

# ETHERNET ACCESS

Data sheet for the MEF-Defined E-Access 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-Access: Access EPL (Port-based at the UNI) – Supported on all access types Access EVPL (VLAN based at UNI) – Only supported on Telstra Fibre accesses and Telstra Mobile accesses
<b>Service Speeds</b> <sup>2</sup>	2 Mbps to 2Gbps Telstra Fibre Accesses: 20 Mbps to 2Gbps

<sup>1</sup> The MEF-defined E-Line service Type (EVPL) is also supported on the EA product. E-Line services are described in a separate data sheet at <https://www.telstrawholesale.com.au/products/data/ethernet-access.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

Telstra Copper Accesses: 2 to 10Mbps  
 NBN Accesses, FTTP: 5, 10, 20, 30, 40 & 50 Mbps  
 FTTN, FTTC and FTTB: 5 Mbps & 10 Mbps  
 Telstra Mobile Accesses: up to 2Mbps and up to 10Mbps<sup>3</sup>

### ENNI 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>ENNI Access Availability Target</b>	99.90%: Single uplink (fibre-based access) 99.98%: Fully redundant <sup>4</sup> pair (fibre-based access). The ENNI pair can either be co-located or geographically diverse <sup>5</sup>
<b>Frame Formats</b>	IEEE Std 802.1ad (Ethertype 0x88A8) or IEEE Std 802.1Q (Ethertype 0x8100)
<b>ENNI MTU Size <sup>6</sup></b>	Jumbo: 9004 bytes
<b>ENNI Service Multiplexing</b>	Yes, for both Access EPL and Access EVPL (i.e. a single S-VLAN ID is mapped to the OVC at the ENNI)

### UNI Attributes (Tail End)

	Telstra Fibre Access	Telstra Copper Access	NBN Access	Telstra Mobile Access
<b>Interface Types</b>	10Base-T	10Base-T	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

<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

<sup>4</sup> Fully redundant (FR) 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 ENNIs

<sup>6</sup> The MTU at the ENNI cannot be considered in isolation and needs to be cognisant of the tail UNI MTU and physical access (bearer) technology

	10GBASE-SR 10GBASE-LR
<b>Interface Mode</b>	Auto Negotiate (Default) Full Duplex Half Duplex
<b>Access Types</b>	Telstra Fibre-based Telstra Copper-based : Premium CoS (1:1) only. Access-EPL only <sup>7</sup> NBN: FTTP, FTTN, FTTC, FTTB: Premium CoS (1:1) only. Access-EPL 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>8</sup>
<b>UNI MTU Size</b>	Telstra Fibre accesses: 1596 bytes (standard) 9000 bytes (jumbo) Telstra Copper Accesses: 1522 bytes NBN Accesses: 1522 bytes Mobile Accesses: 1596 bytes <sup>9</sup>
<b>UNI Shut Down</b>	Disabled
<b>UNI Service Multiplexing</b>	For Access EVPL only Fibre Accesses : (≥1 OVC associated with the UNI and based on CE-VLAN ID) Mobile Accesses: (Only 1 OVC associated with the UNI) <sup>10</sup>
<b>CE-VLAN ID (C-VID) Bundling</b>	Access EPL: All-to-one (All <sup>11</sup> C-VIDs mapped to one OVC at the UNI) Access EVPL: One-to-one: One C-VID mapped to one OVC at the UNI Many-to-one: >1 C-VIDs mapped to one OVC at the UNI (Telstra fibre and Telstra mobile accesses only)

<sup>7</sup> On Telstra copper accesses, only untagged frames are permitted to ingress the UNI

<sup>8</sup> Fully Redundant tail UNIs cannot be geo-diverse nor copper-based nor NBN-based

<sup>9</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>10</sup> Only one OVC can be associated with the UNI on Telstra mobile accesses and therefore should not be used as a backup for Telstra fibre accesses if more than one OVC needs to be associated with the UNI

<sup>11</sup> Including untagged frames

## OVC Attributes

<b>Available Classes of Service</b>	<b>Expedited</b> (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.
	<b>Priority</b> (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.
	<b>Premium</b> (1:1 CIR:PIR): Medium queues with low discard preference, used for key business applications like email and large file transfers. This is the only class of service available over Telstra copper accesses and over NBN accesses. Not available over Telstra mobile accesses.
	<b>Standard</b> (0:1 CIR:PIR): Deep queues with higher discard preference, used for best effort applications like web browsing. Not available over Telstra copper or over NBN accesses. This is the only Class of Service available over Telstra mobile accesses <sup>12</sup> .

<b>Class of Service Operation</b>	<p>Single CoS: Any one of the four available CoS can be used within the OVC (subject to the access type as above)</p> <p>Multi-CoS<sup>13</sup>: Up to four CoS are concurrently supported within the same OVC. (Only supported on Telstra Fibre Accesses)</p>
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<b>OVC Frame Mapping</b>	<p>At the ENNI end-point, frames are mapped to the OVC using the S-Tag VLAN ID.</p> <p>At the UNI endpoint:</p> <p>Single-CoS: Frames are C-VID mapped to the OVC irrespective of customer CoS marking</p> <p>Multi-CoS<sup>13</sup>: Frames can be either C-tag mapped (C-VID and PCP) or DSCP-mapped</p>
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<b>Target Network Performance Objectives, (ENNI-to-UNI)</b>	<b>Class of Service</b>	<b>Frame Loss Ratio</b>	<b>Average One-way Frame Delay</b>			<b>Average Frame Delay Variation</b>
			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>12</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>13</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>14</sup>	Access EPL: For single-CoS OVC: Per UNI and per ENNI.OVC For multi-CoS <sup>13</sup> OVC: Per UNI.CoS and per ENNI.OVC.CoS
	Access EVPL: For single-CoS OVC: Per UNI.OVC and per ENNI.OVC For multi-CoS <sup>13</sup> OVC: Per UNI.OVC.CoS and per ENNI.OVC.CoS
<b>Colour Mode</b>	Colour blind <sup>15</sup> : Expedited: 1:1 (CIR Only) Priority: 1:1 (CIR Only) Premium: 1:1 (CIR Only) Standard : 0:1 (EIR only)
<b>Colour Forwarding</b> <sup>16</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>	CE-VLAN IDs are preserved from UNI to ENNI as per relevant MEF specifications
<b>Layer 2 Control Processing</b>	Discard for both Access EPL and Access EVPL The following Layer 2 control protocols will be discarded at UNI/ENNI ingress: xSTP, LLDP, PAUSE frames, GARP/MRP, LACP/LAMP, CDP, Link OAM, VTP, Port Authentication, UDLD, E-LMI
<b>S-Tag VLAN ID</b>	Telstra allocates SVID, or customer indicates preferences <sup>17</sup> Valid S-VID range in both cases is 1001-2999
<b>Service Frame Delivery</b>	Known Unicast: Unconditionally supported <sup>18</sup> Unknown Unicast: Conditionally Supported <sup>19</sup> Broadcast: Conditionally Supported <sup>14</sup> Multicast: Conditionally Supported <sup>14</sup>
<b>MAC Address Limit</b>	50 (Enforced in the network)
<b>OVC MTU</b>	Fibre accesses: 1600 bytes (default) 9004 bytes (requires approval) Copper Accesses: 1522 bytes NBN Accesses: 1526 bytes Mobile Accesses: 1600 bytes <sup>9</sup>
<b>Service OAM Processing</b>	IEEE 802.1ag CFM is used for internal operational and fault sectionalisation purposes.

<sup>14</sup> Bandwidth Profiles are a method of characterising Service Frames for the purpose of rate enforcement or policing. Incorrectly shaped traffic ingressing a UNI or ENNI 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>15</sup> A colour-blind profile is one where the ingress OVC policer at the UNI ignores any existing colour indication that the service frame is already conformant to CIR (green) or EIR (yellow)

<sup>16</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 ENNI Frame. When Colour Forwarding is Yes, the OVC cannot "promote" a frame from Yellow to Green

<sup>17</sup> Customer preferences may not be allocable on shared infrastructure, in which case Telstra will unilaterally allocate an available S-VID

<sup>18</sup> Subject to the CoS performance objectives

<sup>19</sup> Where CoS = Premium and the ENNI Access Topology is fully redundant, broadcast, unknown-unicast, and multicast frames are not transparently passed. Also, broadcast and multicast frames are not supported on Copper Accesses. Refer to TSIS

Customer Service OAM frames with MD-Level = 5, 6 or 7 will be transparently passed at the UNI and ENNI.

<b>Relevant Specifications</b>	MEF 33, MEF 10.2, MEF 23, IEEE802.1ad
<b>MEF Certification</b>	E-Access Services on Telstra fibre accesses <sup>20</sup> are designed to be compliant with MEF 33, but are not yet certified

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<sup>20</sup> There is no intent to MEF-certify services on copper accesses, NBN Accesses or Telstra mobile accesses