

KREONET/KREONet2 and Global Research Network for Accelerators and Detectors in Asia (AFAD 2024)

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KREONET Center

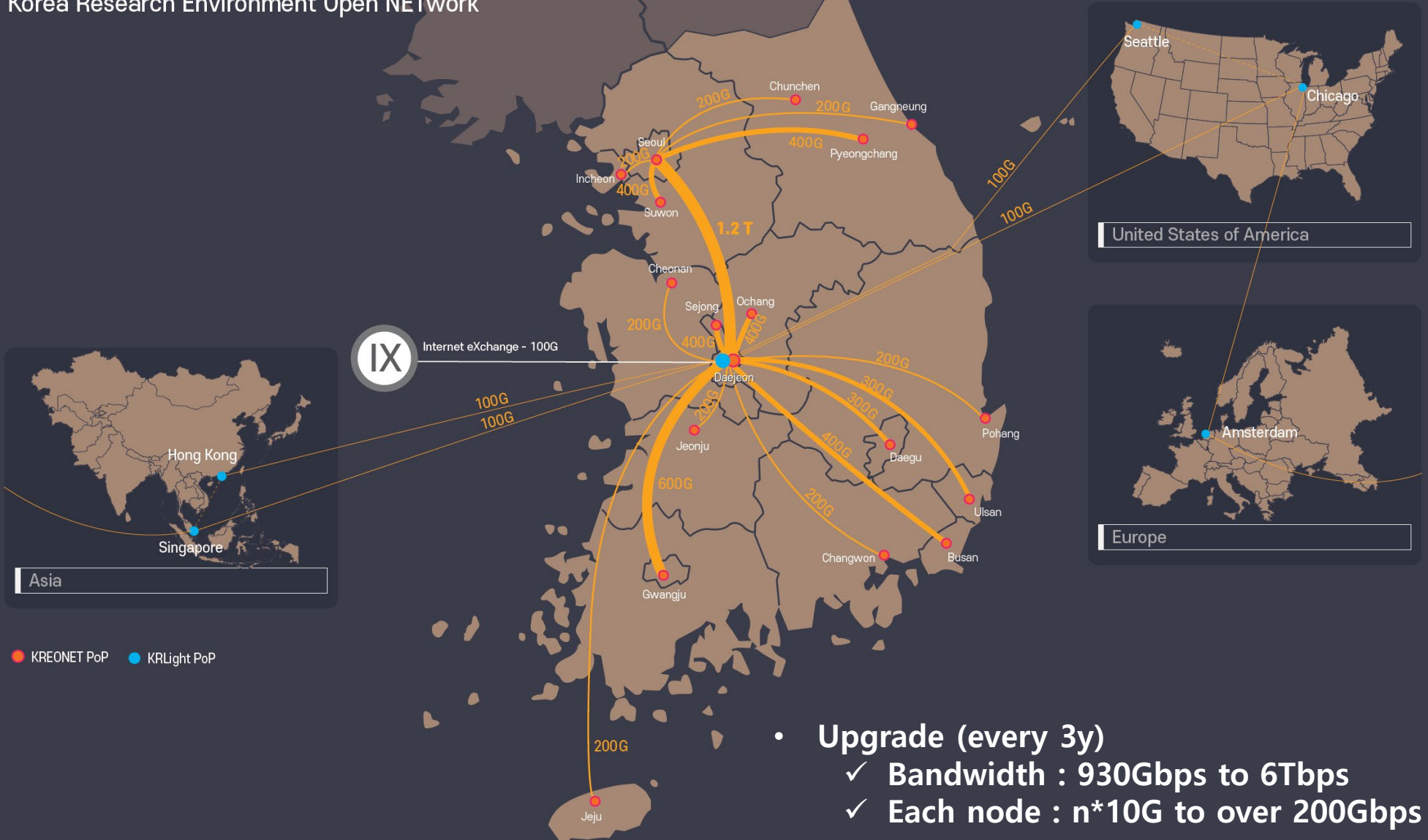
Korea Institute of Science and Technology Information (KISTI)

KREONET/KREONet2(ASI237/ASI7579)

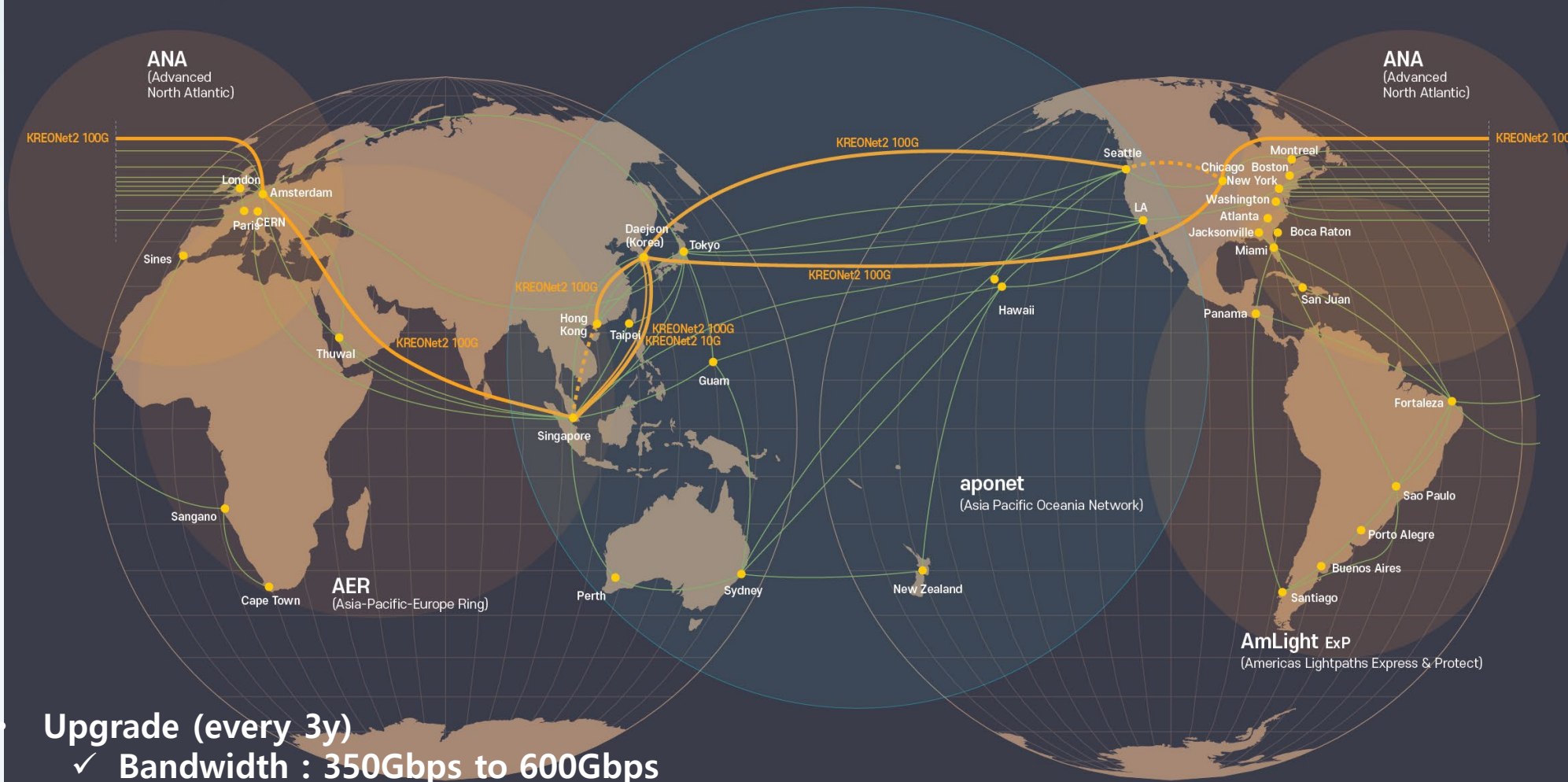
- (1988) started as The Korean National Science & Research Network.
- (2005) As a Core Member of GLORIAD project,
Started international research network service
- (2023) 6Tbps Domestic backbone with 18 Regional GigaPoPs
(Seoul, Deajeon, Gwangju, Busan, Changwon and so on)
- (2023) 600Gbps International backbone with 6 GigaPoPs
(Daejeon, Chicago, Seattle, HongKong, Singapore, Amsterdam)
- Support about 200 R&E organizations :
Government Research Institutes, Universities, Libraries and so on.
- Provide 365*24 NOC (Network Operation Center) Service
- Connected with Internet exchanges (KT, Sejong Telecom, Cogent, SG.GS, AMSIX)
and L2 direct peering with Clouds(Google, Amazon, Microsoft)
- Provides L1 LightPath service, L2 MPLS-TP, L3 IP service, VPN using Segment routing.

Map of KREONET 2023

Korea Research Environment Open NETwork



Map of KREONET2 2023

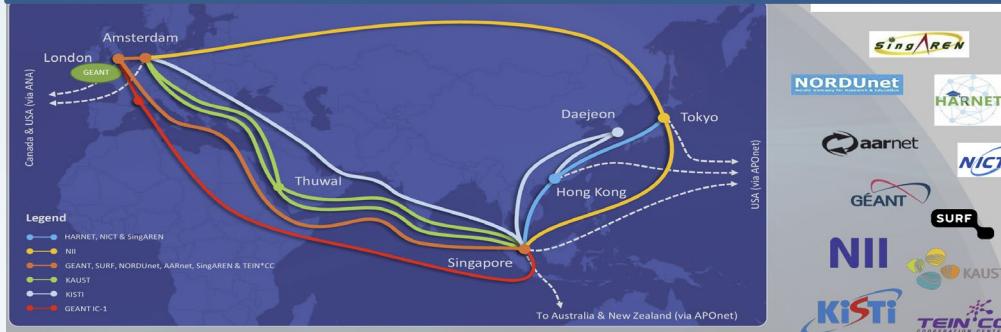


Upgrade (every 3y)

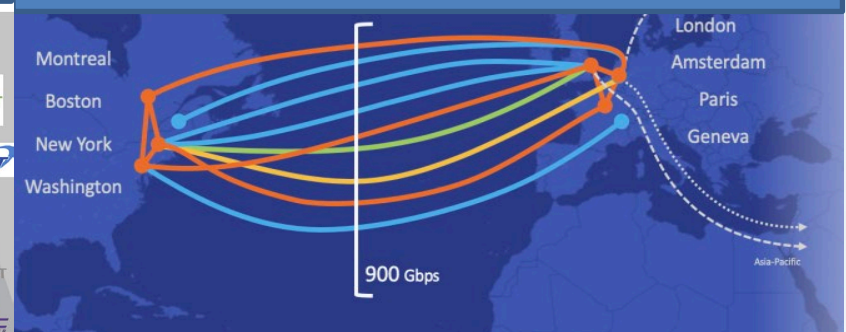
- ✓ Bandwidth : 350Gbps to 600Gbps
- ✓ New Global 100G ring
- ✓ Singapore PoP

Global Research Network Consortium

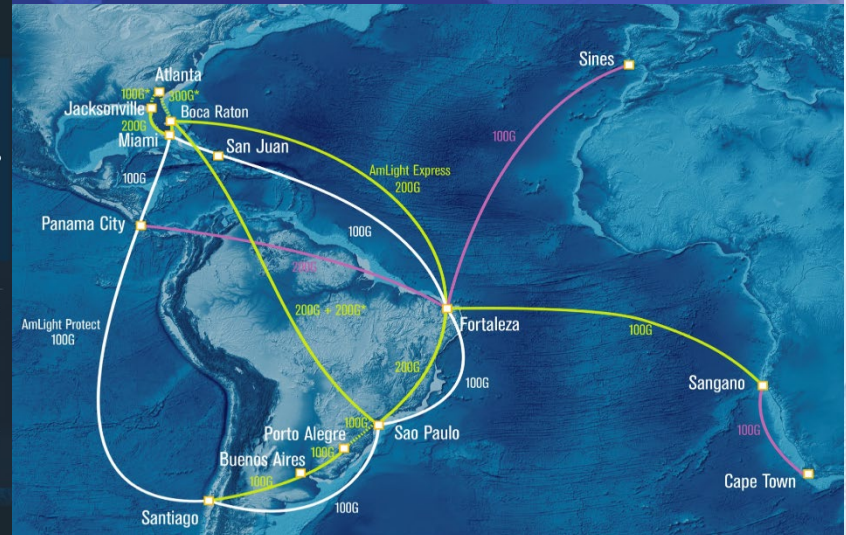
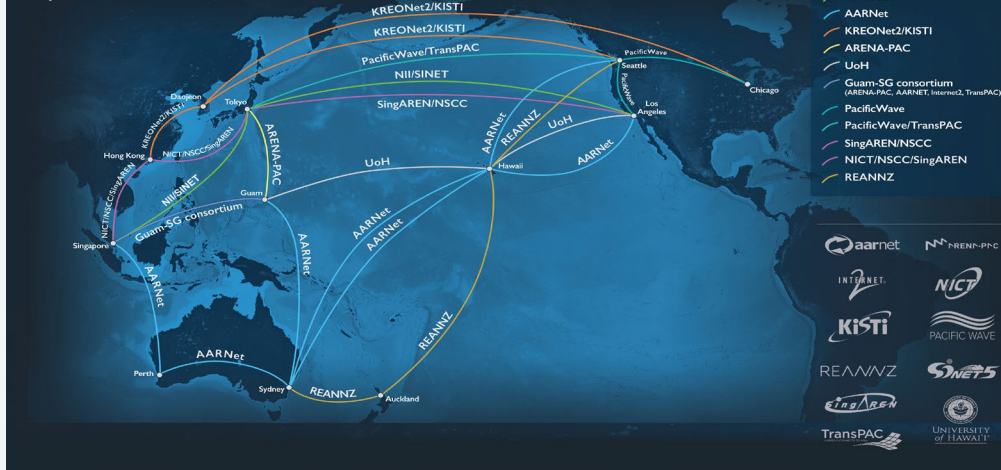
AER(Asia Pacific Europe Ring)



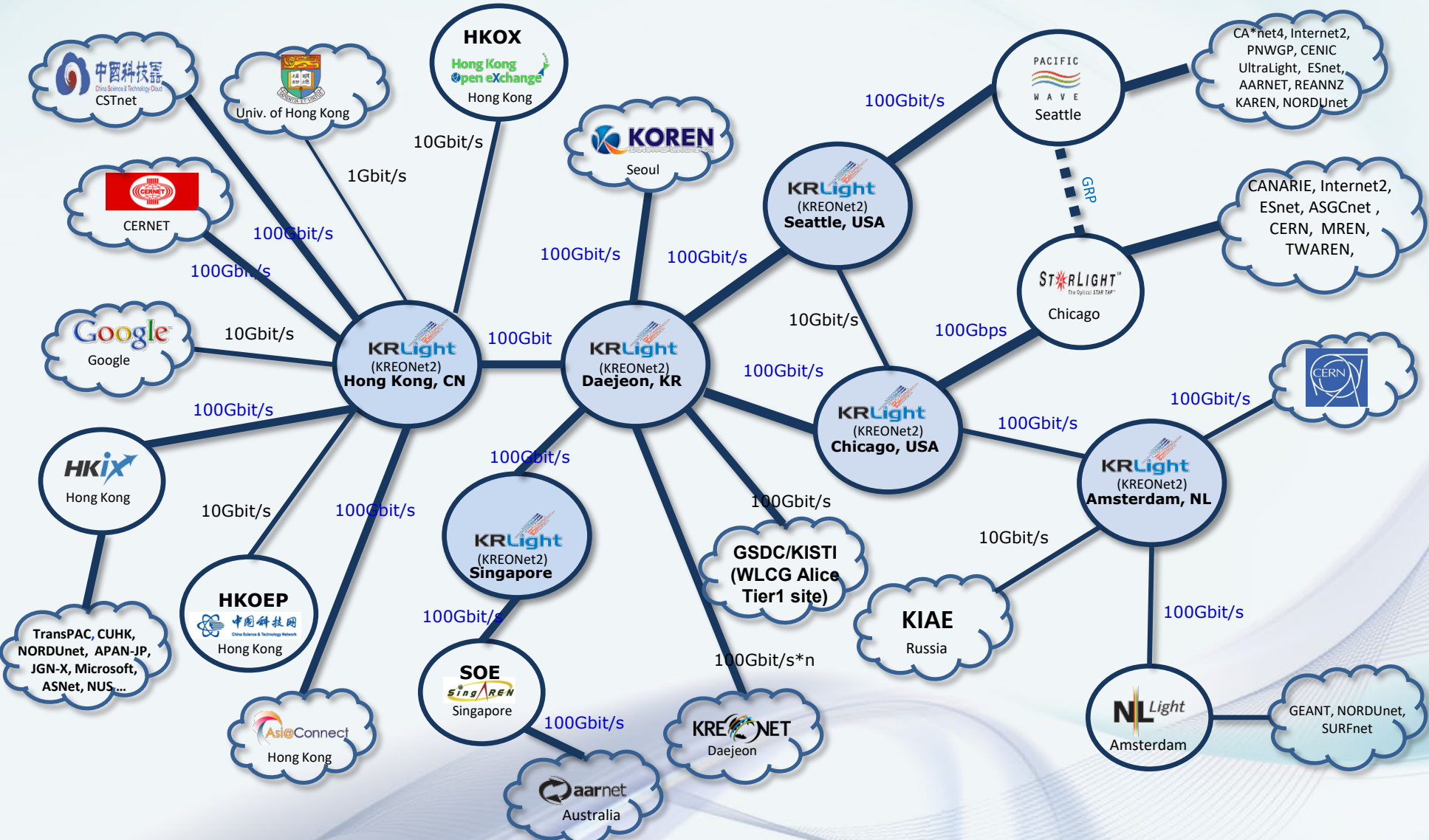
ANA(Advanced North Atlantic)



aponet ASIA PACIFIC OCEANIA NETWORK (APOnet)

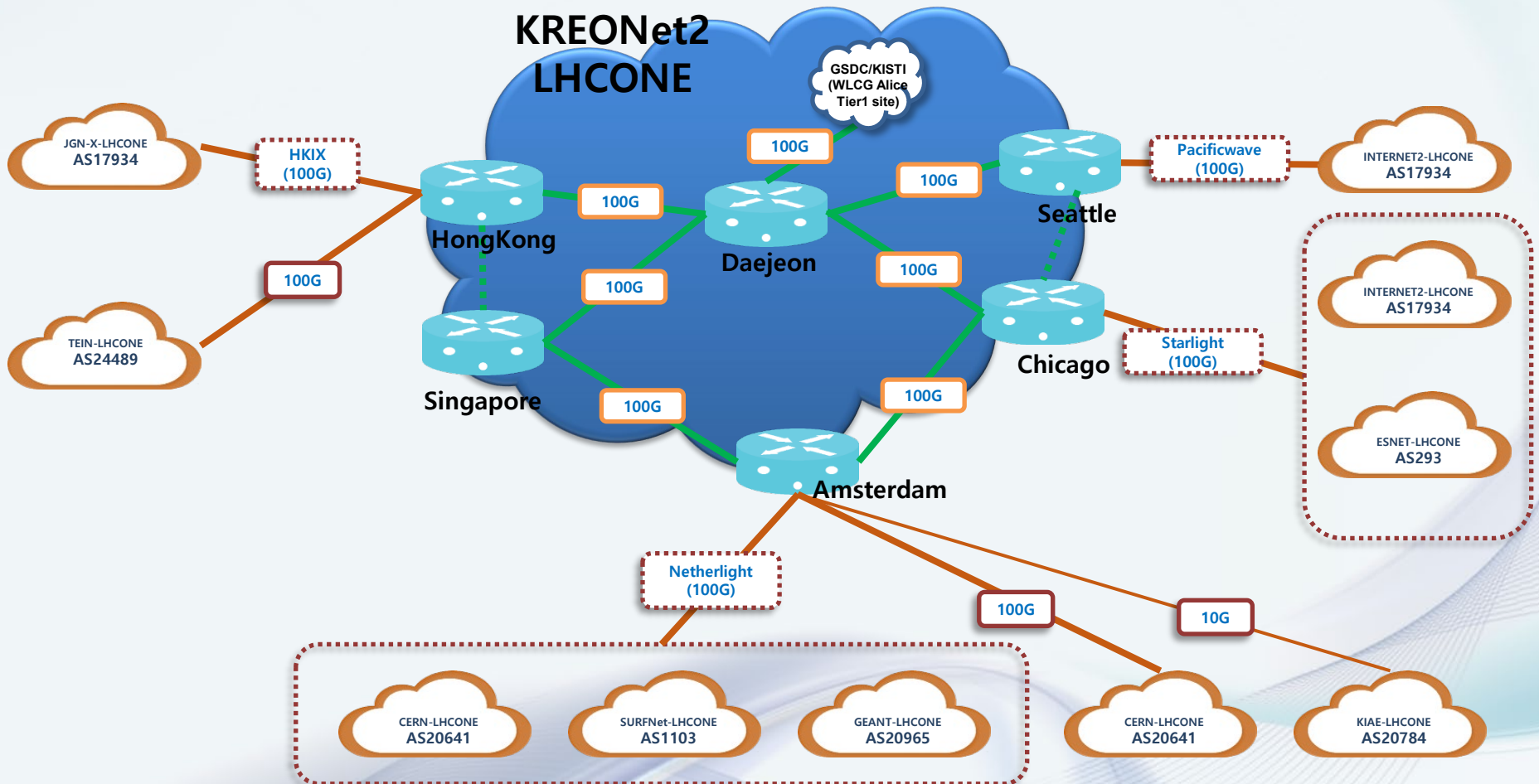


KREONet2 Peers



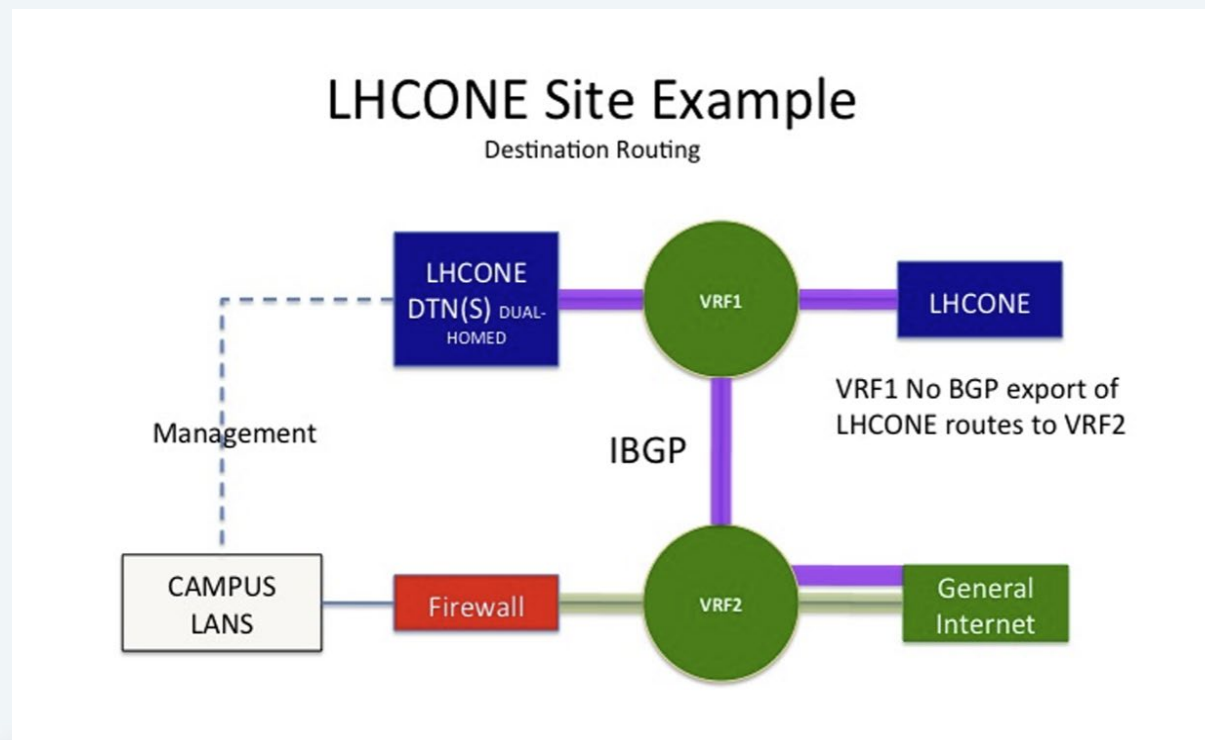
LHCONE on KREONet2(2024)

- LHCONE network is logical dedicate network for LHC Tier2 and Tier3 Center.
- LHCONE is faster and more secure(trusted-base).
- KREONET also support LHCONE.



LHCONE site example

- Firewalls slow down network performance
- Trust-based networks
- Only user IPs trusted by the community can use LHCONE
- Data from LHCONE can bypass the firewall and get in the campus network without compromising performance.



- <https://twiki.cern.ch/twiki/bin/view/LHCONE/WebHome>

SCION networks in KREONET

- SCION is one of future internet project. (production-level network)
- More Secure network based on path aware.
- We built SCION network over KREONet2.
- In SCION, you can have the same benefits without LHCONE.

Current SCIERA Connectivity (As of 2023)



Thanks for listening.

KREONET/KREONet2 Infra. Upgrade

	2019 - 2023.6, Current	2023.6 – 2026.5, New
Backbone Capacity	(Domestic) 930Gbps (Seoul-Daejeon 100G λ *3=300G) (International) 310Gbps	(Domestic) 6Tbps (Seoul-Daejeon 600G λ *2=1.2T) (International) 610Gbps
Wavelength (λ : Lambda)	(Domestic) 100Gbps Wavelength (International) 100Gbps Wavelength	(Domestic) 100/600Gbps Wavelength (International) 100Gbps Wavelength
VPN Service	L1 VPN + 802.1Q VLAN	L1 VPN + 802.1Q VLAN L2/L3 VPN (MEF3.0 + Segment Routing) MPLS, MPLS-TP
Protection	(Domestic) L1: 50ms protection (International) Manual or more than 10s (STP/RSTP)	(Domestic) L1/L3: 50ms protection (International) L3: SR TI-LFA, 50ms protection
# of PoPs	(Domestic) 17 Regional Center (International) 5 PoPs	(Domestic) + Peongchang Regional Center (18) (International) + Singapore PoP (6)
routes_prefix (FIB)	Half 1M	More than 2M (IPv4 4M, IPv6 2M)
others	(Domestic) PTP network (International) 100G Star topology	(Domestic) 5 Ring network + PTP network (International) 100G Global Ring topology