AFCS Application

MDU Distribution

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Description of the Application

- Introduction
  - Multi-Dwelling Unit (MDU) applications are based on remote high-rise buildings that distribute service to building residences or offices.
  - MDU building owners often lease space in the basement to service providers that in turn offer high demand services such as voice, data and video.
  - Building owners generally do not like providing building access to multiple service providers and thus often limit access to a select few. Even those selected have limited access, which must be coordinated through the building owner, adding further delays and inconvenience to manual provisioning.
  - Rather than providing “me-too” services, both building owners and providers alike are searching for cost effective and efficient means of offering premium high speed services that differentiate themselves from the competition.
  - This presentation outlines how Automated Switches play an important role in remotely provisioning services within the MDU and provide additional benefits and added value.

Description of the Application

- Present Mode Operation (PMO)
  - Many MDUs are unmanned and technicians must be dispatched in order to move, add or change (MAC) user connections and services. This is both time consuming and adds to the OPEX cost. To make matters worse, MDU churn is typically higher than the norm.
  - During MAC operations fiber connectors are exposed to contaminants. Technicians must follow strict cleaning procedures, but due to time constraints, errors and less than ideal lighting conditions, these procedures are not always performed correctly, leading to signal degradation.
  - Since physical connectivity and connection records involve two separate operations, they are prone to human error. This translates in to a mismatch between database records and physical connectivity.

Description of the Application

- Present Mode Operation (PMO)
  - Fiber path problems take time to resolve, technicians must be dispatched on site to manually locate faults and take corrective action. Meanwhile end-customers are affected.
  - Equipment port faults can be generally detected quickly, but technicians must still be dispatched on site to affect repairs, delaying the process.
  - Building owners generally limit the number of service providers within their buildings. Thus residents have limited choices when selecting the best provider for their needs.

Description of the Application

- How Can AFCS Help?
  - Service providers and building owners can easily support a distributed network of buildings from a central location. Provisioning operations are performed immediately and remotely. Billing takes effect sooner.
  - Since provisioning does not require physically entering the building, building owners can allow for more service providers, and a greater number of choices for the building residents.
  - By load balancing high usage end-customers evenly over equipment ports, network performance can be optimized, delaying upgrade purchases to newer technologies.
  - The means to offer premium services, such as “Time of Day Provisioning” or “Service on Demand” can help building owners and service providers differentiate themselves from competitors and generate new revenue streams. As more and more building residents work from home, opportunities for such premium services are on the rise.

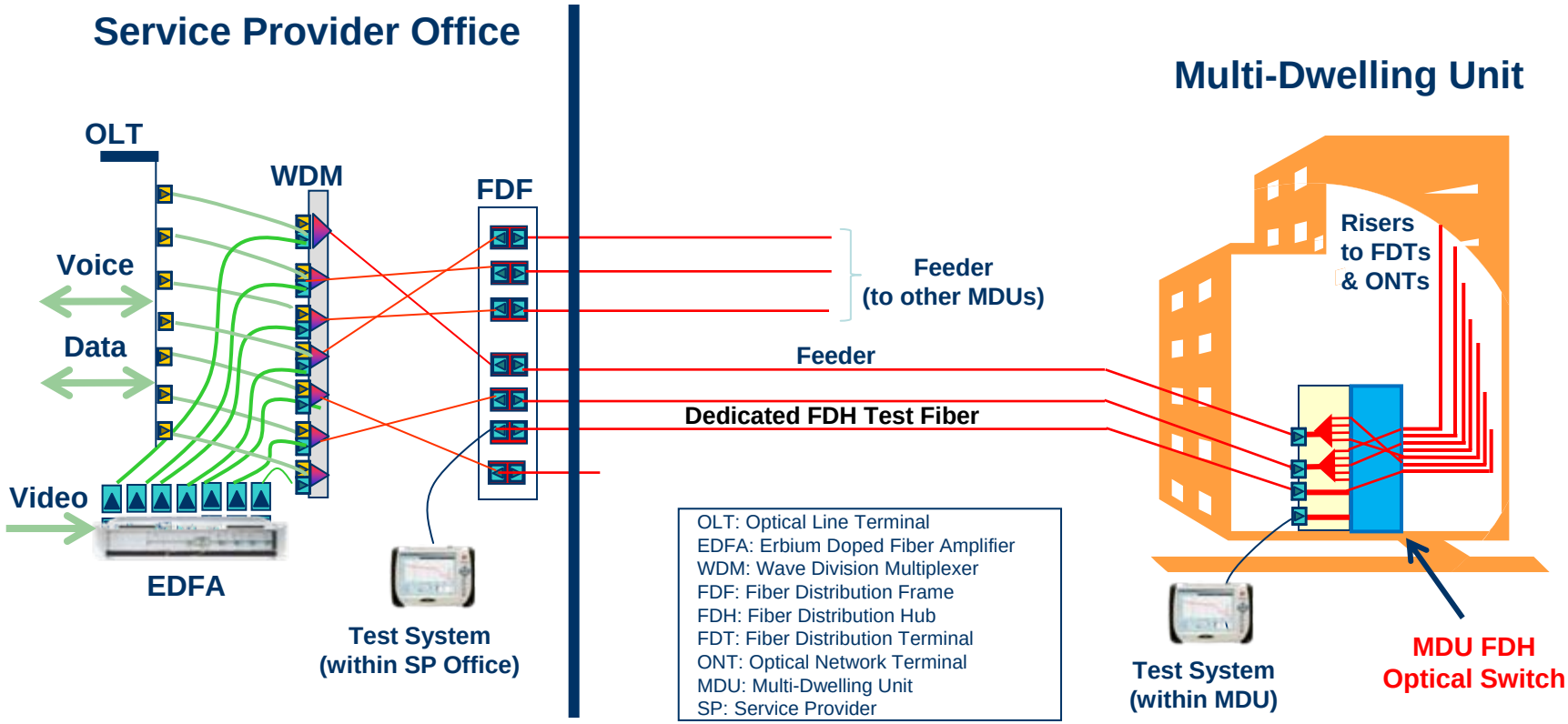
Description of the Application

- How Can AFCS Help?
  - As user needs change, service providers can groom connectivity to maximize existing equipment port usage, such as placing users with like services onto equipment ports optimized for this purpose.
  - Building owners can easily switch between service providers whenever an end-customer wishes to change providers.
  - Since MAC operations are handled internally by the automated switch in a dust free environment, provisioning can be performed without risk of connector contamination that would otherwise degrade performance.
  - In addition, all MACs are automatically recorded in the switch database, which is always synchronized with the physical connections. Disconnected ports are easily identified and can be reused.

Description of the Application

- How Can AFCS Help?
  - Automated Optical Switches can provide the means to remotely test and troubleshoot problems, for quick problem identification and resolution.
  - Test equipment may be centrally located to be more efficiently utilized. It may be located within each MDU and shared among all service providers or at a given service provider office and shared across multiple MDU locations.
  - Optical Switches can monitor the fiber infrastructure and alert operators of degradation, in order to resolve issues before they become service affecting.
  - 1:N redundancy can be supported, allowing failed equipment ports or fiber paths to be remotely switched to backups. Service can be quickly stored and repairs can be conveniently scheduled without urgency.
  - Service Level Agreement (SLA) can be honored without penalties.

Drawing of the Application



Benefits of the Application

- Technical Benefits
  - Remote management of provisioning operations, allow service providers to more conveniently support a larger distributed MDU network.
  - Remote test & monitoring allow problems to be identified quickly and even avoided, and 1:N redundancy allow problem ports/fibers to be switched-out.
  - Improved signal quality due to less signal degradation from dirty connectors.
  - Optimize throughput due to load balancing to get the best performance out of existing technologies.
  - Synchronized database with physical connectivity maintains an efficient infrastructure. What you see is what you get.
  - Building owns can offer building residents a greater number of service providers from which to choose, and can quickly effect changes as needed.

Benefits of the Application

- Financial Benefits
  - Remote management of provisioning, test & monitoring reduces OPEX.
    - Savings per year for provisioning: 50% of a technician.
    - Savings per year for troubleshooting problems: 25 troubles.
    - Savings per year for monitoring: 10% of a technician.
    - Savings per incident due to 1:N redundancy switching: 1 day of revenue
    - Provisioning users sooner leading to earlier billing: 1 day of revenue
  - Elimination of dirty connector problem – accounts for 5% of troubles found.
  - Speed up repairs without database and physical connectivity mismatches – affects up to 10% of connections.
  - Support for a larger distribution of MDU networks, leading to additional revenue possibilities, particularly for smaller service providers.

Benefits of the Application

- Financial Benefits
  - Possibility of new revenue streams with “Time of Day” and “Service on Demand” provisioning. Additional revenue per affected connection starts from 5%, grows to 25% over time.
  - Postpone upgrades to newer technologies through more efficient throughput performance from existing technologies with load balancing. CAPEX postponed by an additional 1 to 2 years.
  - Grooming can optimize the distribution of existing equipment and delay premature purchases of addition equipment ports. CAPEX postponed by an additional year.
  - Save on SLA penalties by resolving issues quickly and in some cases avoiding problems before they happen. SLA savings of 1-30 days revenue.

Benefits of the Application

- Financial Benefits
  - Building owners can sign-on more service providers without risking too many technician hands physically within their facility. This means twice as many service providers can easily be managed.
  - Reuse disconnected ports, since they are easily identified, rather than losing them in the fiber rats nest infrastructure. Recovered ports per year: 5% (based on 25% churn per year, where 20% of these may be lost).
  - Centrally located test equipment that is shared over your network for a more efficient set-up. Savings of up to 50% in test equipment purchases.

Benefits of the Application

- Who Can Benefit from the Application?
  - Multi-Dwelling Unit building owners by offering an advanced and flexible fiber infrastructure, alone with all the benefits that it provides.
  - Service providers offering voice, data and video services with added value, quicker service turnaround and problem resolution, leading to overall higher customer satisfaction.
  - Test equipment vendors that can offer more value through remote centrally located testing capabilities.
  - End-customers through access to enhanced services and better choices of providers.