

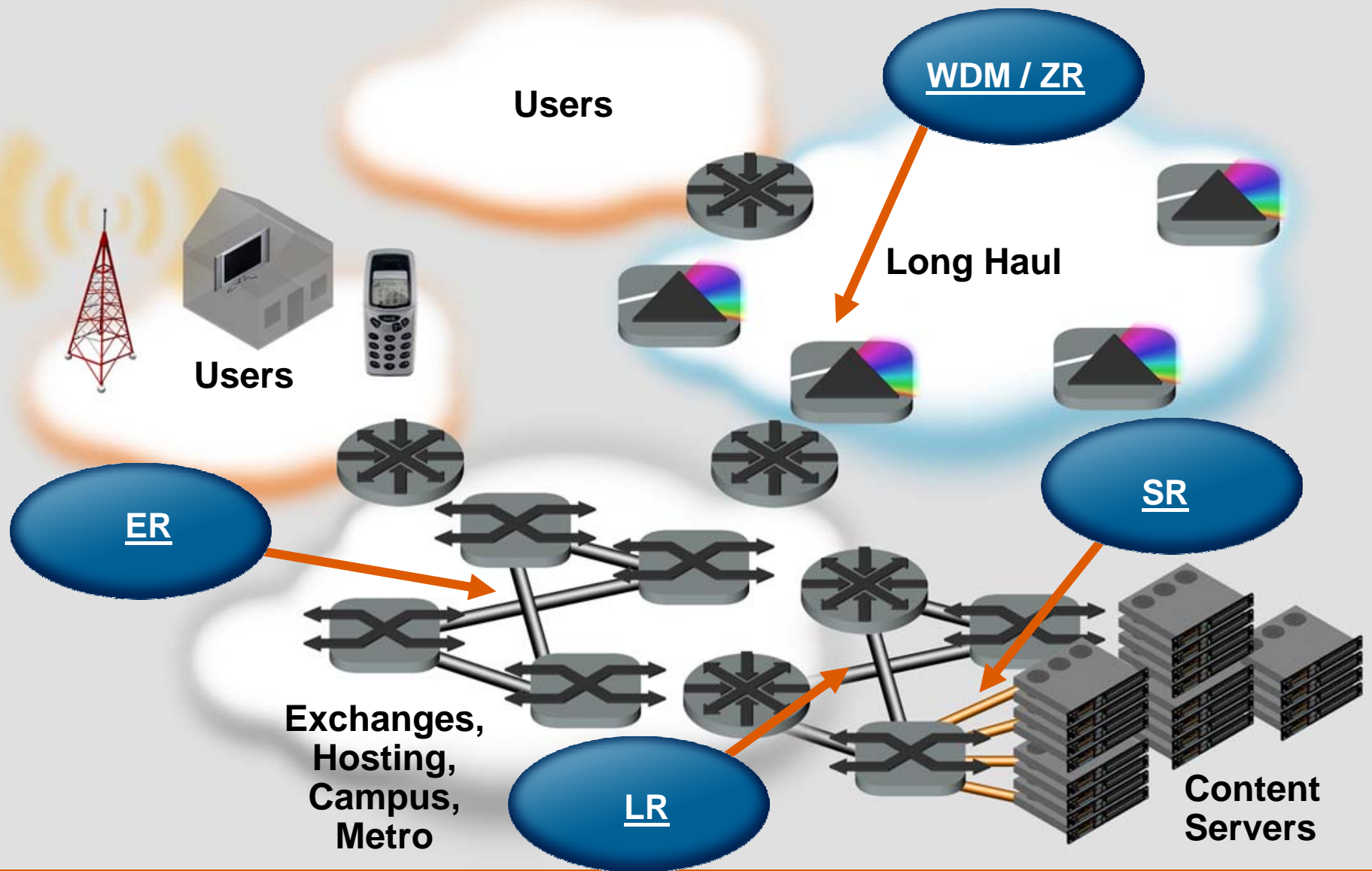
FORCE 10™

Understanding a 40KM Reach Objective

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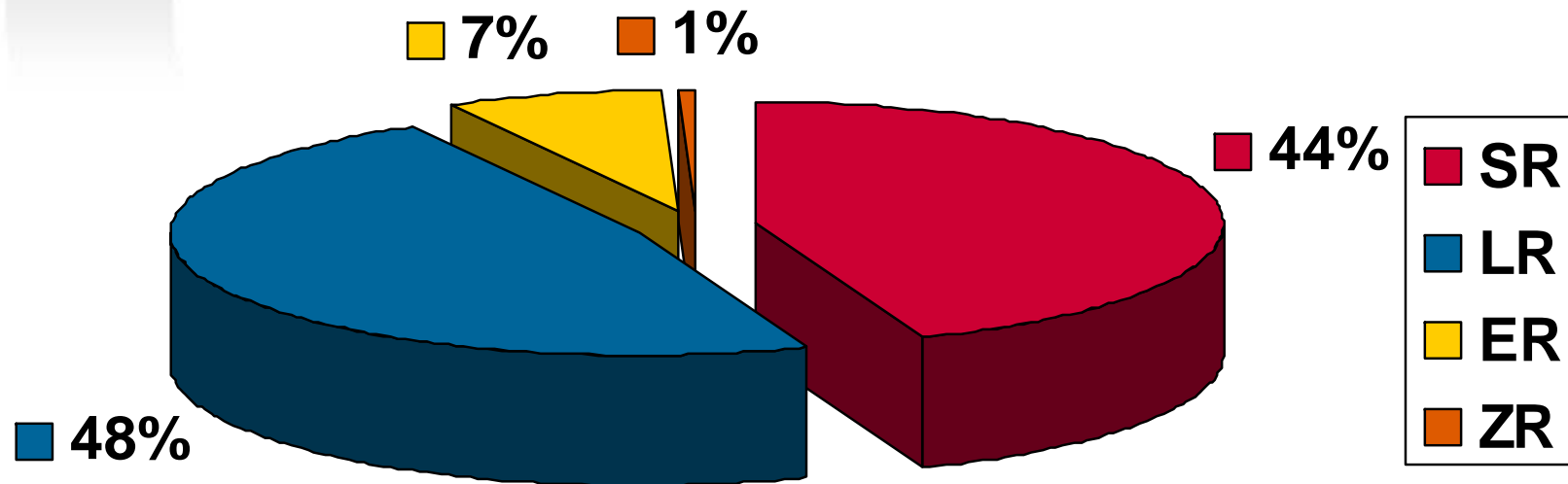


Identifying the ER Space



- Internet Exchange
- Campus Backbone
- Campus to Campus or Metro

2007 Deployment Trends: 10GE Port Types



- SR: 2m to 300m
- LR: 2m to 10km
- ER: 2m to 40km
- ZR: 80km++

Force10 Customer Survey
Percent of Volume

- Customers have stated 10 GE percentages will map into HSSG percentages.
- ER optics show a percent volume increase for 2007 over 2006, goergen_02_1106.
- Objective - Support at least 40km on SMF
 - January 2007
 - Objective not yet associated with a PAR; HSSG can produce more than one PAR.

Reach (Technical) Feasibility of 100GE alternatives

SMF	10km 1310nm	40km 1310nm	10km 1550nm	40km 1550nm
10x10G DML	yes (10λ span needs semi-cooling)	yes (need new DML & RX APD/SOA)	yes (need new DML)	maybe (need new DML)
10x10G ML	yes	yes (need RX APD/SOA)	yes	yes
5x20G / 4x25G DML	yes (need new DML)	maybe (need new DML & RX SOA)	maybe (need new DML)	no
5x20G / 4x25G ML	yes (need new EML)	yes (need new EML & RX SOA)	yes	yes (need RX DC)
2x50G DQPSK ML	yes (need I/Q ML)	yes (need I/Q ML & RX DC & SOA)	yes (need I/Q ML & RX DC)	yes (need I/Q ML & RX DC)
1x100G TDM ML	yes (need new ML & maybe RX DC)	yes (need new ML & RX DC & SOA)	yes (need new ML & RX DC & SOA?)	yes (need I/Q ML & RX DC & SOA?)

Green shading designates alternatives under detailed study by Fiber Optic Ad Hoc contributors.

Cost (1/Economic Feasibility) of 100GE alternatives

SMF	10km 1310nm	40km 1310nm	10km 1550nm	40km 1550nm
10x10G DML	mid	mid	low	mid
10x10G ML	mid	mid	mid	mid
5x20G / 4x25G DML	low	mid	low	not feasible
5x20G / 4x25G ML	mid	mid	mid	not economically feasible (RX DC)
2x50G DQPSK ML	high	not economically feasible (RX DC)	not economically feasible (RX DC)	not economically feasible (RX DC)
1x100G TDM ML	high (RX DC?)	not economically feasible (RX DC)	not economically feasible (RX DC)	not economically feasible (RX DC)

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- Recommend the 40KM objective be added with the other objectives to PAR-A. Initial feedback from optics vendors is that the 40km PMD may take longer, so we need to consider the possibility of spinning this out as a separate project, PAR-x, in the future should the 40km time-line not match the other objectives in the PAR-A.