



SRTE Deployment @Alibaba

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Agenda

- Alibaba Business Introduction
- Alibaba Network Infrastructure Overview
- Alibaba Network Orchestrator (NetO) Overview
- SRTE @Alibaba : Use Cases, Architecture Choice, and Features
- SR Future Deployment @Alibaba

Alibaba's Best Practice of Digital Innovation

The World's Largest e-Commerce Company

Global Sell

AliExpress

淘宝网
Taobao.com

TMALL

Core Commerce

Global Buy



Local services

Global Fund



Payment and
Financial services

Global Deliver

CAI
N!AO 菜鸟

Logistics

Global Fun

YOUKU



Digital media and
entertainment

Innovation in figures

454 M

Active Buyers

11 M

Active Merchants And Brands

\$ 17.8 B

GMV on 11-11 Festival

\$ 547 B

Annual GMV in 2016

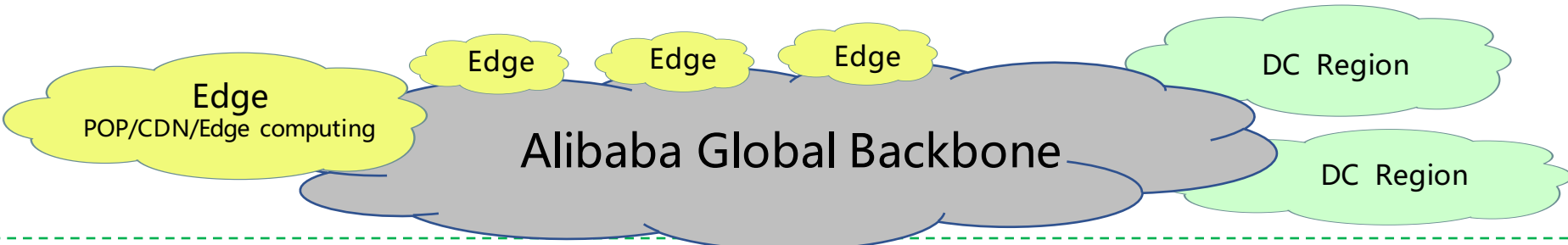
*Global
Infrastructure*



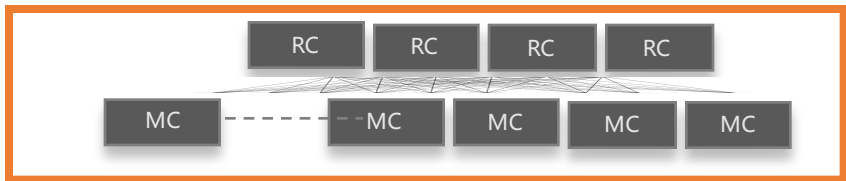
Alibaba Cloud

Cloud Computing

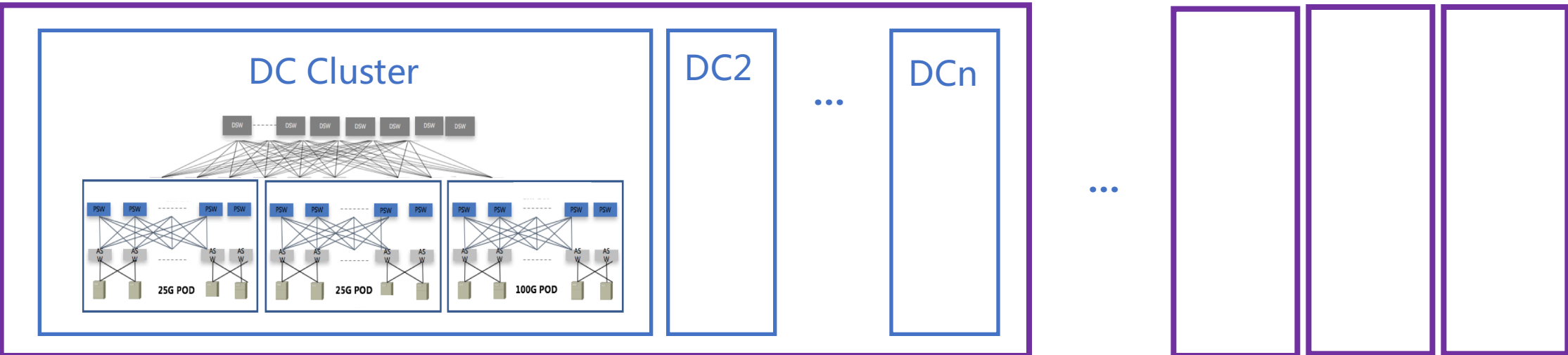
Alibaba Network Infrastructure Overview



DC Region



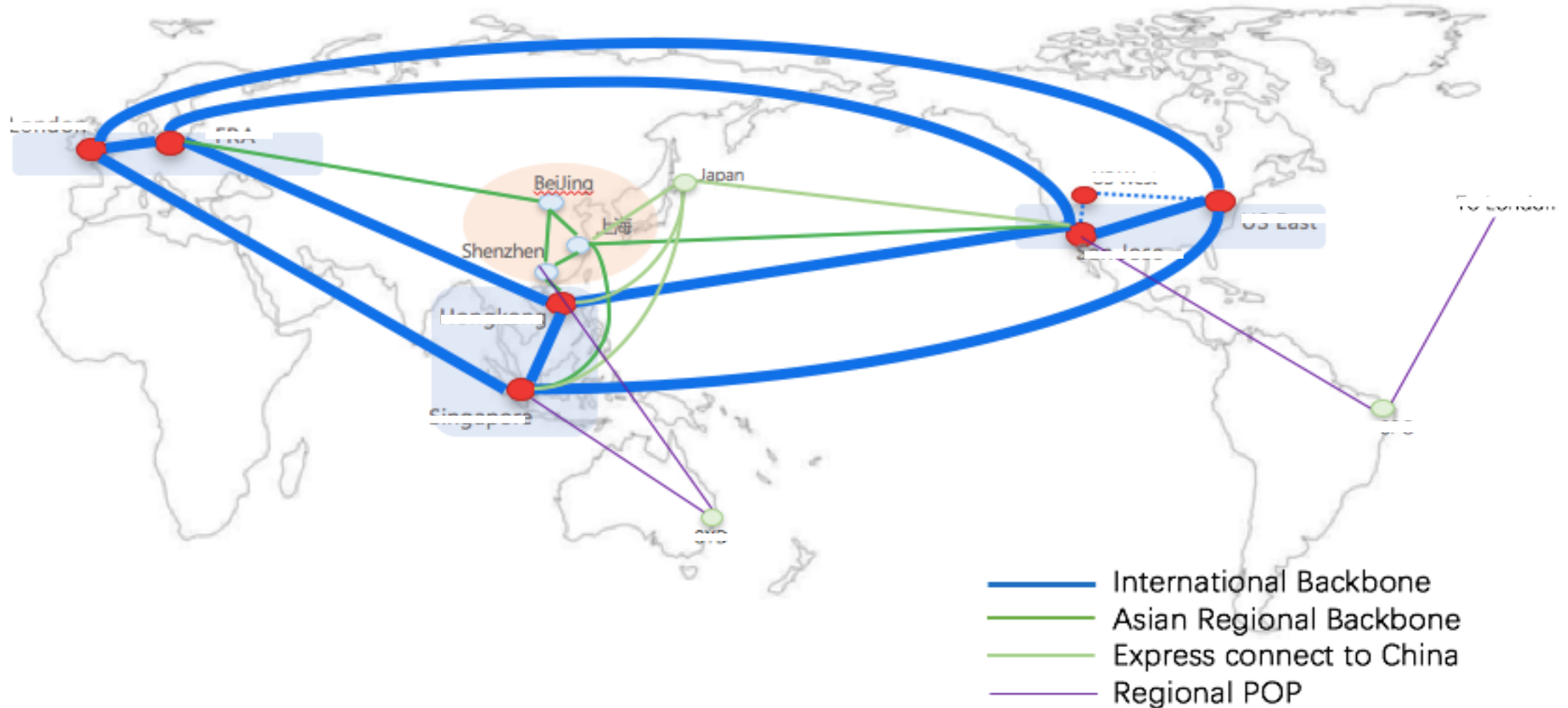
Metro Network



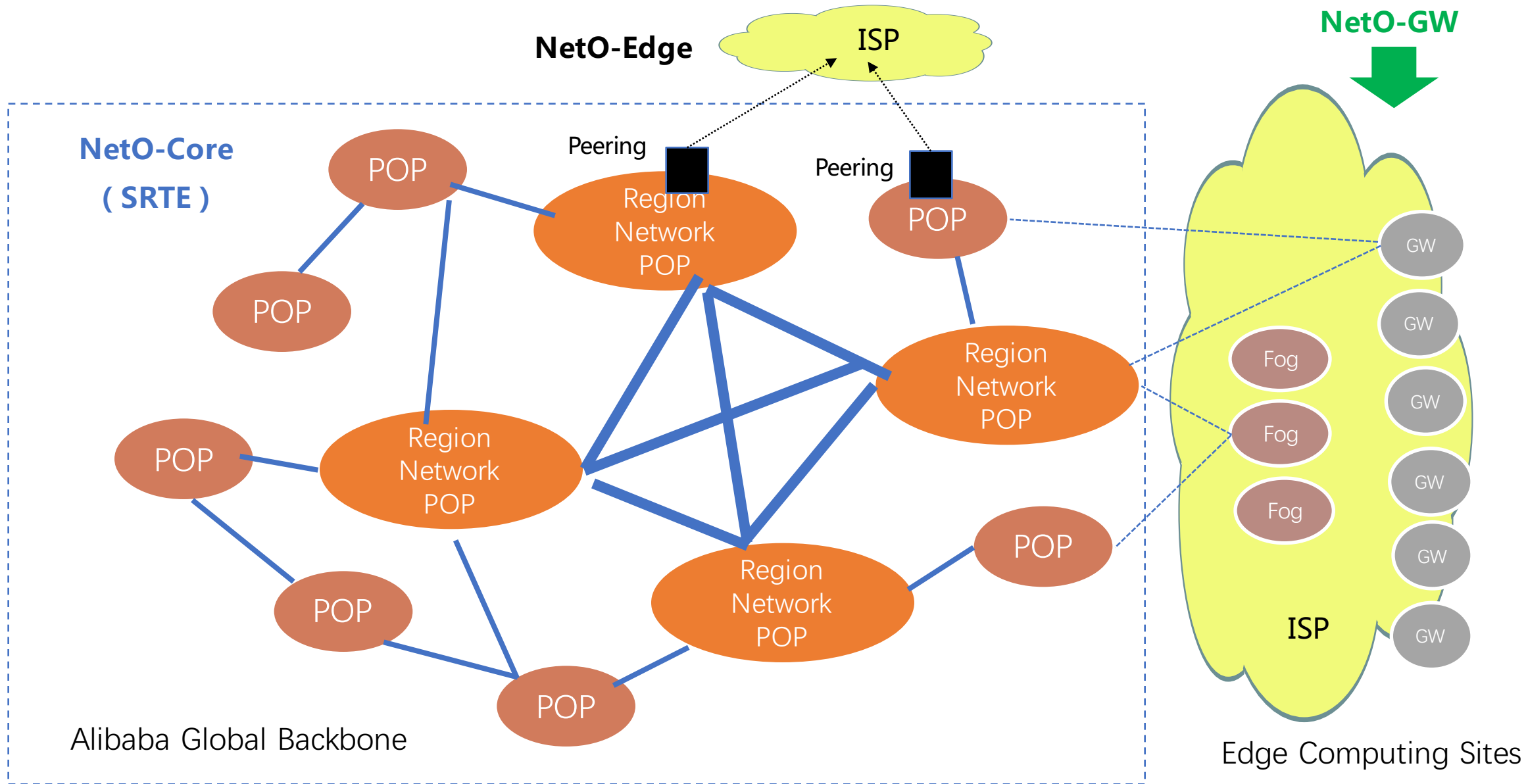
Availability Zone (DC-DC: <2KM)

AZ AZ AZ

Alibaba International Backbone – Hub Sites

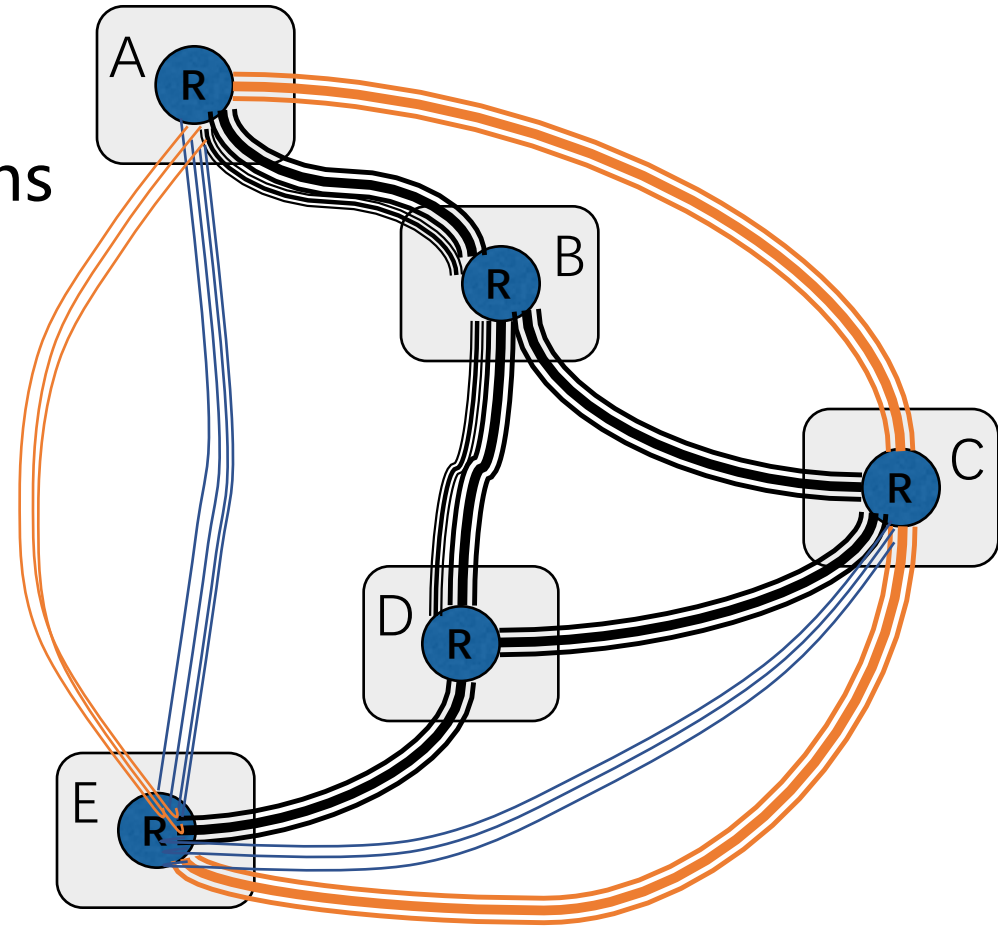


Alibaba Network Orchestrator (NetO) Overview



NetO-Core (SRTE) Use Cases

- Use case 1: Low latency path
 - Parallel IP links over different physical paths
 - Cross domain best path
- Use case 2: Network failure mitigation
 - Reduce the redundant links
- Use case 3: High link utilization
 - Big data applications
- Use case 4: FRR

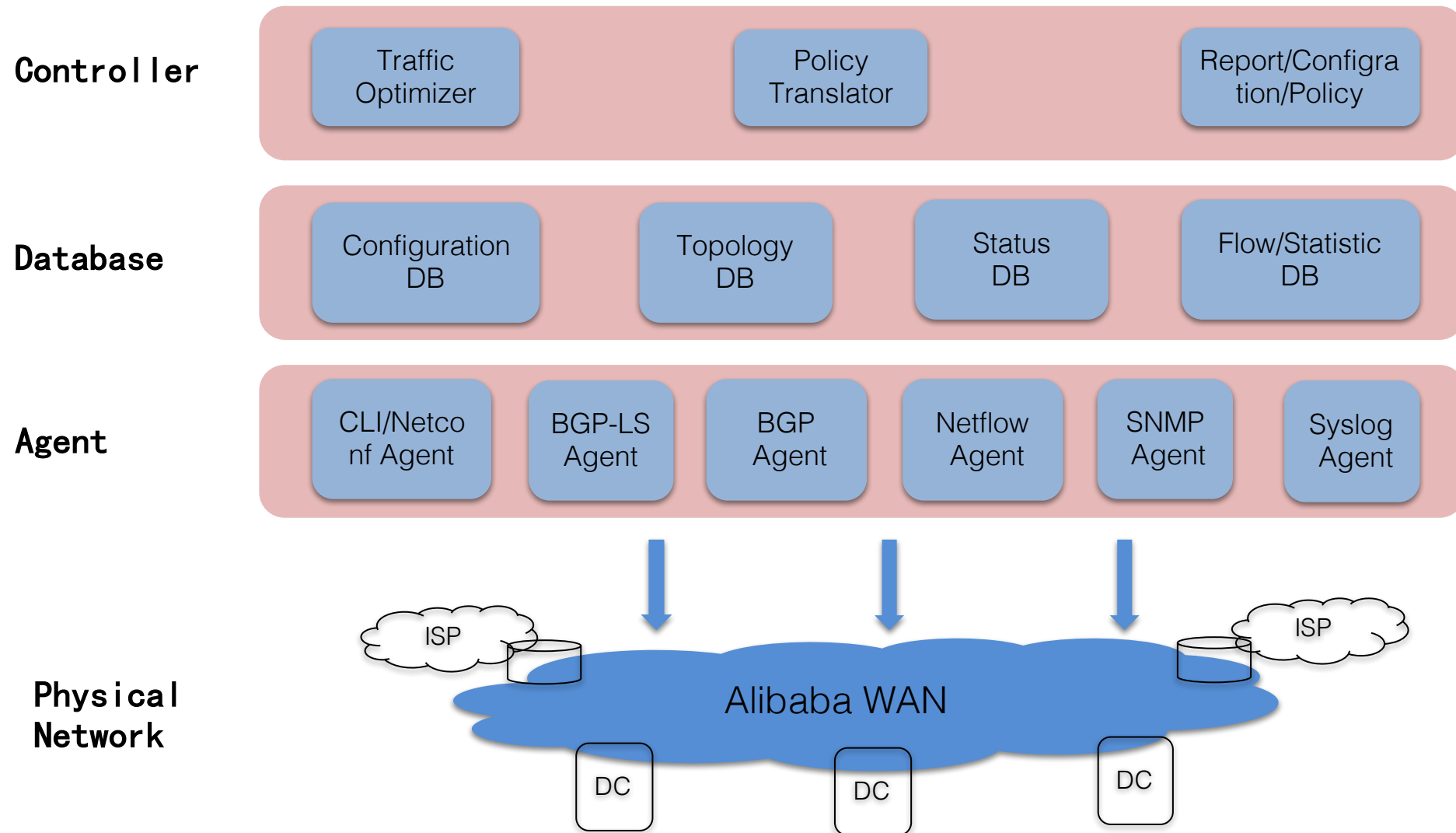


Our Architecture Choices

Challenger: How can we deploy TE smoothly, without impacting existing applications for such large network infrastructure?

- Overall TE Strategy
 - Keep it as simple as possible, 20% / 80% theory
 - Keep ISIS routing as baseline, traffic engineering on-demand
- RSVP-TE vs SRTE
 - Pretty straightforward for us
- Centralized vs Distributed
 - Centralized
- Traffic Steering
 - PBTS class-based
 - BGP community (phase 2): prefix-based, flow-based
- Controller and APIs
 - In-house, full control
 - Vendor inter-operability

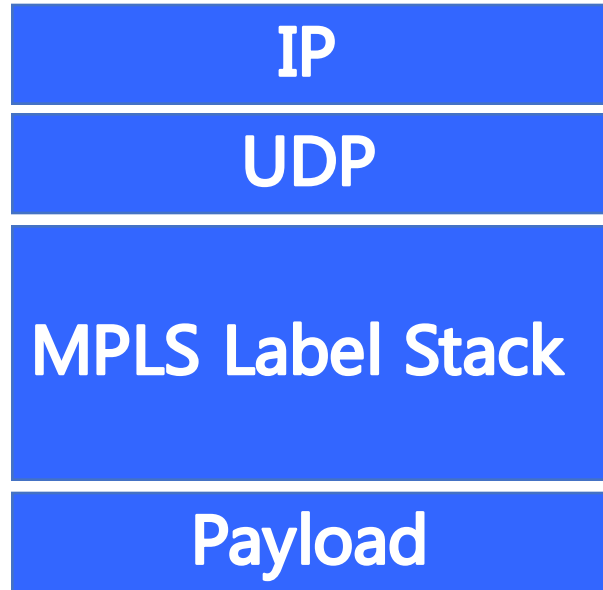
SRTE Controller Architecture Overview



Deployment Status and SR Features

- Deployment @Alibaba
 - In production network, small scale now
 - Plan to expand to entire backbone network in next 1-2 years
- SR major features @Alibaba
 - ISIS nodal SID, prefix SID
 - FRR
 - SRTE Explicit path, dynamic path
 - SRTE Un-equal ECMP
 - EPE
 - Adj-SID group (bundle SID)
 - Biding SID
 - Traffic Steering: PBTS class-based, BGP community

MPLS-SR over IP : Data Plane Overview



- Take MPLS-in-UDP encapsulation [RFC7510] as an example:
 - MPLS-SR is encapsulated with a UDP/IP tunnel header.
 - IP destination address points to next node segment indicated by top label.
 - IP source indicates the current node.
 - UDP destination port indicate MPLS below.
 - UDP source port is used as an entropy field.

Value for our deployment

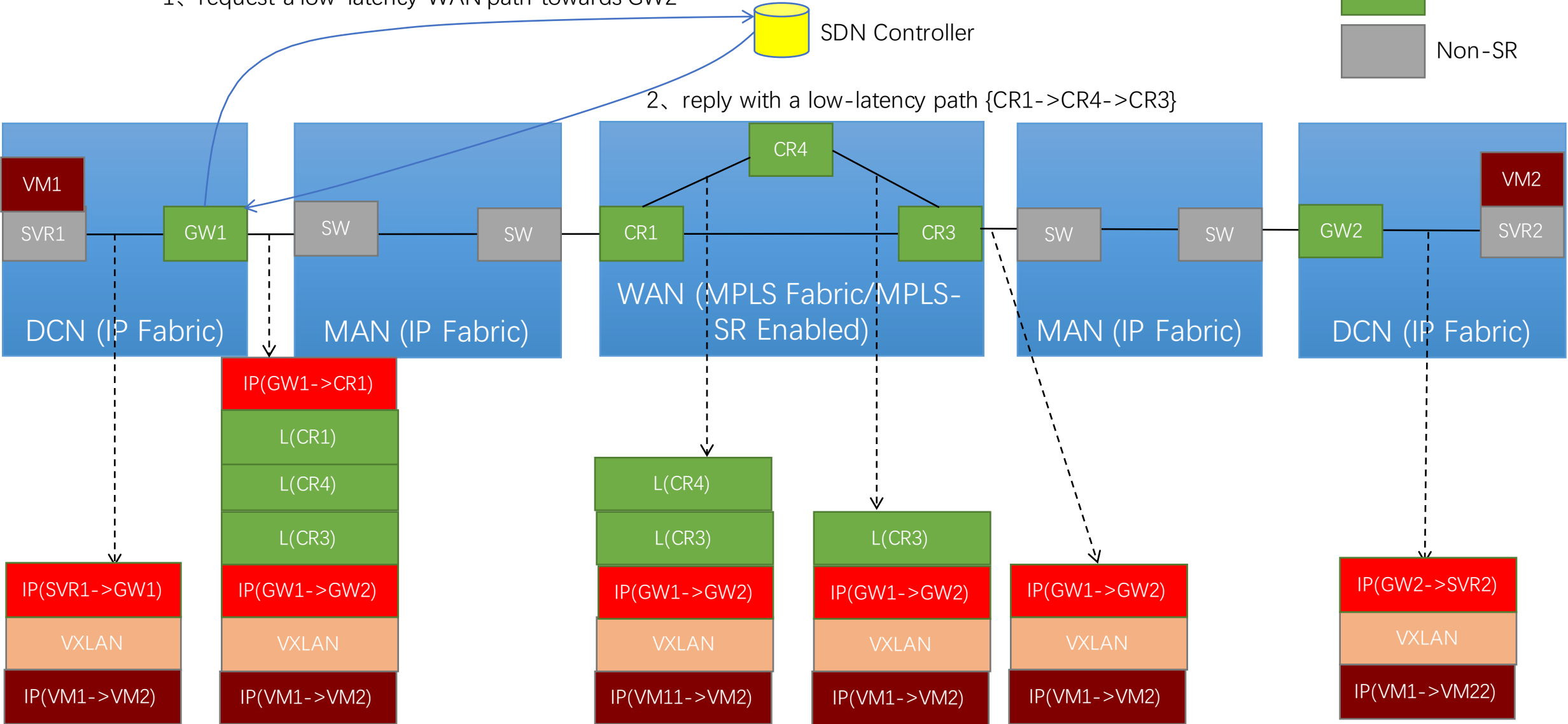
- Leverage the existing hardware capabilities (e.g., MPLS-SR forwarding capability and MPLS-in-UDP tunneling capability) and existing IP network
- Facilitate the incremental deployment of MPLS-SR.
- Works for both IPv4 and IPv6 underlying networks.

MPLS-SR over IP Use Case @Alibaba

1、 request a low-latency WAN path towards GW2

2、 reply with a low-latency path {CR1->CR4->CR3}

SR-enabled
 Non-SR





Thanks!