Ethernet Access

Data sheet for the E-Access Service Type

Wholesale

General

Related Documents	Telstra Wholesale Ethernet Access fact sheet: https://www.telstrawholesale.com.au/content/dam/tw/products/data_ip/ethernet-access/Documents/Telstra_Wholesale_Ethernet_Access_Factsheet Telstra Service Interface Specification (TSIS) [commercial-in-confidence] TSIS Addendum for E-Access [commercial-in-confidence]
Supported MEF Service Types[1]	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
Service Speeds[2]	Telstra Fibre Accesses: 20 Mbps to 2Gbps NBN Accesses, FTTP: 5, 10, 20, 30, 40 & 50 Mbps FTTN, FTTC and FTTB: 5 Mbps & 10 Mbps Telstra Mobile Accesses: up to 10/10, 20/20, 40/40 and 100/50Mbps[3]

ENNI Attributes (Aggregated Head End)

Interface Types	1000Base-T 1000Base-LX 10GBASE-LR 100GBASE-LR4 1000Base-SX 10GBASE-SR 100GBASE-SR4
Interface Modes	Auto Negotiate (Default) Full Duplex
Access Type	Fibre-based
ENNI Access Availability Target	99.90%: Single uplink (fibre-based access) 99.98%: Fully redundant[4] pair (fibre-based access). The ENNI pair can either be co-located or geographically diverse[5]
Frame Formats	IEEE Std 802.1ad (Ethertype 0x88A8)[6] or IEEE Std 802.1Q (Ethertype 0x8100)
ENNI MTU Size[7]	Jumbo: 9004 bytes
ENNI Service Multiplexing	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/content/dam/tw/products/data_ip/ethernet-access/Documents/Ethernet_Access_E-Line_Service_Type_Data_Sheet

[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. The speed tiers on Telstra mobile access represent the maximum data speeds applied to 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 access can experience typical 4G speeds of 2-50Mbps in the download and 1-10Mbps in the upload.

[4] 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

[5] Business rules apply to the locations of a fully redundant pair of ENNIs

[6] IEEE 802.1ad “Provider Bridging” with the outer tag TPID value of 0x88A8 is not supported on services delivered through the Z4806 devices. ENNI configurations delivered through the Z4806 devices must use outer tag TPID value of 0X8100.

[7] 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** 10Base-T 100Base-Tx 1000Base-T 1000Base-SX 1000Base-LX 10GBASE-SR 10GBASE-LR	**NBN Access** 100Base-Tx 1000Base-T 1000Base-SX 1000Base-LX	**Telstra Mobile Access** 10Base-T 100Base-Tx 1000Base-T 1000Base-SX[8] 1000Base-LX[7]
Interface Mode	Auto Negotiate (Default) Full Duplex Half Duplex		
Access Types	Telstra Fibre-based NBN: FTTP, FTTN, FTTC, FTTB: Premium CoS (1:1) only. Access-EPL only Telstra Mobile: Use for rapid activation or as a backup for a tail-end Telstra Fibre-based access type only[9]		
UNI Access Availability Target	99.70%: Single uplink (NBN Access) 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)[10]		
UNI MTU Size	Telstra Fibre accesses: NBN Accesses: Mobile Accesses:	1596 bytes (standard) 9000 bytes (jumbo) 1522 bytes 1596 bytes[11]	
UNI Shut Down	Disabled		
UNI Service Multiplexing	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)[12]		
CE-VLAN ID (C-VID) Bundling	Access EPL: All-to-one (All[13] 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)		

[8] Optical interfaces for the tail UNI not initially supported on EA Mobile access use for rapid activation

[9] By default, EA Mobile access use for rapid activation is automatically converted to mobile backup once the tail-end EA fibre is delivered

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

[11] Jumbo frames are not supported on Telstra mobile accesses and therefore should not be used for rapid activation and/or as a backup for Telstra fibre accesses if Jumbo frames are required

[12] Only one OVC can be associated with the UNI on Telstra mobile accesses and therefore should not be used for rapid activation and/or as a backup for Telstra fibre accesses if more than one OVC needs to be associated with the UNI

[13] Including untagged frames

OVC 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 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 NBN accesses and Telstra mobile accesses.

Premium (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 NBN 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 NBN accesses. This is the only Class of Service available over Telstra mobile accesses[14].

Class of Service Operation

Single CoS: Any one of the four available CoS can be used within the OVC (subject to the access type as above)

Multi-CoS[15]: Up to four CoS are concurrently supported within the same OVC. (Only supported on Telstra Fibre Accesses)

OVC Frame Mapping

At the ENNI end-point, frames are mapped to the OVC using the S-Tag VLAN ID.

At the UNI endpoint:

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

Multi-CoS[16]: Frames can be either C-tag mapped (C-VID and PCP) or DSCP-mapped

Target Network Performance Objectives, (ENNI-to-UNI)

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		

Bandwidth Profile Rates[16]

Access EPL:

- For single-CoS OVC: Per UNI and per ENNI.OVC
- For multi-CoS[16] 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[16] OVC: Per UNI.OVC.CoS and per ENNI.OVC.CoS

[14] For 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. When use as a backup for Telstra fibre access, traffic failover occurs when the physical fibre between the tail-end NTU and the aggregation switch located in the Telstra exchange is down.

[15] Multi-CoS is not supported on Telstra mobile accesses and therefore should not be used for rapid activation and/or as a backup for Telstra fibre accesses if Multi-Cos is being enabled. Multi-CoS is not supported on services delivered through Z4806 devices.

[16] 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 cont.

Colour Mode	Colour blind[17]: Expedited: 1:1 (CIR Only) Priority: 1:1 (CIR Only) Premium: 1:1 (CIR Only) Standard: 0:1 (EIR only)
Colour Forwarding[18]	Yes
CoS Marking Preservation	Layer 2 priority (802.1p) and Layer 3 priority (DSCP) always preserved end-to-end
CE-VLAN ID Preservation	CE-VLAN IDs are preserved from UNI to ENNI as per relevant MEF specifications
Layer 2 Control Processing	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	Telstra allocates SVID, or customer indicates preferences[19] Valid S-VID range in both cases is 1001-2999
Service Frame Delivery	Known Unicast: Unconditionally supported[20] Unknown Unicast: Conditionally Supported[21] Broadcast: Conditionally Supported[14] Multicast: Conditionally Supported[14]
MAC Address Limit	50 (Enforced in the network)
OVC MTU	Fibre accesses: 1600 bytes (default) 9004 bytes (requires approval) NBN Accesses: 1526 bytes Mobile Accesses: 1600 bytes[12]
Service OAM Processing	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	MEF 33, MEF 10.2, MEF 23, IEEE802.1ad

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[17] 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)

[18] 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

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

[20] Subject to the CoS performance objectives

[21] Where CoS = Premium and the ENNI Access Topology is fully redundant, broadcast, unknown-unicast, and multicast frames are not transparently passed. Refer to TSIS