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# eCore

## Network Architecture and Whitebox Evolution of Alibaba's Service-Oriented DCI Network

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# Alibaba Cloud Global Network Footprint

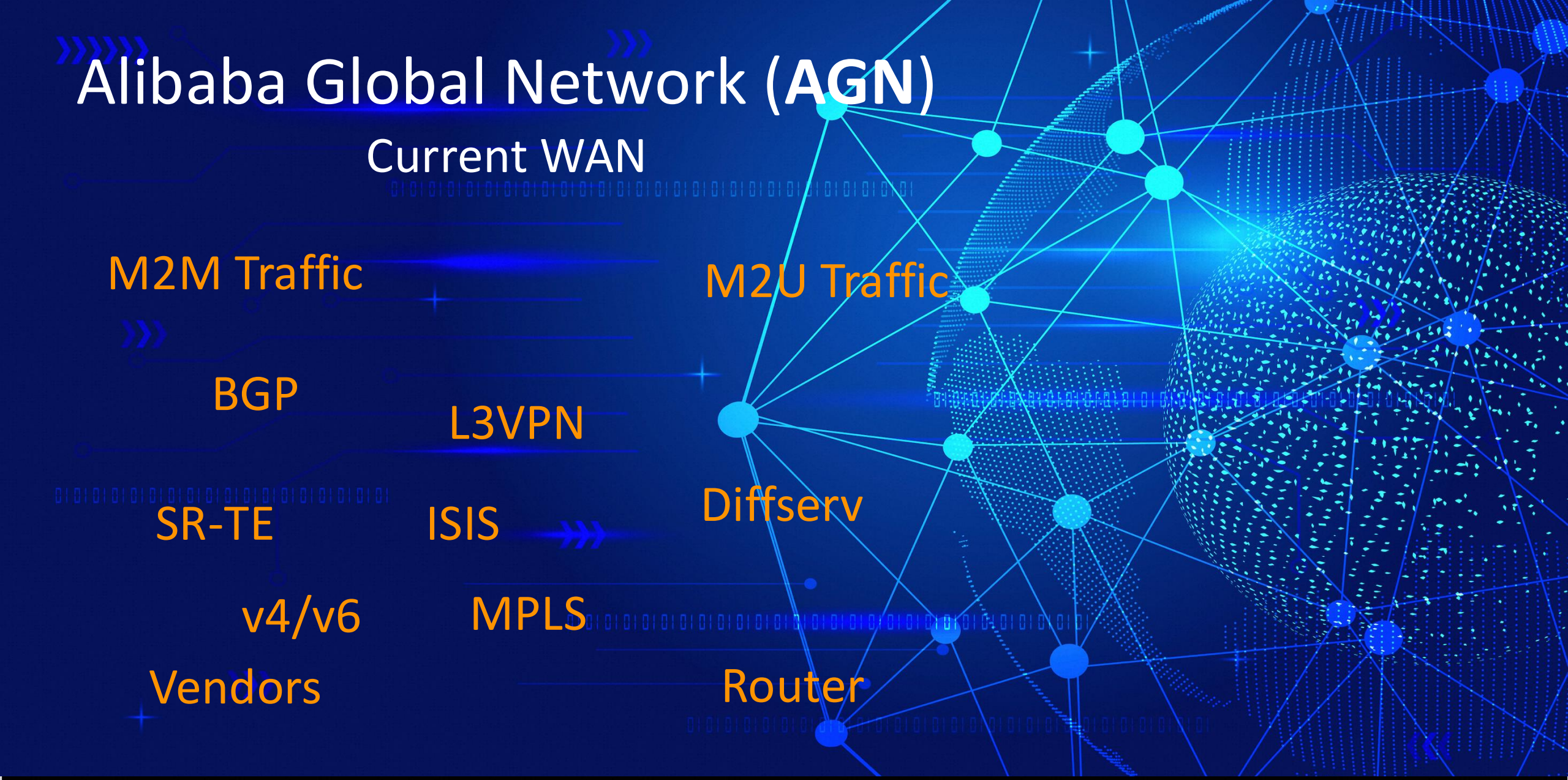
**29** Regions

**91** AZs

**3200+** Edge sites

# Alibaba Global Network (**AGN**)

## Current WAN



# eCore – Alibaba's Next Generation Predictable DCI Network

**Architectural Goals**

Simplicity

Stability

Service-Oriented Network

**with Massive Scale**

**Design Principles**

Simplicity
Single-chip & Single Stack

Composable Architecture
Easy to scale

Minimize Blast Radius

Service-Oriented

**Operation Excellence**

**Build and operate DCI like DCN (fully automated)**

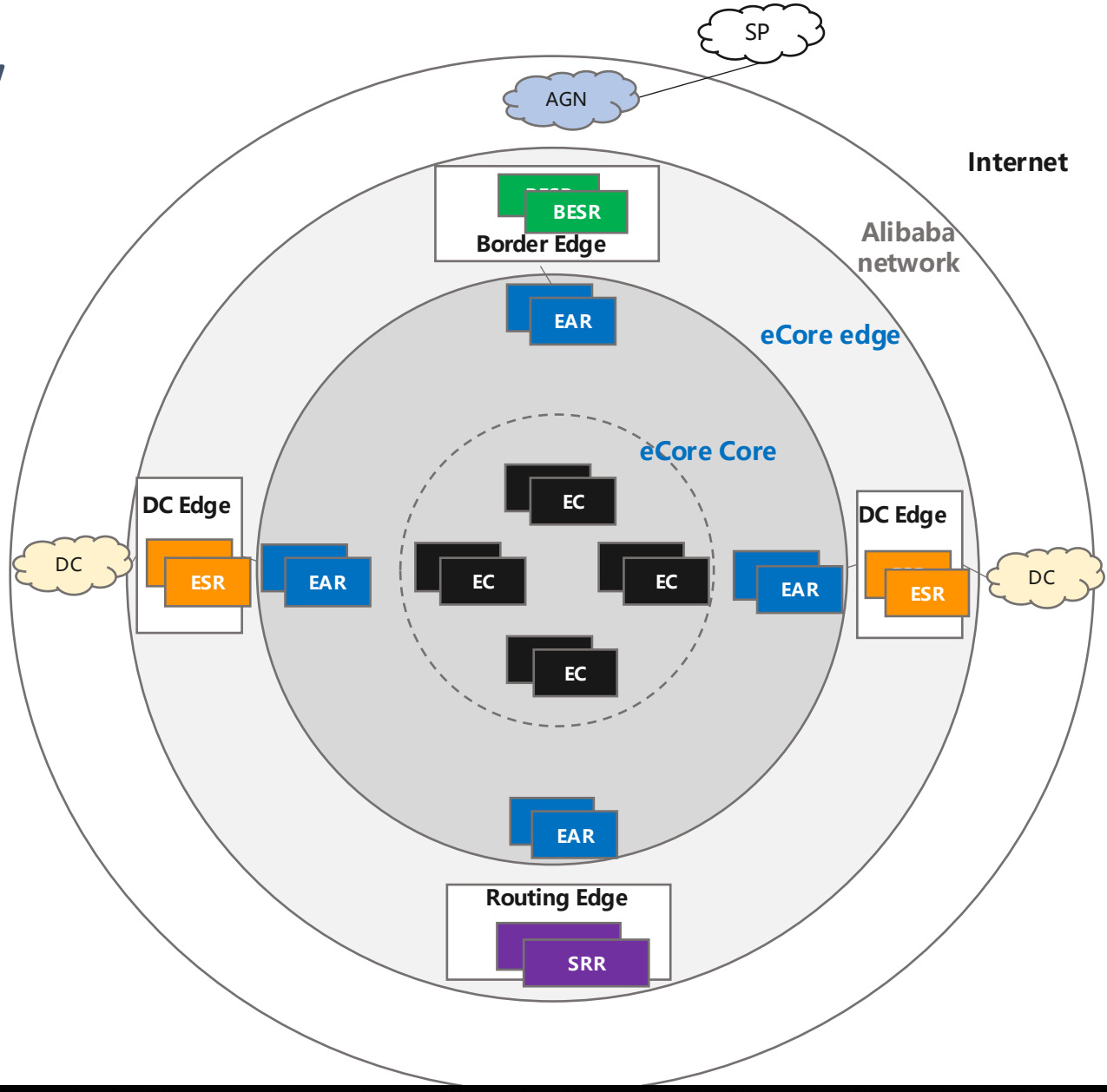
# High Level Architecture Overview

## Edge

- Role
  - SRv6 VPN PE router – overlay
- Categories
  - DC edge - ESR
  - Border edge - BESR
  - Routing edge - SRR （Service Route Reflector）

## Core

- Role
  - SRv6 VPN P router - underlay
  - SRv6 Traffic Engineering
- Layers
  - National Core - EC
  - Regional Core - EAR （collocated with ESR）



# Single-chip & Single-Stack

Single Chip

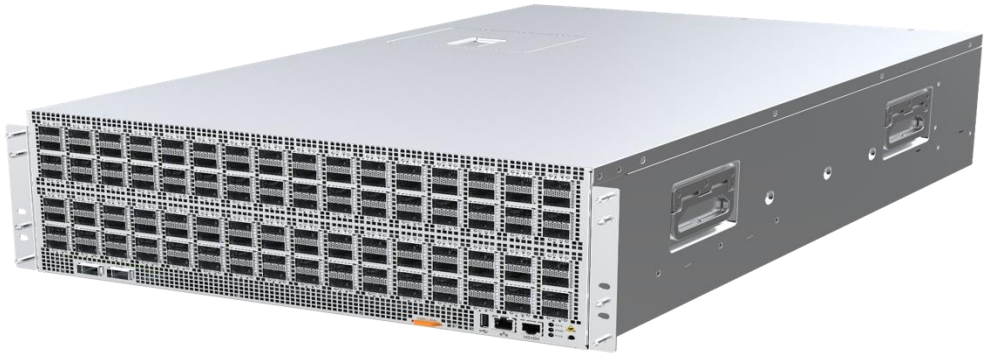
- Pizza-box
- **NO chassis**

Single Stack

- SRv6 only
- **No MPLS**

In-house Developed Software

- AliNOS（based on SONiC）
- Feature velocity + live patch



| | |
|---|---|
| SRv6 Enable | Deep Buffer |
| HW offload BFD | MACSec Enable |
| 12.8T | Large LPM |

In-house developed white-box router with Cisco Silicon One Q200

Dual-NOS/dual-chip: commercial pizza box from H3C/Ruijie with BRCM ASIC

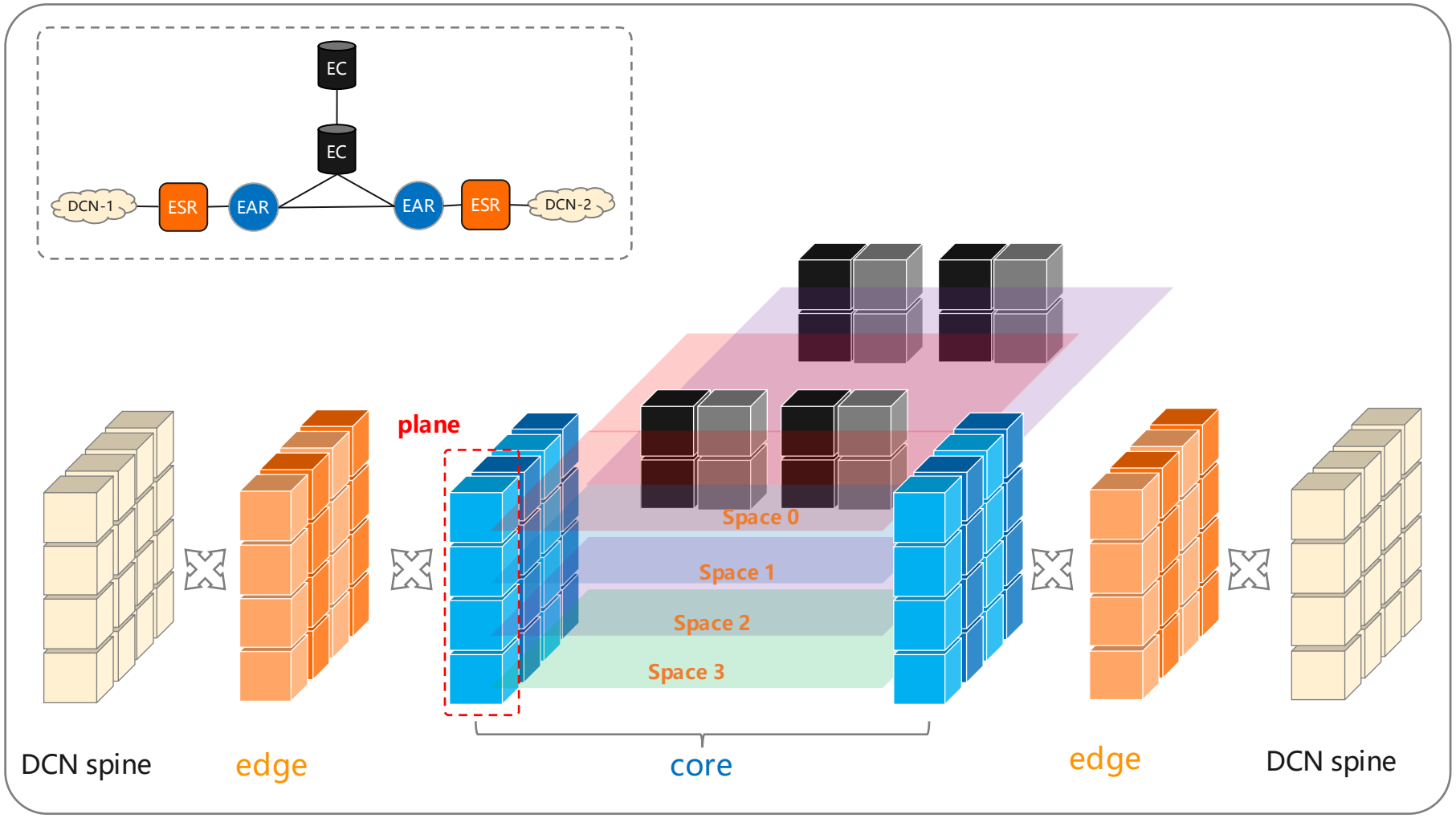
# Composable Architecture

## Standard Network Modules

- Node/Cluster/Group

## Elastics and Resilience

- Multi-Plane (redundance)
- Multi-Space (capacity scaling)
- Multi-Routing Domain (failure isolation, small blast radius)



# Minimize Blast Radius

## IS-IS minimized

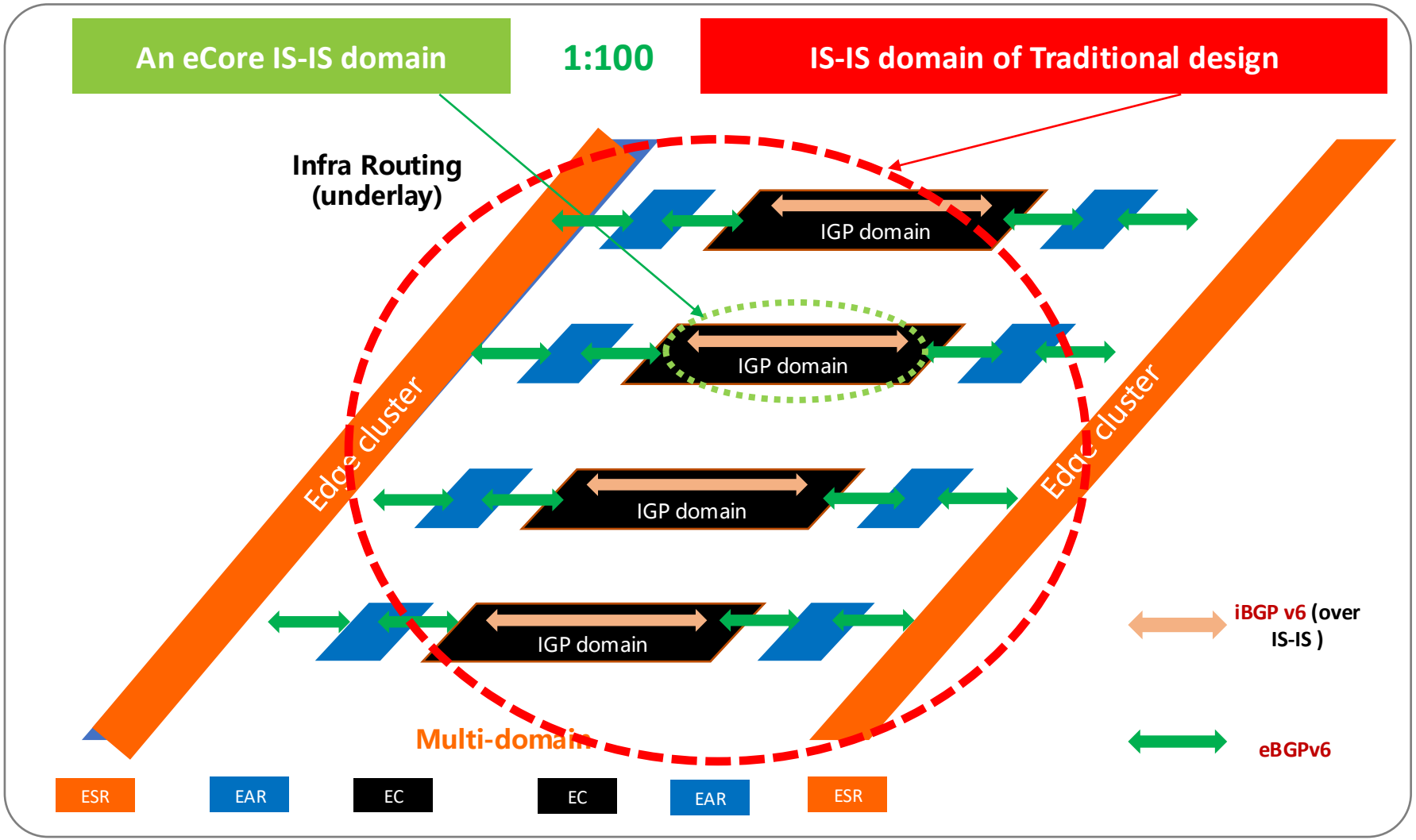
- ISIS domain = EC plane
- iBGP next-hop resolution only

## BGP Underlay Routing

- SRv6 Inter-domain friendly
- No MPLS LSP

## Seamless Migration from Legacy MPLS Core

- SRv6 VPN over 6PE MPLS Core
- SR-MPLS TE



# Service-Oriented: A Simple Way to Provide More Flexible TE Service

## SRv6 VPN Overlay

- Service-SID（End.DT46）
- **TE-Class + VPN**

**Very large SID space to represent flexible and granular TE services**

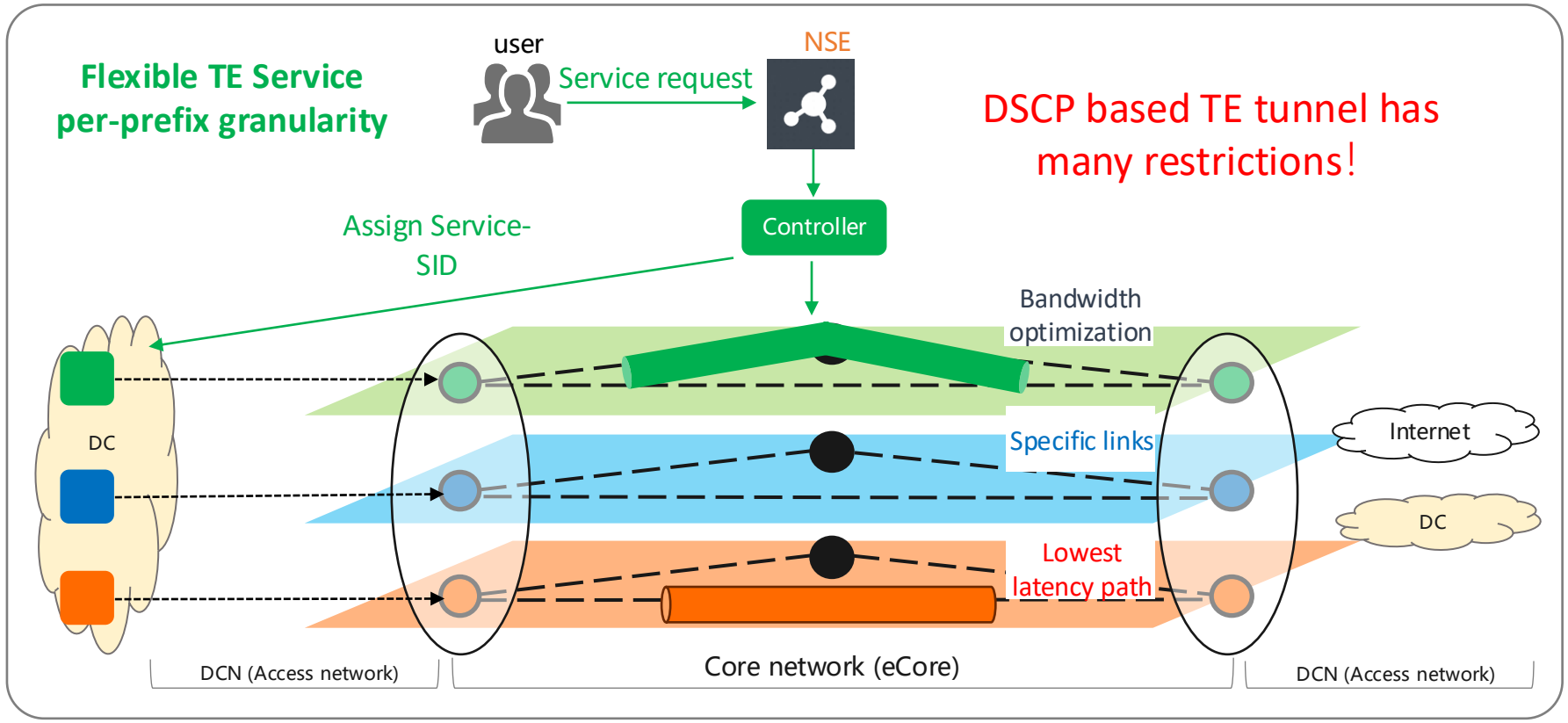
## SRv6 TE Underlay

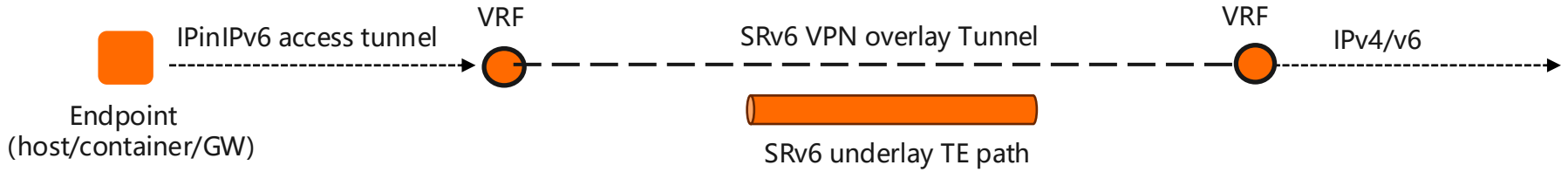
- TE SID（uN/uA）
- SRv6 policy + controller

## SRv6 Tunnel Access

- **IPinIPv6 terminated in VRF (End.DT46)**

**A simple way to steer traffic into SRv6 TE tunnel**



# eCore – the Results

| Pain Points of AGN | eCore's Advantages |
| --- | --- |
| • Device/protocol complexity | **Pizza Box** Single chip & single stack (SRv6) |
| • Big failure domain and slow convergence | **10 x** Fast convergence **1/100** ISIS domain size |
| • High CAPEX and OPEX | **50%** CAPEX reduction **Operation Excellence** Fully automated |
| • Supply-chain risk and feature velocity | **10 x** Feature velocity ( within weeks) |
| • Rigid traffic engineering | **per-prefix** Granularity TE |

# 2nd Generation Building Block - 51.2T Alibaba | Cisco P200

- Alibaba In-house developed 51.2T routing system
- 2xSKUs:
  - 128 * 400GE
  - 64 * 800GE
- Planned production by Q1CY26
- **Powered by Cisco Silicon One P200**