OMCI Optical Network Terminal Replacement

Update Only – No Board action needed

Oct. 7, 2024

CHELAN COUNTY

Project Overview

- Optical Network Terminal (ONT) replacement. O-421E-B is a specific model of equipment that goes out of service due to a communication failure, causing intermittent outages for the end user.
- There are 4,144 of these devices located throughout Chelan County that must be replaced.
- Original Project timeline September 2024 – December 2025
  - Timeline was spread out due to low occurrence rates and ability to balance workload.
- Total project budget approved: $2,629,061.

Timeline through September

- April 2024 identified need for replacing O-421E-B ONTs as they were no longer supported by Nokia
- May 2024 ran pilot program to establish timeline and budget
- June 2024 received approval of project budget and timeline:

	Timeline				
	24-Aug	Sep	Oct	Nov	Dec
Installs	240	240	240	240	240
ONT Delivery	500		500		500

25-Jan	Feb	Mar	Apr	May	Jun
240	240	240	240	240	240
	500		500		500

Jul	Aug	Sep	Oct	Nov	Dec
240	240	240	240	240	240
	500		500		

- Initial deployment was September 2024

Current State

Need to Accelerate Timeline

- As of September 20, 2024, we have seen a daily occurrence of the outage alarms from the O-421E-B ONT devices.
- We have removed any non-critical work from the crews to focus on the ONT replacements.
- Worked with providers to identify and changed out critical customers, i.e. school, medical, other business accounts.
- Crews will be working overtime and add an additional day each week that is solely focused on ONT replacements.

Current State cont.

- The communications team has:
  - Put messaging out and updated the website to reflect that we are working on the replacements as fast as we can.
  - Created internal talking points for staff.
  - Created self-help video on how to power cycle the ONT
- Placed PO to order 3000 additional ONTs
  - 500 to ship 10/4/2024 with the remainder to follow.
- Establishing plan to get additional resources to replace ONTs – Targeting internal staff from other departments but can bring in contractors if needed.
- XGS-PON Card installations started 9/30/2024
- As of 10/3/2024 we have replaced 750.

Benefits of Project

- New ONT removes failing devices.
- New ONT makes speed upgrades to 5Gbps service level possible, the O-421E-B ONT was only capable of 100Mbps service.
- New network line cards to support 10G Symmetric Passive Optical Network (XGS PON), to all end users in the county.
- Modernizes our network interface by making the network compliant with AltiPlano
  - This platform delivers fully integrated automation tools, a customizable graphical user interface (GUI) and flexible service programming via open interfaces. The open modular architecture allows the fast introduction of new network capabilities and integrates easily with operations and business support system (OSS/BSS), Information Technology (IT) and cloud platforms.

Customer Support Information

- Fiber Homepage updated with information and support help: Fiber Outage Information (chelanpud.org) https://www.chelanpud.org/my-pud-services/residential-services/fiber-optics/Outage_Information
- Fiber Equipment upgrade project page: Fiber Equipment Upgrade (chelanpud.org) https://www.chelanpud.org/my-pud-services/residential-services/fiber-optics/ONT_Upgrade
- Map that shows current locations that need ONT replacement: Fiber ONT Replacement Status https://experience.arcgis.com/experience/4bb07d3b568641b8b594d0ad223ae80d

Thank you for your patience as we work through this project!

Comments and Discussion

Appendix – Definitions of Terms

ONT – Optical Network Terminal, one is placed at each residence or business. It converts the optical signals transmitted over fiber into electrical signals that electronic devices can use in the home or business.

OMCICOMM – ONT Management Control Interface Communication Failure, this is the alarm in our monitoring software when this alarm is active the ONT is not able to pass data.

Mbps – megabits per second, this is a measurement of speed for internet connections.

> megabit - a unit of data size or (when expressed per second) network speed, equal to one million or (strictly) 1,048,576 bits.

Gbps – gigabits per second, this is a measurement of speed for internet connections. 1Gbps = 1000Mbps

Appendix – Definitions of Terms cont.

XGS PON – A 10-gigabit-capable Symmetric Passive Optical Network (XGS-PON) is a next-generation passive optical network (PON) technology that offers much higher bandwidth than older systems. XGS-PON provides symmetrical speeds up to 10 Gbps in both downstream and upstream directions. This improvement comes from advancements made in optical transceiver technology and more efficient use of the spectrum available. With wavelength division multiplexing (WDM), XGS-PON can work together with GPON on the same fiber infrastructure for smooth upgrades and backward compatibility. This development addresses the need for faster internet connections while supporting modern applications like cloud computing or streaming 4K videos, which are part of smart home technologies, among others, hence becoming an indispensable component for current and future network architectures.

Open Interface - A public standard for connecting hardware to hardware and software to software. With regard to hardware, it implies that there is more than one brand of product that can be hooked up to the device with the open interface.
In the case of software, it implies that more than one program exists to interface with the application that has the open interface or that a program can be readily written to communicate with it.

Appendix – Definitions of Terms cont.

OSS/BSS - In telecommunications, refer to operations support system and business support system. The distinction emphasizes a separation of concerns between maintaining network operations and the business around which that network is built. Communications service providers support a broad range of services and functions with their OSS/BSS. BSS primarily consists of order capture, Customer Relationship Management and Telecommunications billing whereas OSS covers Order Management, Network Inventory Management and Network Operations.

Information technology (IT) - The use of computers, storage, networking and other physical devices, infrastructure and processes to create, process, store, secure and exchange all forms of electronic data. Typically, IT is used in the context of business operations, as opposed to the technology used for personal or entertainment purposes. The commercial use of IT encompasses both computer technology and telecommunications.

Cloud Platform - The operating system and hardware of servers in a data center that are configured to provide cloud computing services to customers. A cloud platform enables businesses to rent access to computing resources on demand over the internet with pay-as-you-go pricing, rather than buying, installing, and managing their own data centers, servers, and software required to have these resources available on premises.