Enabling
Virtual
Access to
Latin-American
Southern
Observatories

http://www.evalso.eu

Work Package:	**SA1 – Link Upgrade**
Deliverable No:	**SA1.1-1.5-102**
	Technical Report – Backbone (LAMBDA)
Date:	**2010/12/15**

Contents

1   INTRODUCTION

Below it is indicated the items that are part of the technical scope and preparation of the delivery of the Project:

- Item2: OTU2 between Antofagasta and Santiago

1.1 Definitions, Acronyms, and Abbreviations

(F)DR   (Final) Design Review
CfT   Call for Tender
KoM   Kick-off Meeting
MoM   Minutes of Meeting
MOP   (Republica de Chile) Ministerio de Obras Publicas
             (Chilean Ministry for Public Work)
N/A   Not Applicable
OCA   Cerro Armazones Observatory
SLA   Service Level Agreement
SoW   Statement of Work
T0   Contract Start

1.2 Reference documents

EVALSO-SA1-1.1, "Technical Specification for the procurement of the EVALSO optical infrastructure").

1.3 Overview

Below it is detailed the technical scopes and preparation of the delivery of Item 2

2   Requirements

The Item 2: It is the optical connectivity through a wavelength (a Lambda) between the location of REUNA in Antofagasta and the PoP of TELCO in Santiago.

1. A standard Lambda dedicated is expected in the outline WDM. Lambda must be able of the transparent transportation of the UIT-T G.709 OTU1 digital Wrapper protocol (2.5Gbps).

2. The use of a higher level of the same standard (OTU2 digital Wrapper protocol, 10Gbps) also is acceptable, only if the circuit maintains the complete functionality of a transparent lambda system.

3 Design

The Telefonica long distance network is composed by DWDM y SDH equipment of new generation that allows the handling of wide band and interfaces with a higher capability to connect their clients.

The network DWDM is mounted on fiber optical networks with   of 10G and 2,5G where the latter are being replaced by   of 10G and are ready in ring and bus topology with route fiber optic diversity so that to maintain a high availability of the services.

For this purpose the solution implemented by Telefonica for this item is:

3.1 Item 2: Fixed wavelength (a Lambda) between REUNA Antofagasta and Santiago Area (TELCO PoP)

The solution considers the establishing of a connection with a wave length capacity (Lambda) OTU2 transparent UIT-T G.709 OTU2 digital Wrapper protocol (10.7 Gbps), between the location of REUNA in POP Antofagasta II and the PoP of TELCO in Santiago.

For this purpose a dark fibre will be installed necessary so that to connect the DWDM Huawei equipment on both ends of Antofagasta and Santiago physical accesses

In the POP of Telefonica (Antofagasta) a Housing service will be enabled.

3.1.1 Antofagasta Equipment (POP Telefonica)

3.1.2 Santiago Equipment (PoP Telefónica)

### 3.1.3 Fibre Interconnection

Ends of the F.O

- In the starting point: connection panel, as indicated in the technical specifications Annex A

- In the ending point: in a connection panel, as required in the technical specification Annex A

3.1.4 Network Design

The solution consists on delivering an optical connection of 10G over the DWDM network composed by 4 rings, which protection is achieve through optical switches OLP. The interface meets the norm UIT-T G.709 OTU2 digital Wrapper protocol (10.7 Gbps)

3.1.4.1   Network Design Diagram
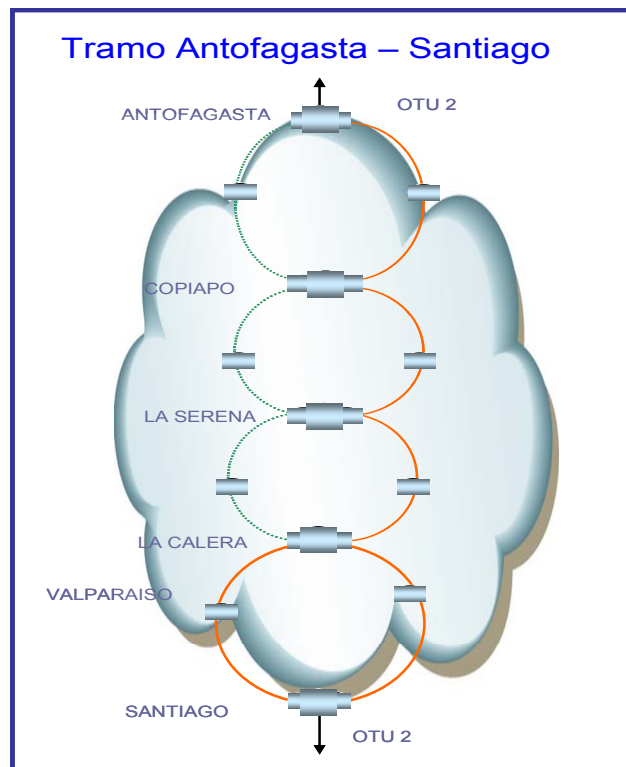
3.1.4.2   General conditions of the NETWORK

- An interface OTU 2 in each end.
- A connection through principal route and a connection through backup route
- Availability 99,95%
- Effective bandwidth

3.2   Item 2: General Characteristics

They are detailed according to the sections:

3.2.1 Antofagasta - Santiago

- Solution over network DWDM HUAWEI
- Solution considers protected OTU 2 cards
- Protected solution (1+1)

3.2.2 Antofagasta – La Calera (includes Copiapó and La Serena)

- wavelength range Tx: 1530 at 1565 nm
- max. Power Tx: 2 dBm
- min. Power Tx: -1 dBm
- wavelength range Rx: 1260 at 1605 nm
- sensitivity Rx: -14 dBm

3.2.3 La Calera - Santiago

- wavelength range Tx: 1530 at 1565 nm
- max. Power Tx: 2 dBm
- min. Power Tx: - 4.7 dBm
- sensitivity Rx: -14 dBm

3.3 Provision for possible nodes Add&Drop in Copiapó and La Serena.

The solution implemented in cascades will allow the opening of the nodes in the datacenter of Movistar in Copiapó and La Serena

And they will be available for EVALSO for their use during the life of the contract.

3.3.1 Antofagasta – Copiapó

3.3.2 La Serena – Santiago