CrossWork APIs Zero to Hero

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Agenda

- What is CrossWork

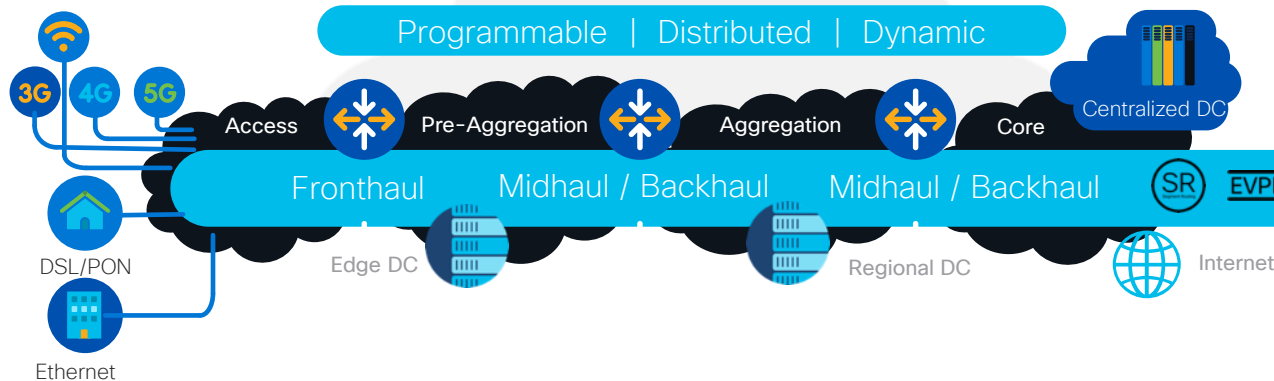- CrossWork Use Cases

- APIs Walk through

- Conclusion

What is CrossWork

CrossWork (Converged SDN Transport Controller)

Provision | Path Compute | Optimize | Monitor | Troubleshoot

Cisco Crosswork
Network Controller
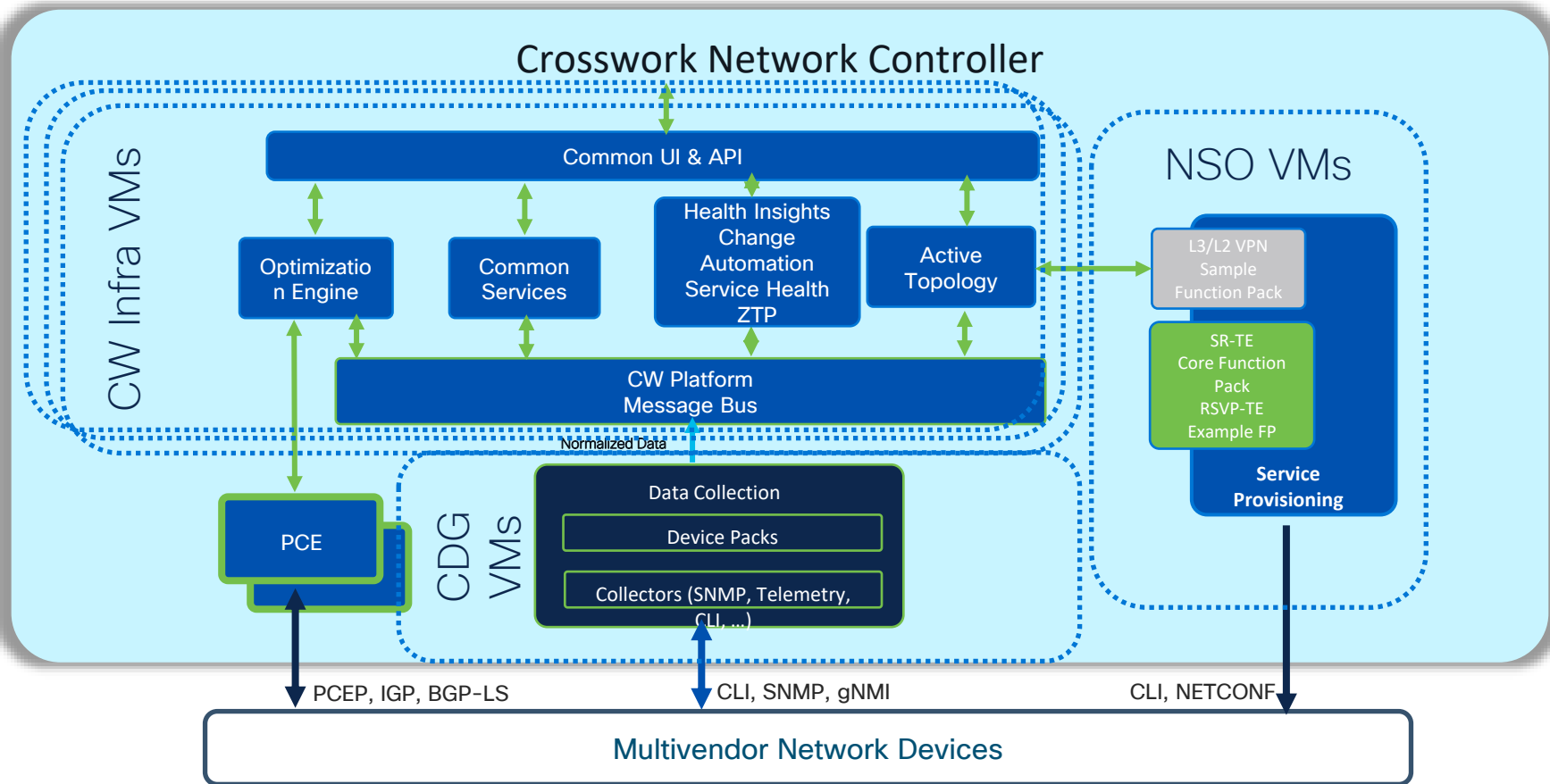
Programmable | Distributed | Dynamic

3G 4G 5G

Access | Pre-Aggregation | Aggregation | Core

Centralized DC

Fronthaul | Midhaul / Backhaul | Midhaul / Backhaul

SR | EVPN

DSL/PON

Edge DC | Regional DC | Internet

Ethernet

Challenges

1 Cumbersome Service Provisioning

2 Bandwidth swings, Congestion and Over capacity

3 Maintaining SLA

4 Siloed tools, fragmented visibility

Outcomes

+ Intent-based Automated Provisioning

+ Dynamic Traffic Engineering

+ Closed loop Automation

Crosswork Network Controller – Functional View

Crosswork Network Controller

CW Infra VMs

Common UI & API

Optimization Engine

Common Services

Health Insights
Change Automation
Service Health
ZTP

Active Topology

CW Platform
Message Bus

Normalized Data

PCE

CDG VMs

Data Collection

Device Packs

Collectors (SNMP, Telemetry, CLI, …)

NSO VMs

L3/L2 VPN Sample Function Pack

SR-TE Core Function Pack RSVP-TE Example FP

Service Provisioning

PCEP, IGP, BGP-LS

CLI, SNMP, gNMI

CLI, NETCONF

Multivendor Network Devices

Use Cases

Use Cases

- Real time network Visualization

- Explicit SR Policy Provisioning

- Dynamic SR Policy Provisioning

- RSVP-TE Tunnel Provisioning

- Bandwidth Optimization

- Bandwidth On Demand

- Local Congestion Mitigation

- Service Provisioning (L2/L3 VPN)

- Service Oriented Transport Provisioning

- Service Health Monitoring

- KPI Monitoring (Telemetry/gNMI)

- Playbook execution for dev config

- Zero touch provisioning

… and many more

APIs Walkthrough

API Classification

- Common Tasks (AUTH's/Tokens)

- Platform Configuration APIs (NSO/SR-PCE/C-Apps on-boarding)

- Device Management (DM)

- Optimization Engine (COE)

- Active Topology (CAT)

- Health Insight (HI)

- Change Automation (CA)

- Operational Activities (Health Monitoring/Backup/Restore)

Common Tasks

- Generating Ticket

POST
https://{{crosswork_ip}}:30603/crosswork/sso/v1/tickets?username={{**username**}}&
password={{**password**}}

- Generate Token

POST https://{{crosswork_ip}}:30603/crosswork/sso/v1/tickets/{{**ticket**}}

Platform Configuration APIs

- Upload Crosswork Application to cluster

- Install uploaded CrossWork Application

- Add Credential profiles for devices, NSO and SR-PCE

- Onboard NSO instance to CrossWork

- Onboard SR-PCE instance to CrossWork

Device Management

- Onboard network devices

- Create Crosswork Data Gateway (CDG) Pool

- Attach onboarded devices the CDG pool

- Validate CDG attached devices

- Onboard SR-PCE instance to CrossWork

- Working with Tags

- Update multiple devices using Tags

Optimization Engine (COE)

- Fetch all SR-Policies

- Create Dynamic SR-Policy via SR-PCE

- Delete Dynamic SR-Policy via SR-PCE

- Create Explicit Path SR-Policy via SR-PCE

- Delete Explicit Path SR-Policy via SR-PCE

Active Topology (CAT)

- Create L2-VPN service via NSO

- Fetch L2-VPN service

- Create Dynamic SR-Policy via NSO

- Update L2VPN to attach SR-Policy to traffic engineer VPN traffic

Health Insight (HI)

- Create KPI Profile

- Enable KPI Profile on specific device

- Enable KPI Profile on multiple devices using Tags

Change Automation (CA)

- Create Playbook/Mop including multiple plays

- Run Playbook on specific device

- Run Playbook on multiple devices using Tags

Operations

- System Health Summary of CrossWork cluster

- Cluster Node Health Summary

- CrossWork-Application Summary

- Fetching all active alarms

- Taking Backup of CrossWork cluster

- Restore earlier taken backup

Conclusion

Conclusion

- Harness the APIs to integrate with north bound systems (OSS/BSS)

- Integrate with Cisco/Non-Cisco products for end-to-end solution

- Automate CrossWork deployment

- Automate repeated/recurring tasks using APIs

- Build custom dashboards, leverage the Crosswork collected data/alarms

- Close loop automation for traffic engineering use cases

- RBAC for access controls and audit logs for compliance of APIs

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