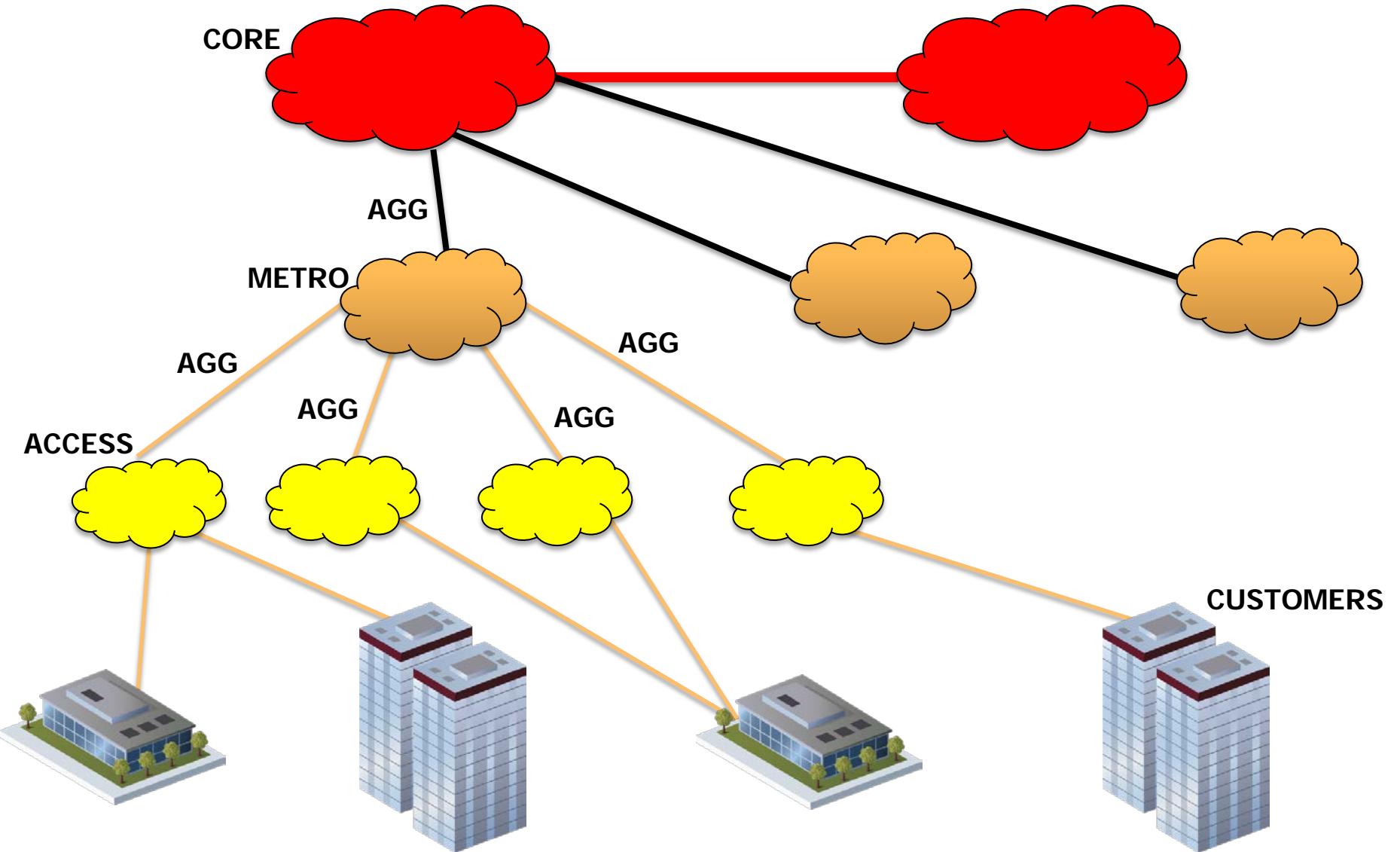Maximizing Network Capacity, Reach and Value
*Over land, under sea, worldwide*

# Xtera Communications, Inc.

## What On Earth is a 100G Metro System

March 2015 – OFC 2015

# Traditional Network Architecture

- May consist of several levels of aggregation
  - Customer site to metro
  - Metro to regional
  - Regional to core

- Many different type of equipment required
  - Add/drop multiplexers
  - WDM systems
  - Digital cross-connects, switches, routers, etc.

- Usually uses smaller capacity in metro and larger capacity in Core

- May involve with O-E-O conversions

- Initially designed for voice traffic
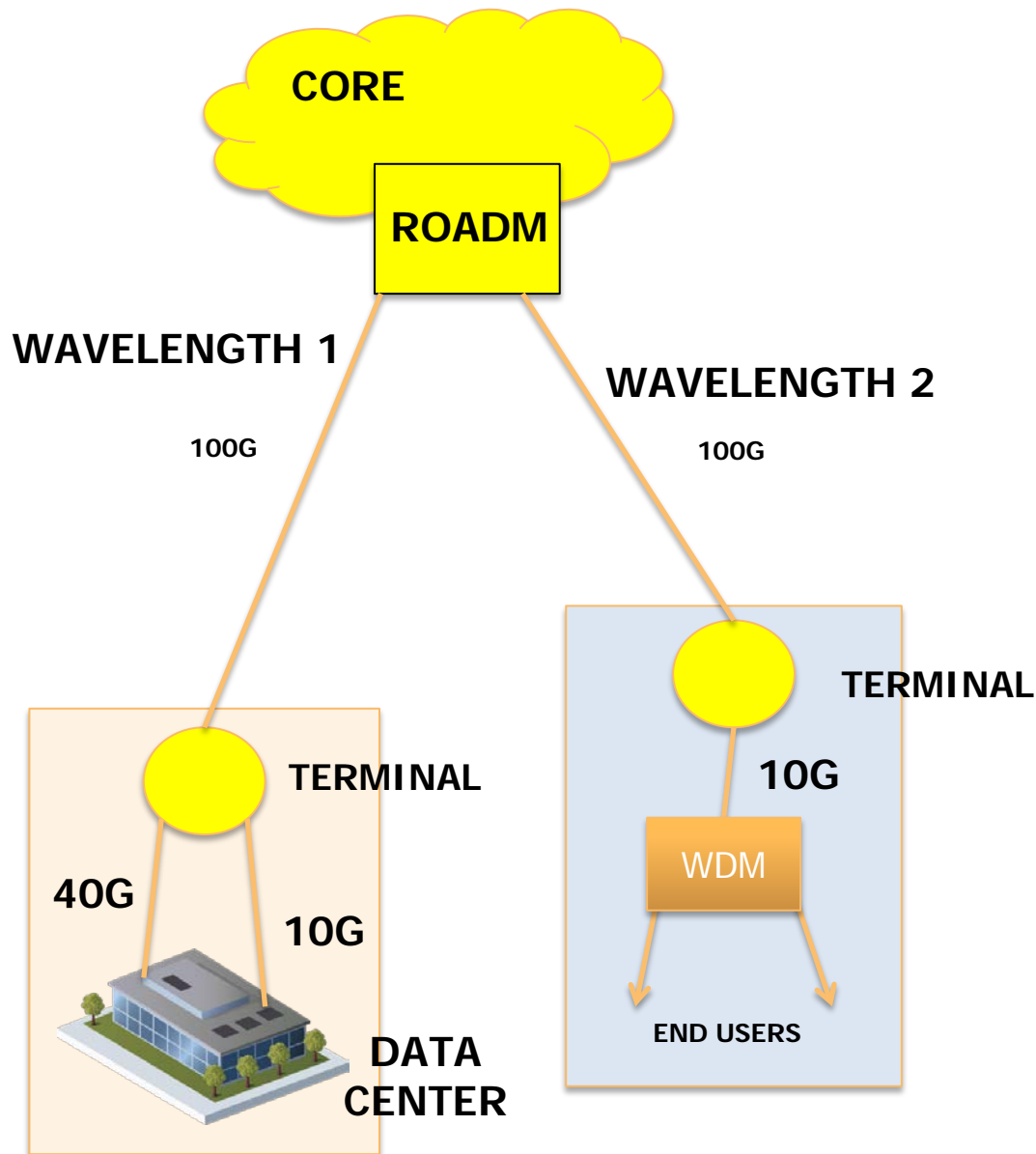
# Today's Optical Network Infrastructure

- Data centers are the biggest bandwidth users

- Other large bandwidth users are:
  - Large enterprises
  - Universities
  - Research institutes, etc.

- Prefer largest possible transport pipes
- Applications are mostly packet based
- Low latency is a must
- Most large customer sites are served by fibers
- Must have protection/restoration capabilities
- Low transport cost

# Current 100G systems

- Uses a whole wavelength

- Equipped with FEC

- Can go a long way between terminals using various amplification systems

- Most are equipped with mux-ponder type terminals capable of interfacing with 10G and 40G input, and providing 10G, 40G outputs

- Low latency transport system.  Minimum or no O-E-O conversion

- Price of the current system is coming down

# Possible 100G Serving Arrangement

**CORE**

**ROADM**

**WAVELENGTH 1**

100G

**WAVELENGTH 2**

100G

**TERMINAL**

**10G**

**TERMINAL**

WDM

**40G**

**10G**

**END USERS**

**DATA CENTER**

- Use an ROADM to deliver wavelengths to customer sites with 100G terminals at each end

- Use the 100G terminals to produce multiple 10G and/or 40G to each servers or other end users

# What If I want to Have a 100G WDM System for a Short Distance?

## Ideal Specifications???

- Range
  - Will 80km be enough?

- FEC
  - Will FEC be needed?

- Amplifier
  - Will this be required?

- Fiber
  - Can it work in a bi-directional mode – meaning only need one fiber?

- Number of 100G channels
  - 40 channels or more?

- Cost
  - Compare to the current 100G system, what should the cost be?

# Summary

- Current 100G metro applications can be satisfied with the existing ROADM technology.

- Higher degree ROADM with flex-grid capability will be available soon.

- MUX-ponder technology can be used to provide lower bit rate applications, such as 10G and 40G requirements.

- 100G server ports is still not yet available.

- For future applications, higher channel count 100G short reach, lower cost system will have to develop.  Size of the market is questionable.

- In the mean time, I still would like to know what on earth is a 100G metro system.

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