



## **Service Definition**

### **E-Line Service**

## Contents

<b>1</b>	<b>Overview .....</b>	<b>1</b>
1.1	Introduction.....	1
1.2	Product Overview .....	1
<b>2</b>	<b>Service Specification .....</b>	<b>1</b>
2.1	Transport Options.....	2
2.2	User Network Interface (UNI) .....	2
2.3	Bandwidth Profile.....	3
2.4	Quality of Service .....	5
<b>3</b>	<b>Access Methods.....</b>	<b>6</b>
<b>4</b>	<b>Service Levels<sup>1</sup> .....</b>	<b>6</b>
4.1	Target Service Levels.....	6
4.2	Severity Level Definitions .....	6
4.3	Service Availability.....	7
4.4	Service Latency .....	8
4.5	Service Jitter.....	9
4.6	Service Utilisation .....	9
4.7	Packet Loss.....	10
<b>5</b>	<b>Support Service Levels .....</b>	<b>11</b>
5.1	Incident Management .....	11
5.2	Change Management .....	12
<b>6</b>	<b>Technical Specifications<sup>2</sup> .....</b>	<b>12</b>
6.1	UNI Specification .....	12
6.2	EVC Technical Specification <sup>3</sup> .....	14

## 1 Overview

### 1.1 Introduction

This Service Definition describes Nexium's E-Line product from the customer's perspective. In this document the product is described in terms of an overview, service specification, service levels, orderable service options and technical specifications.

The Product Description details standard aspects of Nexium's E-Line product. Specific customer requirements may vary, and therefore any service offering (including aspects such as price and performance guarantees) will require contractual agreement.

### 1.2 Product Overview

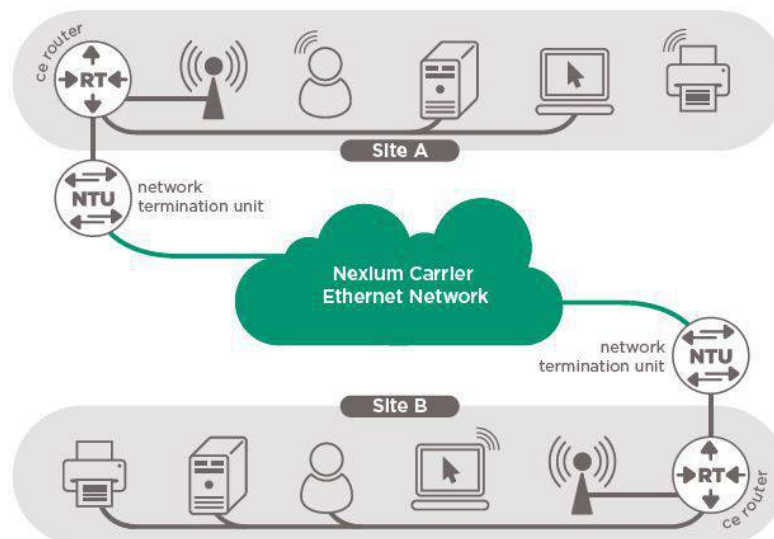
The E-Line product is a point-to-point service, which provides for connection requirements of between 1 Mbps and 10000 Mbps (10 Gbps) using standard Ethernet interfaces. E-Line services can meet simple requirements where two sites need to be linked, or multiple services can be configured to provide for connectivity between many sites.

E-Line Services can be configured using flexible, high-speed bandwidth profiles to meet service performance and capacity requirements. The service also provides quality of service features to support IP-based transport of voice, video and business critical data communications.

## 2 Service Specification

As shown in the diagram below, a E-Line Service is comprised of:

- User Network Interfaces (UNI) that provides standards-based Ethernet interfaces between Nexium and the Customer Edge (CE).
  - CE represents the Customer Edge interface for the EVC service connection.
  - UNI Represents the Network Provider's (Nexium) interface for the EVC service connection.
- Ethernet Virtual Connection (EVC) that connects two UNIs in a full duplex, point to point mode. The EVC capacity matches the customer-specified bandwidth profile.



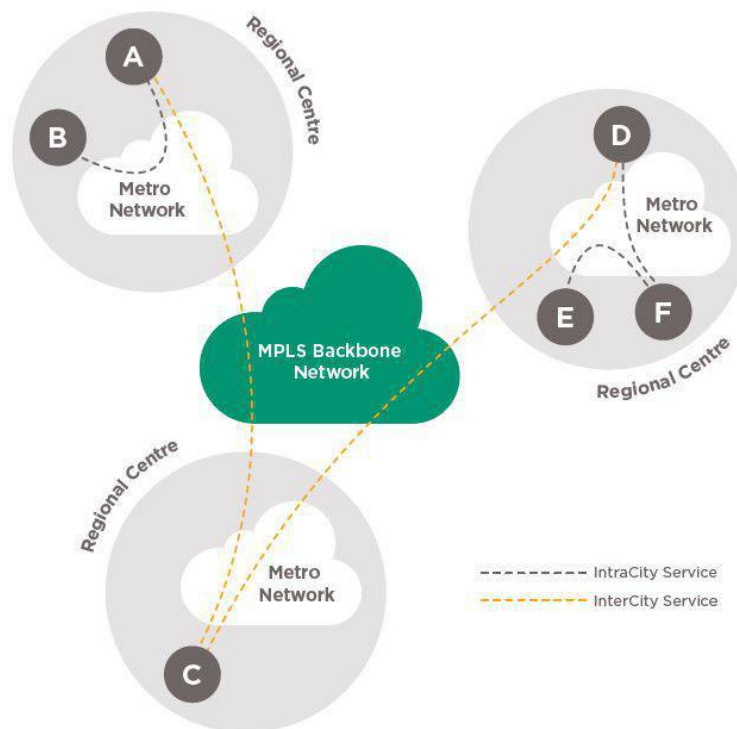
# E-Line Service

## 2.1 Transport Options

Nexium operates a number of metro Ethernet networks, and an MPLS backbone network which covers much of regional Queensland. An E-Line service may be provided as:

- An IntraCity E-Line Service - Ethernet Switched Only Service, which does not traverse the MPLS backbone network.
- An InterCity E-Line Service - Ethernet over MPLS service, which traverses the MPLS backbone network.

Ergon and third party wide area transmission services enable Nexium to deliver end-to-end managed E-Line Services between regional centres. The diagram below shows a number of E-Line services.



## 2.2 User Network Interface (UNI)

A customer accesses an E-Line service at the UNI, and the UNI defines the point of service responsibility between Nexium and the Customer (CE). The physical interface is provided to a customer as a designated Ethernet port on the Nexium UNI. This switch is provided and maintained by Nexium, with the cabling between UNI and CE to be provided by the customer.

UNI supported physical interfaces include twisted pair and short or long wavelength optical fibre according to IEEE 802.3 standards. The physical presentation from the Nexium UNI will be:

- Copper Ethernet - RJ-45 (8P8C keyed) receptacle (IEC 60603-7)
- Optical Fibre – Duplex LC receptacle (IEC 61754-20)

The customer will provide and maintain the appropriate cabling between the UNI and CE

The logical interface is provided at the UNI using IEEE 802.1Q tagged Ethernet frames.

The customer can choose from the following UNI IEEE 802.1Q tagging options per UNI:

1. S-Tagged Service Interface (default interface option):
  - a. Nexium provides the customer with an EVC ID (also known as VLAN ID, which is a part of the S-TAG,) for each E-Line service.
  - b. Customer must tag all the traffic transmitted to Nexium with S-TAG.
  - c. Customer selects a Layer 2 control protocol delivery option.
  - d. Customer can have any inner CE-VLAN (C-TAG) under this S-TAG.
  - e. Incorrect outer tagged (S-TAG) or untagged frames are not transported across an EVC.
  - f. Nexium provides service multiplexing by terminating multiple S-Tagged EVCs on a single UNI.
2. C-Tagged Service Interface:
  - Nexium by default maps all customer traffic entering UNI to a single EVC ID (S-TAG).
  - Customer can forward any IEEE 802.1Q tagged frames.
  - Customer selects a Layer 2 control protocol delivery option.
  - Customer can forward untagged frames.
  - Nexium can optionally provide service multiplexing by mapping different CE-VLANs to separate EVCs.

The customer can choose from the following Layer 2 control protocol delivery options:

1. Layer 2 control protocol frames discarded
2. Layer 2 control protocol transported: cdp, lldp, stp, vtp, pagp, lacp, udld

## 2.3 Bandwidth Profile

E-Line service bandwidth is specified using two traffic parameters:

- **Committed Information Rate (CIR):** The rate in bps of ingress service frames that Nexium delivers between UNIs that meets the CIR rate defined by the relevant traffic class.
- **Excess Information rate (EIR):** The rate in bps of all ingress service frames that Nexium delivers between UNIs. This includes CIR compliant frames.
- **Mark Down Traffic Rate:** The amount of traffic that is not discarded that exceeds CIR that is calculated as (EIR-CIR).

The CIR and EIR parameters together define the bandwidth profile for the service. The customer selects CIR and EIR on the basis of traffic classes (refer to Quality of Service below).

The customer:

- Selects a CIR for each traffic class. The customer is required to select at least one of Real Time, Business Critical or Bulk Data class for each service. The default traffic class, if undefined in the commercial agreement, is Bulk Data.
- Defines the Service CIR as the sum of all selected traffic class CIRs for the service, up to a limit of the UNI access speed.

# E-Line Service

- Defines the Service EIR as greater than or equal to the Service CIR, up to the limit of the UNI access speed.
- Note:
  - the Real Time traffic class is not permitted to transmit above the defined CIR.
  - for Ethernet Switched Only services, Service EIR is required to be equal to the Service CIR.
- Calculation of both CIR and EIR bandwidth is based on use of 1526 byte frames, including all underlying carrier and protocol overheads.

The service bandwidth profile is specified using the parameters shown in the tables below.

**Table 1: Service Types**

Service Type	Minimum CIR	Above Minimum CIR	EIR
Nexium EVC	1 Mbps	<ul style="list-style-type: none"> <li>• &lt; 10 Mbps: Increments of 1Mbps to 10 Mbps</li> <li>• &lt; 100 Mbps: Increments of 10 Mbps to 100 Mbps</li> <li>• &gt; 100 Mbps: Increments of 50 Mbps to 1000 Mbps</li> <li>• &gt; 1000 Mbps (1 Gbps) : Increments of 500 Mbps to 10000 Mbps (10 Gbps)</li> </ul>	<ul style="list-style-type: none"> <li>• &lt; 10 Mbps: Increments of 1Mbps to 10 Mbps</li> <li>• &lt; 100 Mbps: Increments of 10 Mbps to 100 Mbps</li> <li>• &gt; 100 Mbps: Increments of 50 Mbps to 1000 Mbps</li> <li>• &gt; 1000 Mbps (1 Gbps) : Increments of 500 Mbps to 10000 Mbps (10 Gbps)</li> </ul>

**Table 2: Bandwidth Profiles**

Per Service Class	Bandwidth Profile	
	CIR	EIR
RT Class <sup>1</sup>	RTc	RTc
BC Class	BCc	Se <sup>2</sup>
BD Class	BDc	Se <sup>2</sup>
Per Service Aggregate	Bandwidth Profile	
Service CIR	RTc + BCc + BDc	
Shared EIR	Se	
Service EIR	RTc + Se	

<sup>1</sup> CIR = EIR for RT

<sup>2</sup> EIR Value is shared across BC and BD classes.

The following principles apply:

- The Real Time class EIR always equals CIR.
- The EIR is common for Business Critical and Bulk Data (i.e. Shared EIR)
- The Real Time class does not form part of the shared EIR.
- The aggregate Shared EIR is established by removing the Real Time CIR from the total Service EIR.
- For the shared EIR product the traffic rates are expressed as CIR/EIR where EIR is expressed as the maximum rate that the class can be transmit at. Due to the nature of the shared EIR product, all shared EIR classes will have the same EIR.
- Aggregate traffic received in Shared EIR classes greater than the Shared EIR rate will be dropped indiscriminately.

# E-Line Service

- For Business Critical and Bulk Data classes, any traffic that is transmitted at or above the CIR rate of respective individual class will be re-marked and is only subject to the SLA for the Mark Down class. The traffic at or below the CIR of the respective individual class is subject the SLA for that class.
- The traffic that has been remarked will be considered as discard eligible, and may be discarded in the event there is congestion on the EVC path.
- Only a specific class can use its own CIR bandwidth as CIR.

**Table 3: Traffic Classes**

Traffic Class	Customer DSCP	Customer Class of Service (CoS) identifier	Application Guidelines	Supported Service Levels			
				Throughput	Delay	Loss	Jitter
Real Time	EF	CoS = 5	Voice and interactive video.	Yes	Yes	Yes	Yes
Business Critical	AF21 & AF23	CoS = 2	Transactional and interactive applications with a high business priority.	Yes	Yes	Yes	No
Bulk Data	All Else	All Else	Large file-transfers, e-mail, network backups, database syncs and replication. Default class for all unassigned traffic within CIR.	Yes	Yes	Yes	No
Mark Down	N/A	CoS = 0	N/A	No	No	No	No

Untagged customer frames that do not have COS value will be transported as the lowest purchased Traffic Class. If the customer selected the option to transport Layer 2 Control traffic (eg: CDP, STP, etc.) this will always be transported as Business Critical.

When selecting CIR and EIR bandwidth parameters for traffic classes, the following guidelines should be utilised. These guidelines define the forwarding rules applied to each traffic class based on whether the traffic instantaneously exceeds the specified CIR, or exceeds the specified EIR.

**Table 4: QoS Actions**

Traffic Class	EIR Guidelines	CIR Exceed Action	EIR Exceed Action
Real Time	EIR for this class must equal CIR.	Discard	Discard
Business Critical	EIR can be specified up to Service EIR	Mark down	Discard
Bulk Data	EIR can be specified up to Service EIR.	Mark down	Discard

## 2.4 Quality of Service

Customers identify the relative importance of their traffic by setting IP Diffserv Code Points (DSCP) or by setting the COS value in the outer most IEEE 802.1Q Tag at the EVC UNI. Nexium will then provide class-based quality of service treatment that reflects the relative priority of each traffic class.

Nexium supports three traffic classes, per service, with supported SLA's for CIR compliant traffic. Marked down traffic has no supported SLA's for Throughput, Delay, Packet Loss or Jitter. These classes and the supported service levels are defined in the table below.

## 3 Access Methods

The E-line service may be available over a range of existing access methods offered and/or supported by Nexium, including:

- Fibre
- Radio / microwave
- Fixed wireless,
- External 3G/4G and DSL
- National Broadband Network (NBN) services, including FTTx and Hybrid-Fibre Coaxial services, Fixed Wireless and Satellite (SkyMuster™) services (note – a Fair Use Policy applies to NBN Satellite services).

Full details of connectivity options and technical requirements are outlined in the Technical Specifications section of this document.

## 4 Service Levels<sup>1</sup>

Service Levels determine the quality characteristics of the Services. Service levels are described in terms of individual metrics, as outlined in the tables below. Specific customer requirements may vary, and therefore any service offering (including aspects such as price and performance guarantees) will require contractual agreement.

Where external providers are used, such as 3G/4G, DSL and NBN services, service levels may vary outside Nexium's standard resolution times. This information should be discussed between the customer and Nexium Account Manager and acknowledged in a specific agreement for each service.

### 4.1 Target Service Levels

The Service Level Tables below also include Target Service Levels for some metrics.

### 4.2 Severity Level Definitions

Some of the Service Level metrics include reference to Severity Levels, being the severity designation assigned to Incidents. The Severity Levels are defined as follows:

**Severity Level 1** – A total loss of a service element or error rate that renders the service unavailable, or any fault that poses a hazard to the safety of the customer's or supplier's personnel, or the general public.

**Severity Level 2** – a partial loss of a service element component; or a reduction in link traffic carrying capacity (degradation), Service still usable but impaired.

**Severity Level 3** – anomalies in transmission performance; or any non-service affecting alarms.

**Severity Level 4** – indicates all other reasonable problems or requests.



A customer may request that an incident be treated as a higher Severity Level if the customer reasonably believes that the business impact of the incident is greater than the Severity Level classification assigned.

<sup>1</sup> Service Level targets are for Nexium managed services only. External services such as 3G/4G, DSL, NBN and satellite services are subject to service levels provided by the relevant provider.

## 4.3 Service Availability

Metric: Service Availability	
Metric Definition	<p>Measures the availability of each E-Line Service.</p> <p>“Available” in relation to the Service means that the Service is accessible to the customer, and able to transmit customer data across the Nexium network, as measured at the Measurement Point specified below. The E-Line service is considered unavailable when the Nexium Operational Support System point to point service agent reports unavailability of either end.</p> <p>Availability is measured on a per service basis.</p>
Measurement Period	24x7
Target Service Level	99.95% for service delivery within or between Regional Centres or Brisbane
Applicable Rebate	Defined in Service Agreement
Measurement Methodology	
Measurement Point	Measured from the User Network Interface i.e. the customer’s connection at the Nexium Customer Edge switch.
Calculation	$\text{Actual Availability \%} = \left[ \frac{(\text{Actual Hours Available} + \text{Excusable Downtime})}{\text{Available Hours}} \right] * 100$ <p>Where:</p> <p><b>Actual Hours Available</b> means the amount of time within the Available Hours that the Service was actually Available.</p> <ul style="list-style-type: none"> <li>• Downtime will commence on notice from customer.</li> <li>• Completion of downtime will be based on NOC advising customer service is restored.</li> </ul> <p><b>Excusable Downtime</b> means the aggregate time within the Available Hours that the Service is not Available due to:</p> <ul style="list-style-type: none"> <li>• any Scheduled Downtime; and</li> <li>• any other excusable event under the Customer contract. Includes in the first instance Force Majeure, compliance with laws / direction of a Regulator, Customer or End User caused outages and suspensions as an alternative to right of termination.</li> </ul> <p><b>Available Hours</b> means 24 hours, 7 days a week every day of the year.</p>
Period of Calculation	Calculated on a calendar monthly basis
Frequency of Measurement	A service response measurement is taken every 5 minutes.
Data Source	Measured using Nexium’s Operational Support System.
Reporting Responsibility	Network Operations Centre
Reporting Frequency	Monthly – to be provided within 10 Business Days of the end of the relevant calendar month.

Reporting Requirements	<ul style="list-style-type: none"> <li>• Reports to be provided in soft copy</li> <li>• All relevant support data required to verify the Service Level calculations to be provided or made available in an acceptable format</li> <li>• Reports to include the information set out in the "Calculation" section, details of actual performance against Minimum Service Level (in graphic representation where possible), details of outages, causal analysis and remedial and preventative actions.</li> </ul>
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## 4.4 Service Latency

Metric: Service Latency							
Metric Definition	Measures the latency of the E-Line Service by measuring User Network Interface to User Network Interface delay between each Customer Site. Latency is reported for a Service on a one way basis.						
Measurement Period	24 x 7						
Target Service Level	<b>Traffic Class</b>						
	Real Time		Business Critical		Bulk Data		Mark Down
	Inter-City	Intra-City	Inter-City	Intra-City	Inter-City	Intra-City	Not applicable
	< 30 ms	< 10ms	< 40ms	< 15ms	< 50ms	< 20ms	
Applicable Rebate	N/A						
Measurement Methodology							
Measurement point	Between two User Network Interfaces.						
Calculation	The average of the all sample measurements over the period of calculation.						
Period of Calculation	Calculated on a calendar monthly basis.						
Frequency of Measurement	Measured at 5 minute intervals.						
Data Source	Measured using Nexium's Operational Support System.						
Measurement responsibility	Network Operations Centre.						
Reporting Frequency	Monthly – to be provided within 10 Business Days of the end of the relevant calendar month.						
Reporting Requirements	<ul style="list-style-type: none"> <li>• Reports to be provided in soft copy</li> <li>• All relevant support data required to verify the Service Level calculations to be provided or made available in an acceptable format.</li> <li>• Reports to be provided on an as required basis. Details of causal analysis and remedial and preventative actions to be provided.</li> </ul>						

## 4.5 Service Jitter

<b>Metric: Service Jitter</b>				
Metric Definition	Measures the jitter of the E-Line Service by measuring variation of delay between each Customer Site. Jitter is reported on a one way basis.			
Measurement Period	24 x 7			
Target Service Level	<b>Traffic Class</b>			
	Real Time	Business Critical	Bulk Data	Mark Down
	< 10 ms	Not applicable	Not applicable	Not applicable
Applicable Rebate	N/A			
<b>Measurement Methodology</b>				
Measurement point	Between two User Network Interfaces.			
Calculation	The average of the all sample measurements over the period of calculation.			
Period of Calculation	Calculated on a calendar monthly basis.			
Frequency of Measurement	Measured at 5 minute intervals.			
Data Source	Measured using Nexium's Operational Support System.			
Measurement responsibility	Network Operations Centre			
Reporting Frequency	Monthly – to be provided within 10 Business Days of the end of the relevant calendar month.			
Reporting Requirements	<ul style="list-style-type: none"> <li>• Reports to be provided in soft copy</li> <li>• All relevant support data required to verify the Service Level calculations to be provided or made available in an acceptable format</li> <li>• Reports to be provided on an as required basis Details of causal analysis and remedial and preventative actions to be provided.</li> </ul>			

## 4.6 Service Utilisation

<b>Metric: Service Utilisation</b>	
Metric Definition	Measures the actual bandwidth utilisation of each E-Line Service, reported in graphical format.
Measurement Period	24 x 7.
Target Service Level	N/A
Applicable Rebate	N/A
<b>Measurement Methodology</b>	
Measurement point	Measured between two User Network Interfaces.
Calculation	Service Utilisation means the actual utilisation measured over the Measurement Period.
Period of Calculation	Calculated on a calendar monthly basis.
Frequency of Measurement	Utilisation measured at 5 minute intervals.
Data Source	Measured using Nexium's Operational Support System.

Measurement responsibility	Network Operations Centre
Reporting Frequency	As Reasonably required.
Reporting Requirements	<ul style="list-style-type: none"> <li>• Reports to be provided in soft copy</li> <li>• All relevant support data required to verify the Service Level calculations to be provided or made available in an acceptable format.</li> <li>• Reports to be provided on an as required basis Details of causal analysis and remedial and preventative actions to be provided.</li> </ul>

## 4.7 Packet Loss

Metric: Packet Loss				
Metric Definition	Measures the percentage of CIR compliant packets lost as a percentage of the total number of CIR compliant packets sent between two User Network Interfaces.			
Measurement Period	24 x 7			
Target Service Level	<b>Traffic Class</b>			
	Real Time	Business Critical	Bulk Data	Mark Down
	< 0.5%	< 1%	< 1%	Not applicable
Applicable Rebate	N/A			
Measurement Methodology				
Measurement point	Measured between two User Network Interfaces.			
Calculation	$\text{Packet Loss \%} = \frac{\sum \text{Test packets lost}}{\sum \text{Test packets sent}} * 100$ <p>as determined on the average of all measurements over the period of calculation.</p>			
Period of Calculation	Calculated on a calendar monthly basis.			
Frequency of Measurement	Packet Loss measured at 5 minute intervals.			
Data Source	Measured using Nexium's Operational Support System.			
Measurement responsibility	Network Operations Centre.			
Reporting Frequency	Monthly – to be provided within 10 Business Days of the end of the relevant calendar month.			
Reporting Requirements	<ul style="list-style-type: none"> <li>• Reports to be provided in soft copy.</li> <li>• All relevant support data required to verify the Service Level calculations to be provided or made available in an acceptable format.</li> <li>• Reports to be provided on an as required basis Details of causal analysis and remedial and preventative actions to be provided.</li> </ul>			

## 5 Support Service Levels

### 5.1 Incident Management

<b>Metric: Incident Management</b>				
Metric Definition	Measures the successful completion of incident response, resolution and communication processes for each problem. Incident management measures the percentage of incidents where response and resolution targets were met and communication processes followed.  Incident Management targets are a function of the severity of the problem.			
Measurement Period	24 x 7			
Target Service Levels				
		Response (By Telephone)	Restoration (Excludes reasonable travel time to site from closest concentration of the applicable personnel, ie: Rockhampton, Townsville, Toowoomba for Regional Centres)	Communication Updates
	<b>Severity Level 1</b>	95% within 30 minutes	95% within 4 hours	Every 30 minutes
	<b>Severity Level 2</b>	95% within 30 minutes	95% within 8 hours	Every 60 minutes
	<b>Severity Level 3</b>	95% within 30 minutes	95% within 5 business days	Once per day
	<b>Severity Level 4</b>	95% within 1 business day (e-mail or telephone response)	95% within 10 business days or as otherwise agreed	Weekly notification of outstanding problems
	Faults that are a result of a fibre cut by the Supplier or the Supplier's Personnel - 12 hours (excluding reasonable travel times from Townsville / Rockhampton / Toowoomba to the relevant site)			
	Faults that are a result of a fibre cut by any person other than the Supplier or the Supplier's Personnel: - Force Majeure conditions apply and the Supplier will use best endeavours to restore.			
Applicable Rebate	N/A			
<b>Measurement Methodology</b>				
Measurement points	N/A			
Calculation	N/A			
Period of Calculation	Calculated on a per incident basis			
Frequency of Measurement	Monthly			
Data Source	Nexium Fault Management System.			
Measurement responsibility	Network Operations Centre			
Reporting Frequency	Monthly – to be provided within 10 Business Days of the end of the relevant calendar month.			

Reporting Requirements	<ul style="list-style-type: none"> <li>• Reports to be provided in soft copy</li> <li>• All relevant support data required to verify the Service Level calculations to be provided or made available in an acceptable format</li> <li>• Reports to include, details of actual performance against Target Service Level (in graphic representation where possible), details of causal analysis and remedial and preventative actions to be provided.</li> </ul>
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## 5.2 Change Management

Metric: Change Management	
Metric Definition	Measures successful completion of operational change activities.  Successful completion means a change that has been completed or backed out in accordance with the agreed change window and process and that does not introduce unforeseen problems subsequent to implementation of the change.
Scheduled Hours	N/A
Minimum Service Level	95% of changes successfully completed in accordance with scheduled change window.
Target Service Level	98% of changes successfully completed in accordance with scheduled change window.
Applicable Rebate	N/A
Measurement Methodology	
Measurement point	N/A
Calculation	% = Successful Changes/Total Changes x 100
Period of Calculation	Measured for each change.
Frequency of Measurement	Monthly
Data Source	Change Management tracking data base and related records.
Measurement responsibility	Network Operations Centre
Reporting Frequency	Monthly – to be provided within 10 Business Days of the end of the relevant calendar month.
Reporting Requirements	Reports to be provided in soft copy  All relevant support data required to verify the Service Level calculations to be provided or made available in an acceptable format, including number and reason for planned outage.

## 6 Technical Specifications <sup>2</sup>

### 6.1 UNI Specification

UNI Attribute	Description	Parameter
Physical Medium	The Ethernet physical media that deliver EVC service to the customer.  Note: Nexium will provision services only to the UNI.	Interface Options: <ul style="list-style-type: none"> <li>• 100BASE-TX                      Category 5 UTP</li> <li>• 1000BASE-SX                  Multimode optical fibre</li> <li>• 1000BASE-LX                  Single mode or multimode optical fibre</li> <li>• 1000BASE-T                    Category 5 UTP</li> <li>• 10GBASE-SR                  Multimode optical fibre</li> <li>• 10GBASE-LR                  Single mode optical fibre</li> </ul>
Interface Speed	The speed of the Ethernet interface.	100 Mbps, 1000, or 10000 Mbps
Interface Port Type	The Ethernet port type.	IEEE 802.1Q Trunk
Maximum Frame Size	The maximum Ethernet frame size	By default 1526 bytes, including 802.1Q header, and excluding

	supported at the UNI.	header preamble. Larger MTU frames may be agreed with customer at the discretion of Nexium.
Mode	The Ethernet mode.	Full duplex
MAC Layer	The Ethernet MAC Standard.	IEEE 802.3-2005
MAC Addresses per UNI	The number of customer MAC addresses supported per UNI.	Maximum per 200 per EVC. Additional MAC Addresses per EVC may be agreed at the discretion of Nexium.
Service ID		Nexium defined.
Ingress Bandwidth Profile per Ingress UNI	A bandwidth profile is applied to all ingress Service Frames at the UNI.	No
Ingress Bandwidth Profile per EVC	A bandwidth profile is applied to all ingress Service Frames for an EVC at the UNI.	No
Ingress Bandwidth Profile by Traffic Class	A bandwidth profile is applied to all ingress Service Frames with a specific Traffic Class.	Yes
<b>S-Tagged Service Interface</b>		
Service Multiplexing	A UNI service attribute in which the UNI can be in more than one EVC instance.	Yes. The UNI can support multiple EVCs by default.
Bundling	A UNI attribute in which more than one CE-VLAN VLAN ID can be associated with an EVC.	Yes. More than one customer VLAN can map to an EVC at the UNI. Customer to map CE-VLAN to EVC.
All-to-One Bundling	A UNI attribute in which all CE-VLAN VLAN IDs are associated with a single EVC.	No.
EVC ID (S-TAG)	The Nexium defined service VLAN ID.	Nexium defined. Each assigned EVC maps to a unique EVC. The customer must insert this as the outer most tag.
CE-VLAN / EVC Map	An association of CE-VLAN VLAN IDs with EVCs at a UNI	Customer can optionally use and map CE-VLAN to the Nexium defined EVC ID/s.
Untagged frames	All untagged frames are discarded.	Yes, all untagged frames are discarded.
Number of EVCs per UNI.		Maximum of 8 for 100 Mbps UNI Maximum of 20 for 1000 Mbps per UNI Maximum of 50 for 10000 Mbps (10Gbps) per UNI
<b>C-Tagged Service Interface</b>		
Service Multiplexing	A UNI service attribute in which the UNI can be in more than one EVC instance.	Optional. The UNI supports a single EVC by default <sup>1</sup> .
Bundling	A UNI attribute in which more than one CE-VLAN VLAN ID can be associated with an EVC.	Yes. More than one customer VLAN can map to an EVC at the UNI.
All-to-One Bundling	A UNI attribute in which all CE-VLAN VLAN IDs are associated with a single EVC.	Optional. All customer VLANs map to a single EVC at the UNI by default.

EVC ID (S-TAG)	The Nexium defined service VLAN ID.	Nexium defined. Each assigned EVC maps to a unique EVC. Nexium will insert this as the outer most tag.
CE-VLAN / EVC Map	An association of CE-VLAN VLAN IDs with EVCs at a UNI	Customer can use any CE-VLAN. Nexium will map the CE-VLAN to the EVC/s.
Untagged frames	All untagged frames are discarded.	No. All untagged frames will be mapped to one EVC.
Number of EVCs per UNI.		Default 1 Maximum of 8 for 100 Mbps UNI Maximum of 20 for 1000 Mbps per UNI Maximum of 50 for 10000 Mbps (10Gbps) per UNI

<sup>2</sup> Untagged frames are mapped to a single EVC.

## 6.2 EVC Technical Specification <sup>3</sup>

EVC Attribute	Description	Parameter
EVC Type	E-Line (Point-to-point EVC)	Point to point
EVC VLAN-ID (S-TAG EVC) Preservation	The VLAN Tag is preserved end to end for the service.	No. 802.1Q EVC VLAN ID may be rewritten and may not be consistent end to end. Nexium and customer will agree VLAN ID to be used at both ends prior to service initiation.
CoS (S-TAG EVC) Preservation	An EVC attribute in which the EVC CoS of an egress Service Frame is identical in value to the EVC CoS of the corresponding ingress Service Frame	No. CoS bits will be set by Nexium and will be presented to customer on egress as per Table 3.
CE-VLAN ID Preservation	An EVC attribute in which the CE-VLAN ID of an egress Service Frame is identical in value to the CE-VLAN ID of the corresponding ingress Service Frame.	Yes
CE-VLAN CoS Preservation	An EVC attribute in which the CE-VLAN CoS of an egress Service Frame is identical in value to the CE-VLAN CoS of the corresponding ingress Service Frame	Yes
IP DSCP Preservation	The customers IP header is preserved end to end on service.	Yes
Unicast Service Frame Delivery	Frames with a unicast destination MAC address.	Deliver unconditionally.
Multicast Service Frame Delivery	Frames with a multicast destination MAC address.	Deliver conditionally. Condition: Frame does not violate multicast storm control levels.



# E-Line Service

Broadcast Service Frame Delivery	Frames with a broadcast destination MAC address.	Deliver conditionally. Condition: Frame does not violate broadcast storm control levels.
Layer 2 Control Protocol Service Frame Delivery	Frames used in Layer 2 control plane, e.g., Spanning Tree Protocol.	Optional. Deliver the following L2 protocol tunneling conditionally: cdp, lldp, stp, vtp, pagp, lacp, udld Condition: Frame rate does not exceed 250 packets per second.

<sup>3</sup> Technical specifications and performance targets are for Nexium managed services only. External services such as 3G/4G, DSL, NBN and satellite services are subject to service levels provided by the relevant provider