



Telstra - Ethernet Infrastructure Training Analysis Report

This TAR captures the following project training requirements:

Project	Team Training	Deployment Training	Migrations Training
	☒	☒	☒

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DOCUMENT SCOPE

This TAR covers the Phase 1 (Project team training) and Phase 2 (Deployment training) stages for Telstra Ethernet Infrastructure (EIP) training requirements. EIP does not include any migrations from the existing BDSL or Ethernet over ATM services (either from the SDN or MSE network) to EI services, including any associated OSS developments and tools.

The Ethernet Infrastructure (EI) project is part of a broader program of work called Ethernet Evolution (EE). The EI training scope covers infrastructure changes alone. Any training related to processes, topologies and products will be covered in the scope of the EE project.

Ethernet Infrastructure was divided into five Release Packages (RP) in November, 2010 with Release Package 1 being further sub-divided into two drops; RP1a and RP1b.

For clarity both original EI Stage 1a AND Stage 1b Solution Architecture designs are captured in this document. Training recommendations in this Training Analysis Report (TAR) are for all five Release Packages based on EI Phase 1a and 1b Solution Architecture designs.

PURPOSE

The purpose of this Training Analysis Report (TAR) is to identify:

- Affected Alcatel-Lucent and Telstra workgroups
- How workgroups are effected by the introduction of new network architecture and technology
- What knowledge and skills the workgroups will require to perform their respective job roles
- The type and method of training required to deliver the necessary knowledge.
- Required training volumes and the location and number of course sessions to be scheduled to satisfy this requirement

RELATED DOCUMENTS

Title	Domino	DME
EI project Phase 1a (Pre CRP43) Requirements Definition Document	3HV 00865 AAAA DTZZA	TAF0001-640320
EI Project Management Plan	3HV 00865 AAAC DBZZA	TAF0001-618342
Titan Ethernet Infrastructure SAD	3HV 00621 AACK UAZZA	TAF0001-329837
Ethernet Infrastructure Project (Pre CRP 43) Phase 1b Requirements Definition Document (E2E RDD)	3HV 00865 AAAA DTZZA	TAF0001 - 640320
Titan Ethernet Infrastructure Stage 1a Requirements Definition Document	TBA	TBA

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ABBREVIATIONS AND ACRONYMS

Please see table below for abbreviations and acronyms used in this Training Analysis Report (TAR):

Term	Definition
Access Speed	Speed of the Access Service backhaul link. Includes 10Gbps, Nx1Gbps and various EoSDH VC combinations. The Access Speed includes all of the backhaul encapsulation and management and control overheads. Note: supportable service speeds are always less than the Access Speed
All-to-One Bundling	A UNI attribute where all CE-VLANs a UNI interface are mapped to a single EVC (including untagged and priority tagged frames). Specifically relates to Ethernet Private services. When a UNI is set to all-to-one bundling Service Multiplexing can not be supported on the UNI.
AN	Access Node
AS	Aggregation Switch
ATM	Asynchronous Transfer Mode
BDSL	Business DSL
BE-NTU	Ethernet Infrastructure Network Termination Unit Customer Premises equipment that provides the demarcation point for EI services
BE-NTU-IGR	BE-NTU that provides the demarcation point between EI services and the IGR.
BISC	Business Information Security Code
BSS	Business Support Systems
Bundling	A UNI attribute in which more than one CE-VLAN ID can be associated with an EVC
CCM	Continuity Check Message
CE	Customer Edge
CE-VLAN	Customer Edge VLAN
CFR	CRP Functional Requirement
CLI	Command Line Interface
CNFR	CRP Non-Functional Requirement
CBS	Committed Burst Size is a bandwidth profile parameter expressed as bytes. It limits the maximum number of bytes available for a burst of service frames sent at the UNI speed to remain CIR-conformant. When CIR > 0, CBS must be equal to or greater than the largest MTU size of all EVCs applied to.
CIR	Committed Information Rate is a bandwidth profile parameter expressed in bits per second. It defines the average rate in bits/s of service frames up to which the network delivers services frames and is committed to meeting the performance objectives defined by the "Titan Transport Class" service attribute. CIR must be greater than or equal to 0.
CoS	Class of Service
CR	Capability Requirement
CRP	Capability Release Project
DSCP	Differentiated Services Code Point
DWDM	Dense Wavelength Division Multiplexer
EAS	Ethernet Access Switch

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Term	Definition
EBS	Excess Burst Size is a bandwidth profile parameter expressed as bytes. It limits the maximum number of bytes available for a burst of service frames sent at the UNI speed to remain EIR-conformant. When EIR > 0 EBS must be greater than or equal to the largest MTU of all EVCs applied to.
EDN	Enterprise Data Network
EEBI	Ethernet Evolution Business Initiative
EIR	Excess Information Rate is a bandwidth profile parameter expressed as bits per second. It defines the average rate in bits/s of service frames up to which the network may deliver service frames but without any performance objectives. EIR must be greater than or equal to 0
E-LAN Service	An Ethernet service type that is based on a Multipoint-to-Multipoint EVC.
E-Line Service	An Ethernet service type that is based on a Point-to-point EVC
ENNI	External Network-to-Network Interface
EPL	Ethernet Private Line – Point-to-point service based on the E-Line service type. Provides a high degree of transparency for service frames between UNIs.
EP-LAN	Ethernet Private LAN – Multipoint-to-multipoint service based on the E-LAN service type. Provides a high degree of transparency for service frames between UNIs.
EATM	Ethernet over ATM
EoSDH	Ethernet over SDH
EP-Tree	Ethernet Private Tree – Rooted multipoint service based on the E-Tree service type. Provides a high degree of transparency for service frames between UNIs.
E-Tree	An Ethernet service type based on the Rooted-Multipoint EVC.
EVC	Ethernet Virtual Connection. An association of two or more UNIs that limits the exchange of service frames to UNIs in the Ethernet Virtual Connection.
EVPL	Ethernet Virtual Private Line – Point-to-point service based on the E-Line service type. Allows for service multiplexing at the UNI whilst providing less transparency for service frames between UNIs.
EVP-LAN	Ethernet Virtual Private LAN – Multipoint-to-Multipoint service based on the E-LAN service type. Allows for service multiplexing at the UNI whilst providing less transparency for service frames between UNIs.
EVP-Tree	Ethernet Virtual Private Tree – Rooted-multipoint service based on the E-Tree service type. Allows for service multiplexing at the UNI whilst providing less transparency for service frames between UNIs.
FCS	Frame Check Sequence
FE	Fast Ethernet
Frame Delay	The Frame Delay for a Service Frame is defined as the time elapsed from reception at the ingress UNI of the first bit of the ingress Service Frame until the transmission of the last bit of the Service Frame at the egress UNI.
Frame Delay Distance Band (FDDDB)	Distance in km between two UNIs for point-to-point services, between the two most distant UNIs for Multipoint services, and between the most distant root and leaf or root and root UNIs for rooted-multipoint services. Service distance should take into account cable distance rather than straight path distance. Bands are as follows (in km): band1 0-40 km, band2 41-161, band3 162-402, band4 403-805, band5 806-1609, band6 1610-4023, band7 4024-8047, band8 8048-16093

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Term	Definition
Frame Delay Performance	Frame Delay Performance for a particular Class of Service instance on a Point-to-Point EVC for a time interval T is defined as the P-Percentile of the delay for all in profile Service Frames transferred in both directions, successfully delivered to a UNI whose corresponding ingress Service Frame had its first bit arrive at the other UNI during the interval T. The term "all Service Frames" in the previous sentence includes Unicast, Multicast, Broadcast, and Layer 2 Control Protocol Service Frames. The Unicast, Broadcast, Multicast and Layer 2 Control Protocol Service Frame Delivery service attributes define which Service Frames should be successfully delivered
Frame Delay Variation	The difference in Frame Delay between two service frames. Also referred to as jitter.
Frame Delay Variation Performance	The Frame Delay Variation Performance is defined as the P-percentile of the absolute values of the difference between the Frame delays of all Service Frame pairs that satisfy the following conditions: Each Service Frame is an egress Service Frame at the same UNI resulting from an ingress Service Frame at the other UNI. The Service Frame can be a Unicast, Multicast, Broadcast, or Layer 2 Control Protocol Service Frame. The first bit of each of the two Service Frames that comprise the pair arrived at the ingress UNI within the time interval T, The difference in the arrival times of the first bit of each Service Frame at the ingress UNI was exactly Δt, Each Service Frame had the Class of Service Identifier for the Class of Service instance in question, and Each ingress Service Frame is in profile.
Frame Loss Ratio	The number of lost frames between ingress UNI and egress UNI expressed as a percentage of Service Frames that should have been delivered. If the number of service frames that should have been delivered equals 0 then the frame Loss Ratio = 0
FTP	File Transfer Protocol
GARP	Generic Attribute Registration Protocol
Interface Speed	UNI Ethernet speed in Mbps. This is the speed of the layer 1 interface and includes the Service Frame plus the Preamble (7 bytes), Start of Frame delimiter (1 byte) and interframe Gap (12 bytes). Note: supportable Service Speeds provided on a UNI are always less than the Interface Speed.
IGR	Internet Gateway Routers
Impacted Workgroup	Workgroup(s) affected by the implementation of a project who will require training
Information Brief	Short communication introducing a project or provide details on a specific topic. Information Briefs generally predate a training deployment.
IPOI	International Point of Interconnect
IP	Internet Protocol
LACP	Link Aggregation Control Protocol
LAMP	Link Aggregation Marker Protocol
LEA	Law Enforcement Agencies
LI	Lawful Intercept / Legal Interception
LRUE	Legal, Regulatory, Usability and External Affairs
MD	Maintenance Domain. Refers to an 802.1ag OAM Maintenance Domain.
MRP	Multiple Registration Protocol
MTU	Maximum Transmission Unit. Measured in bytes
NBI	North-Bound Interface

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Term	Definition
NNI	Network to Network interface
OAM	Operations, Administration and Maintenance
OSS	Operational Support Systems
OSS-T	Operational Support Systems – Transformation
OOB	Out of Band - (OOB) Direct physical connectivity to a network element
PBS	Peak Burst Size is a bandwidth profile parameter expressed as bytes. It limits the maximum number of bytes available for a burst of service frames sent at the UNI speed to remain PIR-conformant.
PDH	Plesiochronous Digital Hierarchy
Phase One Training	Project team will require training prior to the main training roll-out. Typically this group would require training prior to SIT stage of the SEMP.
Phase Two Training	Training that is usually delivered during deployment of the solution to provide capability to build, operate and maintain the solution. This target audience would typically require training in the pre-OATs, OATs, pre-FAR and post-FAR stages for the program and subsequent deployment projects.
Phase Three Training	Training that is usually delivered once Method of Procedure (MoPs) have been signed off that facilitates the migration of customers or infrastructure to the solution. This target audience would typically become involved in the project during FAR stage of the SEMP.
PIR	Peak Information Rate is a bandwidth profile parameter expressed in bits per second. It defines the peak rate in bits/s of service frames up to which the network may deliver services. PIR must be greater than or equal to CIR. $PIR = CIR + EIR$
PVC	Permanent Virtual Circuit
RDD	Requirements Definition Document
RTM	Requirements Traceability Matrix
SAD	Solution Architecture Definition
SDH	Synchronous Digital Hierarchy
Service Frame	The Service Frame is the layer 2 Ethernet Frame for Ethernet Infrastructure Services. The Service Frame may range from 64bytes to 9216 bytes and includes the 802.1MAC frame components from the MAC Destination Address to the FCS inclusive. Note: The Service frame must not be larger than the MTU limit for the UNI or Service
Service Multiplexing	A UNI service attribute in which the UNI can be in more than one EVC instance.
Service Speed	Maximum rate (in bps, kbps, Mbps or Gbps) at which Service Frames ingress to UNI shall be forwarded. Note that the service rate includes any associated overheads. Service Speed is applicable to each "Titan Transport Class" and the Service Speed is equal to the PIR ($PIR = CIR + EIR$) + associated overheads.
SSH	Secure Shell
SIO	Services in Operation
SNMP	Simple Network Management Protocol
SPOF	Single Point of Failure
Target Audience	Audience for a particular stream of training or training program.
Training Analysis Report	The report (this report) that contains the scope of the training project, the needs analysis and the training recommendations. Telstra, once the TAR has been approved, requests a quotation and then issues a purchase order for the training to be developed and delivered.

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Term	Definition
Training Needs Analysis	Training needs analysis is the first critical stage in the training cycle. The others are design, pilot, presentation and evaluation. The cycle is continuous. The evaluation step includes a re-assessment of training needs. There are many aspects to training needs analysis, but the essential activity involves: - determining what is required to complete the work activity; - determining the existing skill levels of the staff completing the work; - determining the training gap (if any). The training gap is the difference between required and existing skill levels. The word "skill" is generic in this case - it includes the knowledge, skills, attitude and aptitude required to undertake the activity efficiently and effectively. A common term also used is competency, a key concept used in the Australian vocational education and training (VET) system.
Training Schedule	List of dates and locations of agreed training events
Training Volume	Total numbers of requests for training
TE	Telstra Ethernet (Retail)
TFTP	Trivial File Transfer Protocol
ToS	Type of Service
TRA	Titan Reference Architecture
TWE	Telstra Wholesale Ethernet
UNI	User - Network Interface. This term will be used to reference the customer facing interface on the BE-NTU. This is sometimes referred to as the UNI-N with the network facing customer CPE side of this interface being referred to as the UNI-C
VLAN	Virtual Local Area Network
VPN	Virtual Private Network
WFR	Workstream Functional Requirement
WIP	Wideband IP. In this document WIP refers to the Epicentre Ethernet aggregation network used as an access network for Wideband IP services.
WS	Workstream

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1 INTRODUCTION

Alcatel-Lucent has been selected to support Telstra's business requirements to meet ADSL growth and transform Telstra's current products, network and technologies to a simplified IP based network.

At a high level, the scope for Ethernet Infrastructure project is made up of the following work streams:

Workstream Name	Workstream Identifier	Responsibility
NTU Workstream	BE-NTU	Telstra
NTU-EMS Workstream	EI NTU-EMS	Telstra
WIP1 Workstream	EI-WIP1	Telstra
Core and Edge Workstream (including REAN)	EI-C&E	Telstra
EAN Workstream	EI-EAN	Alcatel-Lucent

This Training Analysis Report applies to Ethernet Infrastructure Release Package one through five of the Telstra Ethernet Infrastructure project.

1.1 Project Scope

The Ethernet Infrastructure Project Phase 1a will deliver the Ethernet Infrastructure (EI) service capability on the Titan network based on the Metro Ethernet Forum (MEF) Technical Specification for Point to Point layer 2 Ethernet services.

Stage 1a delivers point-to-point and point-to-multipoint services (EPL and EVPL) over Direct Fibre (national coverage) and EoSDH (in regional areas only).

The service capability will be local and national layer 2 capability and include the following service Ethernet Access mechanisms:

- Direct Access:
 - Direct optical fibre access from the EAN supporting service speed from 64kbps to 10Gbps.
 - Direct Optical Fibre and EoSDH access from the REAN supporting service speeds from 64kbps to 1Gbps
- Aggregated Direct Access:
 - Direct fibre access from an Aggregation Switch (AS) which is in turn direct fibre connected from the EAN supporting service speed from 64kbps to 1Gbps
 - Direct fibre access from an Aggregation Switch (AS) which is in turn direct fibre or EoSDH connected from the REAN supporting service speed from 64kbps to 1Gbps

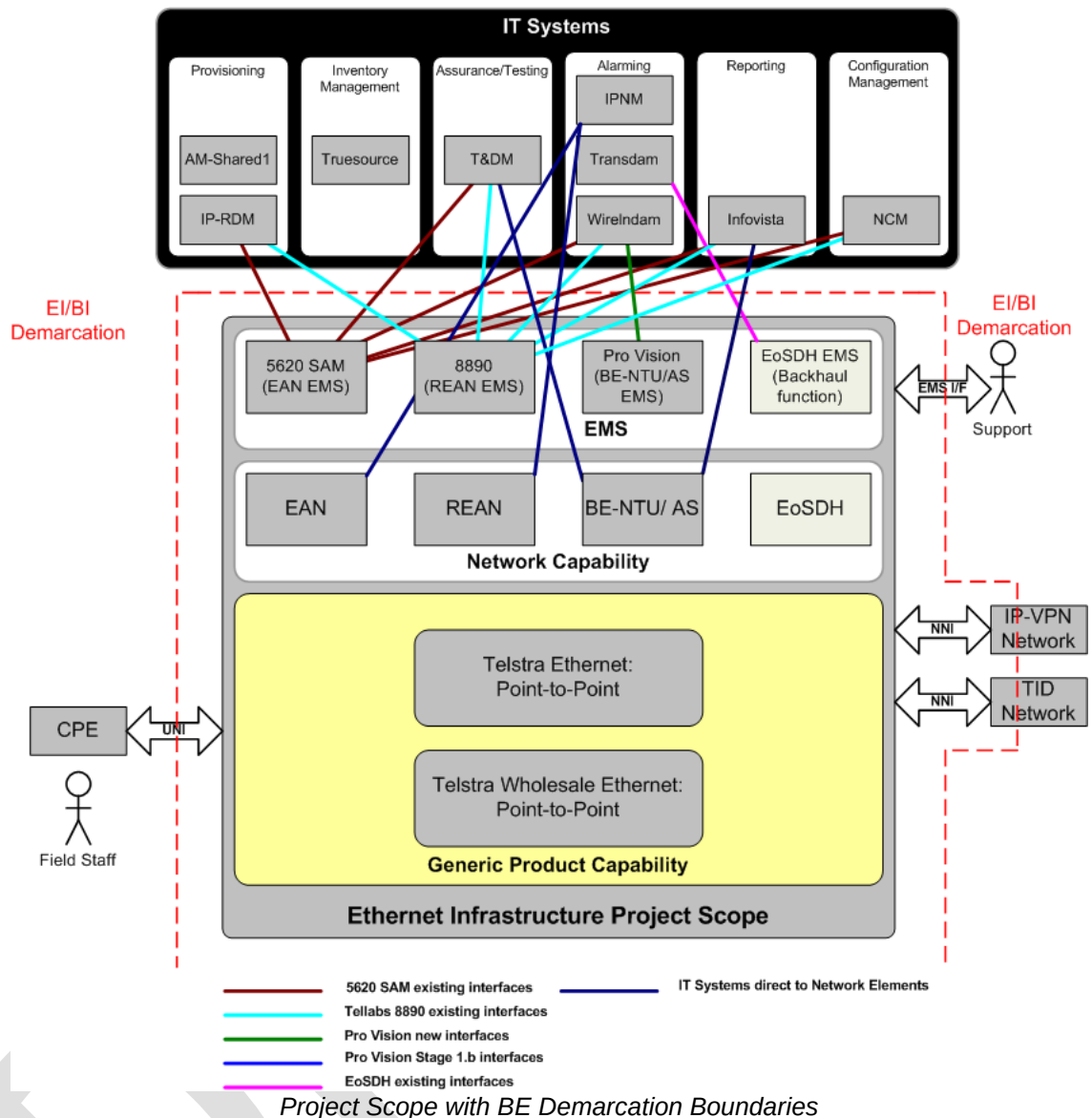
The EI solution architecture includes Ethernet connectivity to the IP-VPN Edge, TID Edge and IGR and WIP networks.

The common EI service architecture provides a MEF based Ethernet service framework for the following service capabilities provided nationally:

- Telstra Ethernet (TE) & Telstra Wholesale Ethernet (TWE)
 - Ethernet Private Line (EPL). Supporting UNI to UNI
 - Ethernet Virtual Private Lines (EVPL). Supporting UNI to UNI, UNI to IP-VPN, UNI to TID, Service multiplexing supported on UNI, IP-VPN NNI, TID NNI.

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This generic BES solution architecture support multiple Ethernet services variants which are documented by the Ethernet Evolution BI SAD.



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1.2 Training Analysis Report Scope

This TAR covers Project Team and Deployment training stages for Telstra Ethernet Infrastructure training requirements and is limited to the “Network” component and “Titan Element Management” component identified in the E2E Solution Architecture (SAD) document and reproduced in this TAR in Section 1.1, Project Scope.

Training Phase	Description
Project Team Training	The Telstra Ethernet Infrastructure project team will require training prior to the main training roll-out. Typically this group would require training prior to SIT. Generic training material will be used to train experienced team members to ensure sufficient knowledge and skill to enter the System Integration Test (SIT) window.
Deployment Training	Training that is usually delivered during OATS/FAR/GAR phase of the implementation to provide capability to build, operate and maintain the solution. All training is customised for Telstra specific programs and a pilot will be held before deployment.

1.2.1 Exclusions

The Ethernet Infrastructure (EI) project is part of a broader program of work called Ethernet Evolution (EE). The EI training scope covers infrastructure changes alone. Any training related to processes, topologies and products will be covered in the scope of the EE project.

The following features and services are NOT included in the scope for Ethernet Infrastructure:

- Migration Activity
- Delivery of MEF certification.
- Development and implementation of any changes necessary to products supported on the WIP1-T, IGR, TID and IPVPN edge platforms for interworking with EI.
- EI Stage 1B will not be providing the upgrade of the SAM 5620 solution to further increase the capability to gather accounting and statistical information. This will be delivered outside of EI Stage 1B.
- E-Tree Service Constructs
- Legal Interception.
- Deployment practices for a hardened BE-NTU variant.
- Development of an environmentally hardened BE-NTU enclosure.
- Interconnectivity of EI services to the REACH IPOI.
- Conditional delivery of broadcast, multicast and unknown frames.
- Enhancements to the EI Stage 1a IP VPN or TID solution architectures.
- Introduction of the MRV 9146 40 Port Aggregation Switch.
- Support for MEF 26 (E-NNI) functionality.
- EPL and EP-LAN interconnectivity to WIP1-T.
- Workgroups that fall outside of Telstra Operations line of business for the purpose of Impacted Workgroup analysis for training. The following Telstra Operations Workgroups are also excluded (by agreement):
 - Legal Services
 - Operations Human Resources
 - Architecture Online & Media
 - Information Technology - non OSS workgroups
 - Business & Commercial Solutions

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1.3 Review Considerations

Primes, SMEs and stakeholders are asked to consider the following when reviewing this Training Analysis Report:

- The Impacted Groups section lists the workgroups identified during data collection activities. It also contains a recommendation on the number of people to receive training.
- Course Outlines (appended to this document) should be reviewed to ensure the content is appropriate
- Where courses have been recommended for development, the Alcatel-Lucent Training Prime will work with the Telstra Training Prime and relevant SMEs to ensure that appropriate resources are engaged and the content defined for inclusion in the Training Plan.

1.4 Master Schedule

Training of Telstra and Alcatel-Lucent staff must be planned to meet Telstra Ethernet Infrastructure Project timeframes. The Training Plan will identify the number of staff to receive training for each phase. For the location, duration and dates of the training, consult the Master schedule.

Refer to the Titan Master Training Schedule TAF0001-231826 / 3HV 00354 AARD WQZZA

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2 TELSTRA ETHERNET INFRASTRUCTURE: TRAINING NEEDS ANALYSIS

2.1 Telstra Ethernet Infrastructure Scope

Titan Ethernet Infrastructure services will leverage off the existing TITAN Footprint Architecture to deliver a layer 2 Ethernet point-to-point services capability across the existing EAN and REAN with access extended to BE-NTUs connected via direct fibre, EoSDH (REAN only) and Aggregation Switch (AS) access networks.

The EIP introduces the following new elements to the Titan network:

- Inter-City Gateway (ICG) in the EAN to provide a national and inter-domain layer 2 service connectivity between and within the EAN and REAN domains.
- The Business Ethernet NTU (BE-NTU) to act as the demarcation device between the customer and the network. The UNI on the BE-NTU facing the customer is the actual demarcation point.
- [Stage 1b introduces the BE-NTU OS904E - environmentally hardened variant]
- The Aggregation Switch (AS) which aggregates multiple BE-NTUs into a single network connection to the EAN or REAN.

The EIP also introduces the following network interconnections:

- EAN to REAN - MPLS interconnection to support layer 2 service connectivity between the EAN and REAN networks.
- EAN/REAN to IP-VPN Edge - Ethernet (VLAN) interconnection to support access via the Titan network for IP-VPN based services.
- EAN/REAN to TID Edge - Ethernet (VLAN) interconnection to support access via the Titan network for TID based services.
- EAN/REAN to WIP - MPLS interconnection between the ICG and WIP1-T IAPE to support layer 2 service connectivity between the EAN/REAN and WIP1-T networks.
- EAN/REAN to IGR - Ethernet (VLAN) interconnection to support access via the Titan network for IGR based services.

The common EI services architecture provides a MEF based Ethernet service framework for the following service capabilities provided nationally from EI access services:

- E-Line - Telstra Ethernet - Ethernet Private Line (TE-EPL), TE Ethernet Virtual Private Lines (TE-EVPL), Telstra Wholesale Ethernet EPL (TWE-EPL) and TWE-EVPL.
- E-LAN

The following Generic EI Service capability will be provided:

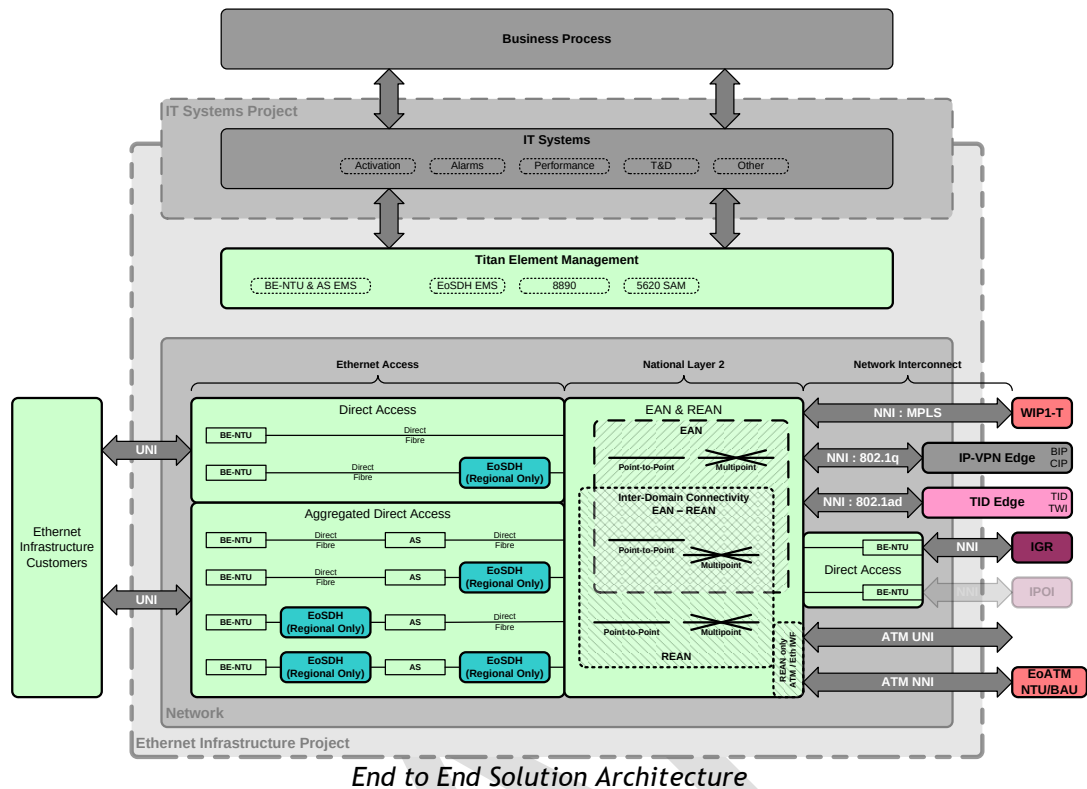
- Telstra Ethernet (TE) & Telstra Wholesale Ethernet (TWE)
 - Ethernet Private Line (EPL). Supporting UNI to UNI
 - Ethernet Virtual Private Lines (EVPL). Supporting UNI to UNI, UNI to IP-VPN and UNI to TID. Service multiplexing supported on UNI, IP-VPN NNI and TID NNI
 - EP-LAN, EVP-LAN

These generic services can support a wide variety of implemented service subsets

The EIP will deliver the capability to provide the generic service capability for new customers over the Titan network through the Titan EMS's. Implementing the northbound IT Systems and business and operational processes is outside of the solution architecture scope documented here.

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No migration will be performed for existing customer services to be migrated to Titan. Therefore there will be no impact on existing customers.



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2.2 Stakeholders

The following individuals hold key responsibilities in the Telstra Ethernet Infrastructure Project:

2.2.1 Alcatel-Lucent

Title/Responsibility	Name	Contact Details
Commercial Manager	Michael Keillor	Email: michael.keillor@alcatel-lucent.com Office: 03 9664 3359 Mob:
Configuration Manager	Riaz Marwat	Email: riaz.marwat@alcatel-lucent.com Office: 03 9664 3440 Mob: 0409 827 122
Lead Capability Designer	Jason Inoue	Email: Jason.inoue@alcatel-lucent.com Office: 03 9664 3738 Mob: 0448 485 792
Capability Project Manager	Kerry Louie	Email: kerry.louie@alcatel-lucent.com Office: 02 8306 5792 Mob: 0407 937 021
Ethernet Infrastructure Phase 1b Release Director	Dennis Duval	Email: dennis.duval@alcatel-lucent.com Office: 03-9664 3577 Mob: 0437 504 560
Ethernet Infrastructure Phase 1b Project Co-ordinator	Nikki Kaur	Email: nikki.kaur@alcatel-lucent.com Office: 03-9664 3382 Mob: 0439 030 575
EAN Workstream Project Manager	Jason Chan	Email: Jason.Chan@alcatel-lucent.com Office: 02- 8306 5907 Mob: 0414 307 945
EI Requirements Manager	Sherry Xue	Email: sherry.xue@alcatel-lucent.com Office: 03 9664 4512 Mob: 0404 192 202
IPD Prime	Jim Mandalakoudis	Email: jim.mandalakoudis@alcatel-lucent.com Office: 02 8306 6218 Mob: 0448 459 335
Quality Manager	Michael Arthur	Email: michael.arthur@alcatel-lucent.com Office: 03 9664 3506 Mob: 0408 206 088
Release Scheduler	Steve Mitrovic	Email: steve.mitrovic@alcatel-lucent.com Office: 03 9664 3824 Mob:
Implementation Manager	Stephen McIntyre	Email: stephen.mcintyre@alcatel-lucent.com Office: 02 8306 5732 Mob: 0407 898 269
Integration Engineer	Anand Thapa	Email: anand.thapa@alcatel-lucent.com Office: 03 9664 3303 Mob: 0409 132 502
Integration Manager	Gary Miranda	Email: gary.miranda@alcatel-lucent.com Office: 03 9664 3730 Mob: 0488 260 997
OHS&E Manager	Yanic Ziebel	Email: yanic.ziebel@alcatel-lucent.com Office: 03 8306 5979 Mob: 0439 268 573
Systems Engineer	Karen Zhou	Email: karen.zhou@alcatel-lucent.com Office: 03 8306 6232 Mob: 0448 456 620
Test Integration Director	Ruurd Jan Ross	Email: rj.ross@alcatel-lucent.com Office: 03 9664 3908 Mob: 0437 771 316

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Title/Responsibility	Name	Contact Details
Training Prime	Jyothi Shankar	Email: jyothi.shankar@alcatel-lucent.com Office: 02 8306 5049 Mob: 0434 189 118
Ethernet Infrastructure Phase 1b Test Manager	Sam Zhang	Email: sam.zhang@alcatel-lucent.com Office: 03 9664 3461 Mob: 0408 490 932
Chief Architect - E2E Architecture	Dean Welsh	Email: dean.welsh@alcatel-lucent.com Office: 03 9664 3363 Mob: 0408 667 564
Scope Lead	Leo Di Dio	Email: leo.didio@alcatel-lucent.com Office: 03 9664 3474 Mob: 0419 407 296
Product Implementation Engineer	Arthur Zygouris	Email: arthur.zygouris@alcatel-lucent.com Office: 03 9664 3904 Mob: 0448 426 259

2.2.2 Telstra

Title/Responsibility	Name	Contact Details
IT Systems Solutions Architect	Brad Peters	Email: bradley.s.peters@team.telstra.com Office: 07 3887 5877 Mob: 0419 705 665
IT Systems Project Manager	Ray Barton	Email: ray.barton@team.telstra.com Office: Mob:
Telstra Delivery Director	Geoff Lee	Email: Geoffrey.lee@team.telstra.com Mob: 0417 696 139
Network Security Prime	Terry Catipovski	Email: Terry.Catipovski@team.telstra.com Office: 03 8647 4780 Mob: 0427 438 692
Operations Prime	Harry Jurdukian	Email: harry.jurdukian@team.telstra.com.au Office: 03 8647 8249 Mob: 0408 368 217
Product Interface Manager	James Andis	Email: james.andis@team.telstra.com Office: 03 9634 7857 Mob: 0408 996 584
Business Processes	Michelle Bevan	Email: michelle.bevan@team.telstra.com Office: Mob:
Capability Project Manager / C&E WS Project Manager	David Nelson	Email: david.nelson@team.telstra.com Office: 03 9634 3336 Mob: 0409 961 304
NTU & WIP1 WS Project Manager	David Nelson	Email: david.nelson@team.telstra.com Office: 03 9634 3336 Mob: 0409 961 304
NTU EMS WS Project Manager	Nakul Mahajan	Email: nakul.mahajan@team.telstra.com Office: 03 8647 5874 Mob: 0418 381 753

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2.2.3 Work Streams and Network Elements

The following workstreams have been identified as well as the Network Elements (NE) being deployed. This table also lists the owner of the NEs and, therefore the subsequent provider of any training stemming from this analysis.

Workstream	Owner	Devices in Scope	Changes	Vendor	New/Modified
EAN	ALU		- QoS for EI services 802.3ah facing BE-NTU, AS, IP-VPN & TID 802.1ag MIP (VPLS only)		New
EAN	ALU	ICG-7450(S/W V7- R4)	- IOM3 - XP MDA - VPWS service Stitching - VPLS with Multi-Chasis End Point - OSPF ASBR function - PEM3 power supply - Interface to S-ECS - Interface to CRS1 - Interfaces to IAPes (Nx10GE LAG 802.3ad)	ALU	New
		EAS/D-EAS - 7450	SFP		Modified
		Interfaces	- New interfaces facing BE-NTU's GE and 10G, LAG, no lag and multi-chasis lag - New interfaces to AS GE, LAG and Multi-Chasis lag - Interfaces to IP-VPN and TID (D-EAS only) - NTU/AS Management		New
		5620 SAM (S/W V7-R5)	No training required. Upgrades provided under separate project	ALU	Existing

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Workstream	Owner	Devices in Scope	Changes	Vendor	New/Modified
NTU	ALU	OS904 - BE-NTU	• UNI 10M/100M/GE • NNI GE or 2xGE LAG • Config Mgt ○ Turn Up Config ○ Factory default • NTU/AS In Band and Out of Band Management • Physical Design • Logical Design • Ethernet Services (e-line, e-LAN, TID, IPVPN, IGR, WIP, BDLS) ○ Including Service configuration • Deployment Rules • Service OAM ○ 802.1ag (fault mgt) ○ Y.1731 (performance mgt) including PM service design • 802.3ah (efm) • Service Policy Enforcement ○ Bandwidth Profile - CIR, EIR, BDS, EBS ○ EoSDH Egress Shaping and Connectivity • Environmentally Hardened Variant • 2.1.7 Firmware OS release (additional features - update training required. • Assurance Commands, including: ○ SOAM Performance Management ○ RFC2544	MRV	NEW

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Workstream	Owner	Devices in Scope	Changes	Vendor	New/Modified
			○ SOAM Loopback and Linktrace ○ SFP Diagnostics ○ Virtual Cable Diagnostics (VCD) ○ Ports (NNI/UNI) ○ EFM (802.3AH)		
		OS906 - BE-NTU	• UNI 10M/100M/GE • NNI GE or 2xGE LAG • Config Mgt ○ Turn Up Config ○ Factory default • NTU/AS In and Out of Band Management • Physical Design • Logical Design • Ethernet Services (e-line, e-LAN, TID, IPVPN, IGR, WIP, BDLS) ○ Including Service configuration • Deployment Rules • Service OAM ○ 802.1ag (fault mgt) ○ Y.1731 (performance mgt), including PM service design • 802.3ah (efm) • Service Policy Enforcement ○ Bandwidth Profiles - CIR, EIR, CBS, EBS ○ EoSDH Egress Shaping and Connectivity • Environmentally Hardened Variant • 2.1.7 Firmware OS release (additional features - update	MRV	NEW

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Workstream	Owner	Devices in Scope	Changes	Vendor	New/Modified
		OS940 - BE-NTU	training required. - Assurance Commands, including - SOAM Performance Management - RFC2544 - SOAM Loopback and Linktrace - SFP Diagnostics - Virtual Cable Diagnostics (VCD) - Ports (NNI/UNI) - EFM (802.3AH) - UNI 10M/100M/GE/10GE - NNI GE or 2xGE LAG - Config Mgt - Turn Up Config - Factory default - NTU/AS In and Out of Band Management - Physical Design - Logical Design - Ethernet Services (e-line, e-LAN, TID, IPVPN, IGR, WIP, BDLS) - Including Service configuration - Deployment Rules - Service OAM 802.1ag (fault mgt) - Y.1731 (performance mgt) including PM Service design 802.3ah (efm) - Service Policy Enforcement - Bandwidth Profiles - CIR, EIR,	MRV	NEW

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Workstream	Owner	Devices in Scope	Changes	Vendor	New/Modified
		OS9124-410G - BE-AS	- CBA, EBS - EoSDH Egress Shaping and Connectivity - Environmentally Hardened Variant 2.1.7 Firmware OS release (additional features - update training required). - Assurance Commands, including - SOAM Performance Management - RFC2544 - SOAM Loopback and Linktrace - SFP Diagnostics - Virtual Cable Diagnostics (VCD) - Ports (NNI/UNI) - EFM (802.3AH) - UNI 10M/100M/GE - NNI GE or 2xGE LAG - Config Management - Turn Up Config - Factory default - NTU/AS In-Band and Out-Of-Band Management - Physical Design - Logical Design - Ethernet Services (E-line, E-LAN, TID, IPVPN, IGR, WIP, BDLS) - Including service configuration - Deployment Rules - Service OAM	MRV	NEW

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Workstream	Owner	Devices in Scope	Changes	Vendor	New/Modified
	TLS	IAPE (Cisco 7609)	○ 802.1ag (fault mgt) ○ Y.1731 (performance mgt), including PM service design. • 802.3ah (efm) • Service Policy Enforcement ○ Bandwidth Profiles - CIR, EIR, CBS, EBS ○ EoSDH Egress Shaping and Connectivity • Environmentally Hardened Variant • 2.1.7 Firmware OS release (additional features - update training required. • Assurance Commands, including ○ SOAM Performance Management ○ RFC2544 ○ SOAM Loopback and Linktrace ○ SFP Diagnostics ○ Virtual Cable Diagnostics (VCD) ○ Ports (NNI/UNI) ○ EFM (802.3AH)	* Cisco	Modified
NTU EMS	ALU	Pro Vision EMS	• R1.8 of Provision software (additional features) • Ethernet Services (e-line, e-LAN, TID, IPVPN, IGR, WIP, BDLS)	MRV	NEW
		Firewall/DMZ Infrastructure		TLS	NEW
		Proxy Servers		TLS	NEW
		DHCP Server		TLS	NEW

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Workstream	Owner	Devices in Scope	Changes	Vendor	New/Modified
REAN	TLS	- T2-MSE (Tellabs 8840) - SCC2 (Switch Control Card 2) - ELC (Ethernet Line Card)	- New interfaces facing BE-NTU's GE - New interfaces to AS GE - New interfaces facing EoSDH GE - VPWS & VPLS Services - GiGE Interface to IP-VPN 802.3ah facing BE-NTU and AS 802.1ag MIP - Ethernet-ATM interworking 10GE interface to BE-NTU	Tellabs	Modified
		T4-MSE (Tellabs 8840)	- Interfaces to TID - VPWS service stitching 802.3ah facing IP-VPN & TID 802.1ag MEP on-demand (Ethernet - ATM)	Tellabs	Modified
		8890 EMS	SW 8.1.x - E1 1a will upgrade from 8.0.x to 8.1.x	Tellabs	Modified
		TID Edge (Cisco ASR9000)	- not being delivered by this project but being delivered in parallel 10G interfaces to D-EAS and T4-MSE 802.1ag and Y.1731	* Cisco	NEW
		CRS-1	Interface to ICG	* Cisco	Modified
		IGR (Juniper T1600, M320)	- Interworking with EI services. 10G NNI	Juniper**	Modified
		EoSDH	Point-to-point Ethernet services	#Ericsson	Modified
		IP-VPN Edge (Juniper M320 & MX960)	10G interfaces to D-EAS and T4-MSE - GE interface to T2-MSE 802.1AG	Juniper**	Modified

#Ericsson - training is not required for this impact.

*Cisco - "Discussions are still occurring on what project will cover the cost of this training. If this course is relevant to you, please indicate it in the survey and you will be advised once a decision is made."

** Juniper - Please note that Impacts corresponding to Juniper will be covered off in the Ethernet Evolution Training Needs Analysis and is not in the current scope of the Ethernet Infrastructure project.

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2.3 Analysis Activities

2.3.1 Impacted Workgroup Analysis

The following methods were used to complete this TAR:

- Workgroups that are impacted as a result of the EI project were obtained from the Telstra Training Prime and several representatives from these workgroups were interviewed or consulted with.
 - o Many Workshops were held in March with individual or some combined workgroups and identify training requirements. Primarily the MRV course descriptions were modified in these workshops.
 - o A final workshop was held on April 18th with all workgroups present to finally review and validate all the course descriptions.

The MRV vendor representative was present in every single workshop which allowed for questions and clarifications from Telstra and ALU to MRV in real time. Suggested changes were either incorporated or further researched for feasibility.

The advantages of this mixed approach are that it:

- Ensures the TAR is completed in the agreed timeframes
- Ensures broad involvement from Telstra stakeholders, ALU SMEs and vendor

2.3.2 Interviews

Initial meetings were conducted with the following Stakeholders and Primes to assess the training requirements of this project:

- John Bowe, E2E Solutions Manager AL - Discussed project scope, Network Elements and architecture
- Robert Larsen, E2e Solutions AL - Discussed project scope, Network Elements and architecture
- Ian Bartley, Solutions Engineering AL - Discussed project scope, Network Elements and architecture
- Leo DiDio, Ian Bartley, Solutions Engineering AL - Discussed project scope, Network Elements and architecture
- Gary White, account Manager, MRV - Discussed MRV training requirements
- Ann-Maree Whelan, interim Training Prime Telstra - project scope, impacted workgroups, needs analysis methodology
- Cheryl Price, interim Training Prime Telstra - project scope, impacted workgroups, needs analysis methodology
- Janine Barrett, Training Prime Telstra - project scope, impacted workgroups, needs analysis methodology
- Jason Inoue - Discussed Engineering Limits
- Kim Walker - Sales Consultant, MRV - updating course content based on workshop feedback

2.3.3 Consultation

Through additional analysis and research the following stakeholders SME's and Primes provided feedback to additional analysis activities:

- Denise Minettos, NTU & EAN Requirements Manager AL - Workstreams and architecture
- Roger Aitkin - Engineering AL - workstreams and network elements, general architecture
- Danny Burns, Project Director Telstra - Project resourcing
- Harry Jurdukian, Operations Prime, Telstra - Resourcing
- Kevin Hemmerijckx, Services Offer Development Mgr AL - realignment of Stage 1a and 1b into five Release Packages
- Dennis Duval, Ethernet Infrastructure Project Manager AL - realignment of Stage 1a and 1b into five Release Packages
- Karim Azer, Ethernet Infrastructure Project Manager AL - realignment of Stage 1a and 1b into five Release Packages

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2.3.4 Course Content Validation

An opportunity to validate course content was provided to SMEs and LOB-Is during the month of March and April. The findings are contained in section 2.4.5: *Training Course Content Validation*.

2.3.5 Confirmation of the TAR

Representatives from the identified groups were selected by Telstra to take part in the Training Needs Analysis approval process to confirm the accuracy of this Training Analysis Report (TAR).

Specifically:

- Provide feedback on the information gathered to ascertain whether this information was correct in relation to the working environment and what is required in order to perform their role
- Ensure agreement with the type of training recommended
- Provide any other valuable information that should be taken into consideration as part of a training recommendation.

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2.4 Findings

2.4.1 Survey Results

A needs survey was conducted with the impacted workgroup population. The summative results of this survey were sent to Telstra for assessment.

The following document represents the initial number of requested courses, which forms Alcatel-Lucent's training recommendation.

Insert spreadsheet

Telstra subsequently reviewed the recommendations and provided revised numbers. The final, approved number of courses which Telstra has deemed appropriate appears in Section 3.3 - *Recommended Training Schedule*. Telstra will assume the risk of providing less training than that requested by the target audience and recommended by Alcatel-Lucent. The following document represents the revised training numbers.

Insert spreadsheet

2.4.2 OSS Training Impacts

As Telstra is Systems Integrator for Operations Support Systems (OSS), there is no involvement by Alcatel-Lucent in the design and implementation of affected OSS systems.

The following table describes affected OSS systems provided by Telstra and the estimated Telstra Ethernet Infrastructure training impacts for EI:

Affected OSS	Training Impacts
IP-RDM	Provisioning - IP RDM is the activation system for EAN (SAM 5620) and REAN (8890)
AMShared1	Provisioning -
Truesource	Inventory management - inventory reconciliation and plant allocation
T&DM	Assurance - (fault investigation, service performance testing)
Transdam	Alarming
Wilrlndam	Alarming - for alarm collection and correlation
Infovista	Reporting - performance management reporting and network capacity planning

2.4.3 Configuration Management

Configuration management provides the means to track configurations implemented on network elements against those stored on a centralised database for the purpose of ensuring data consistency. For existing network elements the EIP will not change the current configuration management systems and processes.

The EIP is responsible for configuration management of the following NE's being introduced:

- BE-NTUs
- AS's
- ICG's

EI-NTU's and AS's will not be managed by the Titan-wide centralised configuration management system (introduced by CRP17) as this system does not manage access nodes or NTUs.

Configuration management for the EI-NTU's and AS's will be the responsibility of the EI-NTU and AS EMS.

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ICG's are a new NE within the EAN. The EAN is managed by the Titan-wide centralised configuration system. Telstra will need to update the configuration system to support configuration management of ICG's.

There is no training requirement for Network Configuration Management

2.4.4 Quality of Service (QoS)

As each new service is provisioned for Ethernet Evolution, Quality of Service is contained in the service offering contracted with the customer. QoS is configured during the service provisioning process using IP-RDM.

No new training requirement exists for the Ethernet Infrastructure project.

2.4.5 Training Course Content Validation

Training content was validated by SMEs and LOB-Is during the month of March and a final one on April 18th, 2011. The following people participated in the workshops or were sent the outcome with an opportunity to comment upon it and thereby validate the course topics:

NGO - X Domain, MSO, IPSC Lvl 1&2, MNOC&CAMC Lvl 1, CSA, TID, MWAN & IPWAN, SD&I, L2DA	Steven Entwistle, Laurie Regan, Tim Murphy, Mauro Totani, Jorge Carreno, Leslie Peirce
NAO Assurance - IP Networks, BigPond Content and Media (Level 2 assurance)	Cameron Walker, David Taylor
NIO Assurance - IP Edge Networks, SOS (Device Mgmt), IP Multiservice EAN & REAN, IP Core, Network Security, Database	Harry Judurkin, Benjamin Egwunye, Joel Hurst, Thinh Nguyen, Don McLaren, Mal Davey, Vinay Periera
Service Delivery Assurance - TCSC, NWSC, CNCS, BIG, Field Technicians	Tracy Wang, Steven Bull
Network construction - Designers, Field Technicians and IP Platforms	Ben Blair, Brian Holmes, Andy Young, Wayne Abreheart, Greg Cotton
Wideband Planning, Forecast & Area Planning	Neil Francis, Warren Oshea, Tony Delisser, Tim Broadbent, Michael Moustakas, Mike Bogle, Mitra Mottahedian, Jack Dempsey, Edwin Youhana; Gregory Bull; Phil Davies, Anthony MacCartin, Brian Cool, Chris Ross, Paul Hicks
Transport & Routing Planning	Tai Tran
ASR 9000 Engineering	Garima Sogarwal
MRV	Kim Walker
Alcatel Lucent	Jason Inoue & Leo Didio
Telstra	Ann-Maree Whelan
Alcatel Lucent University	Jyothi Shankar & Harry Halliday

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2.4.6 Target Audience: Project Team and Deployment Phases Training

The following table identifies the Target Audience workgroups impacted by the implementation of Telstra Ethernet Infrastructure, their training requirements and training delivery timeframes. It is important to note that training will not be offered to groups that have not been identified as part of the Target Audience.

Telstra Operations – Next Generation Services (NGO) – Steve Entwistle – Integrator						
Workgroup	Business Contact	Function	Knowledge/Skills Gap	Training Solution	Project Training	Deployment training
X Domain	Kostas Kyriacopoulos	Provide technical expert assistance to level 3 assurance IP assurance groups	What is Ethernet Evolution? Pro-Vision New NTUs New AS	AL Training EI E2E Solution Overview – Online SROS 7.0 7450 ESS MRV training Optiswitch Installation & Commissioning Optiswitch Troubleshooting Advanced Assurance Telstra Tellabs MSE Training for EI – Virtual Netmeeting	x	✓
MSO – Managed Services Operations	Brian Macauley	There are a level 2/3 assurance group that look after certain products that connect to various types of carriage such as IPMAN, Frame Relay etc. They look after the actual equipment/products that connect to the carriage service. Ethernet Infrastructure is just another type of carriage as far as MSO is concerned. They do not do assurance of the carriage service and as such just need a high level understanding of what Ethernet Infrastructure is.	What is Ethernet Evolution?	AL Training EI E2E Solution Overview – Online	x	✓

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Telstra Operations – Next Generation Services (NGO) – Steve Entwistle – Integrator						
Workgroup	Business Contact	Function	Knowledge/Skills Gap	Training Solution	Project Training	Deployment training
IPSC Level 1 & 2	Mauro Totani	Receive customer incident reports for standard and managed IP services Create trouble tickets Test and resolve or partition customer incidents with carriage, network element and CPE configuration Perform level 1 and 2 incident management Dispatch incidents to appropriate fixer groups	What is Ethernet Evolution? Pro-Vision New NTUs New AS	AL Training EI E2E Solution Overview – Online EI Project Engineering Limits - Virtual 7450 ESS SROS 7.0 MRV training Optiswitch Installation & Commissioning Optiswitch Troubleshooting Basic Assurance Optiswitch Troubleshooting Advanced Assurance ProVision System Administration Telstra Cisco ASR 9000 Tellabs MSE Training for EI – Virtual Netmeeting	✗	✓
MNOC & CAMC Level 1 (Customer Alarm Management System)	Mauro Totani	Receive alarms for managed IP services Create trouble tickets Test and resolve or partition customer incidents Perform level 1 and 2 incident management Dispatch incidents to appropriate fixer groups	What is Ethernet Evolution? Pro-Vision New NTUs New AS	AL Training EI E2E Solution Overview – Online MRV training Optiswitch Troubleshooting Basic Assurance	✗	✓

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Telstra Operations – Next Generation Services (NGO) – Steve Entwistle – Integrator						
Workgroup	Business Contact	Function	Knowledge/Skills Gap	Training Solution	Project Training	Deployment training
CSA (Complex Service Assurance) Level 3	Tim Murphy	Test and resolve or partition customer incidents with TE/TWE carriage and network elements Perform level 3 incident management Dispatch incidents and problems to appropriate fixer groups Assist escalation form Level 2 Assurance Provide SME support to other Activation and Assurance groups Escalation point to vender NTU	What is Ethernet Evolution? Pro-Vision New NTUs New AS	AL Training EI E2E Solution Overview – Online EI Project Engineering Limits - Virtual 7450 ESS SROS 7.0 MRV training Optiswitch Installation & Commissioning Optiswitch Troubleshooting Basic Assurance Optiswitch Troubleshooting Advanced Assurance ProVision System Administration Telstra Cisco ASR 9000 Tellabs MSE Training for EI – Virtual Netmeeting	✗	✓
TID Level 3 Customer Assurance	Liam Stephens	Test and resolve or partition customer incidents with TID network configuration Perform level 3 incident management Dispatch incidents and problems to appropriate fixer groups	New PE Router (TID) ASR9000 1GE to MX960/Cisco 10GE to M320 CRS-1 What is Ethernet Evolution? Pro-Vision New NTUs New AS	AL Training EI E2E Solution Overview – Online Telstra Cisco ASR 9000	✗	✓
MWAN&IPWAN Level 3 Customer Assurance	c/- Steve Entwistle	Test and resolve or partition customer incidents with managed IP network and CPE elements Perform level 3 incident management Dispatch incidents and problems to appropriate fixer groups	What is Ethernet Evolution? Pro-Vision New NTUs New AS	AL Training EI E2E Solution Overview – Online MRV training Optiswitch Troubleshooting Advanced Assurance ProVision System Administration	✗	✓

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Telstra Operations – Next Generation Services (NGO) – Steve Entwistle – Integrator						
Workgroup	Business Contact	Function	Knowledge/Skills Gap	Training Solution	Project Training	Deployment training
SD&I (Solution, Design & Implementation)/ IPMAN/FNC Commission	Laurie Regan	Solution implementation activation Design & activation of EVC	What is Ethernet Evolution? Pro-Vision New NTUs New AS	AL Training EI E2E Solution Overview – Online 7450 ESS SROS 7.0 MRV training Optiswitch Installation & Commissioning Optiswitch Troubleshooting Basic Assurance Optiswitch Troubleshooting Advanced Assurance ProVision System Administration Telstra Tellabs MSE Training for EI – Virtual Netmeeting	✗	✓
L2DA (Level 2 Data Activation)	Les Pierce	Test and resolve or partition customer incidents with TE/TWE carriage and network elements Perform level 2 incident management Dispatch incidents to appropriate fixer groups Design & activation of EVC	What is Ethernet Evolution? Pro-Vision New NTUs New AS	AL Training EI E2E Solution Overview – Online EI Project Engineering Limits - Virtual 7450 ESS MRV training Optiswitch Installation & Commissioning Optiswitch Troubleshooting Basic Assurance ProVision System Administration Telstra Tellabs MSE Training for EI – Virtual Netmeeting	✗	✓

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Telstra Operations – NAO Assurance – Harry Jurdukian - Integrator						
Workgroup	Business Contact	Function	Knowledge/Skills Gap	Training Solution	Project Training	Deployment training
IP Networks	Cameron Walker	L2 investigation and resolution of outages / faults on Telstra's transmission networks. L2 assurance of IP networks, i.e. "first in fix" and management of associated hardware	What is Ethernet Evolution? Pro-Vision New NTUs New AS	AL Training EI E2E Solution Overview – Online EI Project Engineering Limits - Virtual SROS 7.0 7450 ESS Telstra Cisco ASR 9000 Tellabs MSE Training for EI – Virtual Netmeeting	✗	✓
Application Storage and IT (Bigpond Content and Media)	David Taylor L	Responsible for Level 2 Network Incident Management and Alarm surveillance.	What is Ethernet Evolution? Pro-Vision New NTUs New AS	AL Training EI E2E Solution Overview – Online MRV training ProVision System Administration (2 day)	✗	✓

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Telstra Operations – NIO Assurance – Harry Jurdukian - Integrator						
Workgroup	Business Contact	Function	Knowledge/Skills Gap	Training Solution	Project Training	Deployment training
IP Edge Networks	Billy Quan Ben Egwunye	NTU/AS	What is Ethernet Evolution? Pro-Vision New NTUs New AS	AL Training EI E2E Solution Overview – Online SROS 7.0 MRV training Optiswitch Troubleshooting Advanced Assurance Telstra Cisco ASR 9000	✗	✓
Shared Operations Services	Joel Hurst	EMS/ProVision	What is Ethernet Evolution? Cramer-LI T&DM Pro-Vision New NTUs New AS	AL Training EI E2E Solution Overview – Online EI Project Engineering Limits - Virtual MRV training ProVision System Administration	✗	✓
IP Multiservice EAN	Thinh Nguyen	Manage EAN Level 4 Assurance for problems with the EAN	New Inter Capital Gateway (ICG) What is Ethernet Evolution?	AL Training EI E2E Solution Overview – Online EI Project Engineering Limits – Virtual SROS 7.0 7450 ESS	✗	✓
IP Multiservice	Don McLaren	Manage REAN Level 4 Assurance for problems with the REAN	New SCC2 and ELC cards + 8.1 software upgrade for MSEs What is Ethernet Evolution?	AL Training EI E2E Solution Overview – Online Telstra Tellabs MSE Training for EI – Virtual Netmeeting	✗	✓

ED	1.0				
ALCATEL-LUCENT	Telstra - Ethernet Infrastructure Stage - Training Analysis Report			ALCATEL-LUCENT	34/75



Telstra Operations – NIO Assurance – Harry Jurdukian - Integrator						
Workgroup	Business Contact	Function	Knowledge/Skills Gap	Training Solution	Project Training	Deployment training
IP Core	Mal Davey	Router	New PE Router (TID) ASR9000 1GE to MX960/Cisco 10GE to M320 CRS-1 What is Ethernet Evolution? Pro-Vision New NTUs New AS	AL Training EI E2E Solution Overview – Online Telstra Cisco ASR 9000 (currently all personnel already trained)	x	✓
Network Security\Security Integrations	Vinay Pereira 02-8576-1660	The SOC provides advice and assistance to project teams involved in the Telstra Enterprise Program Management process. The SOC is primarily involved in ensuring that operational security issues are appropriately addressed in these projects so that the resulting platform or product can be securely managed by Network Services.	What is Ethernet Evolution? Cramer-LI T&DM Pro-Vision New NTUs New AS	AL Training EI E2E Solution Overview – Online Telstra Cisco ASR 9000 (but no training required)	x	✓
Database	Harry Jurdukian	Database for NIO Assurance	Oracle Databases	Who will provide this training? ALU or Telstra?		

ED	1.0				
ALCATEL-LUCENT	Telstra - Ethernet Infrastructure Stage - Training Analysis Report			ALCATEL-LUCENT	35/75

Telstra Operations – Service Delivery: Assurance – Tracy Wang - Integrator						
Workgroup	Business Contact	Function	Knowledge/Skills Gap	Training Solution	Project Training	Deployment training
Contact Centres						
TCSC (Telstra Customer Service Centre)	Tracy Wang	Level 1 Accept and enter Fault Reports by Customers (Wholesale) into the FOH Assurance System.	What is Ethernet Evolution?			
NWSC (National Wholesale Service Centre)	Tracy Wang	Level 1 Accept and enter Fault Reports by Customers (Wholesale) into the FOH Assurance System.	What is Ethernet Evolution?			
Test and Fulfilment						
CNSC (Customer Network Service Centre) – TE&G/TB	Tracy Wang	Level 1 data testers, circuit tests and error tests. There is also an afterhours control group that performs level 1 testing plus all level 2 testing for: BAU alarms, Reprovision, Continuity, check link alarms, MSE, Ethernet status, check counters	What is Ethernet Evolution? Pro-Vision New NTUs New AS			

ED	1.0					
ALCATEL-LUCENT	Telstra - Ethernet Infrastructure Stage - Training Analysis Report			ALCATEL-LUCENT	36/75	

Telstra Operations – Service Delivery: Assurance – Tracy Wang - Integrator						
Workgroup	Business Contact	Function	Knowledge/Skills Gap	Training Solution	Project Training	Deployment training
BIG (Business Internet Group)	Tracy Wang	The BIG group is split into FOH (Contact Centres) and BOH (Test and Fulfilment). FOH accept and enter Fault Reports for Telstra Internet Direct, TIPT (Telstra IP Telephony), TWE (Telstra Wholesale Ethernet, Ethernet MAN, Epicentre (etc) customers. Level 1 & 2 BOH performs fault testing.	New PE Router (TID) What is Ethernet Evolution? Pro-Vision New NTUs New AS			
Field Workforce						
Field Technicians (Customer Technicians)	Steven Bull	Provide field services in metro areas to support CPE/NTU in lifecycle, i.e. on-site fault diagnosis and restoration	What is Ethernet Evolution? Pro-Vision New NTUs New AS	AL Training EI E2E Solution Overview – Online MRV training Optiswitch for Field staff	x	✓

ED	1.0				
ALCATEL-LUCENT	Telstra - Ethernet Infrastructure Stage - Training Analysis Report			ALCATEL-LUCENT	37/75

Telstra Operations – Network Construction – Ben Blair - Integrator

Workgroup	Business Contact	Function	Knowledge/Skills Gap	Training Solution	Project Training	Deployment training
Network Construction Designers	Brian Holmes	Conduct Wideband feasibility studies Conduct site visit if considered necessary Design Ethernet Evolution services from NTU to EAS. Update DBoRs Issue design pack	What is Ethernet Evolution?	Instructor Lead course required for design, construct & commissioning teams. To be developed by W&D LPO (Ben & Brian) AL Training EI E2E Solution Overview – Online MRV training Optiswitch for Field Staff	✗	✓
Network Construction Field Technicians	Brian Holmes	Install Ethernet Evolution NTUs. Build fibre path. Commission System. Update DBoRs	What is Ethernet Evolution? NTU – Installing and troubleshooting Aggregation Switch (AS) – Installing and troubleshooting	AL Training EI E2E Solution Overview – Online EI Project Engineering Limits - Virtual MRV training Optiswitch for Field Staff Optiswitch Installation and Commissioning	✗	✓
Network Construction IP Platforms	Andy Young	Commission and accept new infrastructure into the network	What is Ethernet Evolution? NTU – Installing and troubleshooting Aggregation Switch (AS) – Installing and troubleshooting CDO staff -New users of Cramer-LI	AL Training EI E2E Solution Overview – Online MRV training Optiswitch Installation and Commissioning Optiswitch Troubleshooting Basic Assurance Optiswitch Troubleshooting Advanced Assurance ProVision System Administration	✗	✓

ED	1.0				
ALCATEL-LUCENT	Telstra - Ethernet Infrastructure Stage - Training Analysis Report			ALCATEL-LUCENT	38/75



Wideband and Area Planning – Neil Francis - Integrator

Workgroup	Business Contact	Function	Knowledge/Skills Gap	Training Solution	Project Training	Deployment training
Wideband Planning	Neil Francis	Fill up	Fill up	E2E Engg Lts SROS 7450 Optiswitch for Network Planning Cisco Tellabs	x	✓
Forecast & Area Planning Qld, NT & Access Cable	Brian Cook	Fill up	Fill up	E2E Engg Lts	x	✓
Forecast & Area Planning NSW	Chris Ross	Fill up	Fill up	E2E Engg Lts	x	✓
Forecast & Area Planning South and West	Paul Hicks	Fill up	Fill up	E2E Engg Lts	x	✓

Transportation and Routing Planning – Tai Tran - Integrator

Workgroup	Business Contact	Function	Knowledge/Skills Gap	Training Solution	Project Training	Deployment training
Transportation and Routing Planning	Tai Tran	Fill up	Fill up	E2E Optiswitch for network Planning	x	✓

ED	1.0				
ALCATEL-LUCENT	Telstra - Ethernet Infrastructure Stage - Training Analysis Report			ALCATEL-LUCENT	39/75

2.4.7 Impacted Workgroup Contact Details

The following table identifies the contact details of the Impacted Workgroup Line of Business Integrators. Integration Lead details are highlighted in **Bold** type.

Workgroup	Business Contact	Contact details
NGO Integrator	Steve Entwistle	Steven.Entwistle@team.telstra.com (03) 8647 6442
X Domain	Kostas Kyriacopoulos	Kostas.Kyriacopoulos@team.telstra.com (03) 9285 3277
MSO (Managed Service Operations)	Brian Macauley	Fill up
IPSC Level 1 & 2	Mauro Totani	Mauro.A.Totani@team.telstra.com (08) 8308 5800
MNOC (Global) & CAMC Level 1 (Customer Alarm Management System)	Mauro Totani	Mauro.A.Totani@team.telstra.com (08) 8308 5800
CSA (Complex Service Assurance) Level 3	Tim Murphy	Tim.Murphy@team.telstra.com 1300 301 586
TID Level 3 Customer Assurance	Liam Stephens	Liam.R.Stephens@team.telstra.com (03) 8661 3988
MWAN & IPWAN Level 3 Customer Assurance	Peter Njorge	Fill up
SD& IPMAN Level 3 Customer Assurance	Laurie Regan	Laurie.Regan@team.telstra.com (02) 85762430
L2DA (Level 2 Data Activation)	Les Peirce	Leslie.Peirce@team.telstra.com (03) 8661 1286
NITO Integrator	Harry Jurdukian	Harry.Jurdukian@team.telstra.com (03) 86478249
NAO Assurance		
IP Networks	Cameron Walker/Annette Gomez	Cameron.Walker@team.telstra.com (03) 8549 2233

ED	1.0			
ALCATEL-LUCENT	Telstra - Ethernet Infrastructure Stage - Training Analysis Report		ALCATEL-LUCENT	40/75

Workgroup	Business Contact	Contact details
Application Storage and IT (Bigpond Content and Media)	David Taylor L	Dave.L.Taylor@team.telstra.com (03) 8549 0904
NIO Assurance		
IP Edge Networks	Billy Quan/ Benjamin Egwunye	Billy.Quan@team.telstra.com (03) 8647 3804
Shared Operations Services	Joel Hurst	Joel.Hurst@team.telstra.com 08 6224 5109
IP Multiservice EAN	Thinh Nguyen	Thinh.Nguyen@team.telstra.com (03) 8647 8386
IP Multiservice REAN	Don McLaren	Donald.McLaren@team.telstra.com 03 8542 3044
IP Core	Mal Davey	Mal.J.Davey@team.telstra.com (03) 8542 4750
Network Security\Security Integrations	Vinay Pereira	Vinay.Pereira@team.telstra.com (02) 8576 1660
Service Delivery Integrator	Tracy Wang	Tracy.Wang@team.telstra.com (02) 8576 6557
Contact Centres		
TCSC (Telstra Customer Service Centre)	Tracy Wang	Same as above
NWSC (National Wholesale Service Centre)	Tracy Wang	Same as above
Test and Fulfilment		
CNSC (Customer Network Service Centre) – TE&G/TB	Tracy Wang	Same as above
BIG (Business Internet Group)	Tracy Wang	Same as above
Field Workforce		
Field Technicians (Customer Technicians)	Steven Bull	Steven.Bull@team.telstra.com (02) 4923 9034

ED	1.0			
ALCATEL-LUCENT	Telstra - Ethernet Infrastructure Stage - Training Analysis Report		ALCATEL-LUCENT	41/75

Network Construction Integrator	Ben Blair	Benjamin.J.Blair@team.telstra.com (07) 3455 1227
Network Construction Designers	Brian Holmes	Brian.Holmes@team.telstra.com (03) 8649 4123
Network Construction Field Technicians	Brian Holmes	Brian.Holmes@team.telstra.com (03) 8649 4123
Network Construction IP Platforms	Andy Young	Andy.R.Young@team.telstra.com (03) 8542 4901
Wideband and Area Planning	Neil Francis	
Wideband Planning	Neil Francis	Neil.Francis@team.telstra.com (02) 9397 2701
Forecast and Area Plann Qld, NT & Access Cable	Brian Cook	
Forecast and Area Planning NSW	Chris Ross	
Forecast and Area Planning South & West	Paul Hicks	
Transport and Routing - Planning	Tai Tran	Tai.T.Tran@team.telstra.com (03) 8649 2985

ED	1.0			
ALCATEL-LUCENT	Telstra - Ethernet Infrastructure Stage - Training Analysis Report		ALCATEL-LUCENT	42/75

3 TELSTRA ETHERNET INFRASTRUCTURE TRAINING PLAN

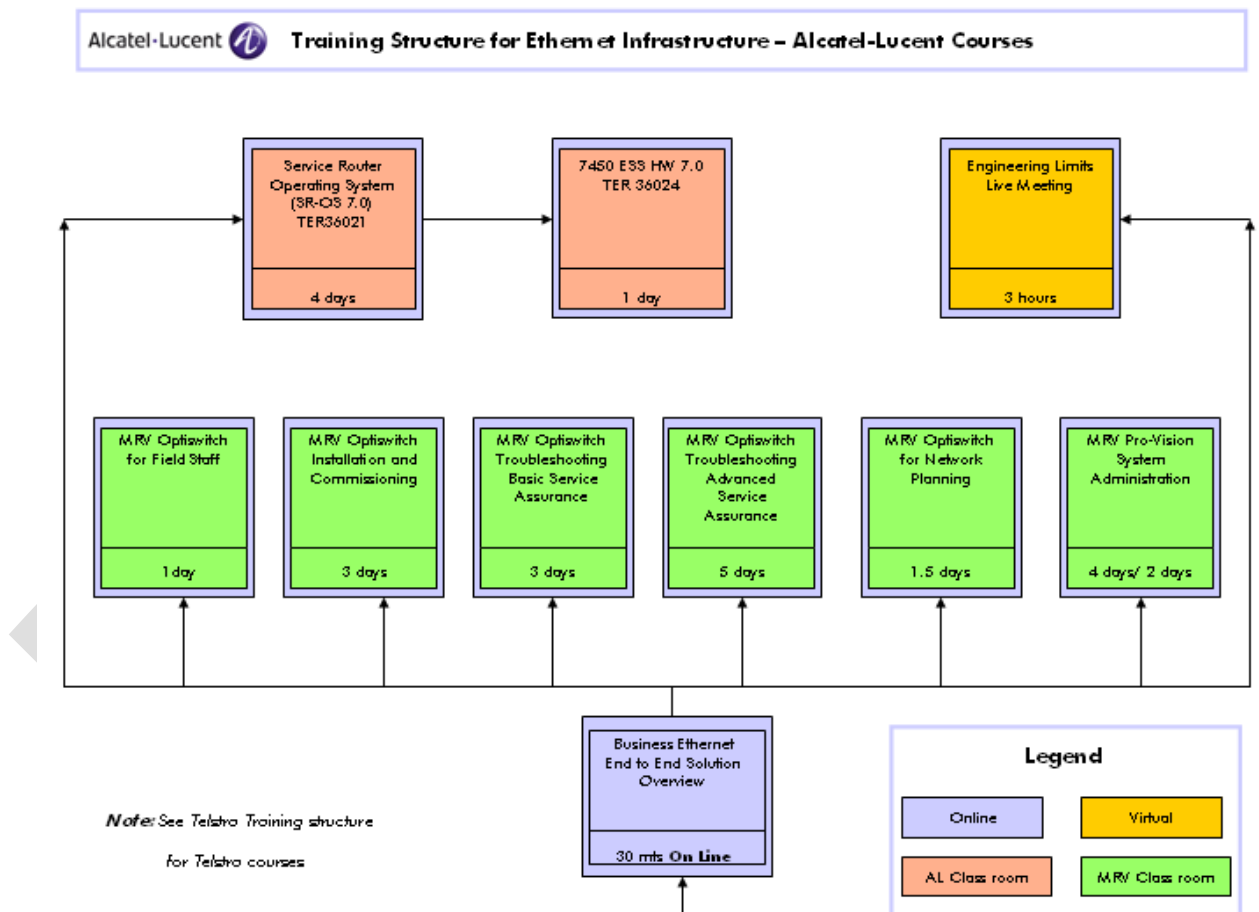
Results of the training needs analysis have been used to produce the Training Plan section of this Training Analysis Report which will define the:

- Training courses and briefings necessary to address the skill and knowledge requirements identified by the Training Needs Analysis
- Responsibility for course development and delivery
- Number of people to be trained
- Number of training courses to be delivered to meet the Project timeframes. A separate training schedule will be produced aligned to this plan detailing dates and locations to facilitate the training rollout.

3.1 Learning Pathway

The image below represents the recommended learning pathway for Telstra Ethernet Infrastructure for training to be provided by Alcatel-Lucent.

3.1.1 Alcatel-Lucent Training

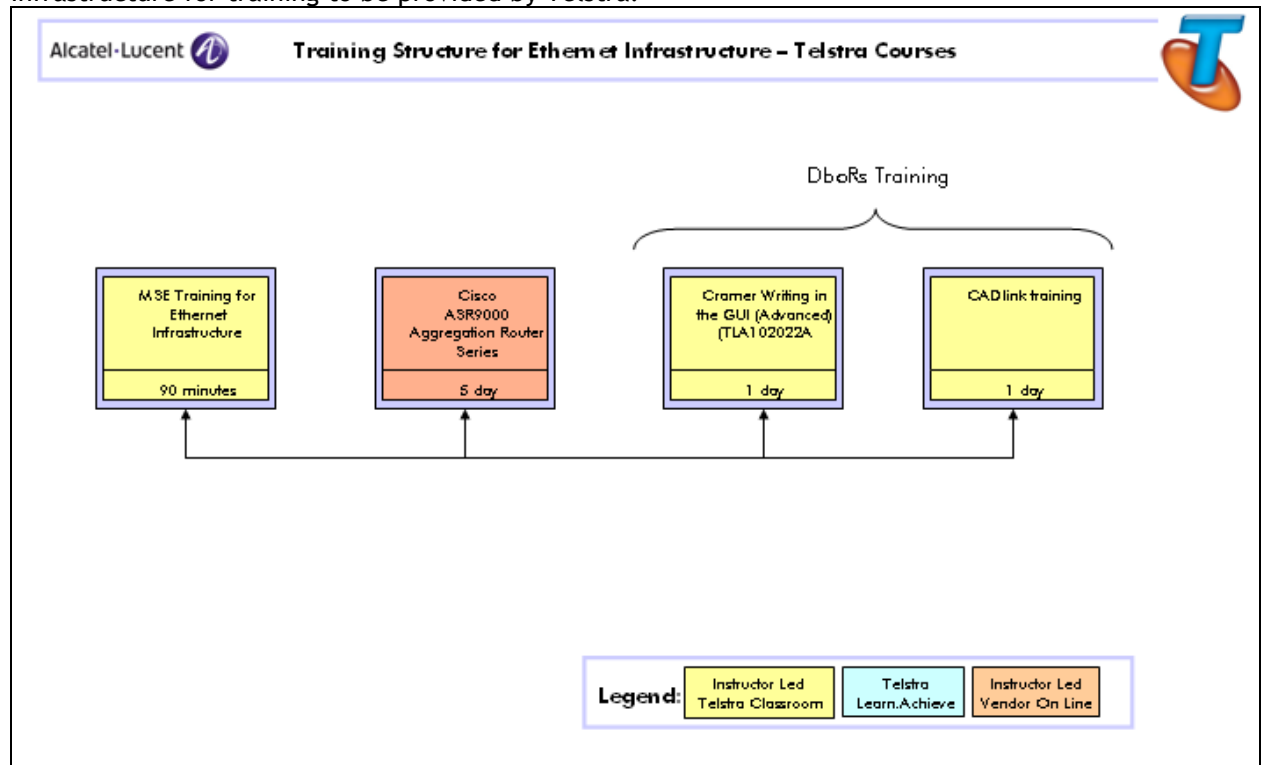


Note the flow of courses to indicate prerequisite training.

ED	1.0			
ALCATEL-LUCENT	Telstra - Ethernet Infrastructure - Training Analysis Report		ALCATEL-LUCENT	43/75

3.1.2 Telstra Training

The image below represents the recommended learning pathway for Telstra Ethernet Infrastructure for training to be provided by Telstra.



Note the flow of courses to indicate prerequisite training.

ED	1.0			
ALCATEL-LUCENT	Telstra - Ethernet Infrastructure - Training Analysis Report		ALCATEL-LUCENT	44/75

3.2 Recommended Training

As a result of the training analysis activities the following courses are recommended.

3.2.1 Online Courses: Alcatel-Lucent

Telstra Ethernet Infrastructure On-line Solution Overview	
Development Required: Full Development	
Content/Description:	Audience: Workgroup
This on-line course is designed for Telstra staff responsible for designing, testing and deploying Ethernet Infrastructure project. Objectives: By the end of this 30 minute on-line course, participants should be able to: • Explain the need for Ethernet Evolution project and its five Release Packages • Describe how Ethernet Infrastructure integrates as a subset of the Ethernet Evolution program • List and understand the Network Elements affected by Ethernet Infrastructure • Discuss Ethernet Infrastructure End to End topology Content: a) Ethernet Evolution Program overview b) Ethernet Infrastructure project overview c) Network Elements affected and deployed by this release d) Ethernet Infrastructure End to End topology Duration: 0.5 hour Prerequisites: Participants should be part of the Ethernet Infrastructure project team <i>Please refer to full course specification located in the appendix</i>	All workgroups staff

ED	1.0			
ALCATEL-LUCENT	Telstra - Ethernet Infrastructure - Training Analysis Report		ALCATEL-LUCENT	45/75

3.2.2 Subject Matter Expert Workshop - Engineering Limits: Alcatel-Lucent

Ethernet Infrastructure Engineering Limits Workshop			
Development Required: Full Development			
Content/Description	Audience: Workgroup Put culled numbers in yellow space	Volume	
		Project	Deployment
This Live Meeting™ workshop is designed to provide those involved with the design and build of the Ethernet Infrastructure project with the engineering limits used to support EI. Objectives: By the end of this 3 hour Live Meeting workshop, participants should be able to: - Describe the features of the new Ethernet Infrastructure project. - Understand the topology of Ethernet Infrastructure and how the new infrastructure integrates into Telstra existing network elements. - Describe the software elements of Ethernet Infrastructure and their integration into the Telstra infrastructure. - Describe the planning and capacity considerations around Ethernet Infrastructure - Describe the transport architecture. - Describe what functions and products are supported. - Describe the deployment rules, in particular what occurs when bandwidth exceeds 100MB - Discuss Engineering Guideline documents for all network devices - List the Engineering Limits documents i.e. Doc Ids (key content from these documents should then be discussed during the training) - Discuss fault identification and localisation - fundamental and capacity planning considerations Content: - Product offerings – overview and differences between them - Ethernet Infrastructure topology - Ethernet Infrastructure network integration - Planning and capacity considerations - Identifying trends - Physical environment - Build limits - Traffic management - Long-term planning considerations - Behaviour under load - Transport architecture - Fault identification and localisation - fundamental and capacity planning considerations - Single link, dual links and fully redundant links – limits - Bandwidth engineering limits	IPSC Level 1 & 2	X	
	CSA (Complex Service Assurance) Level 2/3	X	
	Shared Operations Services	X	
	IP Multiservice - EAN	X	
	Network Construction Field Technicians	X	
	Wideband Planning	X	
	Forecast and Area Plann Qld, NT & Access Cable	X	
	Forecast and Area Planning NSW	X	
	Forecast and Area Planning South & West	X	

ED	1.0			
ALCATEL-LUCENT	Telstra - Ethernet Infrastructure - Training Analysis Report		ALCATEL-LUCENT	46/75

- Rules around placement of NTU/AS e.g. where is service delivery point when there is a AS - Network Boundary definitions - EVC limits What resources are consumed at each point in an end to end service e.g. VLAN IDs, EVCs, number of circuits Duration: 3.0 hours Prerequisites: Participants should be part of the Ethernet Infrastructure project team and possess: - Relevant experience with the Telstra network and current telecommunications engineering and planning practices and principles. - Undertaken and successfully completed Ethernet Infrastructure End to End Solution Overview - TOS-TBA <i>Please refer to full course specification located in the appendix</i>			
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ED	1.0	
ALCATEL-LUCENT	Telstra - Ethernet Infrastructure - Training Analysis Report	ALCATEL-LUCENT 47/75

3.2.3 Facilitator-led Courses: Alcatel-Lucent - Service Router Operating System

Service Router Operating System (SR-OS 7.0) - TER36021			
Development Required: Full Development			
Content/Description	Audience: Workgroup	Volume	
		Project	Deployment
This course is intended for personnel involved in maintaining and administering any system running the SROS including installation and commissioning engineers Objectives: Upon completion of this 4 day course participants should be able to identify and define the following: - SR Operating System, File Structure, and CLI - Routing Protocols and MPLS - Services, including characteristics of different service types (ePipe, VPLS, and VPRN) - Traffic Management (QoS Overview, OAM Tools) - Identify and define the following: - Application Specific Features, including Multi-Service Edge features, Triple Play features and Mobility features Content: Section 1. Applications Overview - Multi-Service Edge - Triple Play - Mobility Section 2. System Operation - Operating System File System and CLI - Commissioning Section 3. High Availability - Overview Section 4. IP & Routing - Overview Section 5. MPLS - Overview Section 6. Services - Overview - VLLs - VPLS - VPRN Section 7. Traffic Management - Basic QoS Section 8. Lab Exercises - Basic Configuration - System and Network Configuration - IGP Configuration - MPLS Configuration - Services Configuration - ePipe Configuration - VPLS Configuration - VPRN Configuration - QoS Configuration	X Domain		
	CSA		
	SD & IPMAN		
	IP Networks		
	IP Edge Networks		
	IP Multiservice EAN		
	Total	N/A	00

ED	1.0			
ALCATEL-LUCENT	Telstra - Ethernet Infrastructure - Training Analysis Report		ALCATEL-LUCENT	48/75

Duration: 4 days Prerequisites: Participants should be part of the Telstra Ethernet Infrastructure project team <i>Please refer to full course specification located in the appendix</i>			
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DRAFT

ED	1.0	
ALCATEL-LUCENT	Telstra - Ethernet Infrastructure - Training Analysis Report	ALCATEL-LUCENT 49/75

3.2.4 Facilitator-led Courses: Alcatel-Lucent - 7450 ESS HW 7.0

7450 ESS HW 7.0 - TER 36024			
Development Required: Full Development			
Content/Description	Audience: Workgroup	Volume	
		Project	Deployment
The intended audience for this course are personnel involved in maintaining and administering the 7450 ESS Objectives: Upon completion of this 1 day course participants should be able to identify and define the following: - The features and characteristics of a service router 7450 ESS hardware components and architecture Content: - Section 1. Overview - Section two: Hardware Overview - SF/CPM - Input/Output Module 3-XP (IOM3-XP) - New Media Dependant Adaptor-XP (MDA-XP) - Integrated Media Module (IMM) - Integrated Services Adapter (ISA) - Application Assurance - IPSec - Video - Versatile Service Module (VSM) MDA Duration: 1 day Prerequisites: - Participants should be part of the Telstra Ethernet Infrastructure project team - Alcatel-Lucent SROS R7.0 (TER36021) <i>Please refer to full course specification located in the appendix</i>	X Domain		
	IPSC Level 1 & 2		
	CSA		
	SD & IPMAN		
	L2DA		
	IP Networks		
	IP Multiservice EAN		
	Wideband Planning		
	Total	N/A	00

ED	1.0			
ALCATEL-LUCENT	Telstra - Ethernet Infrastructure - Training Analysis Report		ALCATEL-LUCENT	50/75

3.2.5 Facilitator-led Courses: Alcatel-Lucent : MRV Optiswitch for Field Technicians

MRV.1 - OptiSwitch for Field Staff			
Development Required: Full Development			
Content/Description	Audience: Workgroup	Volume	
		Project	Deployment
This course is intended for installation and commissioning field staff and is a 1-day instructor-led course. Objectives: At the end of this course participants will be able to understand: - The OS904, OS906 and OS940 models of OptiSwitch NTUs - The OS9124 OptiSwitch NTU as an aggregation switch - NTU installation - NTU commissioning - NTU initial network configuration Content: - Who is MRV Company Overview - MEF Overview of Terminology and Definitions – EPL, EVPL e.g. ingress/egress profiles, (just an overview, not detail) - Introduction to the OptiSwitch family: Standard product specifications, hardware limitations, RAM, flash memory, on board copies of system configuration - OptiSwitch models – Basic product specifications, product images, getting familiar - OS904 and OS906 GE NTUs - OS940 10G NTU - OS9124 NTU as an aggregation switch - Interfaces 10/100/1000, GE, 10G - Power supplies and fans - Pluggable optics – Specifications and applications of each. - LEDs – Status indications available on the box. OptiSwitch installation – summary of work that field technician does e.g. technician confirms optics levels, plugs in NTU, check LEDs, and advises IP Platforms of the MAC address, works with Activations until service is stable and they can leave the site. LAB Work Activity Specify equipment to be made available for the Lab work: 5xOS904, 2xOS906, 1xOS912, 1xOS9124, 8 pairs of Pluggable Optics to create links from OS9124 to each available NTU. Recommend a range of Optic pairs SFW and Dual. Build a Dual redundant access link to an OS904 from the OS9124.	Service Delivery Field technicians		
	NC Designers		
	NC Field technicians		

ED	1.0			
ALCATEL-LUCENT	Telstra - Ethernet Infrastructure - Training Analysis Report		ALCATEL-LUCENT	51/75

Activities: • Factory configure an NTU and aggregation switch • Understanding pluggable optics variants • Load pre-specified configuration • Connection to fiber • Monitoring NTU indications – Connection via management port • Monitoring Aggregation Switch indications – Connection via management port Duration: 1 day with hands on lab work Prerequisites: No prerequisite MRV courses. Attendees must have: • An understanding of fiber optic installations. • A basic understanding of networking technologies <i>Please refer to full course specification located in the appendix</i>			
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ED	1.0	
ALCATEL-LUCENT	Telstra - Ethernet Infrastructure - Training Analysis Report	ALCATEL-LUCENT 52/75

3.2.6 Facilitator-led Courses: Alcatel-Lucent: MRV OptiSwitch Installation and Commissioning

MRV.2 OptiSwitch Installation and Commissioning			
Development Required: Full Development			
Content/Description	Audience: Workgroup	Volume	
		Project	Deployment
This course is intended for installation and commissioning related disciplines and Network Activations and is a 3-day instructor led course. Objectives: At the end of this course participants will be able to understand: - The OS904, OS906 and OS940 models of OptiSwitch NTUs - The OS9124 OptiSwitch NTU as an aggregation switch - NTU installation - NTU initial network configuration - NTU commissioning - EVC commissioning - Pro-Vision Operation with GUI and CLI Content: Day 1: (MRV Optiswitch & Pro-Vision Introduction – Module) - Who is MRV Company Overview - MEF Overview of Terminology and Definitions – EPL, EVPL e.g. ingress/egress profiles, (just an overview, not detail) - Introduction to the OptiSwitch family: Standard product specifications, hardware limitations, RAM, flash memory, on board copies of system configuration - OptiSwitch models – Basic product specifications, product images, getting familiar - OS904 and OS906 GE NTUs - OS940 10G NTU - OS9124 NTU as an aggregation switch - Interfaces 10/100/1000, GE, 10G - Power supplies and fans - Pluggable optics – Specifications and applications of each. - LEDs – Status indications available on the box. OptiSwitch installation – summary of work that field technician does e.g. technician confirms optics levels, plugs in NTU, check LEDs, and advises IP Platforms of the MAC address, works with Activations until service is stable and they can leave the site. - Pro-Vision Module – GUI – (for Basic Service Assurance) - Pro-Vision 1.7.1 / 1.8 – GUI overview - Adding device to the MAP with SNMPv2c/SNMPv3 - Creation of configuration file with Pro-Vision and usage	X Domain		
	IPSC Level 1 & 2		
	CSA		
	SD & IPMAN		
	L2DA		
	NC Field Technicians		
	NC IP Platforms		

ED	1.0			
ALCATEL-LUCENT	Telstra - Ethernet Infrastructure - Training Analysis Report		ALCATEL-LUCENT	53/75

on NTU/AS • Profiles & Services buildup • Monitoring tools • Hands-On • Pro-Vision service introduction - OAM – 802.1ag, 802.3ah, Y.1731, RFC 2544 Day 2: 1. Pro-Vision Module – CLI (for Basic Service Assurance) • Pro-Vision CLI overview • Profiles & Services buildup • Monitoring tools / Low level CLI • Hands-On • Pro-Vision services (NTU/AS) with all service options via Pro-Vision 2. OptiSwitch initial network configuration: • Factory default configuration • DHCP operation – how does this work, where does the information come from, where is the MAC address entered, what tasks are involved? • Initial turn-up configuration (some detail around what this contains and who will do this) • Turn-up of replacement OptiSwitch (how to replace a faulty NTU). • Telstra fiber topologies (Kim refer to Telstra RDD to update the language in this section) ○ Single fibre link ○ Dual fibre links ○ Single Fiber Working (SFW). ○ NTU connecting direct to MSE or 7450 port or MRV OS9124 aggregation switch 3. Re-using NTUs – what process will apply to return the NTU to factory default and then re-using it for next customer? Day 3: 1. OptiSwitch commissioning: Step by Step Procedures and testing processes; • Electrical and optical diagnostics (optical Tx / Rx Levels) • 802.3ah EFM loopback • 802.1ag loopback • Electrical and optical diagnostics • RFC 2544 traffic generation • Port and VLAN counters 2. EVC Turn-up – How the configuration is specified, loaded and tested. How do you load a configuration? Performance management and any limitations Classes of service – DSCP, PCP, etc how are they applied Mapping of services, EVC's Where is CLI required and CLI commands because Pro-Vision can't do s-Tags Use of On Demand Performance Management procedures Y.1731 and RFC2544 eg. Common Moves Adds and Changes to services.			
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ED	1.0	
ALCATEL-LUCENT	Telstra - Ethernet Infrastructure - Training Analysis Report	ALCATEL-LUCENT 54/75

LAB Work Activity – Spread over all days Specify equipment to be made available for the Lab work: 5xOS904, 2xOS906, 1xOS912, 1xOS9124, 8 pairs of Pluggable Optics to create links from OS9124 to each available NTU. Recommend a range of Optic pairs SFW and Dual. Build a Dual redundant access link to an OS904 from the OS9124. Activities: • Factory configure an NTU and aggregation switch • Load pre-specified configuration • Demonstrate connectivity via CLI • Demonstrate connectivity via Pro-Vision GUI • Perform all commissioning diagnostics via CLI / Pro-Vision • Commission several EVC's (based on common specifications) ○ Prove traffic throughput on configured EVC's • Inject a number of faults and use troubleshooting techniques to identify and recognize the problems and rectify these. Duration: 3 days with hands on lab work Prerequisites: No prerequisite MRV courses. Attendees must have: • An understanding of fiber optic installations. • A basic understanding of networking technologies <i>Please refer to full course specification located in the appendix</i>			
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3.2.7 Facilitator-led Courses: Alcatel-Lucent: MRV OptiSwitch Troubleshooting Basic Assurance

MRV.3 OptiSwitch Troubleshooting Basic Assurance			
Development Required: Full Development			
Content/Description	Audience: Workgroup	Volume	
		Project	Deployment
This is a course intended primarily for Level 1 and 2 Service Assurance and is a 3 day instructor-led course. Objectives: At the end of this course participants will be able to: - Troubleshoot configuration and connectivity issues via CLI and via the Pro-Vision GUI, at a level appropriate for Basic Assurance. Content: Day 1: MRV Optiswitch Introduction – Module Introduction - Who is MRV – Company Overview - MEF Overview of Terminology and Definitions – EPL, EVPL e.g. ingress/egress profiles, (just an overview, not detail) - Introduction to the OptiSwitch family: Standard product specifications, hardware limitations, RAM, flash memory, on board copies of system config - OptiSwitch models – Basic product specifications, product images, getting familiar - OS904 and OS906 GE NTUs - OS940 10G NTU - OS9124 NTU as an aggregation switch - Interfaces 10/100/1000, GE, 10G - Power supplies and fans - Pluggable optics – Specifications and applications of each. - LEDs – Status indications available on the box. - Port & interface configuration - Management configuration - SNMP/AAA/SFTP/SSH/Telnet Day 2: Pro-Vision Module – GUI – (for Basic Service Assurance) - Pro-Vision 1.7.1 / 1.8 – GUI overview - Adding device to the MAP with SNMPv2c/SNMPv3 - Creation of configuration file with Pro-Vision and usage on NTU/AS - Profiles & Services buildup - Monitoring tools - Hands-On - Pro-Vision service introduction - OAM – 802.1ag,	IPSC level 1 & 2		
	MNOC		
	CSA		
	SD &IPMAN		
	L2DA		
	NC IP Platforms		
	Total	N/A	00

ED	1.0			
ALCATEL-LUCENT	Telstra - Ethernet Infrastructure - Training Analysis Report		ALCATEL-LUCENT	56/75

802.3ah, Y.1731, RFC 2544 - Moves, Adds & Changes to services Pro-Vision Module – CLI (for Basic Service Assurance) - Pro-Vision CLI overview - Profiles & Services buildup - Monitoring tools / Low level CLI - Hands-On - Pro-Vision services (NTU/AS) with all service options via Pro-Vision - Moves, Adds & Changes to services Day 3: In depth topics - Protection mechanisms (overview) - Link Protection – PHY Based and OAM Based - LACP – Passive/Active - Each access topology scoped for Telstra EI to be covered - Access List explanation / tag manipulation - H-QoS - Congestion avoidance – WRR/SP - Debugging tools – show commands/debug commands for OAM (overview) - Practical service troubleshooting - Simulate network issues and solutions Review of all course content Q&A Duration: 3 days. Each day will include hands-on lab exercises, based on the service assurance commands covered in the Telstra NTU DDS document. Prerequisites: No prerequisite MRV courses. Attendees must have: - A basic knowledge of networking - Familiarity with Telstra Ethernet Infrastructure project - An understanding of MEF services “MRV Carrier Ethernet Refresher Course” recommended for those without MEF background <i>Please refer to full course specification located in the appendix</i>			
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ALCATEL-LUCENT	Telstra - Ethernet Infrastructure - Training Analysis Report	ALCATEL-LUCENT 57/75

3.2.8 Facilitator-led Courses: Alcatel-Lucent: MRV OptiSwitch Troubleshooting Advanced Assurance

MRV.4 OptiSwitch Troubleshooting Advanced Assurance			
Development Required: Full Development			
Content/Description	Audience: Workgroup	Volume	
		Project	Deployment
This is a 5-day instructor-led advanced course intended primarily for Level 3 Assurance, but also for network operations, Network Activations and Element Management, and engineering staff. Objectives: At the end of this course participants will be able to: - Troubleshoot configuration and connectivity issues via CLI and via the Pro-Vision GUI, at a level appropriate for Level 3 Assurance. Content: Day 1: MRV Optiswitch Introduction – Module Introduction - Who is MRV – Company Overview - MEF Overview of Terminology and Definitions – EPL, EVPL e.g. ingress/egress profiles, (just an overview, not detail) - Introduction to the OptiSwitch family: Standard product specifications, hardware limitations, RAM, flash memory, on board copies of system config - OptiSwitch models – Basic product specifications, product images, getting familiar - OS904 and OS906 GE NTUs - OS940 10G NTU - OS9124 NTU as an aggregation switch - Interfaces 10/100/1000, GE, 10G - Power supplies and fans - Pluggable optics – Specifications and applications of each. - LEDs – Status indications available on the box. - Port & interface configuration - Management configuration - SNMP/AAA/SFTP/SSH/Telnet Day 2: Pro-Vision Module - GUI - Pro-Vision 1.7.1 / 1.8 – GUI overview - Differences between 1.7.1 and 1.8 - Adding device to the MAP with SNMPv2c/SNMPv3 - Creation of configuration file with Pro-Vision and usage on NTU/AS - Profiles buildup - Services buildup - Monitoring tools	X Domain		
	IPSC level 1 & 2		
	CSA		
	MWAN & IPWAN		
	SD & IPMAN		
	IP Edge Networks		
	NC IP Platforms		
	Total	N/A	00

ED	1.0			
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• Hands-On • Pro-Vision service introduction - OAM – 802.1ag, 802.3ah, Y.1731, RFC 2544 • Moves, Adds & Changes to services Day 3: Pro-Vision Module - CLI • Pro-Vision CLI overview • Differences between 2.1.6C and higher firmware (2.1.6E/2.1.7) • Profiles buildup • Services buildup • Monitoring tools / Low level CLI • Hands-On • Pro-Vision services (NTU/AS) with all service options via Pro-Vision • Moves, Adds & Changes to services Day 4: In depth topics • Device Packet walkthrough • Protection mechanisms ◦ Link Protection – PHY Based and OAM Based ◦ LACP – Passive/Active ◦ Each access topology scoped for Telstra EI to be covered • Link Reflection for UNI Shutdown ◦ Link Reflection operation for various failure scenarios • Debugging tools – show commands/debug commands for OAM ◦ Simulate a network issues and solutions • Memory resource management – Overview of buffers and descriptors Day 5: More in depth topics and wrap up ◦ Access List explanation / tag manipulation ◦ H-QoS ◦ Congestion avoidance – WRR/SP Review of all course content Q&A Duration: 5 Days. Each day will include hands-on lab exercises, based on the service assurance commands covered in the Telstra NTU DDS document. Prerequisites: No prerequisite MRV courses. Attendees must have: • A basic knowledge of networking • Familiarity with Telstra Ethernet Infrastructure project • An understanding of MEF services • “MRV Carrier Ethernet Refresher Course” recommended for those without MEF background <i>Please refer to full course specification located in the appendix</i>		
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ED	1.0			
ALCATEL-LUCENT	Telstra - Ethernet Infrastructure - Training Analysis Report		ALCATEL-LUCENT	59/75

3.2.9 MRV.5 OptiSwitch Network Planning

MRV OptiSwitch Network Planning			
Development Required: Full Development			
Content/Description	Audience: Workgroup	Volume	
		Project	Deployment
This 1.5 day instructor-led course is intended for Telstra network planning personnel. Objectives: At the end of this course participants will be able to understand: - The OS904, OS906 and OS940 models of OptiSwitch NTUs - The OS9124 OptiSwitch NTU as an aggregation switch - NTU and Agg Switch capabilities - Service provisioning on the Optiswitch - Pro-Vision Operation overview Content: Day 1: MRV Optiswitch & Pro-Vision Introduction – Module - Who is MRV Company Overview - MEF Overview of Terminology and Definitions – EPL, EVPL e.g. ingress/egress profiles, Northbound/Southbound, NNI, UNI (an overview) - Introduction to the OptiSwitch family: Standard product specifications, hardware limitations - OptiSwitch models – Basic product specifications, product images, getting familiar - OS904 and OS906 GE NTUs - OS940 10G NTU - OS9124 NTU as an aggregation switch - Interfaces 10/100/1000, GE, 10G - Power supplies and fans - Pluggable optics – Specifications and applications of each. - LEDs – Status indications available on the box. (not relevant) - Port allocations - Class Of Service definitions - Pro-Vision Element Management System - Overview - System description - How it is deployed - How it is used and by which groups - GUI and CLI access to network elements - How to extract specific information from the system for planning purposes eg. - Port utilization - Bandwidth utilization	Wideband Planning		
	Total	N/A	00

ED	1.0			
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Day 2 (3 hours only) 5. Review of Pro-Vision access and usage for Planners 6. Telstra fiber topologies (refer to Telstra RDD to finalise the nomenclature in this section during course development) • SU (single uplinks), FR (fully redundant), DU (dual uplinks) • LACP • Single Fiber Working (SFW). • NTU connecting direct to MSE or 7450 port or MRV OS9124 aggregation switch • Electrical and optical diagnostics (optical Tx / Rx Levels) - in brief • Classes of service – DSCP, PCP, etc how are they applied • Mapping of services Duration: 1.5 day Prerequisites: No prerequisite MRV courses. Attendees must have: • A good understanding of fiber optic networks. • A good understanding of networking technologies • An understanding of MEF standards • An appreciation of Telstra Ethernet Service Products <i>Please refer to full course specification located in the appendix</i>			
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3.2.10 MRV Pro-Vision System Administration

MRV .6 MRV Pro-Vision System Administration			
Development Required: Full Development			
Content/Description	Audience: Workgroup	Volume	
		Project	Deployment
This 2 or 4 day instructor-led course is intended for Network Services staff in the BigPond Content and Media group, Device Management Systems group and Level 2 NAO. Level 2 NAO will take the 2 day course. Objectives: At the end of this course participants will be able to: - Carry out system administration tasks for the Pro-Vision NMS - Have sufficient knowledge of the system for troubleshooting to level 2. Content: Day 1: Pro-Vision Overview - Back-End Server : - Front-End Server: - Platform Architecture - Detailed platform setup - Oracle Database Overview - Pro-Vision Application Overview - Pro-Vision application and platform dependencies - Pro-Vision Operations Modules : - Pro-Vision GUI – User Operations - Pro-Vision CLI – User Operations - Configuration Files - Pro-Vision Logging Services Module Services - Module Services - Shutdown Administration - Configuring serverparameters.conf Backup Service - Backup - Backup Administration Day 2: Common Server Configurations - Configuring Pro-Vision Ports - Configuring Pro-Vision Interfaces - Starting Pro-Vision behind a Firewall - Blocking Pro-Vision Resources through Web Server - Processes Startup - Configuring Pro-Vision Launcher	IPSC Level 1 & 2		
	CSA		
	MWAN & IPWAN		
	SD & IPMAN		
	L2DA		
	Application Storage and IT (Bigpond Content and Media) (2 day)		
	Shared Operations Services		
	Database Group (2 day)		
	NC IP Platforms		
	Total	N/A	00

ED	1.0			
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• Failover Service ○ BE failover ○ FE failover ○ Database failover – Overview only Day 3: • Security Service ○ Authentication ○ Authentication Start Up Options ○ Authorization ○ Authorization Start Up Options ○ Security Administration ○ User Login and Logout Notifications Day 4: • Designing for Platform Performance ○ Initial Platform Design (theoretical performance limits) ○ Platform Scaling for additional performance • Fault Management • Configurable Parameters – Including: ○ Trap Ports ○ Trap Parsers ○ Event Parsers ○ Event Filters ○ Alarm Filters Duration: 2 or 4 day duration. Each day will include hands-on lab exercises, based on the course content for the day. Prerequisites: Attendees must also have: • A basic understanding of networking • Familiarity with the Telstra/MRV project <i>Please refer to full course specification located in the appendix</i>			
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3.2.11 Tellabs MSE Training for Ethernet Infrastructure

Tellabs MSE Training for Ethernet Infrastructure			
Development Required: Full Development			
Content/Description	Audience: Workgroup	Volume	
		Project	Deployment
The intended audience for this course are personnel involved in maintaining and administering the MSE/REAN. Objectives: Upon completion of this course you should be able to: - Explain the changes being introduced to the MSE due to the Ethernet Infrastructure Project - Describe how this will impact Assurance activities Content: - Ethernet Infrastructure Overview - Hardware Changes Overview - T2-MSE (Tellabs 8840) - SCC2 (Switch Control Card 2) - ELC (Ethernet Line Card) - New interfaces facing BE-NTU's GE - New interfaces to AS GE - New interfaces facing EoSDH GE 10GE interface to BE-NTU - VPWS & VPLS Services - GiGE Interface to IP-VPN 802.3ah facing BE-NTU and AS 802.1ag MIP - Ethernet-ATM interworking - T4-MSE (Tellabs 8840) - Interfaces to TID - VPWS service stitching 802.3ah facing IP-VPN & TID 802 1ag MEP on-demand (Ethernet – ATM) - EMS 8890 Changes - SW 8.1.x – E1 1a will upgrade from 8.0.x to 8.1.x - Activation - Monitoring - Reporting - Assurance - Engineering Limits - Systems - Process - More Information	X Domain		
	IPSC Level 1 & 2		
	CSA		
	TID		
	SD & IPMAN		
	L2DA		
	IP Networks		
	IP Multiservice REAN		
	Wideband Planning		
	Total	N/A	00

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Duration: 90 minutes Netmeeting (Virtual) Prerequisites: Participants should be part of the Telstra Ethernet Infrastructure project team <i>Please refer to full course specification located in the appendix</i>			
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3.2.12 Facilitator-led Courses: Telstra - Cisco

Cisco - Advanced Services' Cisco ASR 9000 Aggregation Services Router Series Essentials (ASR9k) Version 1			
Development Required: Full Development			
Content/Description	Audience: Workgroup	Volume	
		Project	Deployment
Objectives: Upon completion of this course, you should be able to: - List and describe the major features and benefits of the Cisco ASR 9000 series - List and describe the major features and benefits of the Cisco IOS® XR Software operating system - Configure the Cisco ASR 9000 platform, back out of configuration changes, and restore older versions of a configuration - Install the Cisco IOS XR Software operating system, package information envelopes (PIEs), and software maintenance updates (SMUs) - Configure Cisco IOS XR Software security features - Configure routing protocols - Enable multicast routing - Education Data Sheet - All contents are Copyright © 1992–2009 Cisco Systems, Inc. All rights reserved. This document is Cisco Public Information. Page 2 of 4 - Configure Multiprotocol Label Switching (MPLS) - Configure Layer 2 services with resiliency and OAM functions - Configure Layer 2 multicast features - Configure Layer 3 services - Configure QoS - Understand data flow through the Cisco ASR 9000 - Troubleshoot basic Cisco ASR 9000 hardware and software problems Audience: This course is designed for technical professionals who need to know how to deploy Cisco ASR 9000 Series routers in their network environment. The primary audience for this course includes: - System engineers - Technical support personnel Content: - Module 1: Introduction to the Cisco ASR 9000 Aggregation Series - Module 2: Cisco ASR 9000 Hardware - Module 3: Cisco IOS XR Software Overview - Module 4: Cisco IOS XR Software Basics - Module 5: Cisco IOS XR Software Installation	IPSC Level 1 & 2		
	CSA		
	TID		
	IP Networks		
	IP Edge Networks		
	Wideband Planning		
	Total	N/A	00

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ALCATEL-LUCENT	Telstra - Ethernet Infrastructure - Training Analysis Report		ALCATEL-LUCENT	66/75

• Module 6: Cisco IOS XR Software Security • Module 7: Cisco IOS XR Software Operations • Module 8: Cisco IOS XR Routing Protocols • Module 9: Cisco IOS XR MPLS • Module 10: Cisco ASR 9000 Layer 2 Architecture • Module 11: Cisco ASR 9000 Point-to-Point Layer 2 Services • Module 12: Cisco ASR 9000 Multipoint Layer 2 Services • Module 13: Cisco ASR 9000 Layer 2 Multicast • Module 14: Layer 3 VPN • Module 15: Layer 3 Multicast • Module 16: Cisco ASR 9000 QoS Duration: 5 days Prerequisites: Participants should be part of the Telstra Ethernet Infrastructure project team and possess • Basic knowledge of router installation and some experience with installation tools • Routing protocol configuration experience with Border Gateway Protocol (BGP), • Intermediate System-to-Intermediate System (IS-IS), and Open Shortest Path First (OSPF) • Knowledge of Layer 2 IEEE switching and related protocols • Strong knowledge of MPLS configuration or multicast configuration experience • Knowledge of Cisco router security implementation, including authentication, authorization, and accounting (AAA) and TACACS • Experience troubleshooting Cisco routers in a large network environment <i>Please refer to full course specification located in the appendix</i>			
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3.2.13 Facilitator-led Courses: Telstra - Cramer

Telstra - CRAMER- Writing in the GUI (Advanced) TLA102022 - needed from Ann Maree			
Development Required: Full Development			
Content/Description	Audience: Workgroup	Volume	
		Project	Deployment
Objectives: Upon completion of this workbook you will be able to: - Run the supported automated process for TID and EPI - Create an infrastructure network - Manage the network - Analyse complex real life scenarios - Design these complex networks in Cramer application Content: Automated Processes - Introduction to Task Engine - Introduction to Cramer-LI supported automation process - EPIU reservation allocation - Ethernet OSDH reservation/allocation - MSE reservation/allocation - Decommissioning Task Engine - Undo a Design Project - Cancel a Design Project Writing the GUI - Basic - Create inventory objects - Modify inventory objects - Manage the network Writing the GUI - Advanced - Ethernet over SDH (GFP_TRAC) scenario - POS_TRAC scenario - LAG modelling scenario Duration: 3 days Prerequisites: Participants should be part of the Telstra Ethernet Infrastructure project team as well as complete the on-line courses: - Network Naming Conventions INV102025A - Cramer-LI Overview INV102030A	Alcatel-Lucent Data Centre Staff	X	
	Alcatel-Lucent Field Deployment Staff	X	
	Total	N/A	00

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ALCATEL-LUCENT	Telstra - Ethernet Infrastructure - Training Analysis Report		ALCATEL-LUCENT	68/75

3.2.14 Facilitator-led Courses: Telstra - CADLINK

Telstra - CADLINK			
Development Required: Full Development			
Content/Description	Audience: Workgroup	Volume	
		Project	Deployment
Objectives: Upon completion of this workbook you will be able to: - Run the supported automated process for TID and EPI - Create an infrastructure network - Manage the network - Analyse complex real life scenarios - Design these complex networks in Cramer application Content: - Overview - Vocabulary - Prerequisites - CADlink Access - Workflow Management - CAD Standards - AutoCAD Setup - Lotus Notes Setup - CADlink Structure - Searching in CADlink - Modifying an Existing Drawing - Creating a New Drawing - Adding a New Drawing Sheet - How to Re-issue a Drawing Sheet - Modifying Details in CADlink - Adding a Drawing Proforma - Modifying an Existing Drawing - PDF Images - Regional Co-ordinators Duration: 1 day Prerequisites: Be a part of the Telstra EI program. <i>Please refer to full course specification located in the appendix</i>	Alcatel-Lucent Data Centre Staff	X	
	Alcatel-Lucent Field Deployment Staff	X	
	Total	N/A	00

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3.3 Recommended Training Schedule

From the Training Needs Analysis and review of the training analysis numbers by Telstra, the following Training Plan is recommended.

The number of courses based on class size has been outlined.

Course name	Total Nominees Prior to Start of SIT (Project Team))	Total Nominees Between OATS & FAR (Deployment)	Total Requested Places	Number of Courses	
				Melb	Syd
Telstra Ethernet Infrastructure project On-line Solution Overview	All staff	All staff	On-line	N/A	N/A
Telstra Ethernet Infrastructure project Engineering Limits					
Service Router Operating System (SR-OS 7.0) – TER36021					
7450 ESS HW 7.0 – TER 36024					
MRV OptiSwitch® 900 and 9000 Hardware and Services					
MRV OptiSwitch® 900 and 9000 Hardware and Services Delta (Optiswitch R1.8, NTU R2.1.7)					
MRV					
MRV					
MRV					
CRAMER-LI Introduction INV102018A					
CRAMER-LI Overview INV102030A					
CRAMER-LI Auto Processes / Writing the GUI					
T&DM					
Cisco ASR9000 Aggregation Router Series					
Juniper Tailored Training on Configs					
Tellabs Tailored Training on Configs					
Total Nominees					
Total Courses					

Notes:

- Number of courses allocated assumes that all staff identified will be able to attend training courses when scheduled.

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4 APPENDIX 1: COURSE SPECIFICATIONS

The following table contains the imbedded complete / detailed Alcatel-Lucent University recommended course specification as highlighted in section 3.2.

Course Name:	Course Specification:
Ethernet Infrastructure End to End Solution Overview	 D:\Documents and Settings\jyothis\My D
Telstra Ethernet Infrastructure project Engineering Limits Workshop	 D:\Documents and Settings\jyothis\My D
Service Router Operating System 7.0	 D:\Documents and Settings\jyothis\My D
7450 ESS HW 7.0	 D:\Documents and Settings\jyothis\My D
MRV Optiswitch for Field Staff	 D:\Documents and Settings\jyothis\My D
MRV Optiswitch Installation and Commissioning	 D:\Documents and Settings\jyothis\My D
MRV Optiswitch Troubleshooting Basic Assurance	 D:\Documents and Settings\jyothis\My D
MRV Optiswitch Troubleshooting Advanced Assurance	 D:\Documents and Settings\jyothis\My D
MRV Optiswitch for Network Planning	 D:\Documents and Settings\jyothis\My D
MRV Pro-Vision System Administration (2 day & 4 day)	 D:\Documents and Settings\jyothis\My D
Cisco ASR9000 Aggregation Router Series	 D:\Documents and Settings\jyothis\My D
Tellabs MSE Training for Ethernet Infrastructure	 D:\Documents and Settings\jyothis\My D
Oracle Database Streams Training	Contact Harry Judurkin/Ann Maree

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5 APPENDIX 2: ADDITIONAL TRAINING INFORMATION

5.1 Definition: Training Activities

In the Telstra Ethernet Infrastructure project, a training activity may be facilitator led, self-paced learning or on-the job training. Titan training activities encompass the following measurable criteria:

- Objectives and outcomes
- Evaluation and assessment
- Participant competency record keeping in Telstra's Learner Management System (Learn. Achieve)

Presentations, distributed resource materials and/or briefs not meeting the above criteria are unmeasurable project communications and not defined as formal Titan training.

5.2 Recommended Training and Communication Approach

Based on analysis findings, a blended learning approach is usually recommended. This includes a combination of:

- Traditional Facilitator-led courses (delivered by Alcatel-Lucent and external vendors)
- Web based training

5.2.1 Development Considerations

Some training programs may require customisation or complete design to be undertaken prior to delivery.

Some training courses will be dependant upon certain project milestones being met prior to customisation, design or delivery taking place. This will also be factored into delivery schedules.

5.2.2 Delivery Considerations

The following will be taken into consideration when planning delivery of training courses:

- Workgroup location
- Number of staff to attend training and release rate (including shift rotation)
- Whether Facilitator-led or on-line delivery is appropriate; taking into consideration course duration, content, geographical location and financial constraints.
- Participant availability

5.3 Training Attendance Guidelines

It is the individual's responsibility to attend the training courses for which they are enrolled. A notification will be sent to the Participant and their manager either by Telstra Learn.Achieve™ or the vendor. It is recommended that participants include the training event(s) in their respective Outlook calendars to avoid overlooking training.

5.3.1 Prerequisite Training

Prerequisites are detailed in the course outlines for the training courses.

Attending training events without prerequisite knowledge / training may:

- Impact the participants learning experience.
- Not ensure competency of the participant.
- Transfer and retention of knowledge will also be affected.

It is the individual's and their manager's responsibility to ensure relevant pre requisites have been met prior to attending.

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Distribution

Name	Title / Role
Harry Halliday	Alcatel-Lucent University Manager
TBA	Project Training Lead, Telstra Ethernet Infrastructure Project
Jyothi Shankar	Alcatel-Lucent Training Program Manager
Danny Burns	Telstra Ethernet Infrastructure Program Director

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Sign-off - Telstra Ethernet Infrastructure: Training Needs Analysis (TAR and Training Plan)

Name	Role	Signature	Date
Danny Burns	Telstra Ethernet Infrastructure Program Director		

Project Primes and Stakeholders will / have been invited to review and provide feedback on the Training Analysis Report. A stakeholder representative from impacted workgroups will then sign-off on behalf of those groups.

Sign-off of the Training Analysis Report confirms:

- The Training Needs Analysis has been satisfactorily completed
- Impacted workgroups are defined
- Workgroup numbers to receive training are defined
- The Training Plan has been satisfactorily developed
- Knowledge and skills requirements are defined and recommended courses have been identified (although specific course content, development, delivery arrangements may not have been finalised).

Contact for Enquiries and Proposed Changes

For questions regarding this learning document please contact the responsible area identified below:

Alcatel-Lucent - Training Plan	
Name	Paul Ponce
Designation	Training Prime
Phone	(02) 8306 6084
E-mail	Paul.Ponce@alcatel-lucent.com

Change History

ED	Date	Approval Authority	Author	Details of Change
0.8	30/01/11	Harry Halliday	Jyothi Shankar	Original draft document
1.0	9/5/11	Harry Halliday	Jyothi Shankar	Peer Review document
1.1		Harry Halliday	Paul Ponce	Peer Review document

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End of Document

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