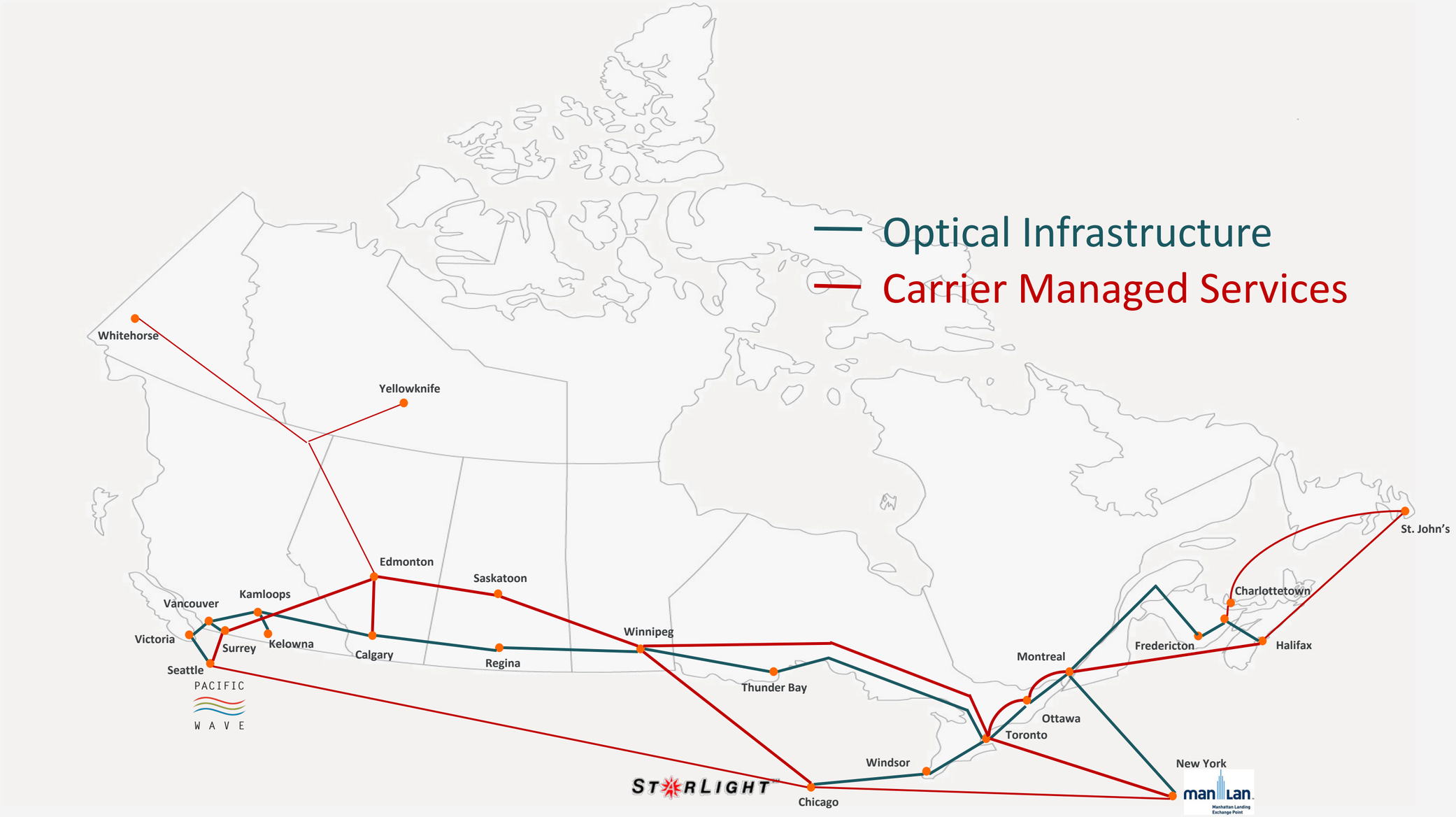
CANARIE National and International Networking Initiatives

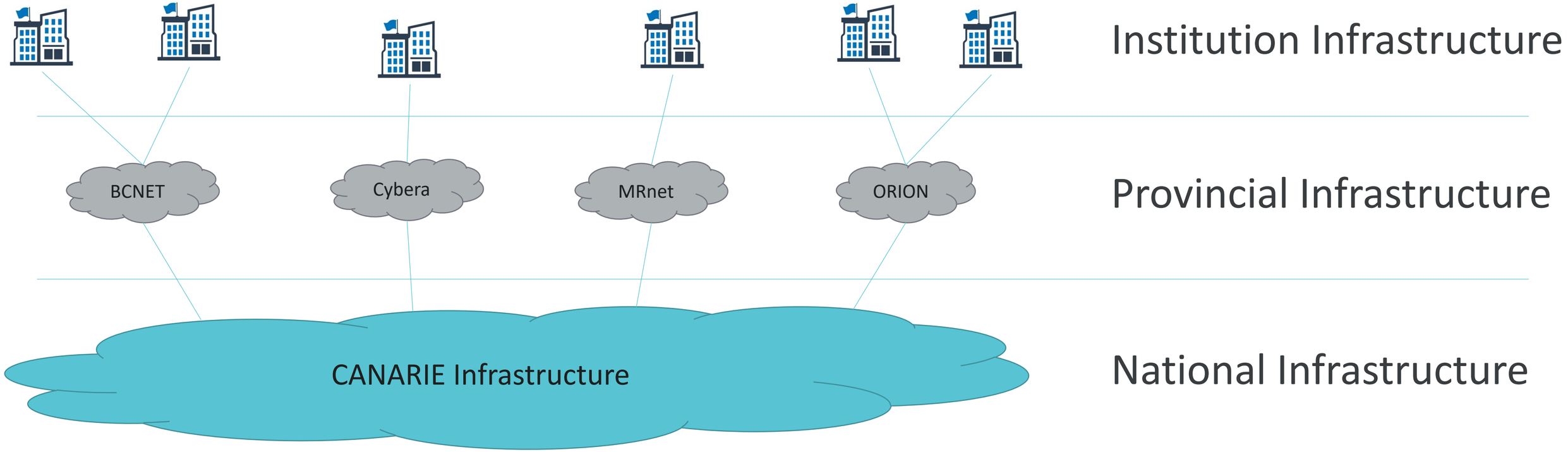
Thomas Tam

AmRP meeting, October 11 2022

CANARIE Network Infrastructure



NREN Network Infrastructure



Network Based Services

CANARIE R&E Internet Service

- General IP traffic
- Uncongested Infrastructure
- Available to R&E community
- R&E focused

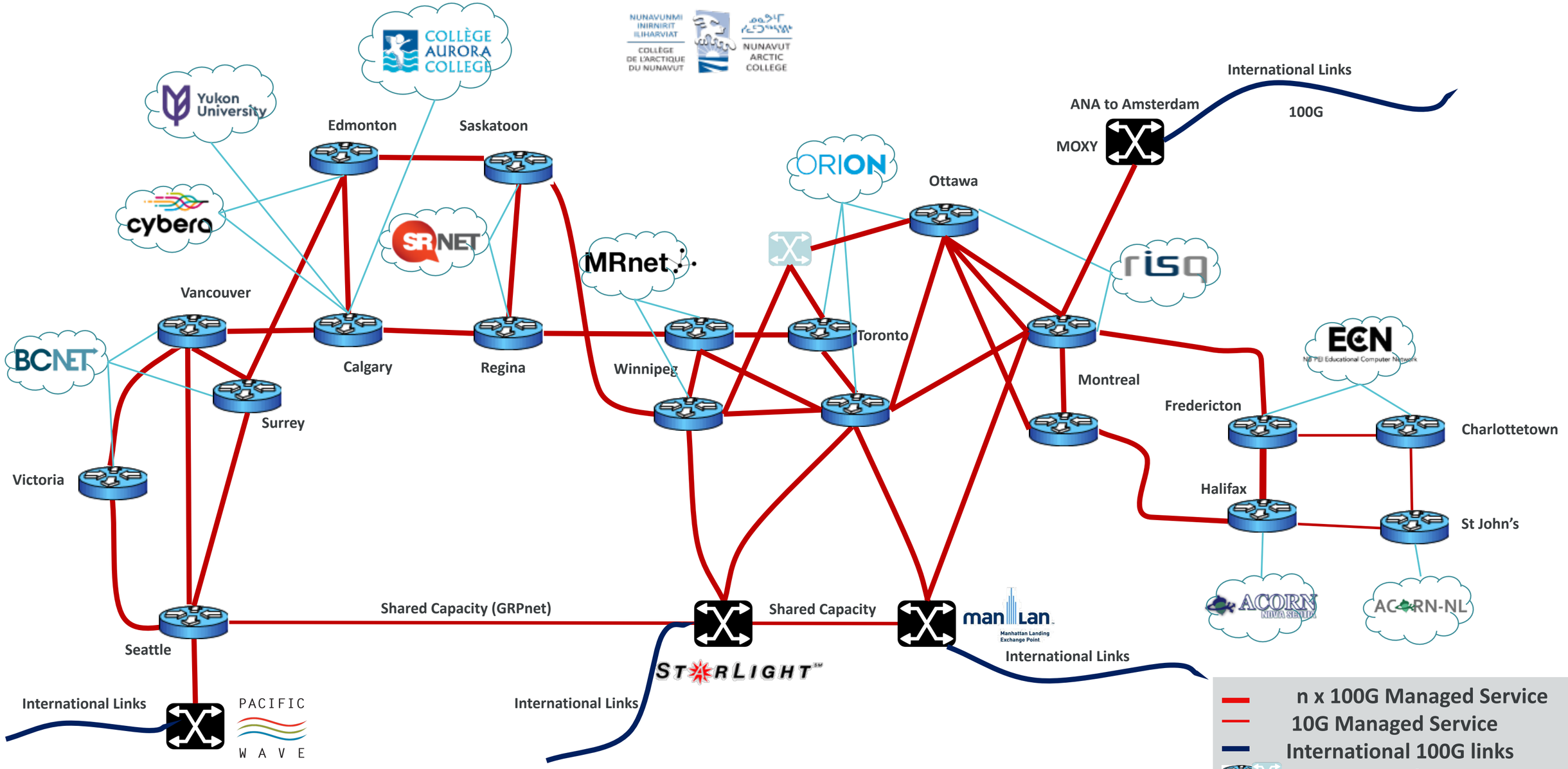
Connection Service (Lightpath Service)

- Offering dedicated connections
- Allowing users to build private infrastructure

Content Delivery Service (CDS)

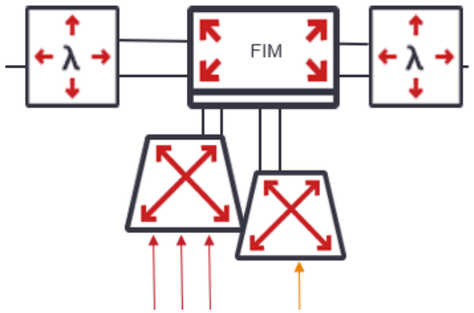
- High-speed access to content providers
  - Google, Youtube, Microsoft, facebook, Amazon, Yahoo, Box, etc..

CANARIE Core Network – Service Layer

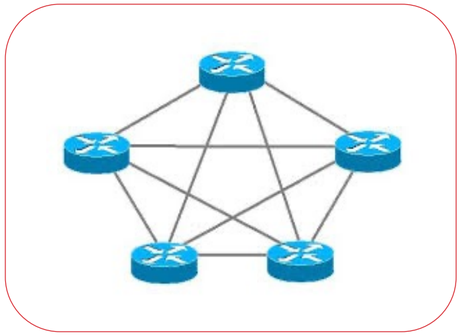


CONFIDENTIAL

Network Initiatives



Optical System Refresh

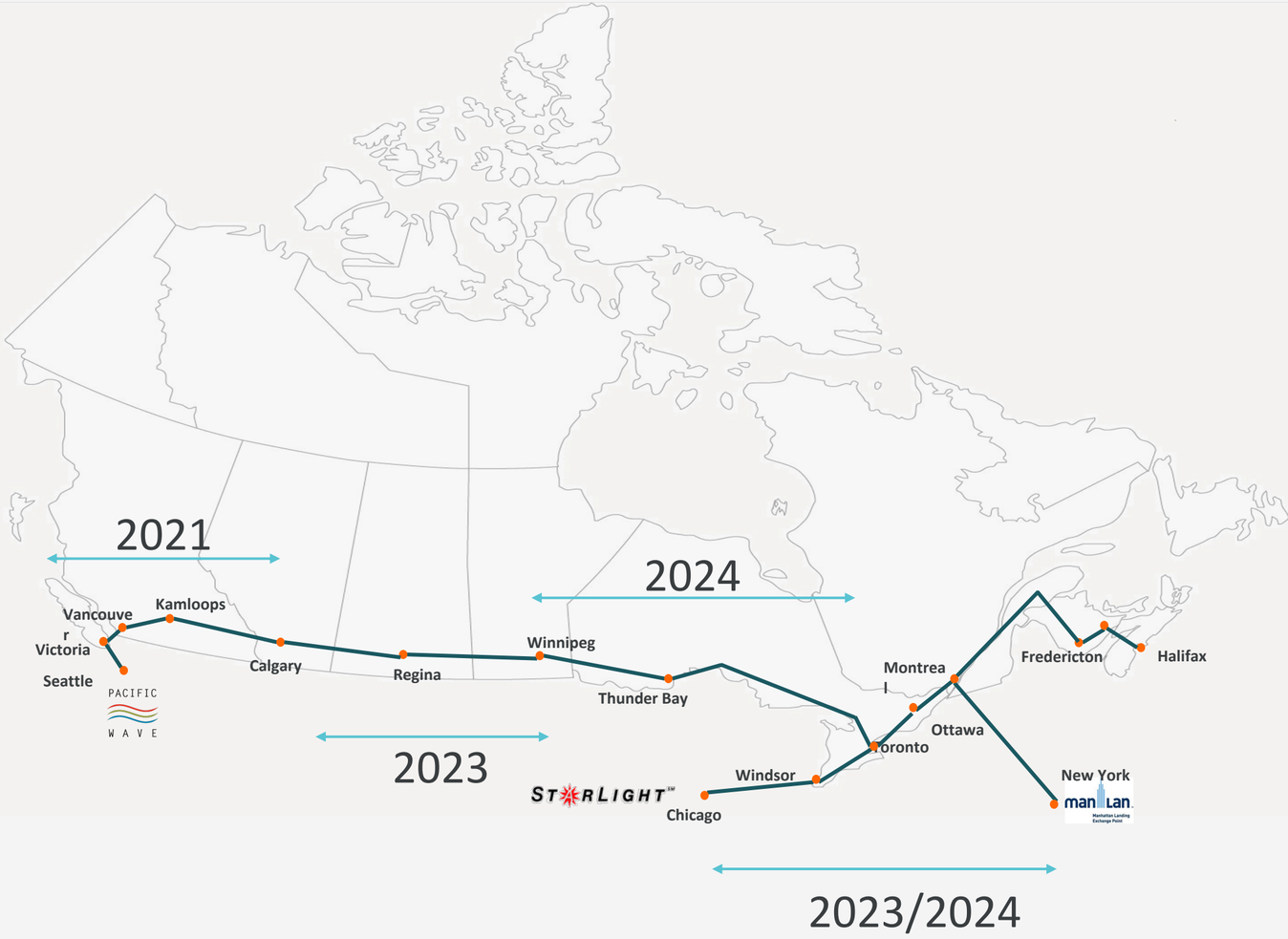


Router (Service Layer) Upgrade

Automation and Programmability

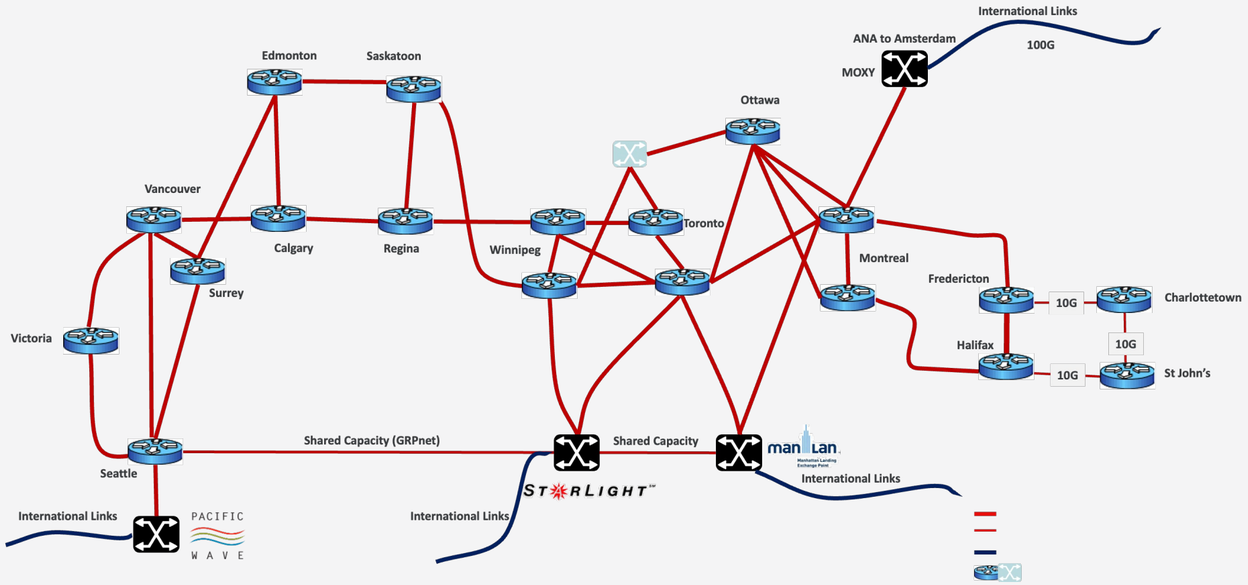
Optical System Refresh

- Long-haul fibre renewals in the next few years
- System upgrades in conjunction with fibre renewals
- Replacing fixed Grid optical systems with CIENA Gridless Reconfigurable Line System (RLS)
- Western section was completed in late 2021.



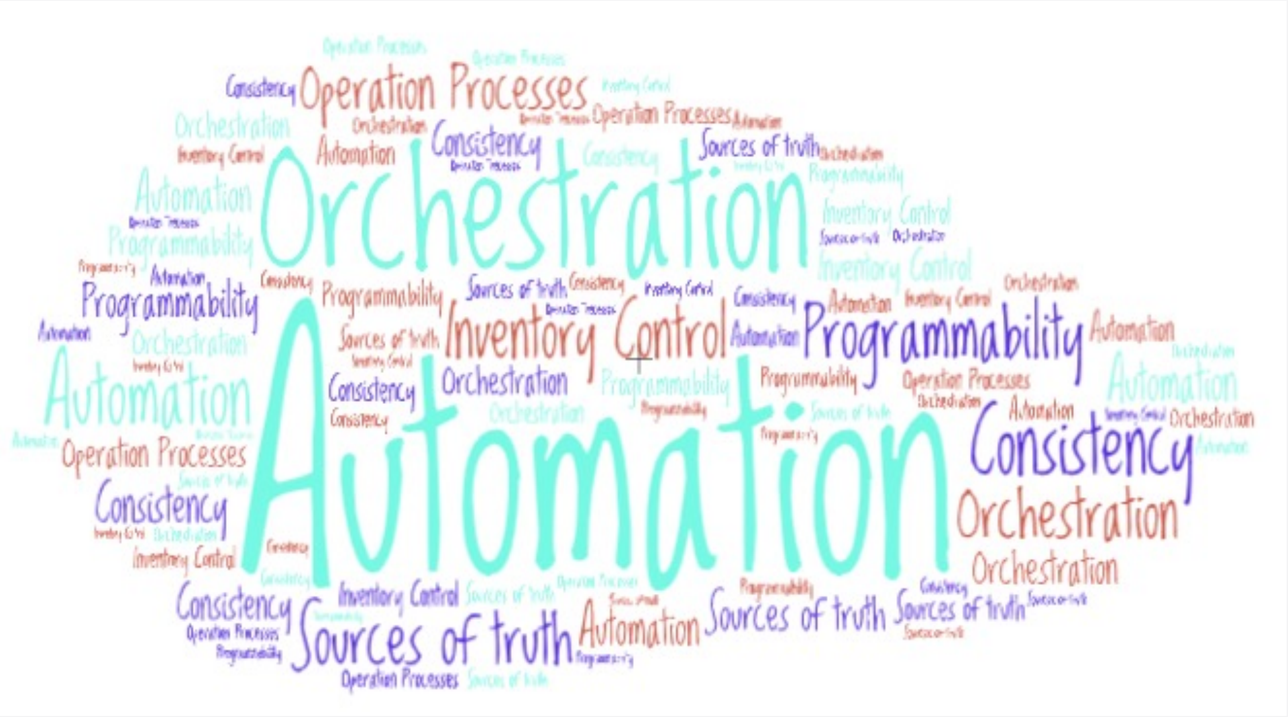
Router (Service Layer) Upgrade

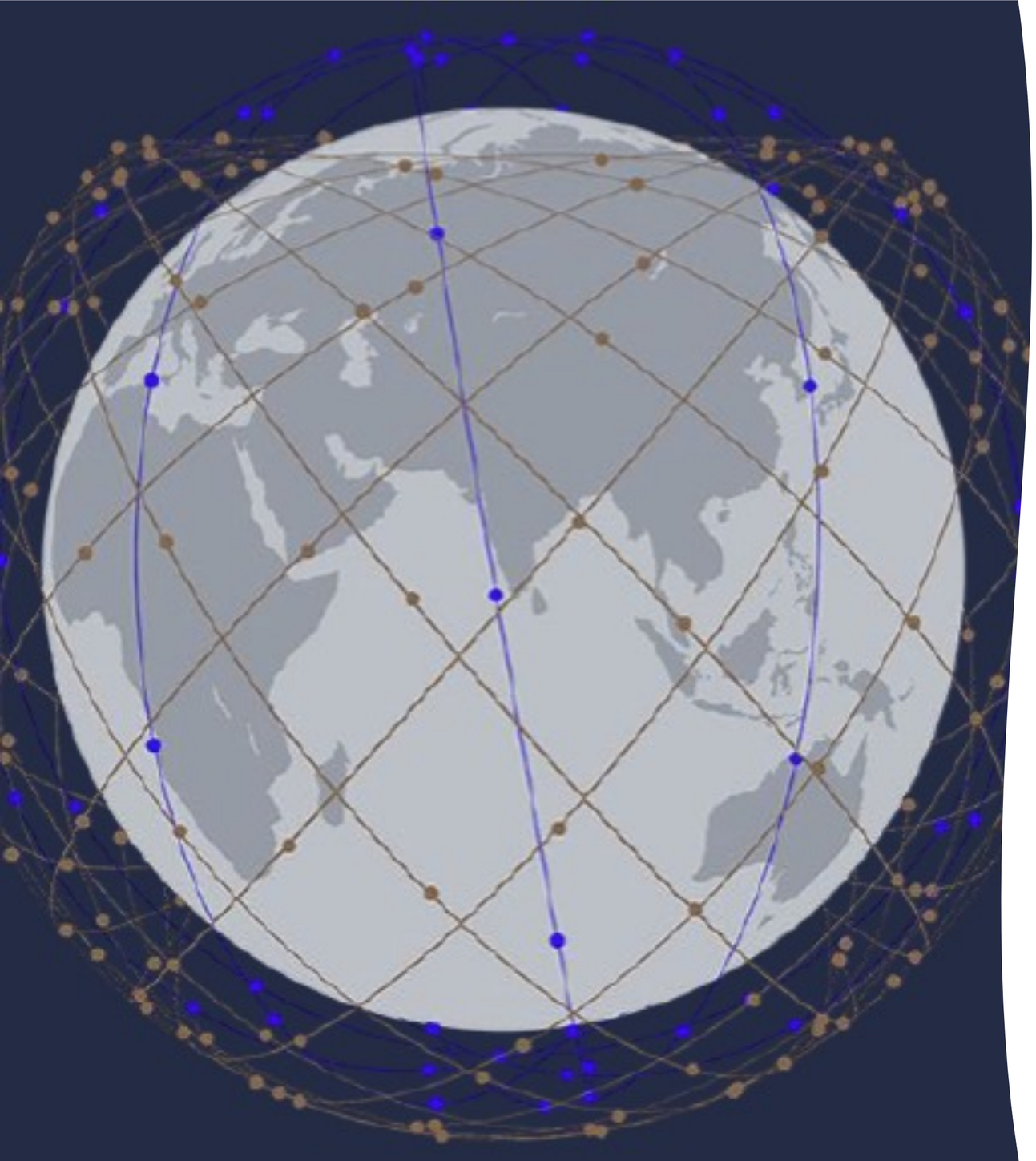
- Existing Juniper MX routers only support up to 100G
- New routers will support 10G, 100G, and 400G
- Deploying EVPN and Segment Routing
- Exploring 400G ZR/400G ZR+ Optics
- Starting upgrade work in 2023/2024
- Upgrading perfSONAR to 100G



Automation and Programmability

- **Automation**
  - Redefine network operation processes and sources of truth
    - NETBOX
  - Network operations and monitoring
  - Integration of Network Service Portal
  - Service provisioning
    - Multi-domain orchestration
  - Events correlation
- **Programmability**
  - ???



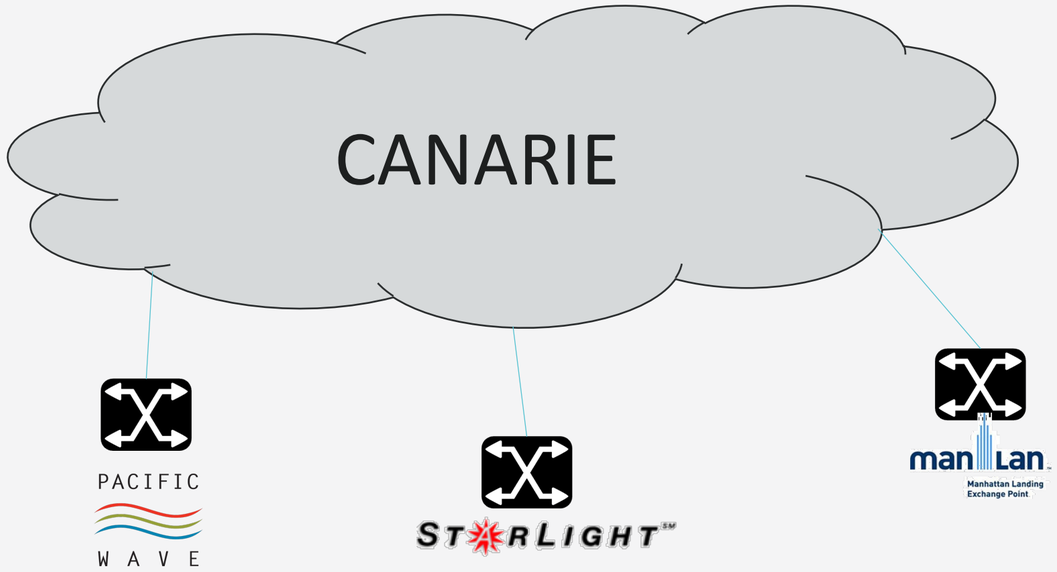


Low Earth Orbit (LEO)

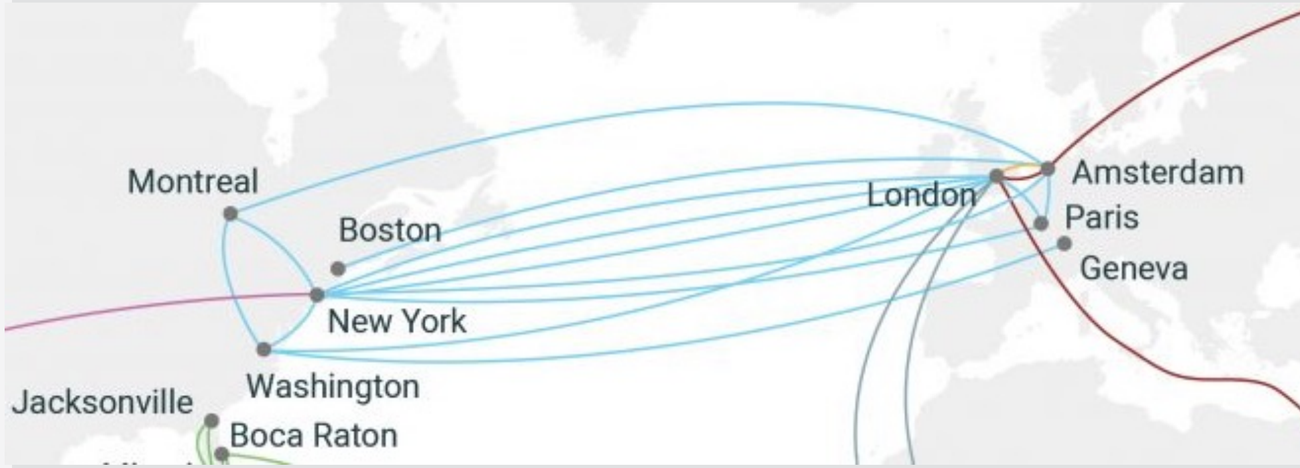
- Few NRENs have engaged with LEO service providers
- Specific interests in Polar Research activities
- CANARIE’s interest in connecting northern research and education facilities.

International Connectivity

Connectivity through US



Advanced North Atlantic (ANA) Multi-100G Links



A
Q

canarie

canarie.ca | @canarie_inc

thomas.tam@canarie.ca