

FTTP Architecture

Verizon

2/21/2008

Role of Optical Network Terminal (ONT)



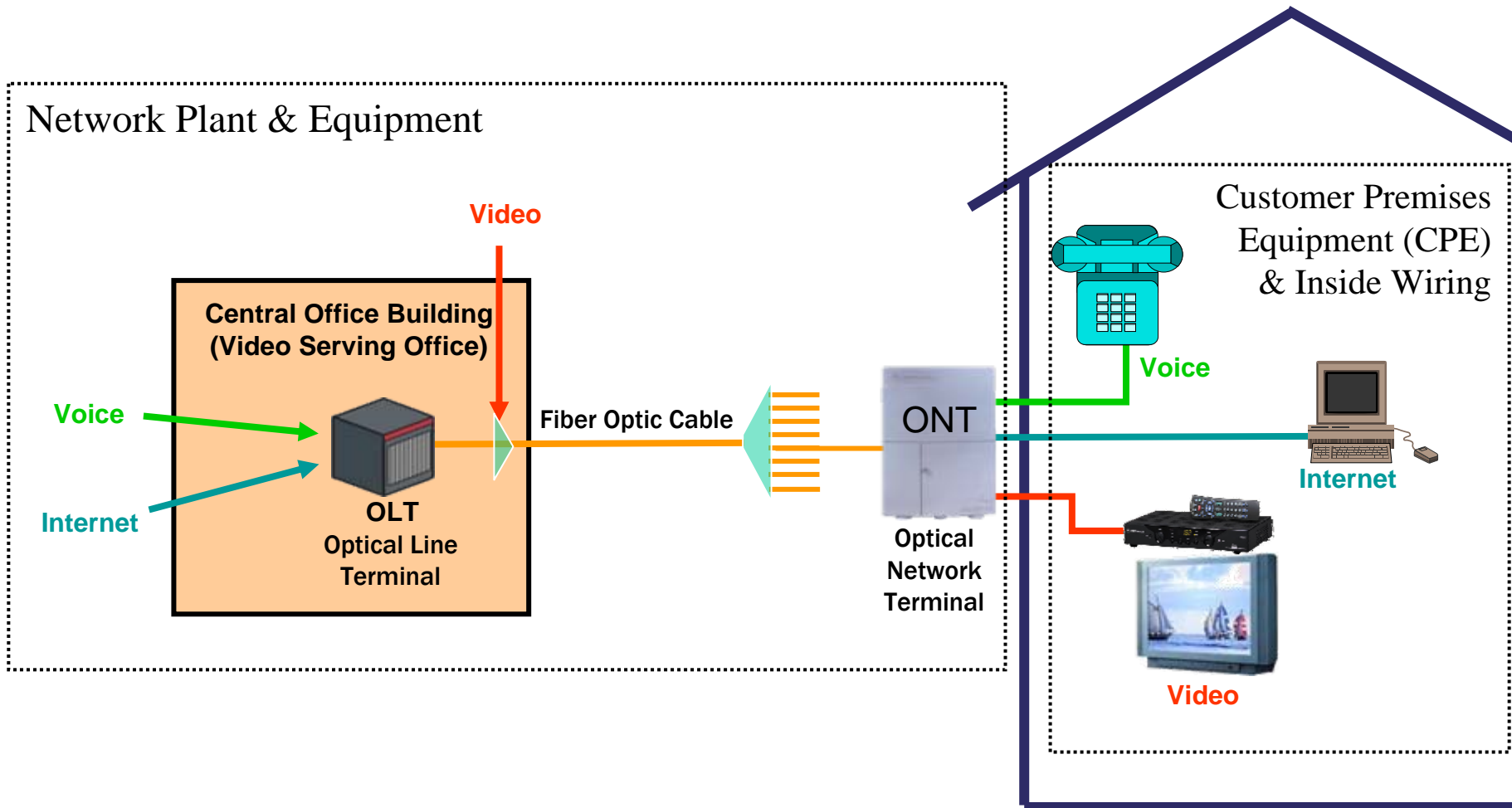
- **ONT, which is typically installed outside or just inside (basement or garage) of customer premise, provides “demarcation point” between Verizon network and customer premise’s wiring**
 - **ONT is required to provide all FiOS services**
 - **VZ does not lease or sell ONT to the customer and it is part of network infrastructure to provide FiOS services**
 - **ONT provides separate customer access area for customer facing interfaces**

- **As a Network Interface Device (NID), ONT terminates the optical signal carried over fiber and translates it in to service specific electrical signal over customer’s premise wiring**
 - **Video is provided over coaxial cable to STB**
 - **Voice service is provided over CAT 3/5 cable**
 - **Data service is provided over CAT 5 or coaxial cable**

- **In Multi Dwelling Unit (MDU) a common ONT located in the building’s basement or on different floors can be used to provide FiOS services to multiple customers**

- **A malfunctioning ONT can affect quality of services to multiple customers**

FTTP Architecture



Role of Optical Network Terminal (ONT) – Cont.



- **Up to 32 ONTs share a port on the Optical Line Terminal (OLT) located in the Central Office (CO)**
- **OLT and all the ONTs on the same port coordinate the upstream transmission to avoid any conflict between one or more ONTs**
 - **One faulty ONT can impact all other ONTs on the same port**
 - **This could occur, for example, because of faulty hardware or software issues resulting in transceiver in the ONT transmitting signal beyond its allocated time slot**
- **Scrambled/Encrypted signal sent by OLT downstream is received by every ONT on a port**
 - **Each ONT coordinates key management with OLT to descramble the data destined to it and discard traffic destined for other ONTs**
- **All the service provisioning and management of the ONTs is done via OLT through ONT Management Channel Interface (OMCI)**

- **ONT is an integral part of Verizon network and requires close coordination with OLT located in the COs**
 - **There is significant network specific communication between OLT and ONT which requires Verizon to own, qualify and manage the ONT**
- **One malfunctioning ONT can cause service impact on other ONTs sharing the same PON port and hence require close monitoring and management by Verizon**
- **ONT interfaces with CPEs in the customer premise (e.g. STB, Home Router) to provide services but in itself is not a CPE**