-confidence] TSIS Addendum for E-Access [commercial-in-confidence]
<b>Supported MEF Service Types</b> <sup>1</sup>	E-Line: EVPL (CE-VLAN ID based at UNI)
<b>Service Speeds</b> <sup>2</sup>	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 2, 10, 20 and 40 Mbps <sup>3</sup>

## Uni Attributes (Aggregated Head-end)

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

<sup>1</sup> The MEF 33-defined E-Access 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>

<sup>2</sup> 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

<sup>3</sup> 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. The speed tiers on mobile backup service represent the maximum data speeds applied to both downstream and upstream transmissions on our network. The typical speeds the End User will experience will vary depending on a range of factors and will not always be at or towards the top of the typical speed range. Depending on the speed tier selected, mobile backup service can experience typical 4G speeds of 2-40Mbps in the download and 1-10Mbps in the upload.

<sup>4</sup> 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

<sup>5</sup> Business rules apply to the locations of a fully redundant pair of head-end UNIs

<sup>6</sup> 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)

	Telstra Fibre Access	Telstra Copper Access	NBN Access	Telstra Mobile Access
<b>Interface Types</b>	10Base-T	<b>Access</b>	100Base-Tx	10Base-T
	100Base-Tx	10Base-T	1000Base-T	100Base-Tx
	1000Base-T	100Base-Tx	1000Base-SX	1000Base-T
	1000Base-SX		1000Base-LX	1000Base-SX
	1000Base-LX			1000Base-LX
	10GBASE-SR			
	10GBASE-LR			
<b>Interface Mode</b>	Auto Negotiate (Default)			
	Full Duplex			
	Half Duplex			
<b>Access Type</b>	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			
<b>UNI Access Availability Target</b>	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) <sup>7</sup>			
<b>UNI MTU Size</b>	Telstra Fibre accesses: 1596 bytes (standard)			
	9000 bytes (jumbo – requires approval)			
	Telstra Copper Accesses: 1518 bytes			
	NBN Accesses: 1522 bytes			
<b>UNI Shut Down</b>	Mobile Accesses: 1596 bytes <sup>8</sup>			
	Disabled			
<b>UNI Service Multiplexing</b>	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) <sup>9</sup>			
<b>CE-VLAN ID Bundling</b>	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)			

<sup>7</sup> Fully Redundant tail UNIs cannot be geo-diverse nor copper-based nor NBN-based

<sup>8</sup> 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

<sup>9</sup> 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

**Available Classes of Service**

**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<sup>10</sup>.

**Class of Service Operation**

Single CoS: Any one of the four available CoS can be used within the EVC, subject to the access type as above

Multi-CoS<sup>11</sup>: Up to four CoS are concurrently supported within the same EVC. (Only supported on Telstra fibre accesses)

**EVC Frame Mapping**

Single-CoS: Frames are C-VID mapped to the EVC irrespective of customer CoS marking

Multi-CoS<sup>11</sup>: Frames can be either C-tag mapped (C-VID and PCP) or DSCP-mapped

Target Network Performance Objectives, (UNI-to-UNI)	Class of Service	Frame Loss Ratio	Average One-way Frame Delay			Average Frame Delay Variation
			0-161km	162-1609km	1610-16093km	
	<b>Expedited</b>	<0.01%	<5.7ms	<14.5ms	<37.5ms	<1ms
	<b>Priority</b>	<0.01%	<10ms	<20ms	<43ms	Not Specified
	<b>Premium</b>	<0.1%	Not Specified			Not Specified
	<b>Standard</b>		Best Effort			

<sup>10</sup> 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.

<sup>11</sup> 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.

<b>Bandwidth Profile Rates</b> <sup>12</sup>	For single-CoS EVC: Per UNI.EVC For multi-CoS <sup>11</sup> EVC: Per UNI.EVC.CoS Colour blind <sup>13</sup> : Expedited: 1:1 (CIR Only)
<b>Colour Mode</b>	Priority: 1:1 (CIR Only) Premium: 1:1 (CIR Only) and 1:4 (CIR:PIR) Standard: 0:1 (EIR only)
<b>Colour Forwarding</b> <sup>14</sup>	Yes
<b>CoS Marking Preservation</b>	Layer 2 priority (802.1p) and Layer 3 priority (DSCP) always preserved end-to-end
<b>CE-VLAN ID Preservation</b>	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
<b>Layer 2 Control Processing</b>	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.
<b>Service Frame Delivery</b>	Known Unicast: Unconditionally supported <sup>15</sup> Unknown Unicast: Unconditionally supported Broadcast: Unconditionally supported Multicast: Unconditionally supported
<b>MAC Address Limit</b>	50 (Enforced in the network)
<b>EVC MTU</b>	Fibre Accesses: 1596 bytes (default) 9000 bytes (requires approval) Copper Accesses: 1518 bytes NBN Accesses: 1522 bytes Mobile Accesses: 1596 bytes <sup>8</sup>
<b>Service OAM Processing</b>	IEEE 802.1ag CFM is used for internal operational and fault sectionalisation purposes

<sup>12</sup> 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.

<sup>13</sup> 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)

<sup>14</sup> 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

<sup>15</sup> Subject to the CoS performance objectives

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

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<sup>16</sup> There is no intent to MEF-certify services on copper accesses, NBN accesses or Telstra mobile accesses