



FSP 3000 ALM

Access Line Monitoring

Network & Systems Consulting, September 2015

A Short Introduction...



Access Link Monitoring – Why?



Hello.
I am a Service Provider.



Access Link Monitoring – Why?



I sell services to other people.
They rely on me to get their data
from Point A to Point B.



Access Link Monitoring – Why?



I am very good in managing their data across my core network.



PoP A



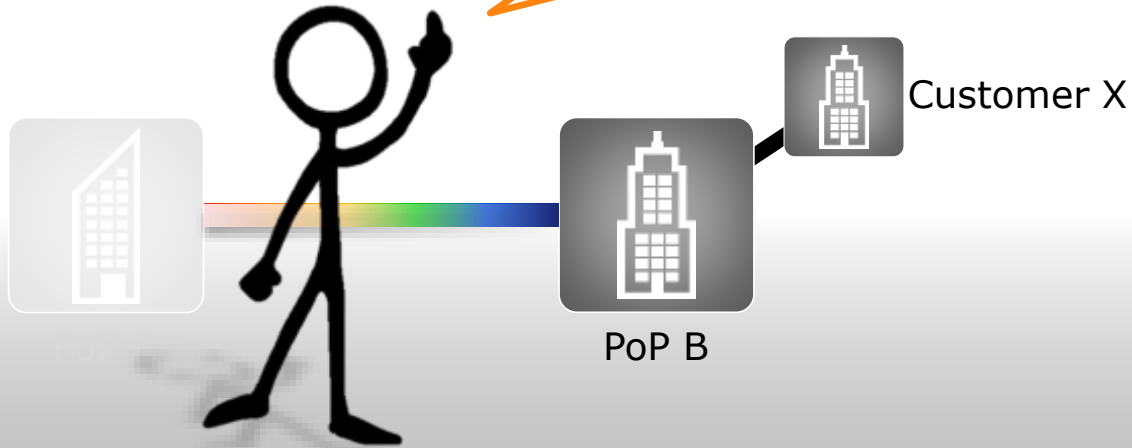
PoP B



Access Link Monitoring – Why?



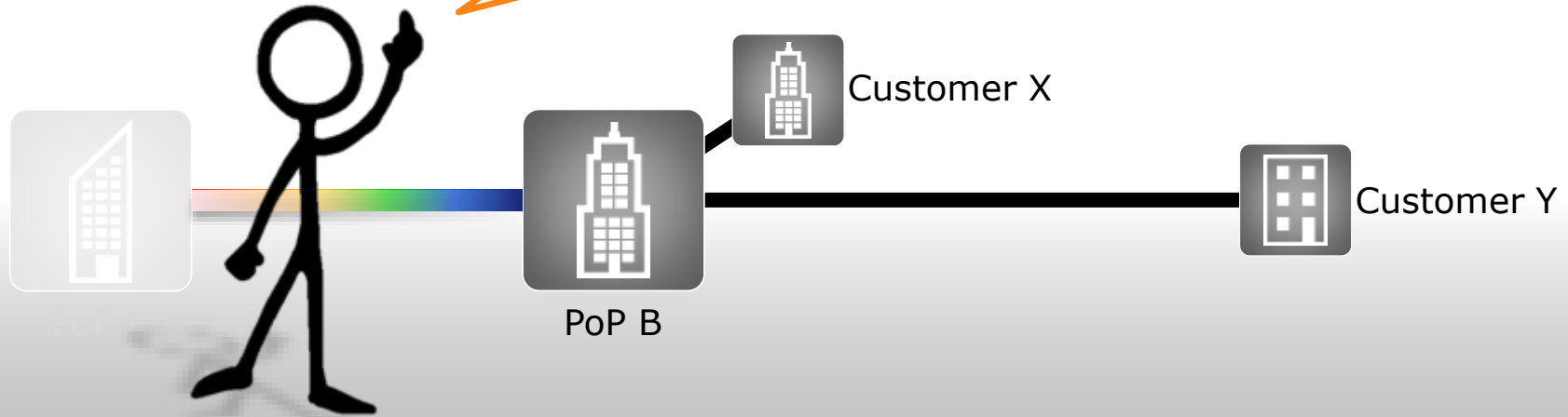
Customers can hand off their data to me in a number of ways.
They could be close. (Co-located)



Access Link Monitoring – Why?



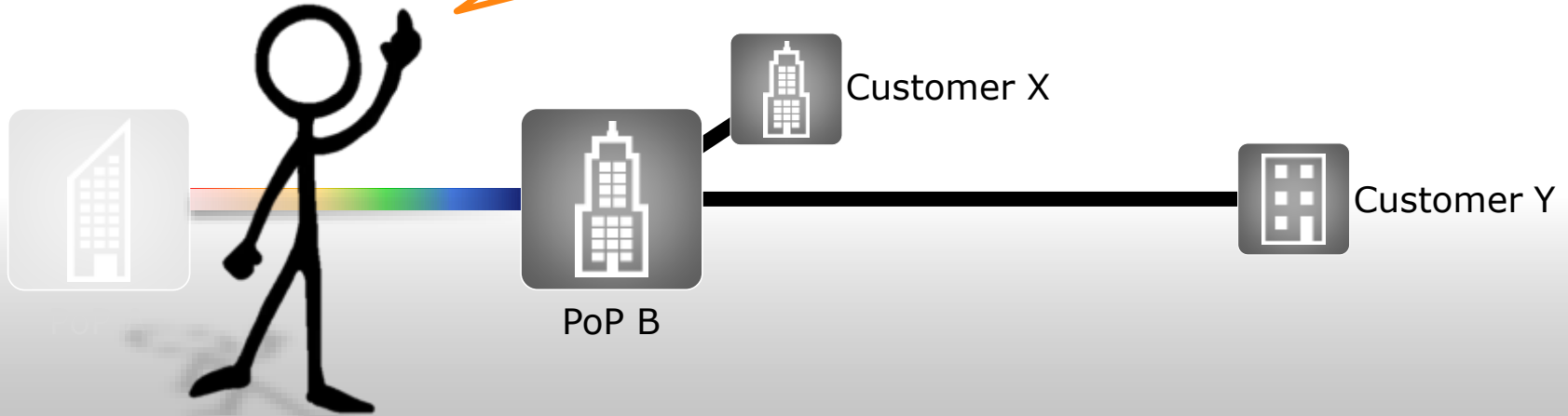
Customers can hand off their data to me in a number of ways.
Or they could be far. (Dark fiber)



Access Link Monitoring – Why?



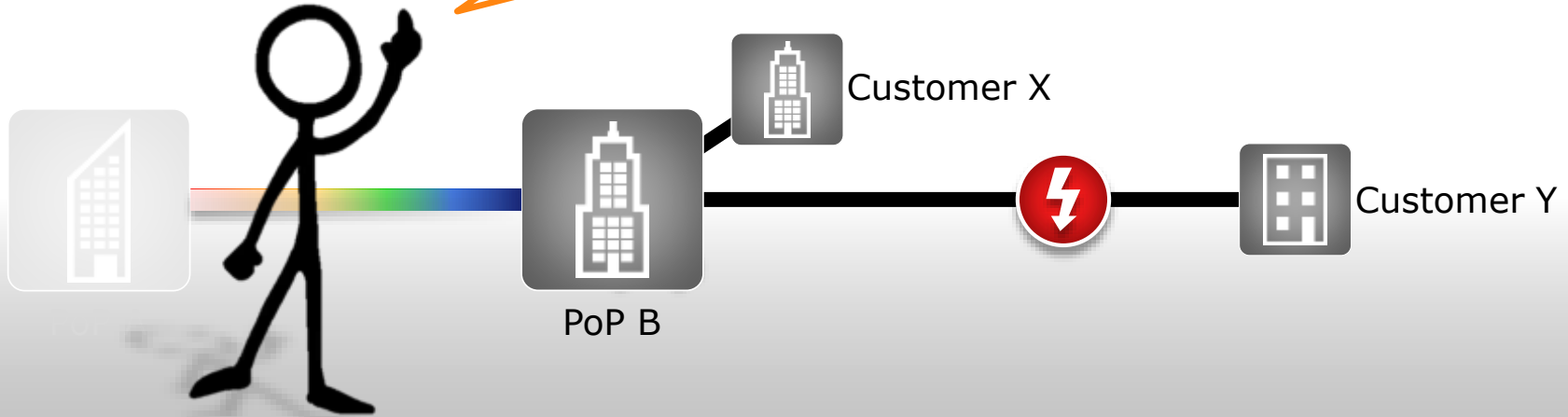
Unfortunately, dark fiber is... dark.



Access Link Monitoring – Why?



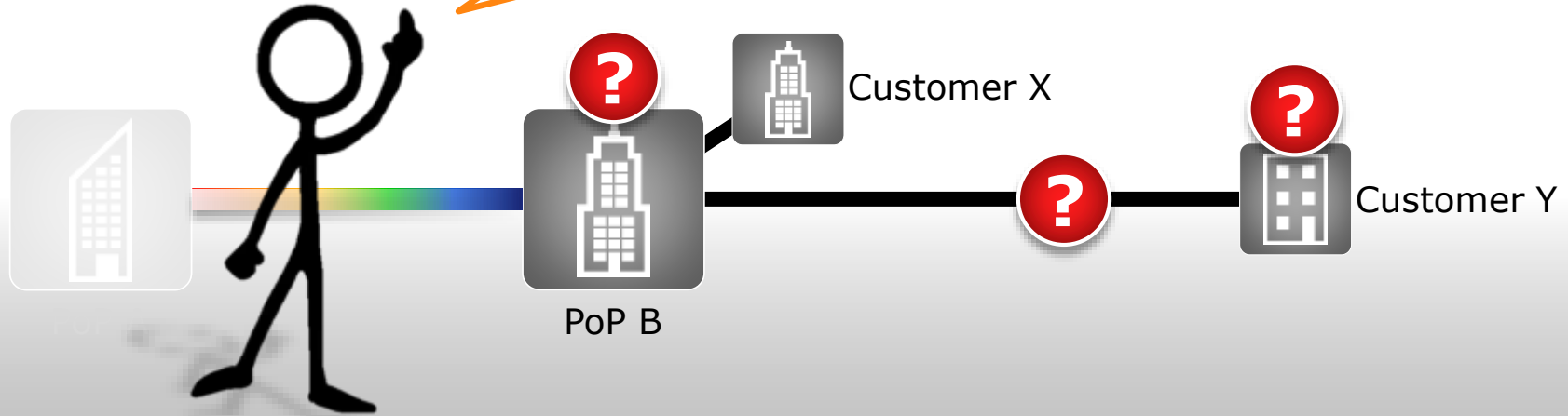
If something happens to the access link between me and my customer, it takes time and a truck roll to determine if the fault is...



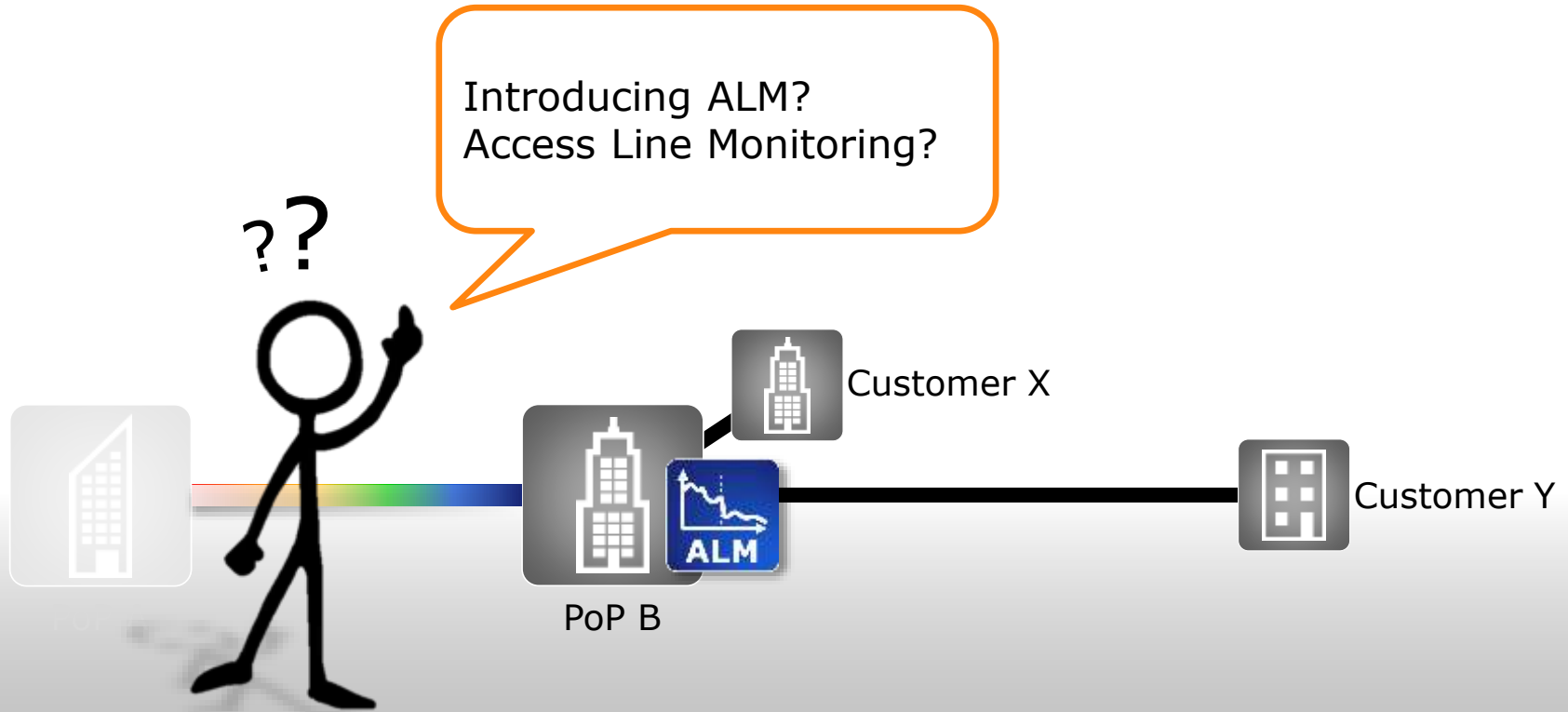
Access Link Monitoring – Why?



...on the fiber.
...at the customer location.
...inside my PoP.



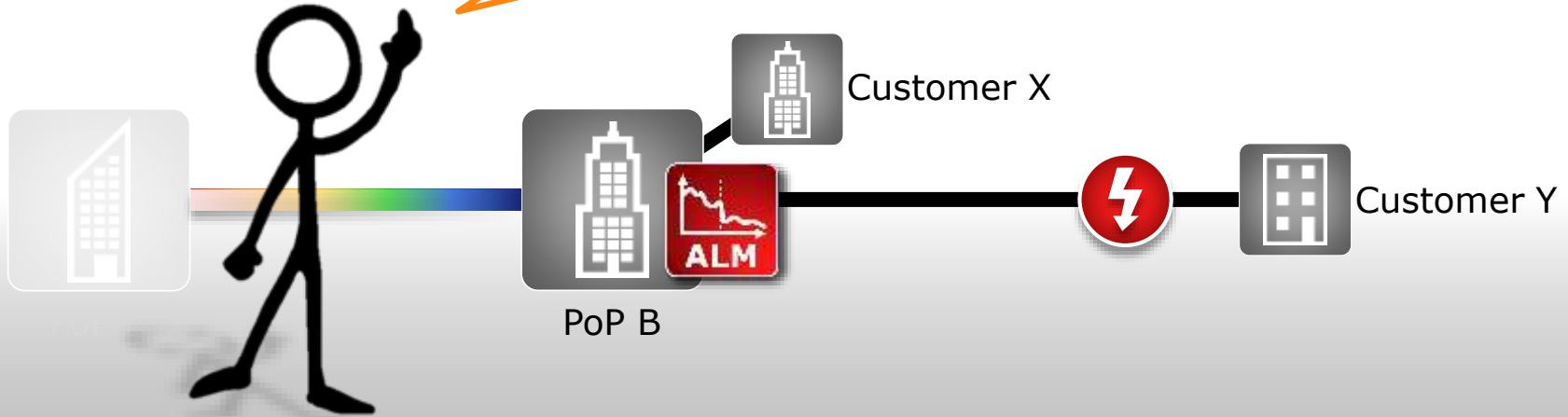
Access Link Monitoring – Why?



Access Link Monitoring – Why?



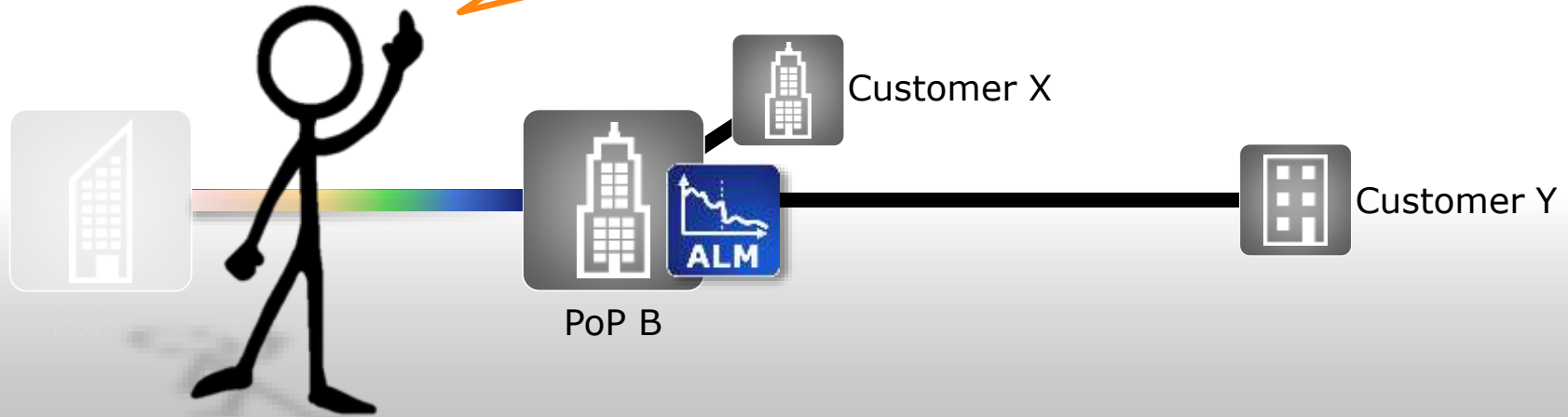
ALM provides a very low cost method for locating faults and guaranteeing physical connectivity on the access fiber between me and my customer.



Access Link Monitoring – Why?



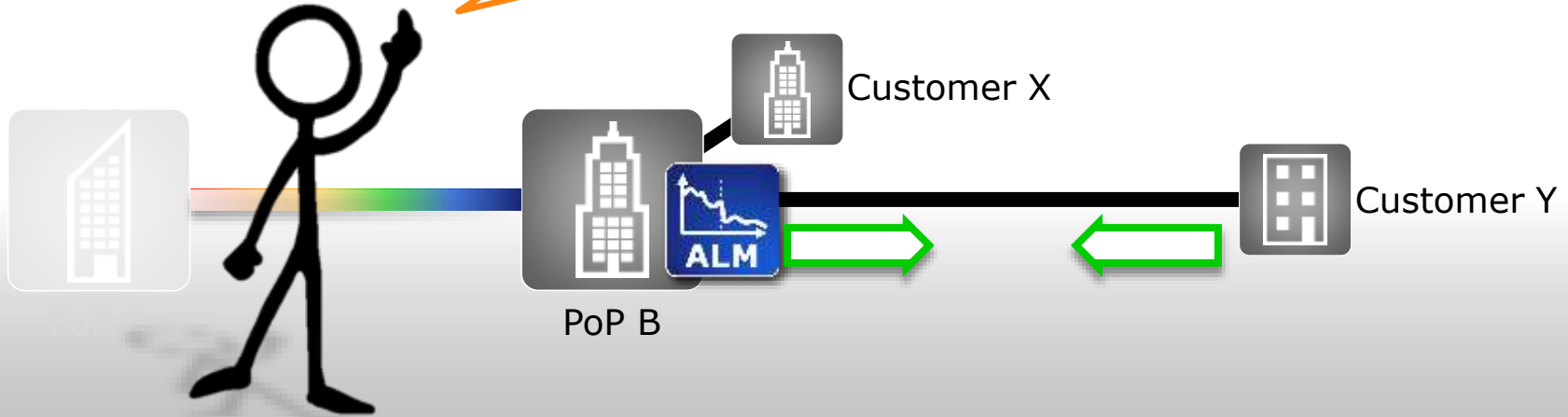
ALM is a low cost fiber monitoring device that can be passively coupled on to an access link.



Access Link Monitoring – Why?



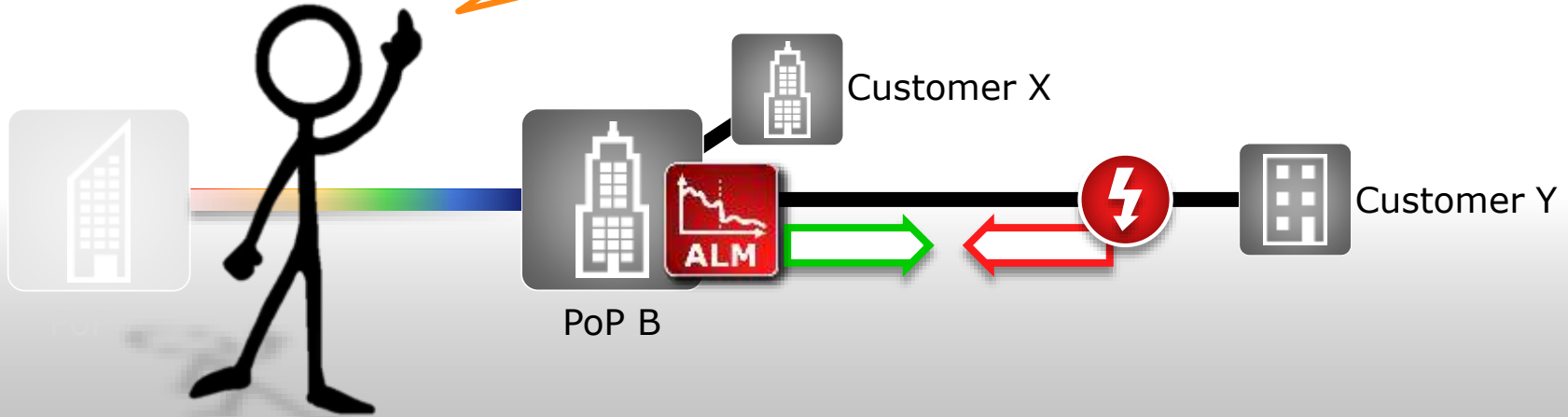
ALM actively monitors the access link. If a problem occurs, ALM can tell me where the physical path changed.



Access Link Monitoring – Why?



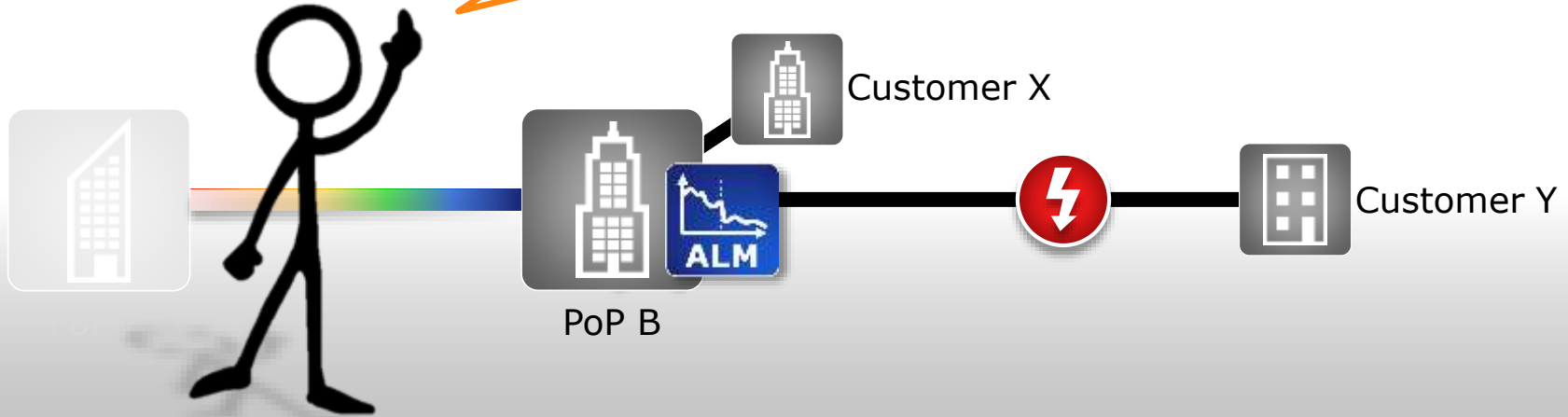
ALM actively monitors the access link. If a problem occurs, ALM can tell me where the physical path changed.



Access Link Monitoring – Why?



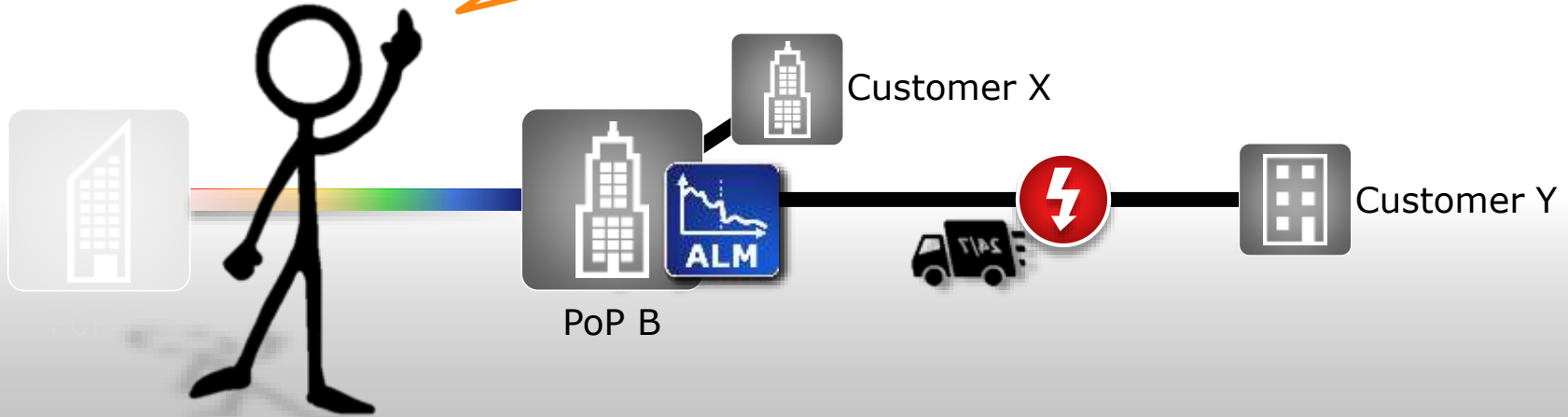
This knowledge allows me to direct my resources quickly and efficiently.



Access Link Monitoring – Why?



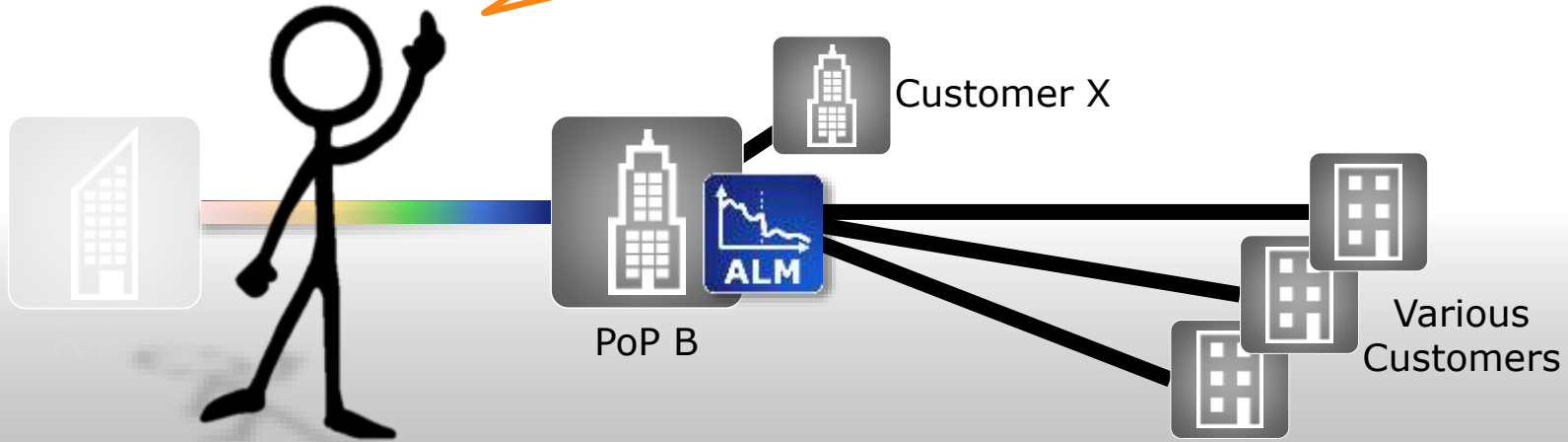
It allows me to reduce my mean time to repair (MTTR), reduce my number of truck rolls and...



Access Link Monitoring – Why?



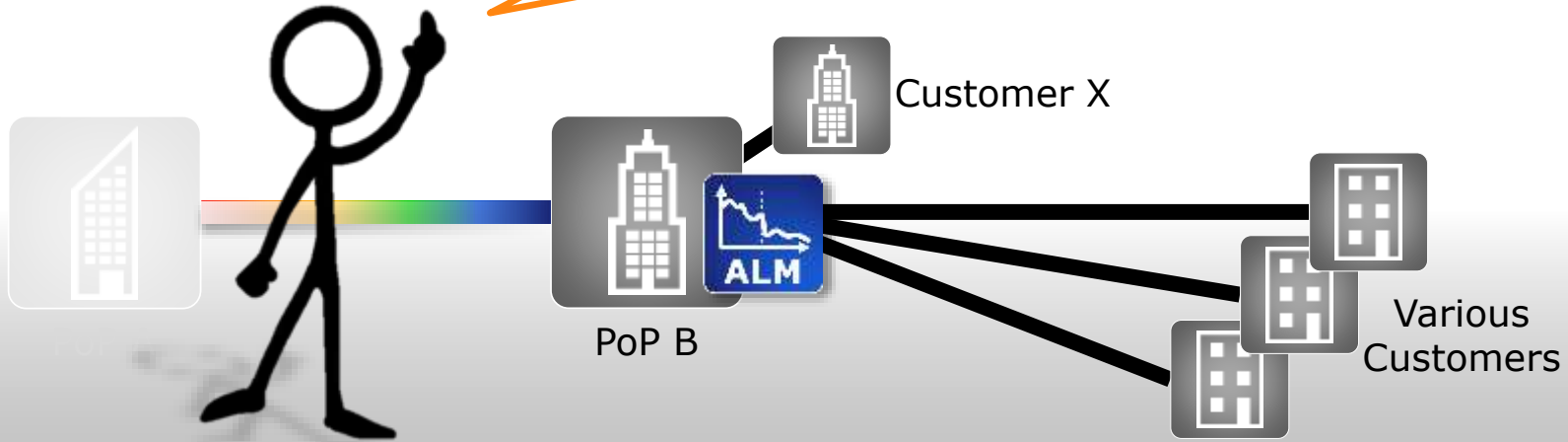
...ALM is also good at multi-tasking.
One device can monitor 16 or 256
access links.



Access Link Monitoring – Why?



ALM operates independent of the underlying services. One ALM unit can manage access links loaded with Ethernet, SONET, Fiber Channel, CWDM, DWDM, CPRI, GPON,...



What does ALM do?



Access Link Monitoring...

...provides active monitoring of your access links.

...is non-intrusive (operates at 1650nm).

...can determine (+/- 10m) where a fault occurs.

...doesn't care what the underlying service is.

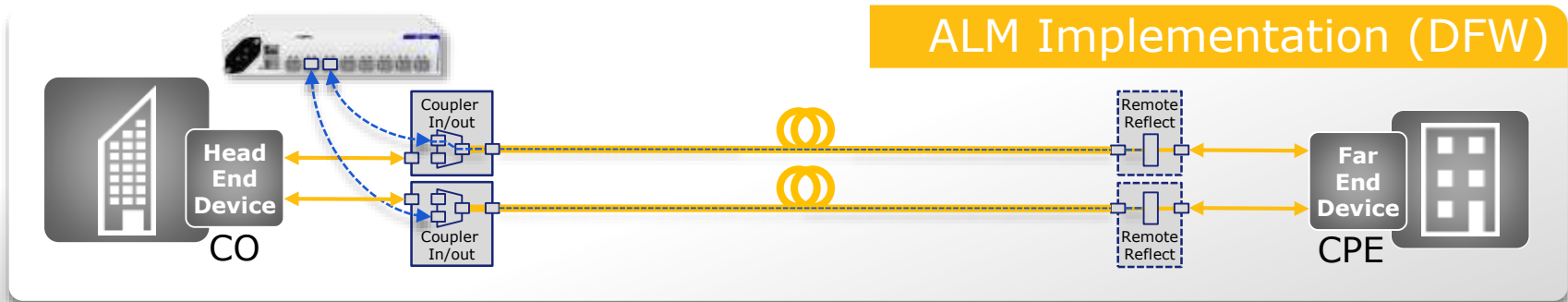
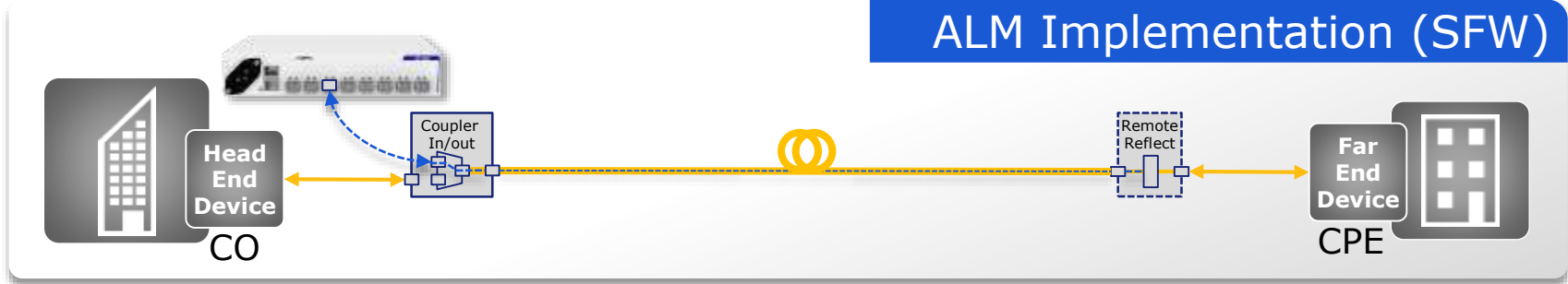


Solution Architecture



ALM Architecture

Point-to-Point configurations



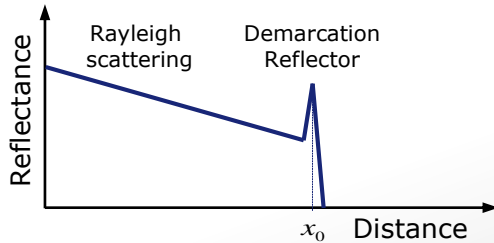
Same ALM shelf is used for both SFW and DFW

How does ALM work?



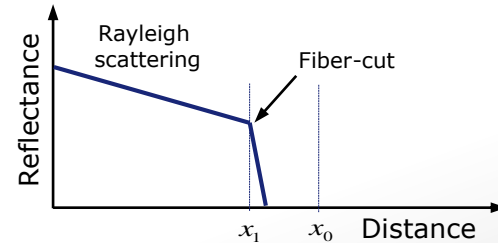
- The integrity of the access fiber is monitored by measuring the reflection of a laser at 1650nm that is co-propagated with the traffic signal(s)

Normal Operation



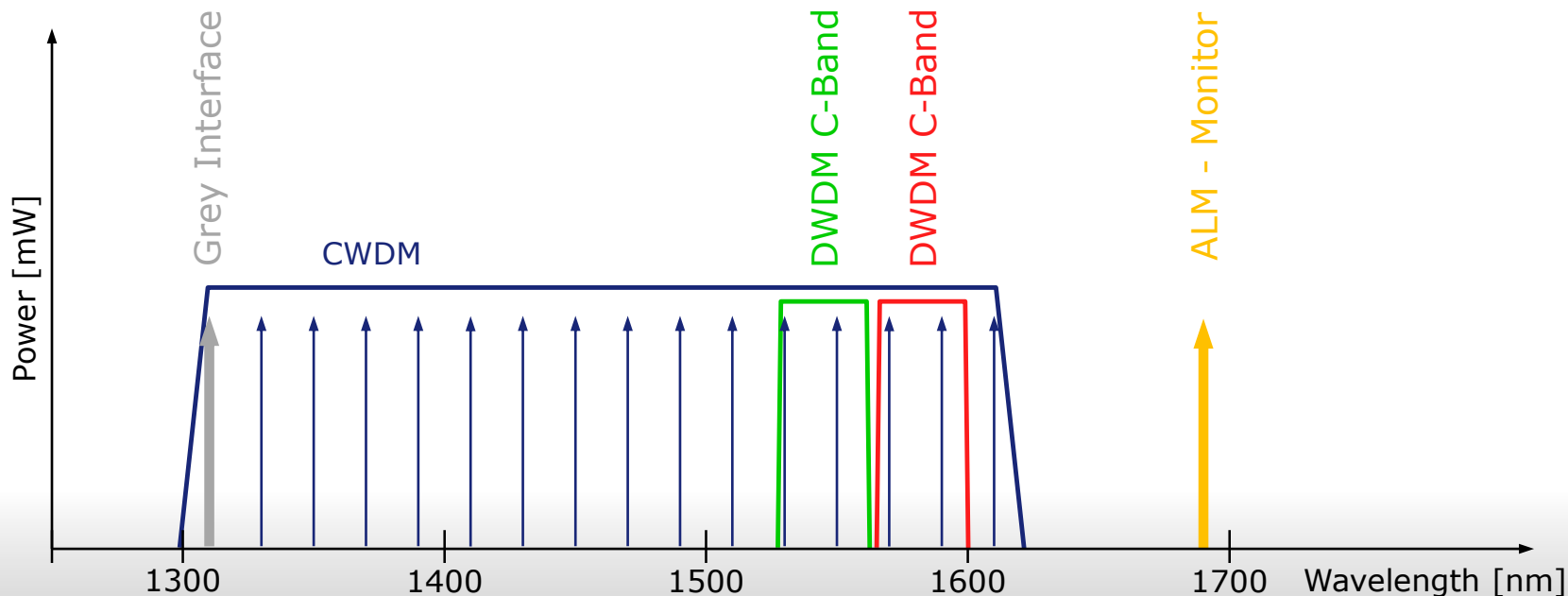
- The optical power of the reflection from the CPE/Far-end demarcation is monitored
- The intensity of the reflected demarcation peak provides an estimate of the insertion loss of the link

Fiber-cut detection



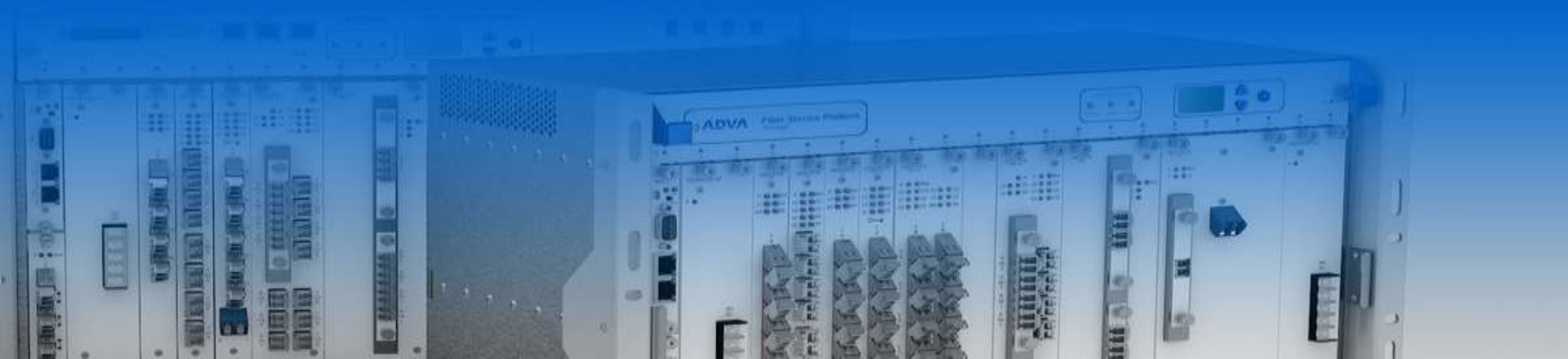
- A fiber cut or increased insertion loss is detected as this reduces the demarcation reflection peak
- By measuring the Rayleigh Scattering power the location of the fiber-cut can be detected

ALM Wavelength Overview



ALM Monitoring does not interfere with any other transport wavelengths

ALM System Hardware



ALM System Components Summary



- **ALM Monitoring Unit**

- Up to 16 Fiber Monitoring ports per unit
- Active test signal generator/receiver
- Real-Time Fiber Monitoring, Fault Detection and Localization
- Architecture allows for “Not Service Affecting” maintenance and upgrades



- **ALM In/Out Passive WDM Coupler Module**

- Provides connectivity to access fiber in CO/Head-end
- 16 WDM Couplers integrated into a rack mounted module



- **ALM Remote Passive Reflector**

- Provides CPE/Far-end Demarcation
- Integrated Reflector in a Connector



Control Options for Monitor Unit



- On the front of the Unit an RJ45 Network Connector is available
- There are two methods for northbound communication
 - An HTML web-interface for direct control over the ALM and review of the status of the network
 - Communication via through SNMPv3 commands (including SNMP Traps)



Thank You

info@advaoptical.com



IMPORTANT NOTICE

The content of this presentation is strictly confidential. ADVA Optical Networking is the exclusive owner or licensee of the content, material, and information in this presentation. Any reproduction, publication or reprint, in whole or in part, is strictly prohibited.

The information in this presentation may not be accurate, complete or up to date, and is provided without warranties or representations of any kind, either express or implied. ADVA Optical Networking shall not be responsible for and disclaims any liability for any loss or damages, including without limitation, direct, indirect, incidental, consequential and special damages, alleged to have been caused by or in connection with using and/or relying on the information contained in this presentation.

Copyright © for the entire content of this presentation: ADVA Optical Networking.