

Ethernet Access

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

General

RELATED DOCUMENTS	<ul style="list-style-type: none"> 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 TYPES¹	E-Access: <ul style="list-style-type: none"> Access EPL (Port-based at the UNI) – Supported on all access types Access EVPL (VLAN based at UNI) – Only supported on Telstra Fibre accesses
SERVICE SPEEDS²	0.256 Mbps to 1Gbps <ul style="list-style-type: none"> Telstra Fibre Accesses: 0.512 Mbps to 1Gbps Telstra Copper Accesses: 0.256 to 10Mbps NBN Accesses, FTTP: 5, 10, 20, 30, 40 & 50 Mbps FTTN and FTTB: 5 Mbps & 10 Mbps

ENNI Attributes (Aggregated Head End)

INTERFACE TYPES	<ul style="list-style-type: none"> 1000Base-T 1000Base-SX 1000Base-LX 10GBASE-SR 10GBASE-LR
INTERFACE MODES	<ul style="list-style-type: none"> Auto Negotiate (Default) Full Duplex
ACCESS TYPE	<ul style="list-style-type: none"> Fibre-based
ENNI ACCESS AVAILABILITY TARGET	<ul style="list-style-type: none"> 99.90%: <ul style="list-style-type: none"> Single uplink (fibre-based access) 99.98%: <ul style="list-style-type: none"> Fully redundant³ pair (fibre-based access). The ENNI pair can either be co-located or geographically diverse⁴
FRAME FORMATS	<ul style="list-style-type: none"> IEEE Std 802.1ad (Ethernet 0x88A8) or IEEE Std 802.1Q (Ethernet 0x8100)
ENNI MTU SIZE⁵	<ul style="list-style-type: none"> Jumbo: 9004 bytes
ENNI SERVICE MULTIPLEXING	<ul style="list-style-type: none"> Yes, for both Access EPL and Access EVPL (i.e. a single S-VLAN ID is mapped to the OVC at the ENNI)

1. 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>

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. 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.

4. Business rules apply to the locations of a fully redundant pair of ENNIs.

5. 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.

UNI Attributes (Tail End)

INTERFACE TYPES	Telstra Fibre Access <ul style="list-style-type: none"> • 10Base-T • 100Base-Tx • 1000Base-T • 1000Base-SX • 1000Base-LX • 10GBASE-SR • 10GBASE-LR 	Telstra Copper Access <ul style="list-style-type: none"> • 10Base-T • 100Base-Tx 	NBN Access <ul style="list-style-type: none"> • 100Base-Tx • 1000Base-T • 1000Base-SX • 1000Base-LX
INTERFACE MODE	<ul style="list-style-type: none"> • Auto Negotiate (Default) • Full Duplex • Half Duplex 		
ACCESS TYPES	<ul style="list-style-type: none"> • Telstra Fibre-based • Telstra Copper-based: Premium CoS (1:1) only. Access-EPL only⁶ • NBN: FTTP, FTTN. FTTB: Premium CoS (1:1) only. Access-EPL only 		
UNI ACCESS AVAILABILITY TARGET	<ul style="list-style-type: none"> • 99.70%: Single uplink (NBN Access) • 99.80%: Single uplink (Telstra copper accesses) • 99.90%: Single uplink (Telstra fibre accesses) • 99.98%: Fully redundant uplink (Telstra fibre accesses)⁷ 		
UNI MTU SIZE	<ul style="list-style-type: none"> • Telstra Fibre accesses: <ul style="list-style-type: none"> – 1596 bytes (standard) – 9000 bytes (jumbo) • Telstra Copper Accesses: 1522 bytes • NBN Accesses: 1522 bytes 		
UNI SHUT DOWN	<ul style="list-style-type: none"> • Disabled 		
UNI SERVICE MULTIPLEXING	<ul style="list-style-type: none"> • For Access EVPL only (≥1 OVC associated with the UNI and based on CE-VLAN ID) 		
CE-VLAN ID (C-VID) BUNDLING	<ul style="list-style-type: none"> • Access EPL: <ul style="list-style-type: none"> – All-to-one (All⁸ C-VIDs mapped to one OVC at the UNI) • Access EVPL: <ul style="list-style-type: none"> – 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 accesses only) 		

6. On Telstra copper accesses, only untagged frames are permitted to ingress the UNI.

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

8. Including untagged frames.

OVC Attributes

<p>AVAILABLE CLASSES OF SERVICE</p>	<ul style="list-style-type: none"> • 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 or over NBN accesses. • 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. Not available over Telstra copper accesses or over NBN accesses. • Premium (1:1 CIR:PIR): Small 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. • Standard (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. 																																	
<p>CLASS OF SERVICE OPERATION</p>	<ul style="list-style-type: none"> • Single CoS: Any one of the four available CoS can be used within the OVC (subject to the access type as above) • Multi-CoS: Up to four CoS are concurrently supported within the same OVC. (Only supported on Telstra Fibre Accesses) 																																	
<p>OVC FRAME MAPPING</p>	<ul style="list-style-type: none"> • At the ENNI end-point, frames are mapped to the OVC using the S-Tag VLAN ID. • At the UNI endpoint: <ul style="list-style-type: none"> – Single-CoS: Frames are C-VID mapped to the OVC irrespective of customer CoS marking – Multi-CoS: Frames can be either C-tag mapped (C-VID and PCP) or DSCP-mapped 																																	
<p>TARGET NETWORK PERFORMANCE OBJECTIVES, (ENNI-TO-UNI)</p>	<table border="1"> <thead> <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> </thead> <tbody> <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> </tbody> </table>	Class of Service	Frame Loss Ratio	Average One-way Frame Delay			Average Frame Delay Variation	0-161km	162-1609km	1610-16093km	Expedited	<0.01%	<5.7ms	<14.5ms	<37.5ms	<1ms	Priority	<0.01%	<10ms	<20ms	<43ms	Not Specified	Premium	<0.1%	Not Specified			Not Specified	Standard	Best Effort				
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<p>BANDWIDTH PROFILE RATES⁹</p>	<ul style="list-style-type: none"> • Access EPL: <ul style="list-style-type: none"> – For single-CoS OVC: Per UNI and per ENNI.OVC – For multi-CoS OVC: Per UNI.CoS and per ENNI.OVC.CoS • Access EVPL: <ul style="list-style-type: none"> – For single-CoS OVC: Per UNI.OVC and per ENNI.OVC – For multi-CoS OVC: Per UNI.OVC.CoS and per ENNI.OVC.CoS 																																	

9. 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.

OVC Attributes (continued)

COLOUR MODE	<ul style="list-style-type: none"> • Colour blind¹⁰: Expedited: 1:1 (CIR Only) Priority: 1:1 (CIR Only) Premium: 1:1 (CIR Only) Standard: 0:1 (EIR only)
COLOUR FORWARDING¹¹	<ul style="list-style-type: none"> • Yes
COS MARKING PRESERVATION	<ul style="list-style-type: none"> • Layer 2 priority (802.1p) and Layer 3 priority (DSCP) always preserved end-to-end
CE-VLAN ID PRESERVATION	<ul style="list-style-type: none"> • CE-VLAN IDs are preserved from UNI to ENNI as per relevant MEF specifications
LAYER 2 CONTROL PROCESSING	<ul style="list-style-type: none"> • 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
S-TAG VLAN ID	<ul style="list-style-type: none"> • Telstra allocates SVID, or customer indicates preferences¹² • Valid S-VID range in both cases is 1001-2999
SERVICE FRAME DELIVERY	<ul style="list-style-type: none"> • Known Unicast: Unconditionally supported¹³ • Unknown Unicast: Conditionally Supported¹⁴ • Broadcast: Conditionally Supported¹⁴ • Multicast: Conditionally Supported¹⁴
MAC ADDRESS LIMIT	<ul style="list-style-type: none"> • 50 (Enforced in the network)
OVC MTU	<ul style="list-style-type: none"> • Fibre accesses: <ul style="list-style-type: none"> – 1600 bytes (default) – 9004 bytes (requires approval) • Copper Accesses: 1522 bytes • NBN Accesses: 1526 bytes
SERVICE OAM PROCESSING	<ul style="list-style-type: none"> • IEEE 802.1ag CFM is used for internal operational and fault sectionalisation purposes. • Customer Service OAM frames with MD-Level = 5, 6 or 7 will be transparently passed at the UNI and ENNI.
RELEVANT SPECIFICATIONS	<ul style="list-style-type: none"> • MEF 33, MEF 10.2, MEF 23, IEEE802.1ad
MEF CERTIFICATION	<ul style="list-style-type: none"> • E-Access Services on Telstra fibre accesses¹⁵ are designed to be compliant with MEF 33, but are not yet certified

10. 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).

11. 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.

12. Customer preferences may not be allocable on shared infrastructure, in which case Telstra will unilaterally allocate an available S-VID.

13. Subject to the CoS performance objectives.

14. 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.

15. There is no intent to MEF-certify services on copper accesses or on NBN Accesses.

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.