Deploying a Backbone in APAC

HOW WE FAILED, WHAT WE'VE CHANGED, WHAT WE'VE LEARNED

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PIERRE-YVES MAUNIER P.MAUNIER@F5.COM

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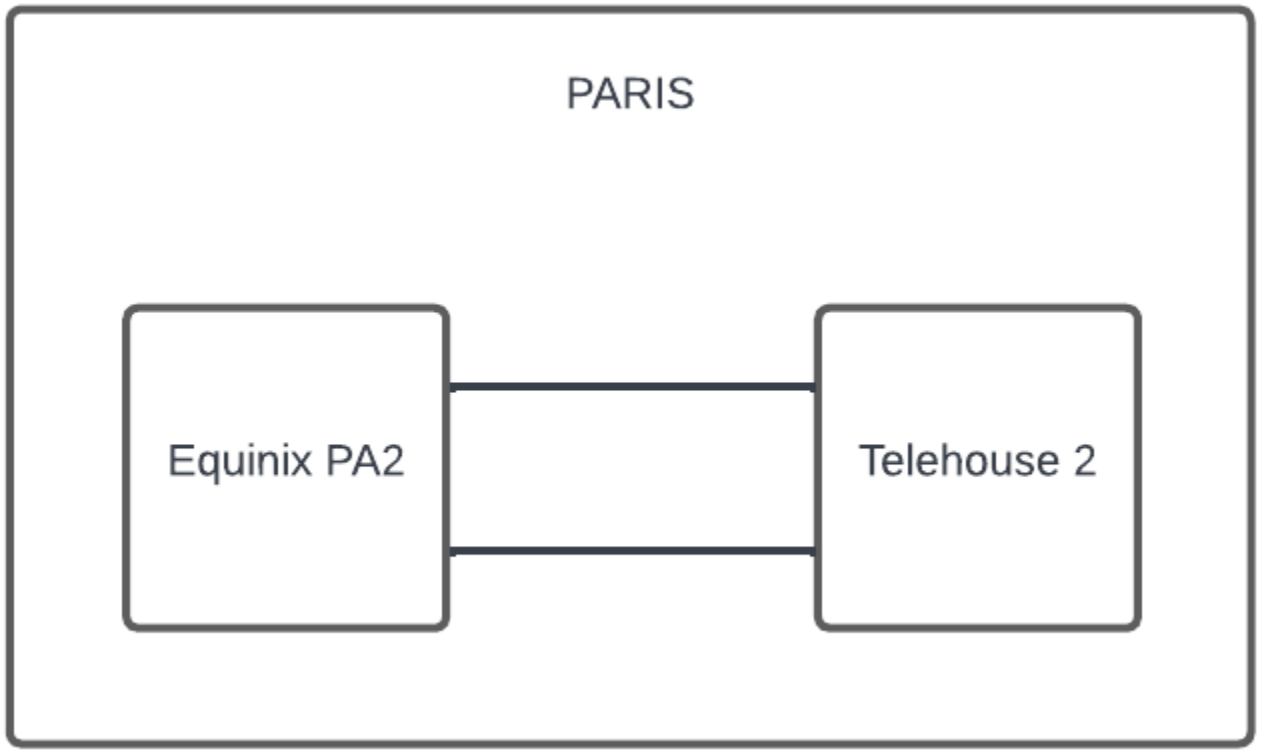
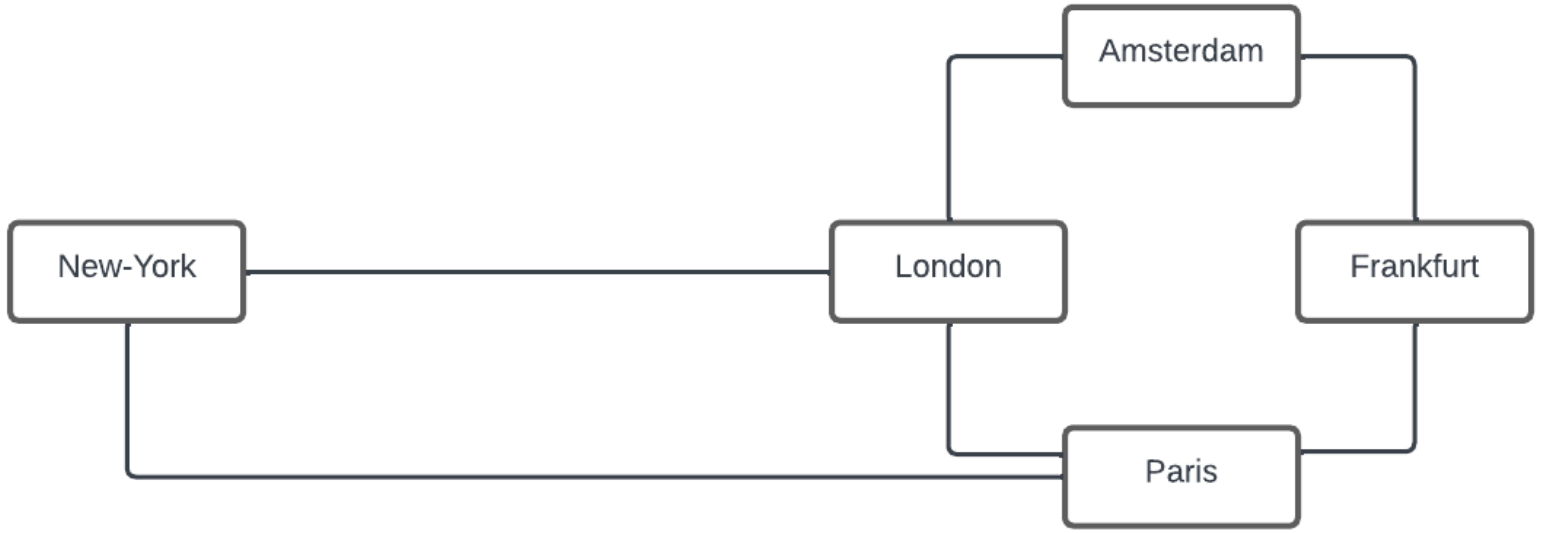
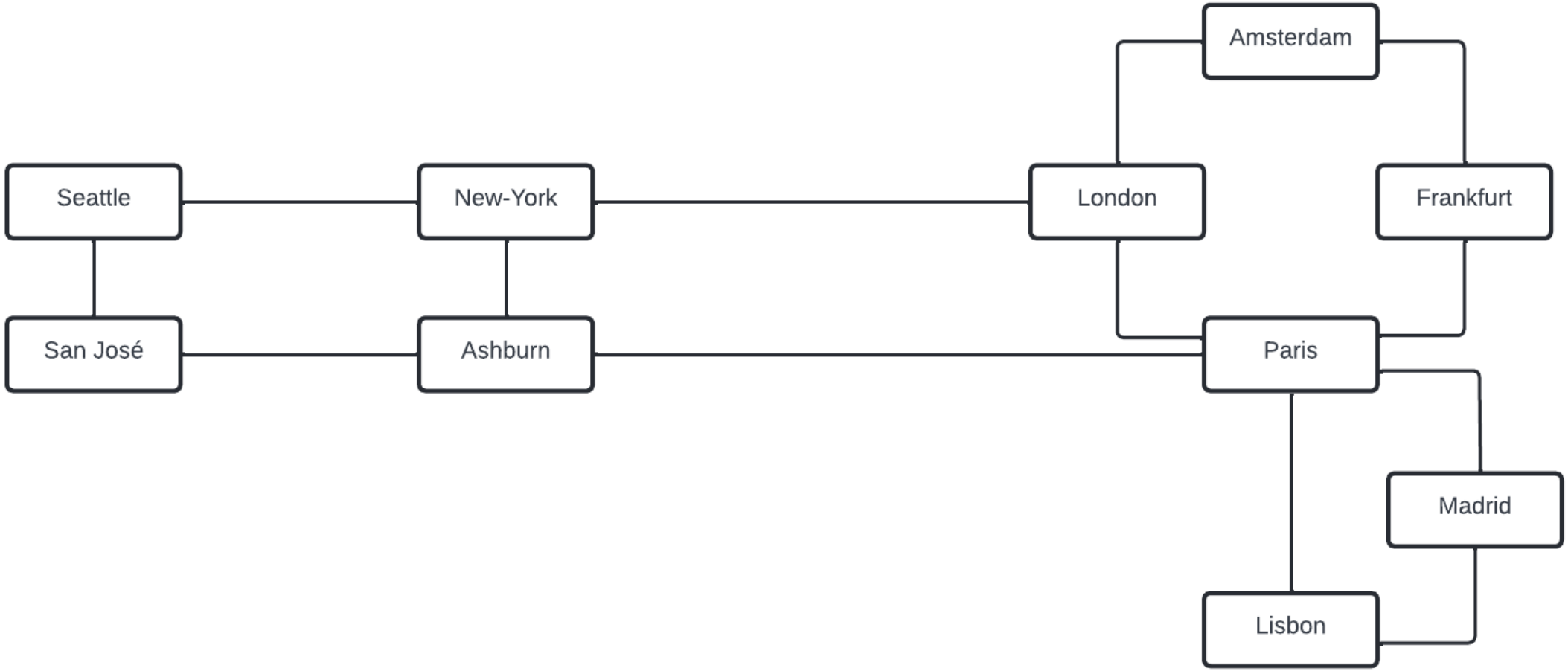


Backbone History



Backbone History



APAC deployment

APAC deployment

APAC Deployment

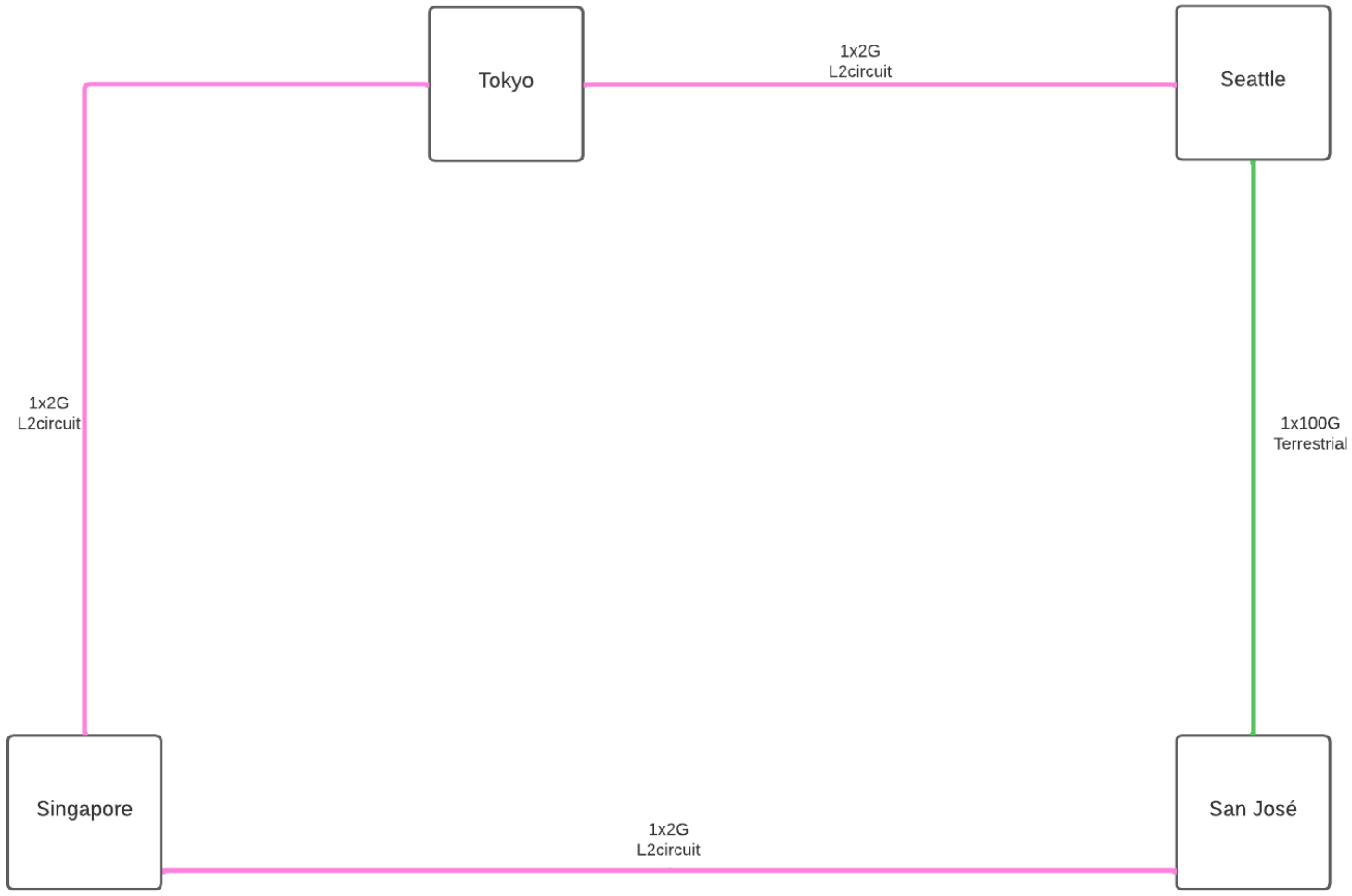
Q1-2020

Started with L2circuit with cost efficiency and resilience in mind

It was horrible : unreliable, frequent packet loss, hard down, latency increase etc

We worked with the provider to try to improve the situation with no results

After a few months we looked at other solutions



APAC Deployment

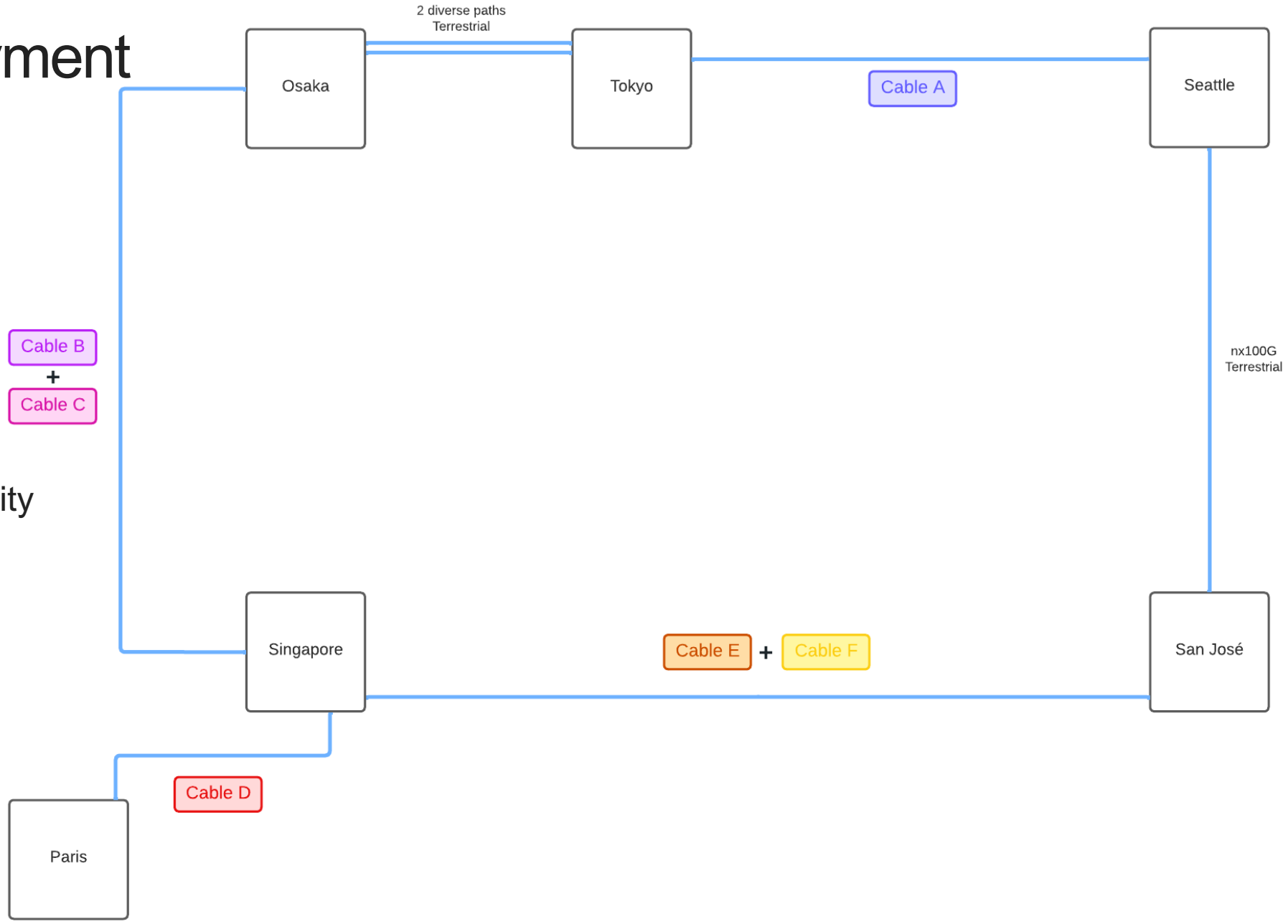
Q1-2021

Ditched L2circuits

Went with Wavelengths

3 paths per POP

Submarine cable diversity



APAC Deployment

SINGAPORE TERRESTRIAL EXAMPLE

We studied all terrestrial backhauls between CLS and POPs for diversity

But it’s not enough

Cuts happen frequently and can take several weeks until repaired which increase the possibility of having multiple cables down at the same time

*CLS : Cable Landing Station

Why so many issues ?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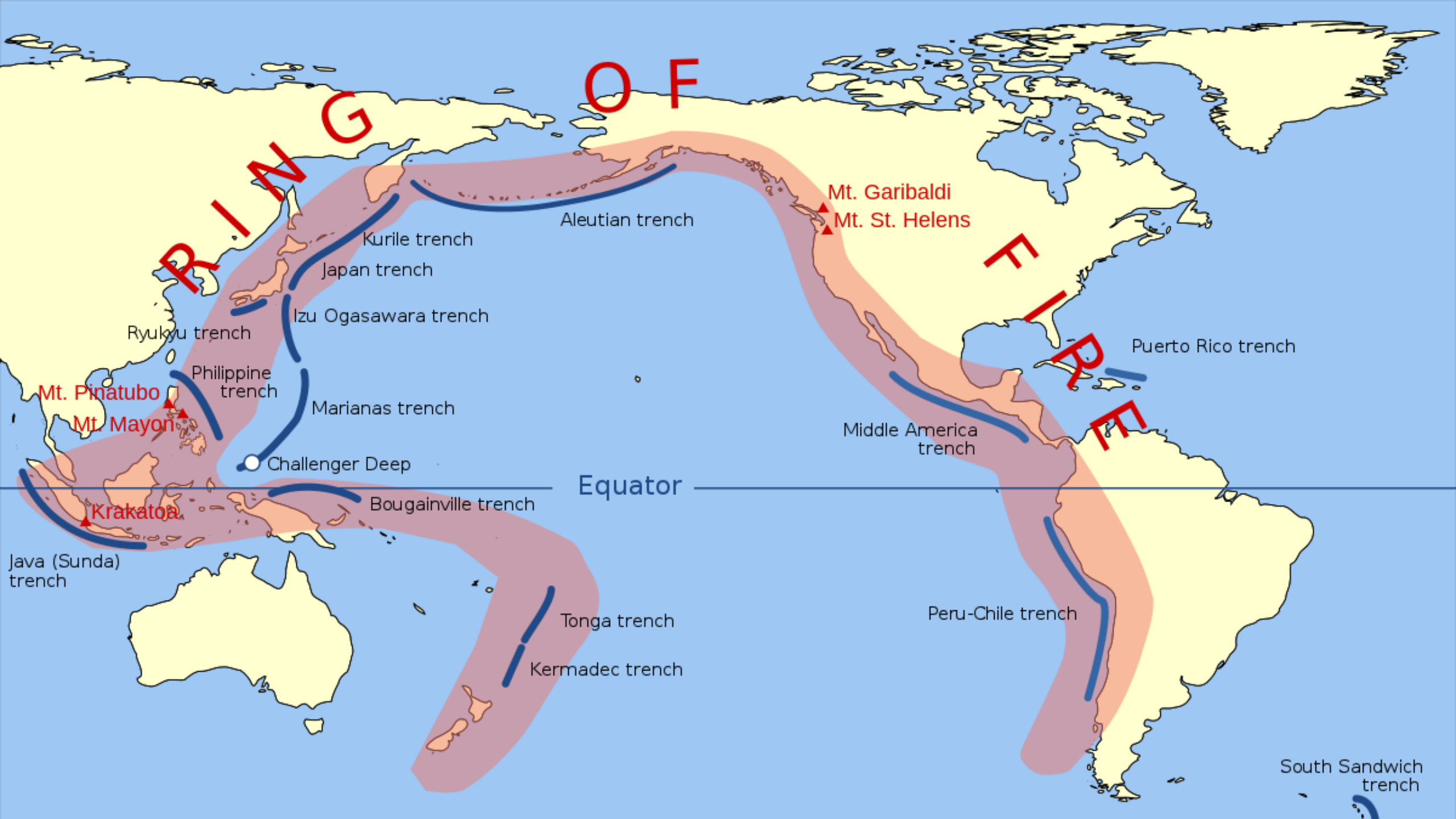

RING OF FIRE
Aleutian trench
Kurile trench
Japan trench
Izu Ogasawara trench
Ryukyu trench
Philippine trench
Marianas trench
Challenger Deep
Bougainville trench
Java (Sunda) trench
Tonga trench
Kermadec trench
Mt. Garibaldi
Mt. St. Helens
Puerto Rico trench
Middle America trench
Peru-Chile trench
South Sandwich trench
Mt. Pinatubo
Mt. Mayon
Krakatoa
Equator

APAC Deployment

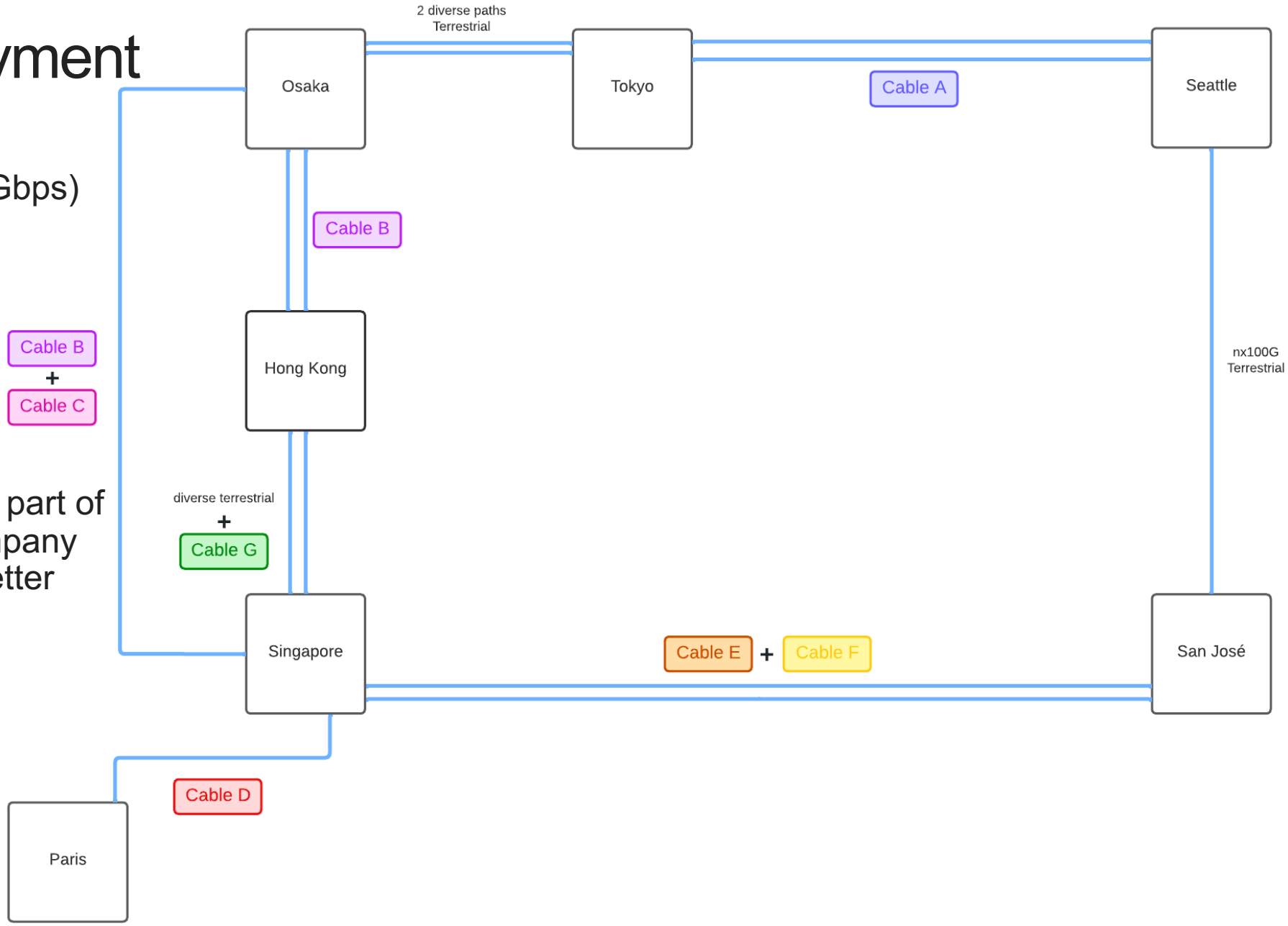
Q3/Q4-2021

Upgraded capacity (120 Gbps)

Added more paths

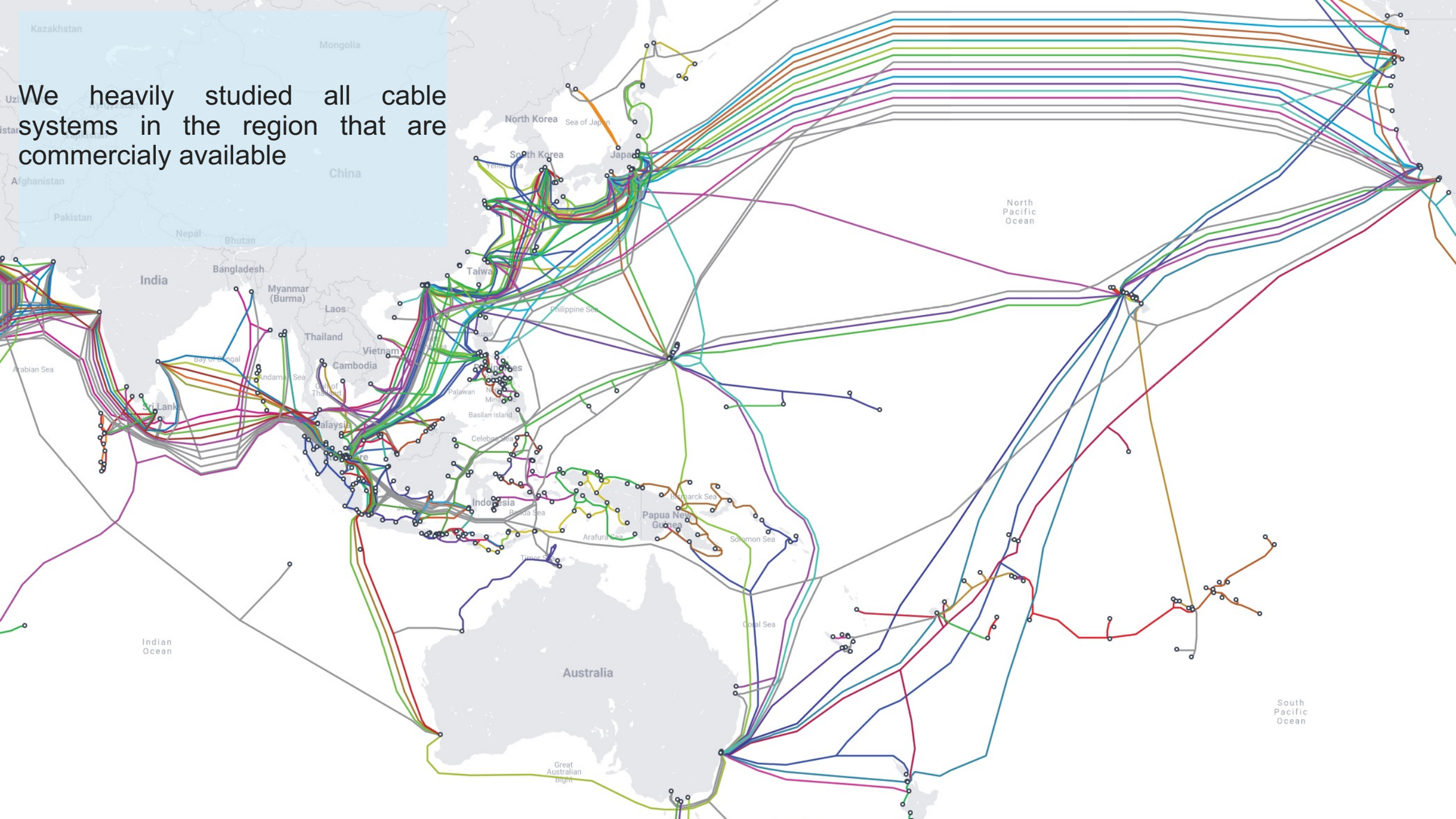
Still not enough

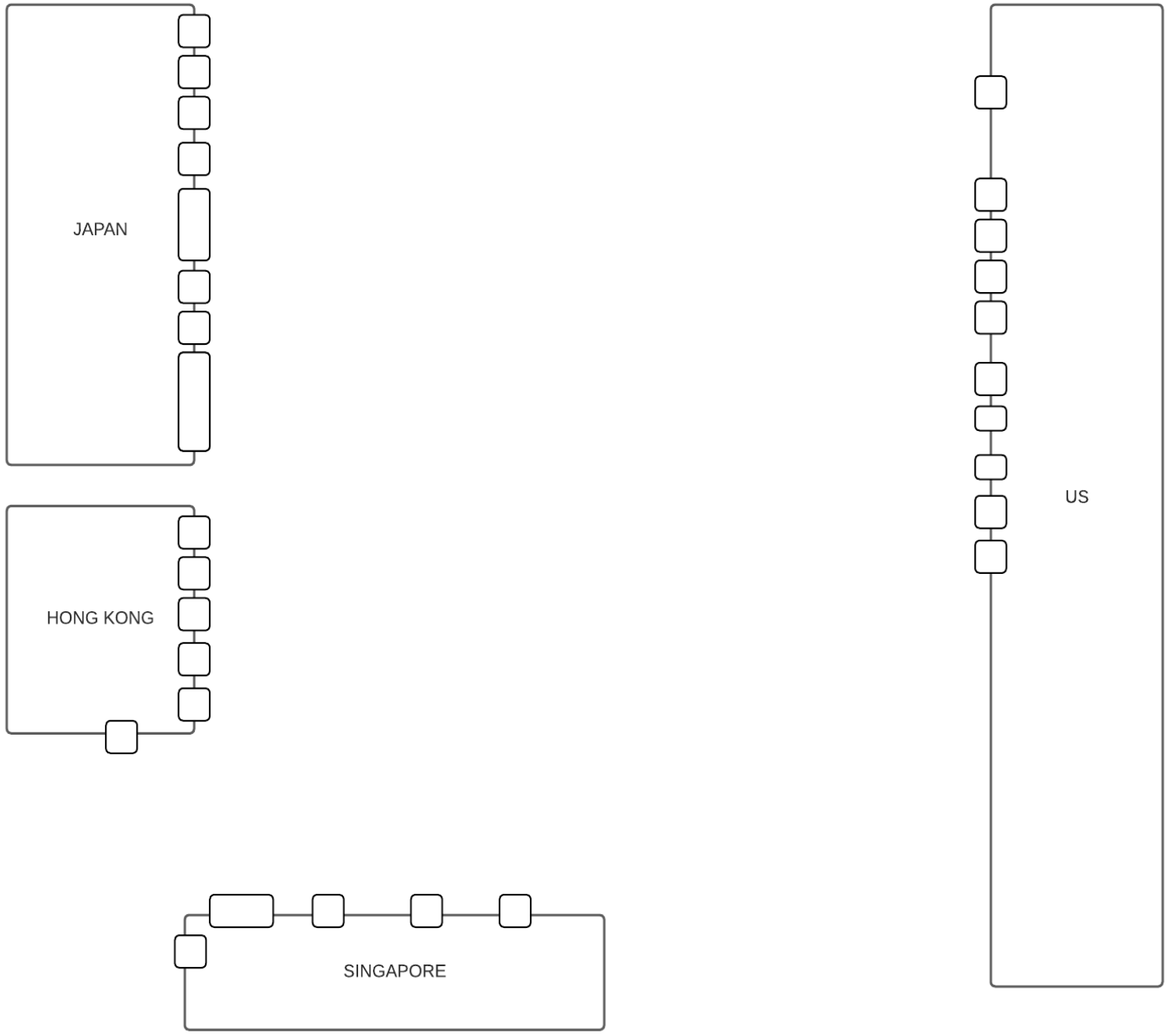
Now that the backbone is part of F5, as a global cloud company we have to and can do better



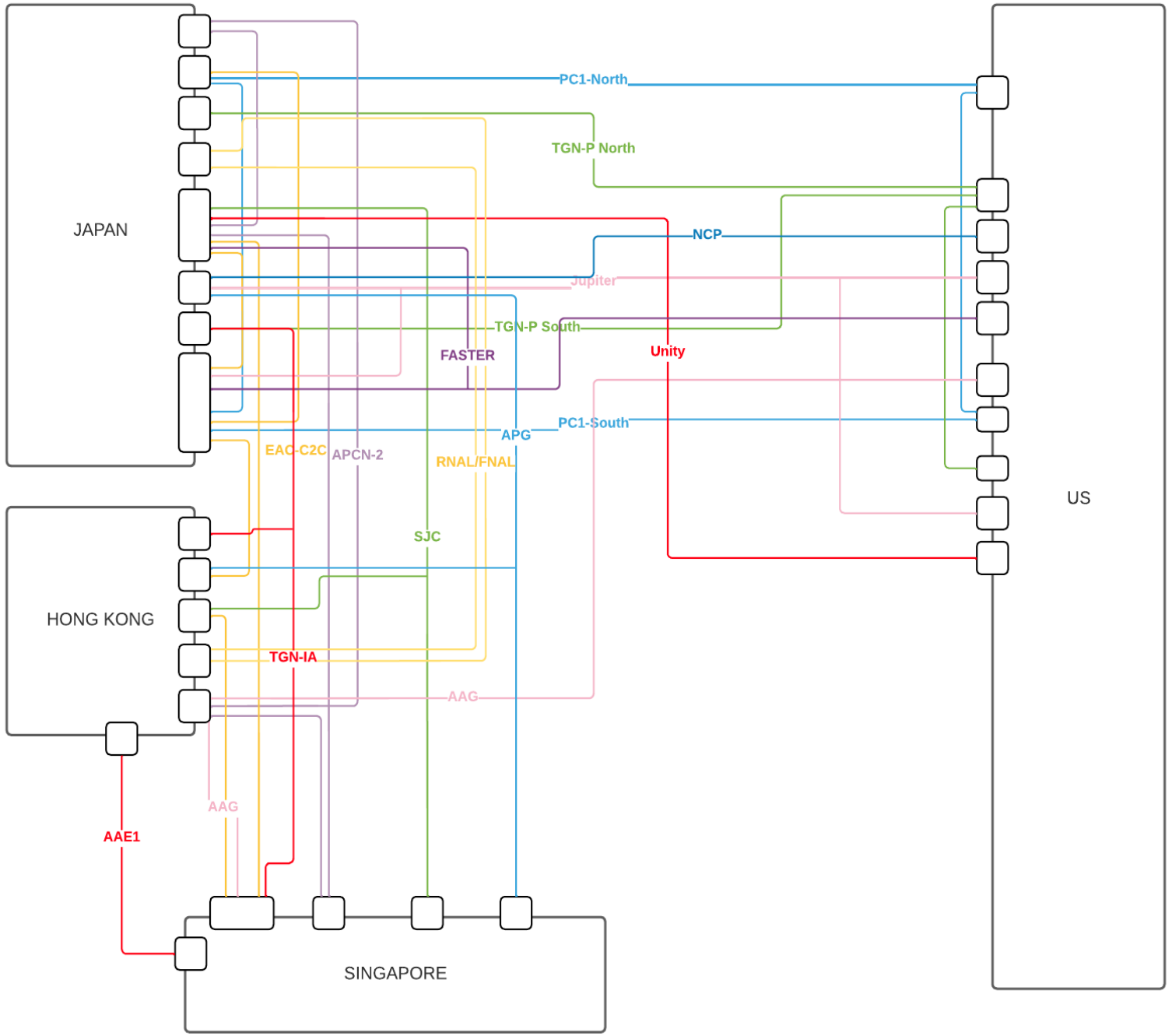
Back to the drawing board

We heavily studied all cable systems in the region that are commercialy available




JAPAN
HONG KONG
SINGAPORE
US

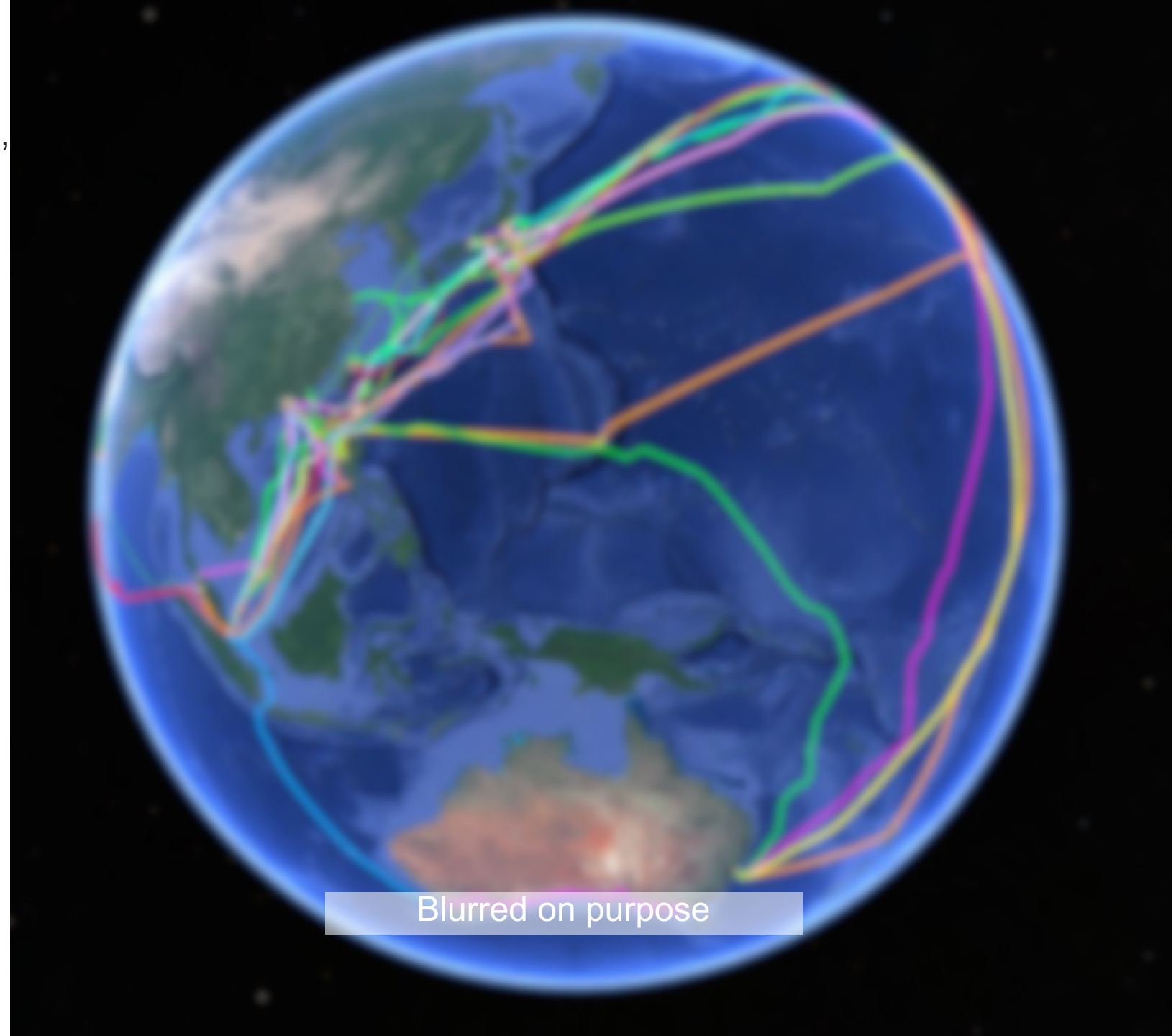
We mapped out most cable system we could get capacity on and studied the Cable Landing Station diversity



Mapping out all kmz as well to check diversity between CLS, BMH, POPS

CLS : Cable Landing Station

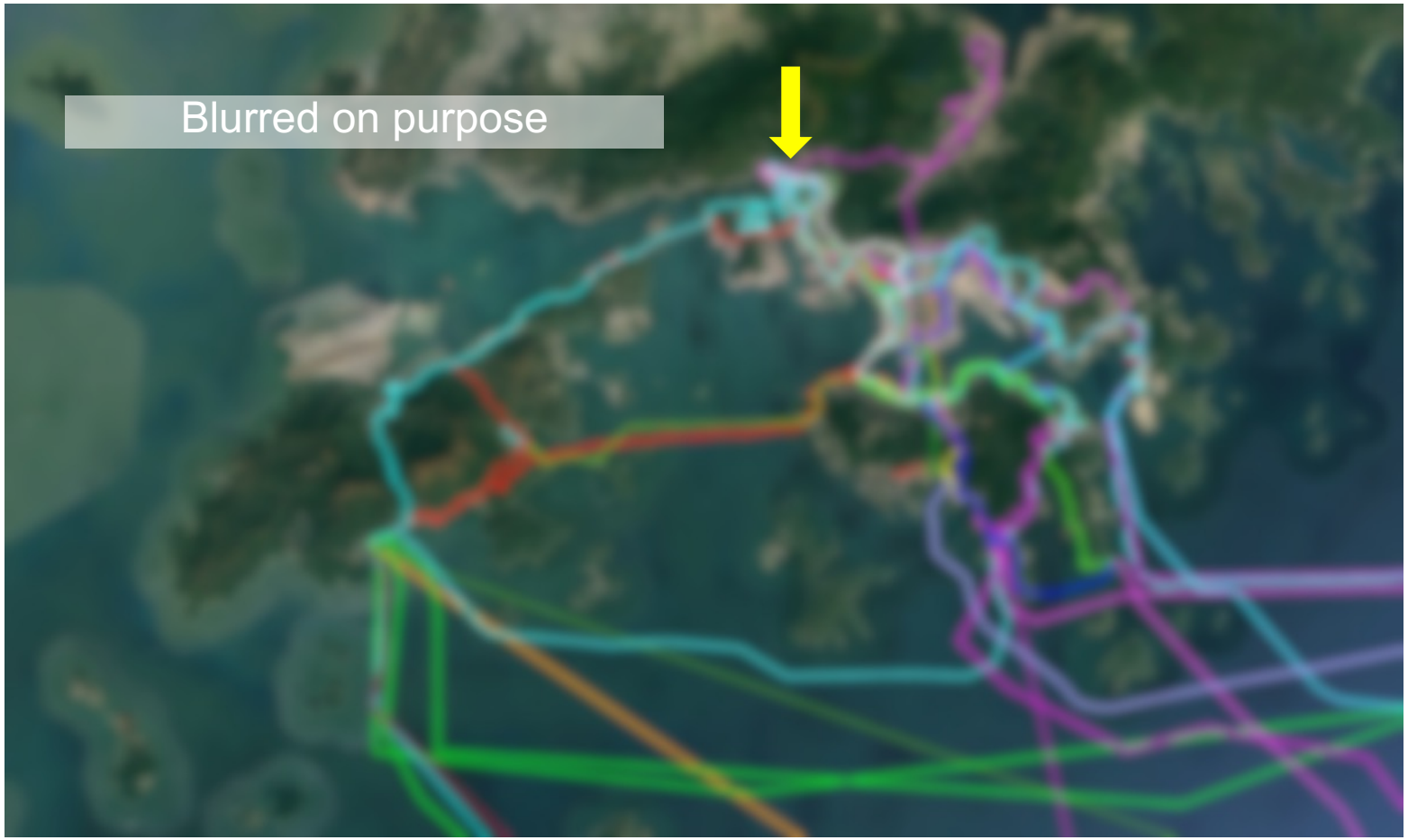
BMH : Beach Manhole, where the subsea cable meets terrestrial fiber to go to the CLS



APAC Deployment

HONG KONG

Our Hong Kong DC of choice makes it difficult to find resilient paths for the terrestrial backhaul



APAC Deployment

Q3 2022

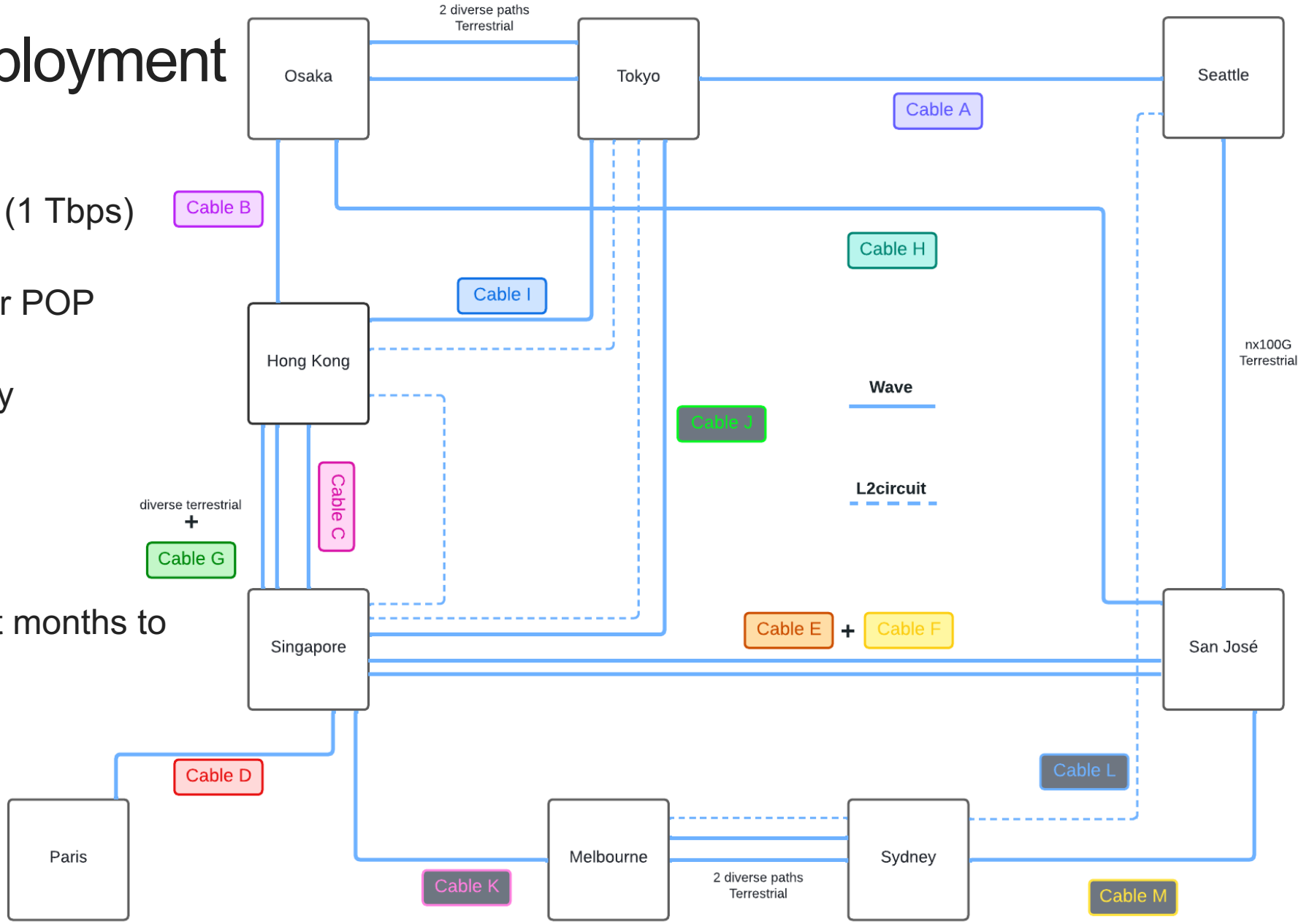
Upgraded capacity (1 Tbps)

More paths (4+) per POP

More cable diversity

New POPs

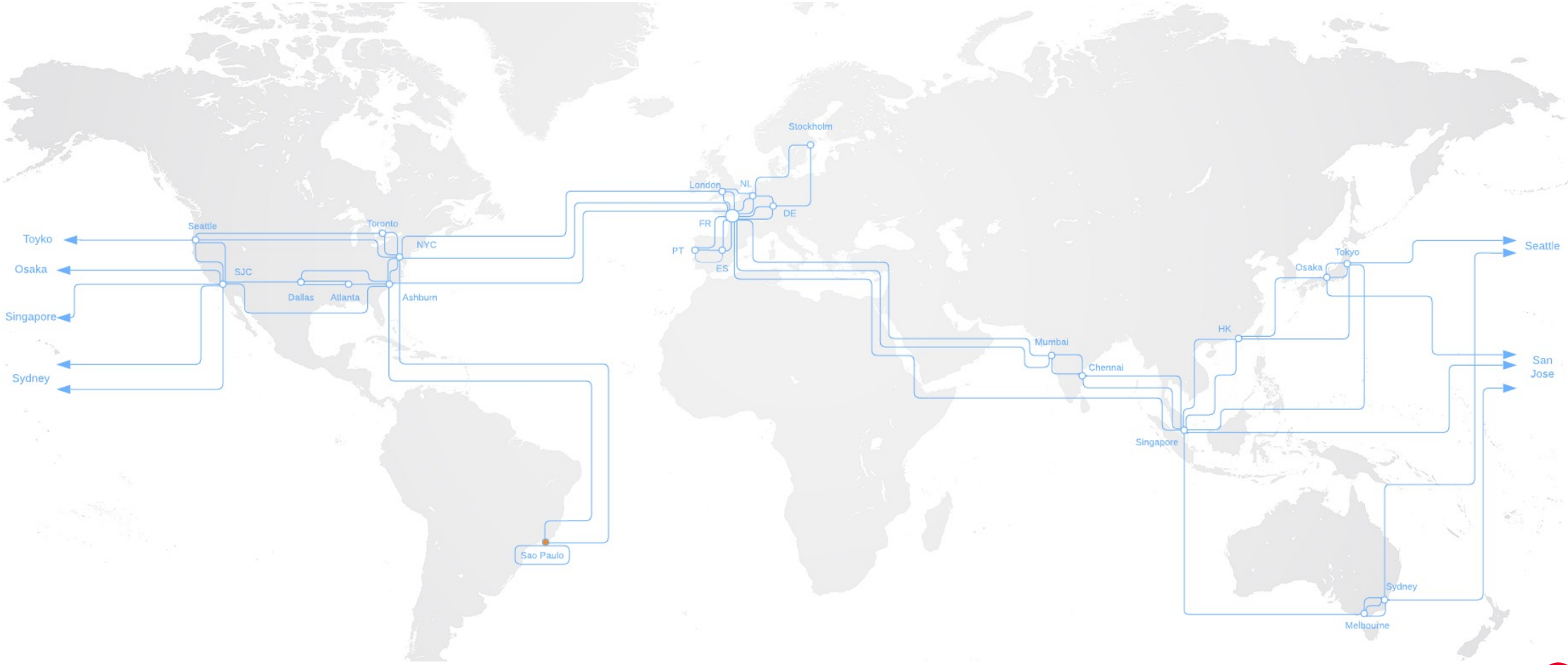
Waiting for the next months to experience it

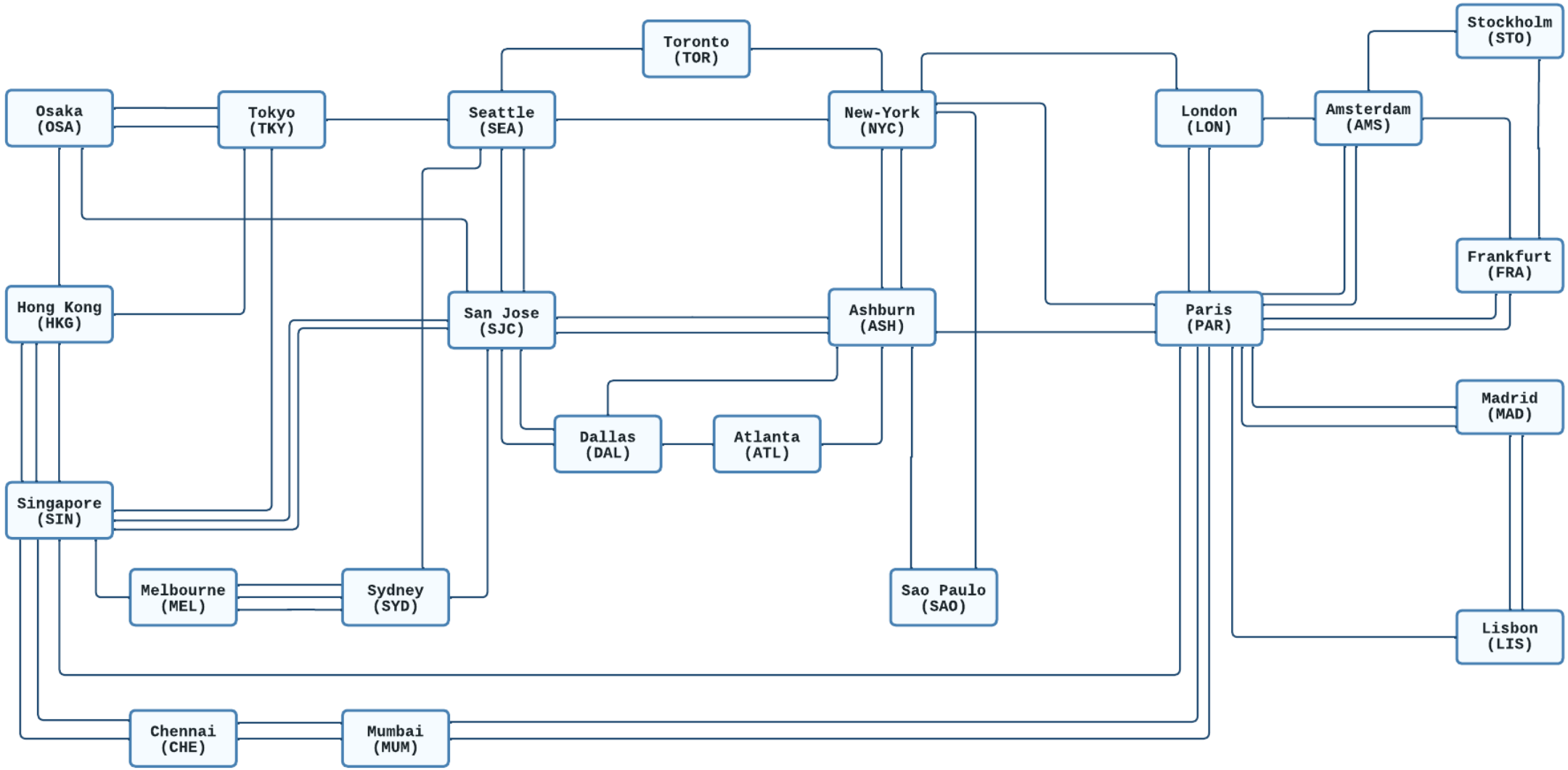


F5 Backbone today

F5 Backbone

TODAY




Toronto
(TOR)
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Sydney
(SYD)
Sao Paulo
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Lisbon
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Chennai
(CHE)
Mumbai
(MUM)

Conlusion

What we've learned

Thank You

Questions ?

 PIERRE-YVES MAUNIER P.MAUNIER@F5.COM