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GOLE
Next Generation Architecture Task Force

GLIF Interim Meeting

Salt Lake City, UT

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Agenda

1. Objectives
2. Working Group Development Timeline
3. Current GOLE Architecture
4. Current Services

Objectives

The Next Generation GOLE Taskforce will develop the future requirements and reference architecture for GOLE.

WHY?
1.Creating a blueprint will facilitate equipment replacement at GOLE
2.The blueprint will help framing what are the functions that are fundamental for a GOLE and which are optional.

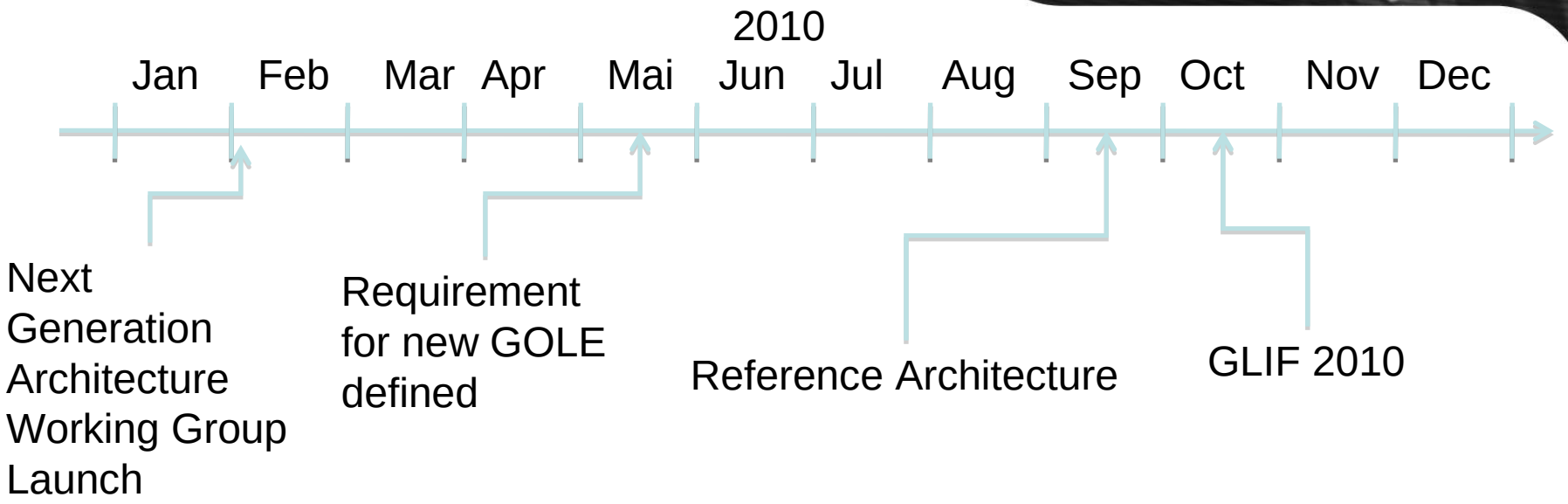
Question to Answer

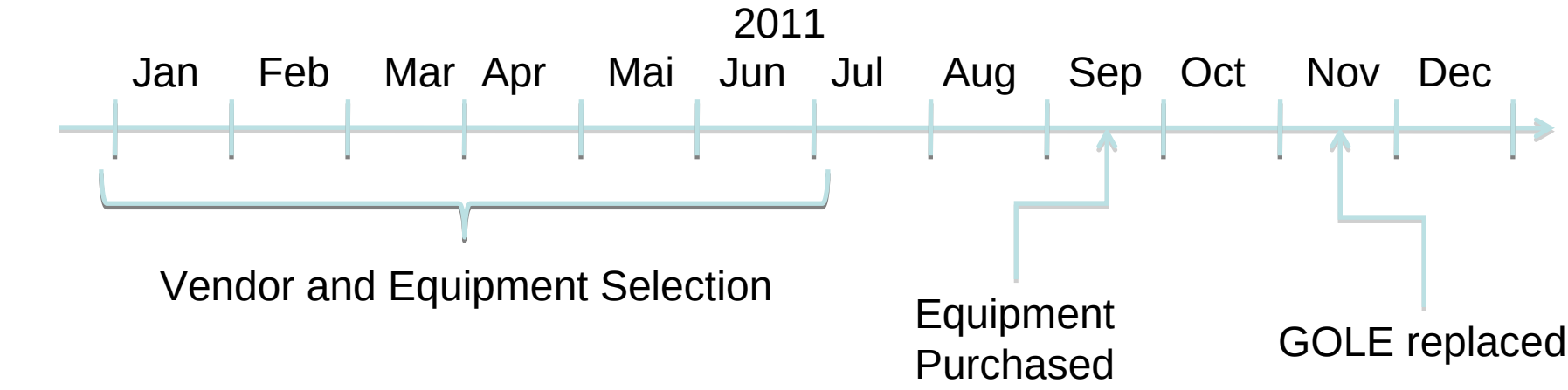
- What is the architecture of GOLES today?
- What works well in creating connections?
- What does not work well connecting?
- What are the functions of the FUTURE GOLE?
- What Services are common to every GOLE?
- What service are relevant for future GOLE?
- Where do GOLE evolve in the future?
- Is there a way to simplify GOLE and operations?
- What are the impact of the change in emphasis from SONET centric to Ethernet centric?

Deliverable

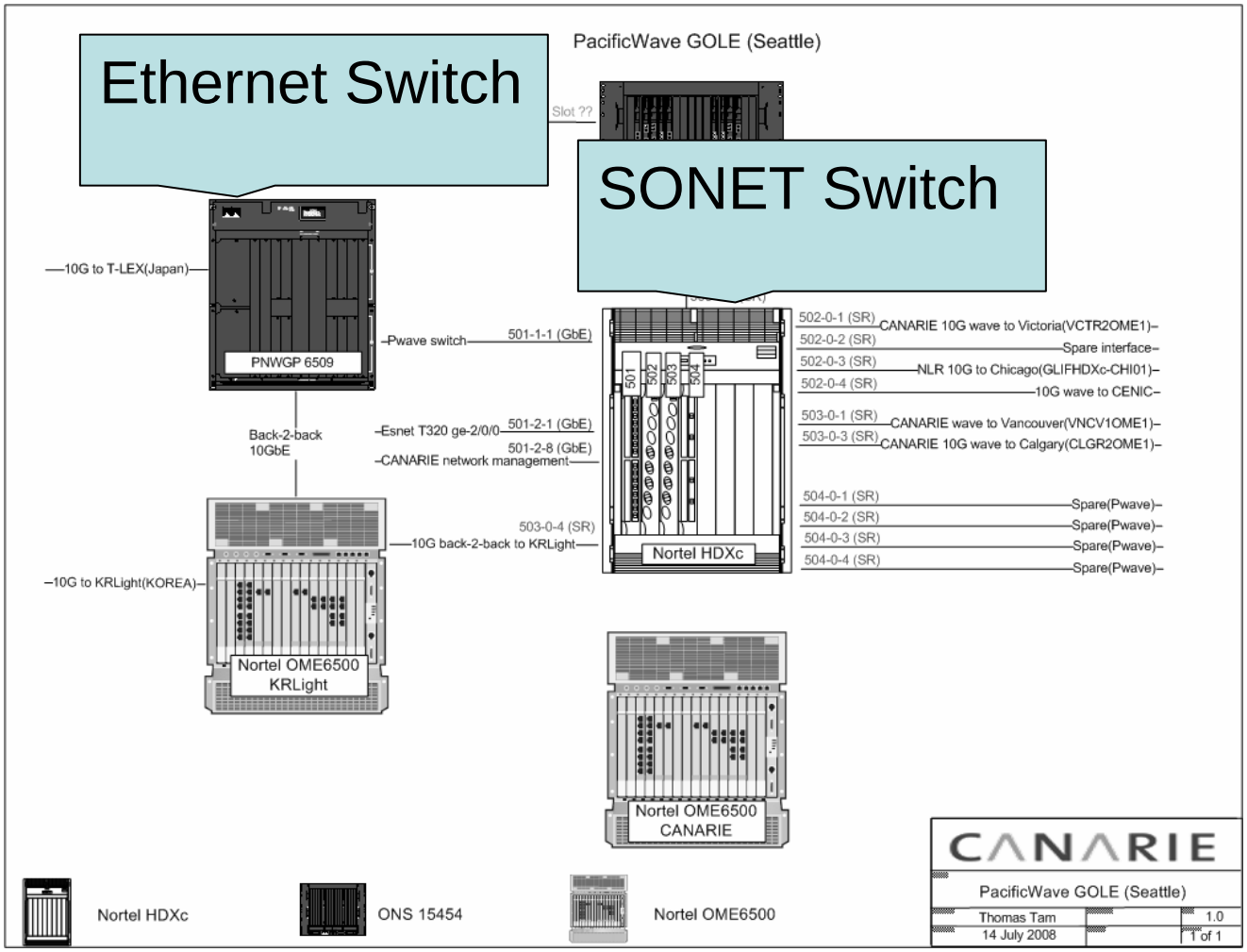
1. Survey of GOLE architectures and supported services.
2. Survey of requirements for future GOLE.
3. Segmentation of requirements into base services and extended services.
4. Reference architecture for the GOLE.
5. Roadmap the evolution of GOLE services.

The Timeline Proposed

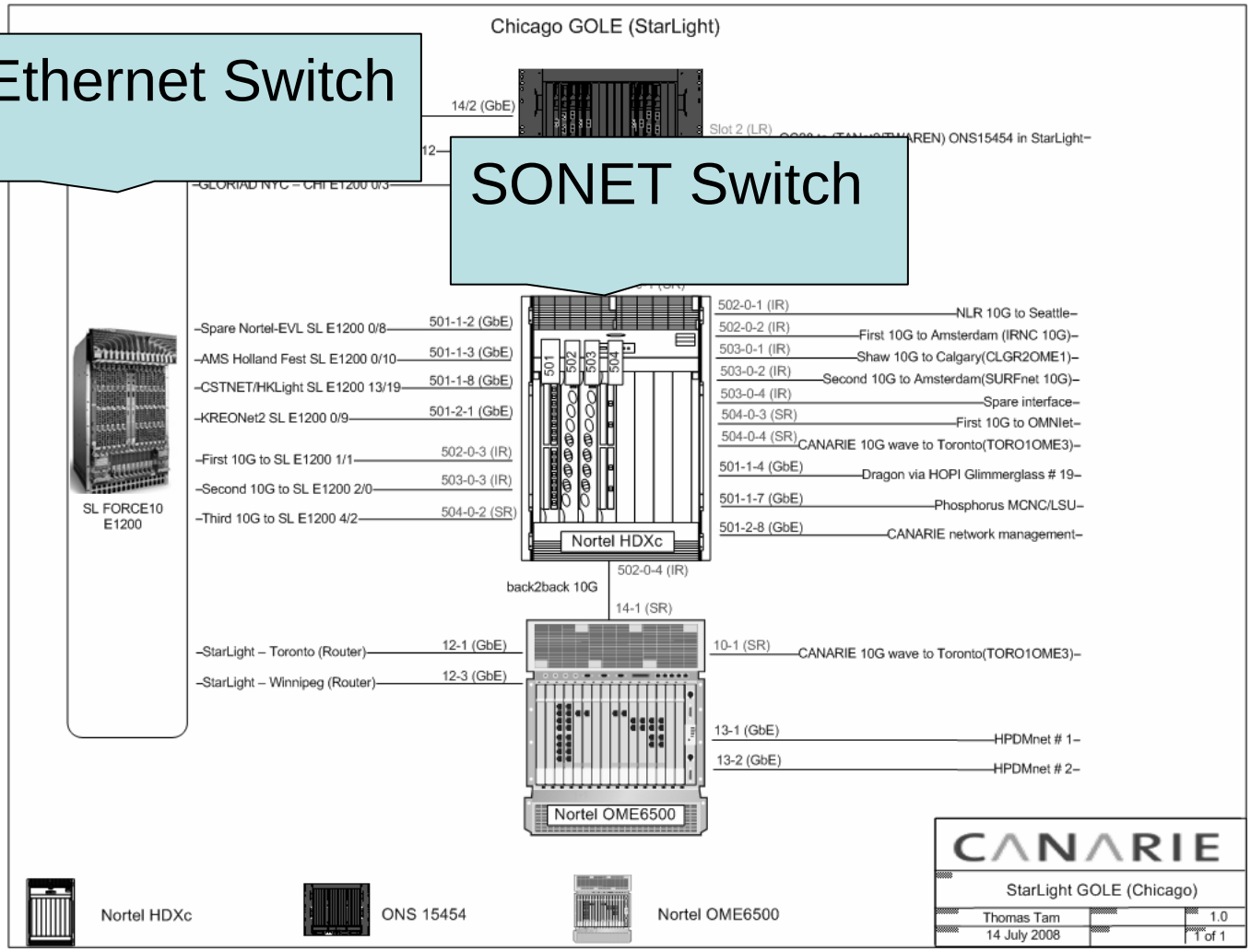




Seattle GOLE Design



Chicago GOLE Design



The Issue

- HDXc
- Manufacture discontinue effective date: June 30, 2009.

Problems:

1.Expansion hampered
2.Early architecture
3.End of support on the horizon

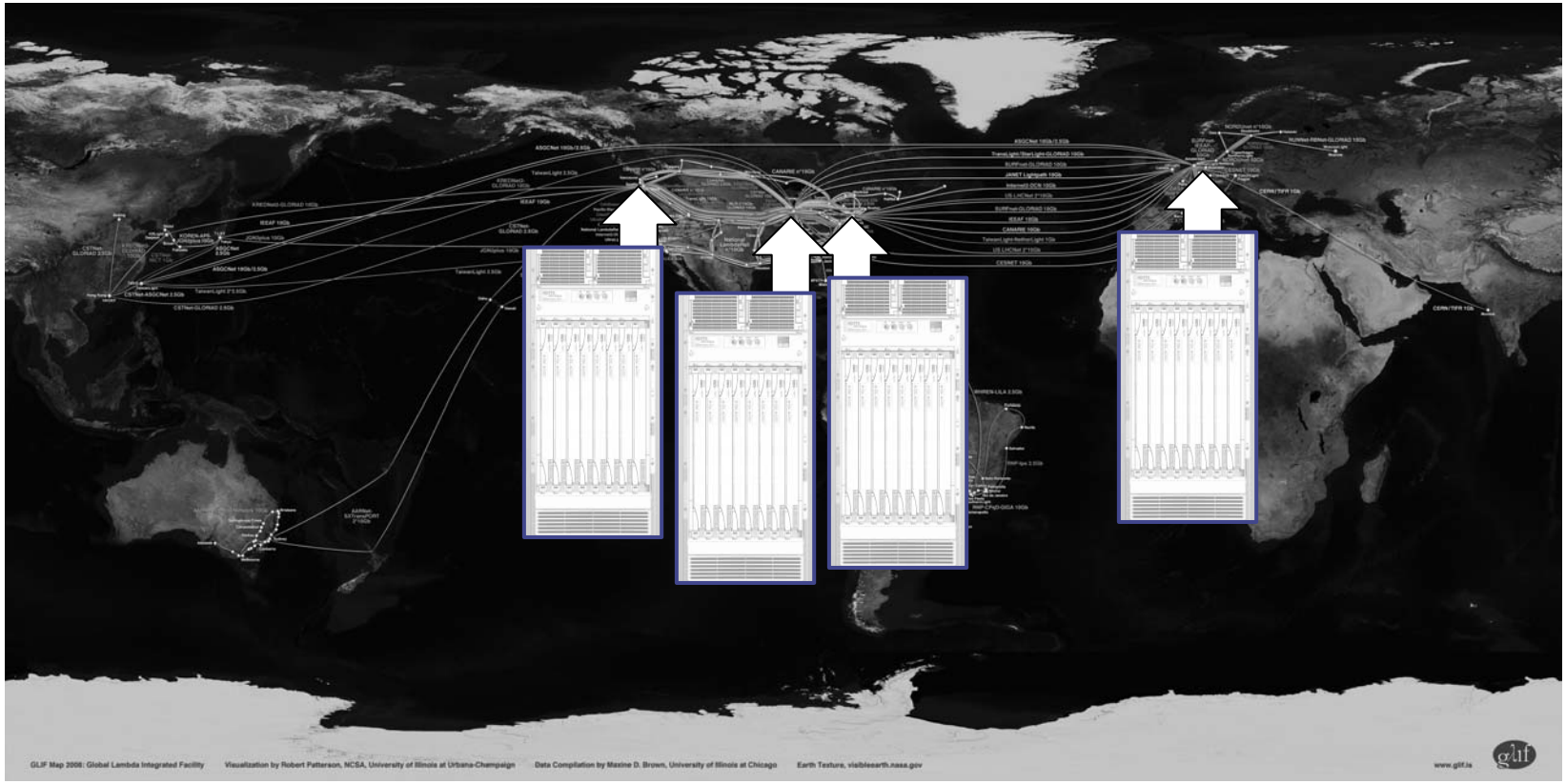
Need:

1.Architecture and feature definition
2.Finance for the GOLE refresh
3.Replacement timeline
4.Equipment and platform

Opportunities:

1.Modern reference GOLE Architecture (L0-L2)

HDXc in the GLIF



Purpose

Fonction of a GOLE:

1. Enable Traffic Exchange amongs Peers
2. Adapt data/traffic formats when necessary

GOLE Services
-Draft-

CURENT

1. SONET
2. Ethernet (1G, 10G WAN, 10G LAN)
3. VLAN Tagged Ethernet
4. IP Over Ethernet

FUTURE

1. OTN
2. MAC-in-MAC
3. Other Carrier Ethernet schema
4. Dynamic Control
5. Ethernet over MPLS

MPLS evolving as the as the core switching of the GOLE?

Service Matrix

To / From	WDM (multiple λ)	Single λ, any bitstream	SONET/ SDH	1 Gb/s Ethernet	LAN PHY Ethernet	WAN PHY Ethernet	VLAN tagged Ethernet	IP over Ethernet
WDM (multiple λ)	cross-connect multicast, regenerate, multicast	WDM demux	WDM demux*	WDM demux *	WDM demux *	WDM demux *	WDM demux *	WDM demux *
Single λ, any bitstream	WDM mux	cross-connect multicast, regenerate, multicast	N/A *	N/A *	N/A *	N/A *	N/A *	N/A *
SONET/SDH	WDM mux	N/A *	SONET switch, +	TDM demux *	TDM demux[6]	SONET switch	TDM demux *	TDM demux *
1 Gb/s Ethernet	WDM mux	N/A *	TDM mux	aggregate, Ethernet conversion +	aggregate, eth. convert	aggregate, Ethernet conversion	aggregate, VLAN encap	L3 entry *
LAN PHY Ethernet	WDM mux	N/A*	TDM mux[6]	aggregate, Ethernet conversion	aggregate, Ethernet conversion +	Ethernet conversion	aggregate, VLAN encap	L3 entry *
WAN PHY Ethernet	WDM mux	N/A *	SONET switch	aggregate, Ethernet conversion	Ethernet conversion	aggregate, Ethernet conversion +	aggregate, VLAN encap	L3 entry *
VLAN tagged Ethernet	WDM mux	N/A *	TDM mux	aggregate, VLAN decap	aggregate, VLAN decap	aggregate, VLAN decap	Aggregate, VLAN decap & encap +	N/A
IP over Ethernet	WDM mux	N/A *	TDM mux	L3 exit *	L3 exit *	L3 exit *	N/A	Store & forward, L3 entry/exit+

BACKUP

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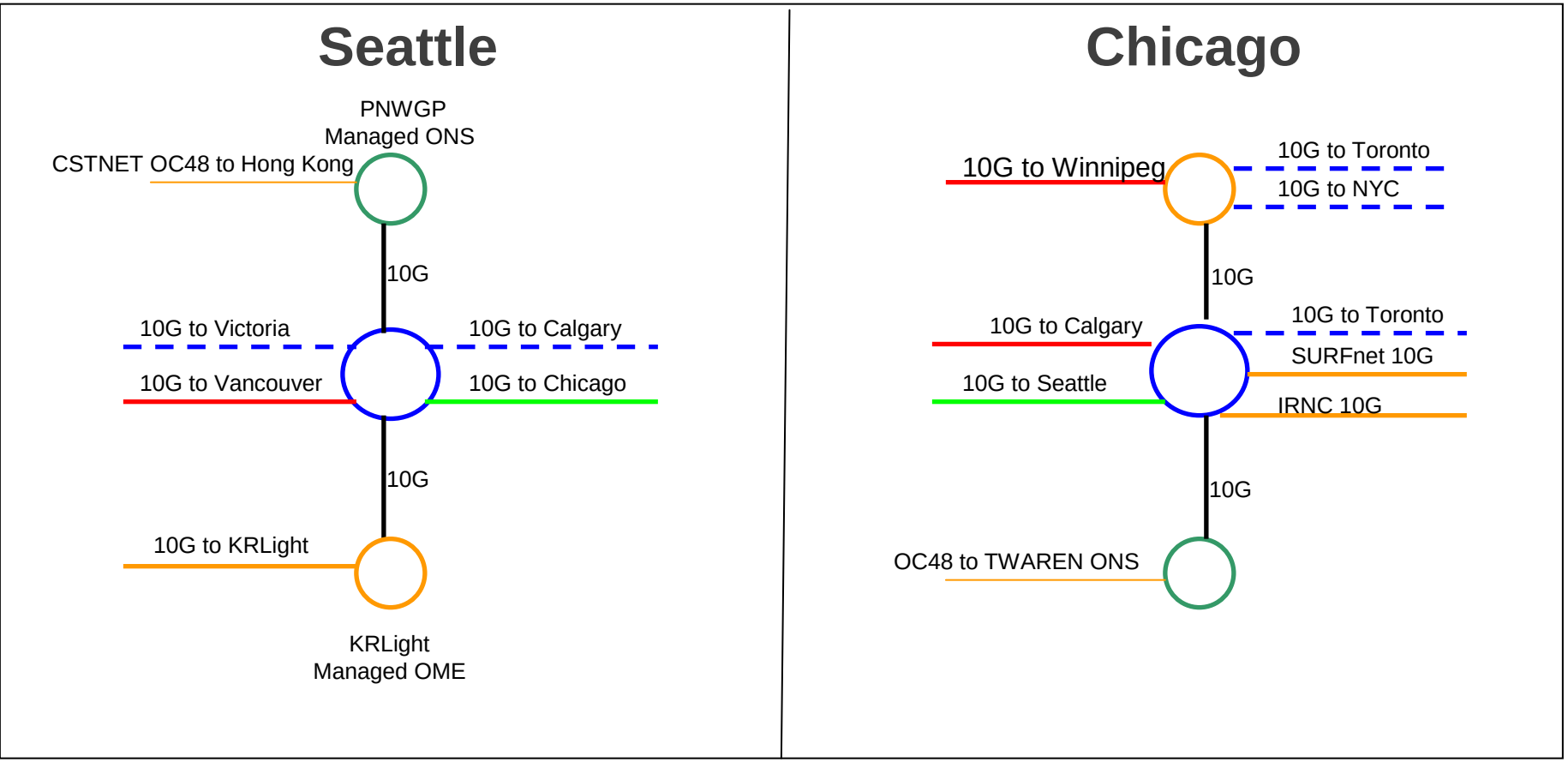
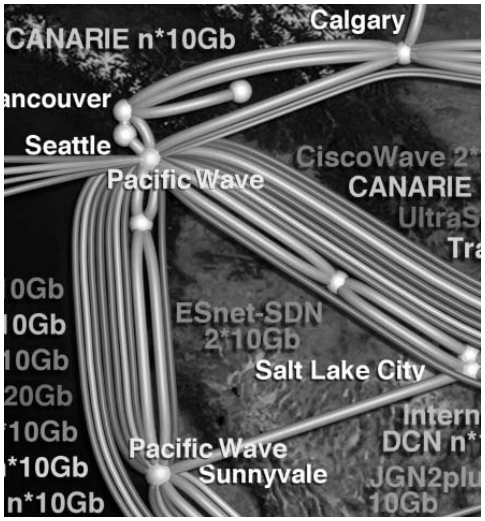
Purpose


GLIF Map 2008: Global Lambda Integrated Facility
Visualization by Robert Patterson, NCSA, University of Illinois at Urbana-Champaign
Data Compilation by Maxine D. Brown, University of Illinois at Chicago
Earth Texture, visibleearth.nasa.gov
www.glif.is

Seattle and Chicago GOLEs



Purpose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CANARIE
ESnet-SDN
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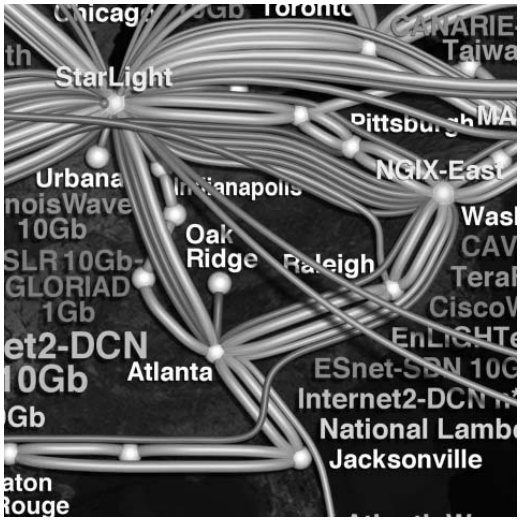
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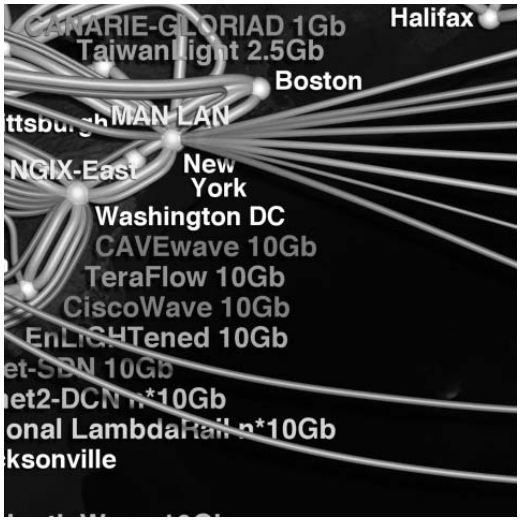
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