The bridge to possible

Implementing Cisco NSO in the Brownfield: How SPs can Learn to Love Orchestration

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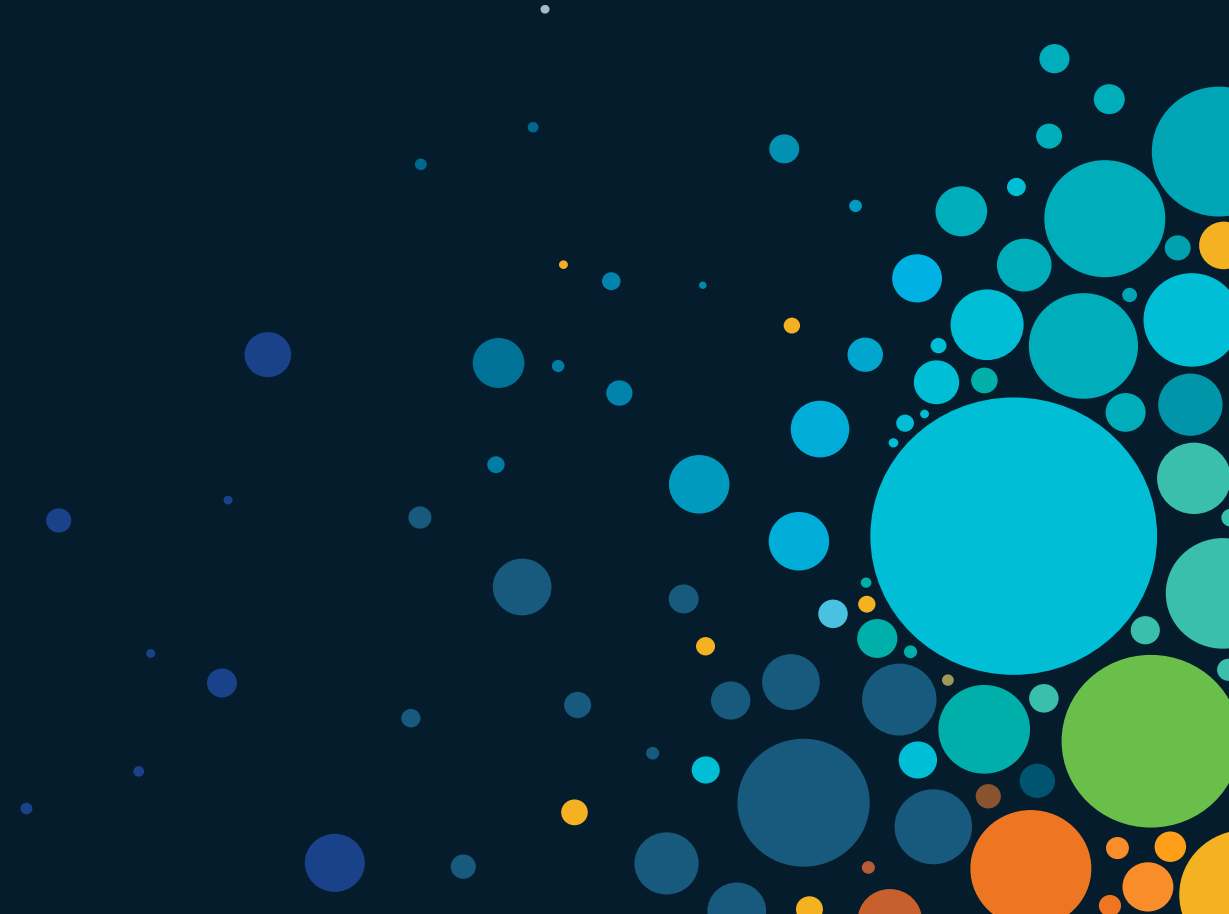
CSSSPG-2572

Agenda

- Introduction
- The Problem
- Warming up to Orchestration
- Implementation in the Brownfield
- Results and Impact

Introduction



T-Com Croatia and Verso Altima

Hrvatski Telekom

Leading service provider in Croatia

2.384.000
Mobile Network

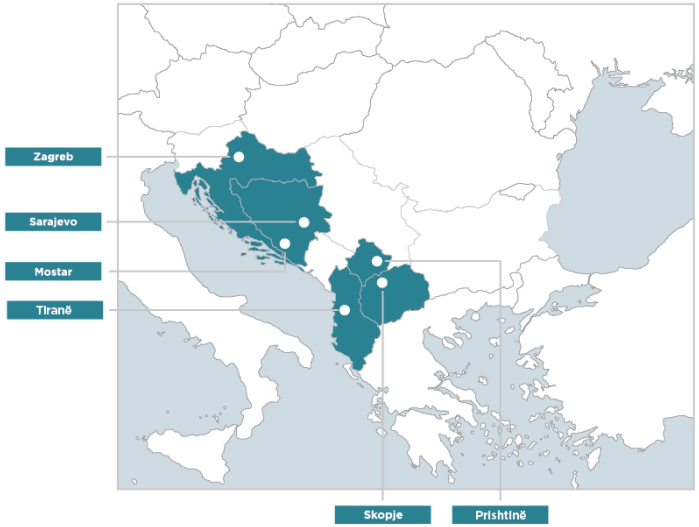
718.000
Fixed Network

Broadband Internet
646.000

IPTV
539.000

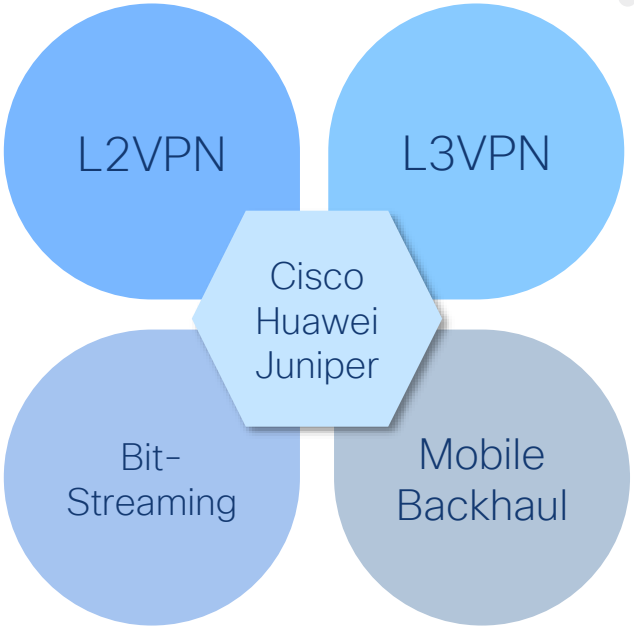
VERSO ALTIMA

Business integrator internationally recognized in the software and networking business, IoT and digital transformation.

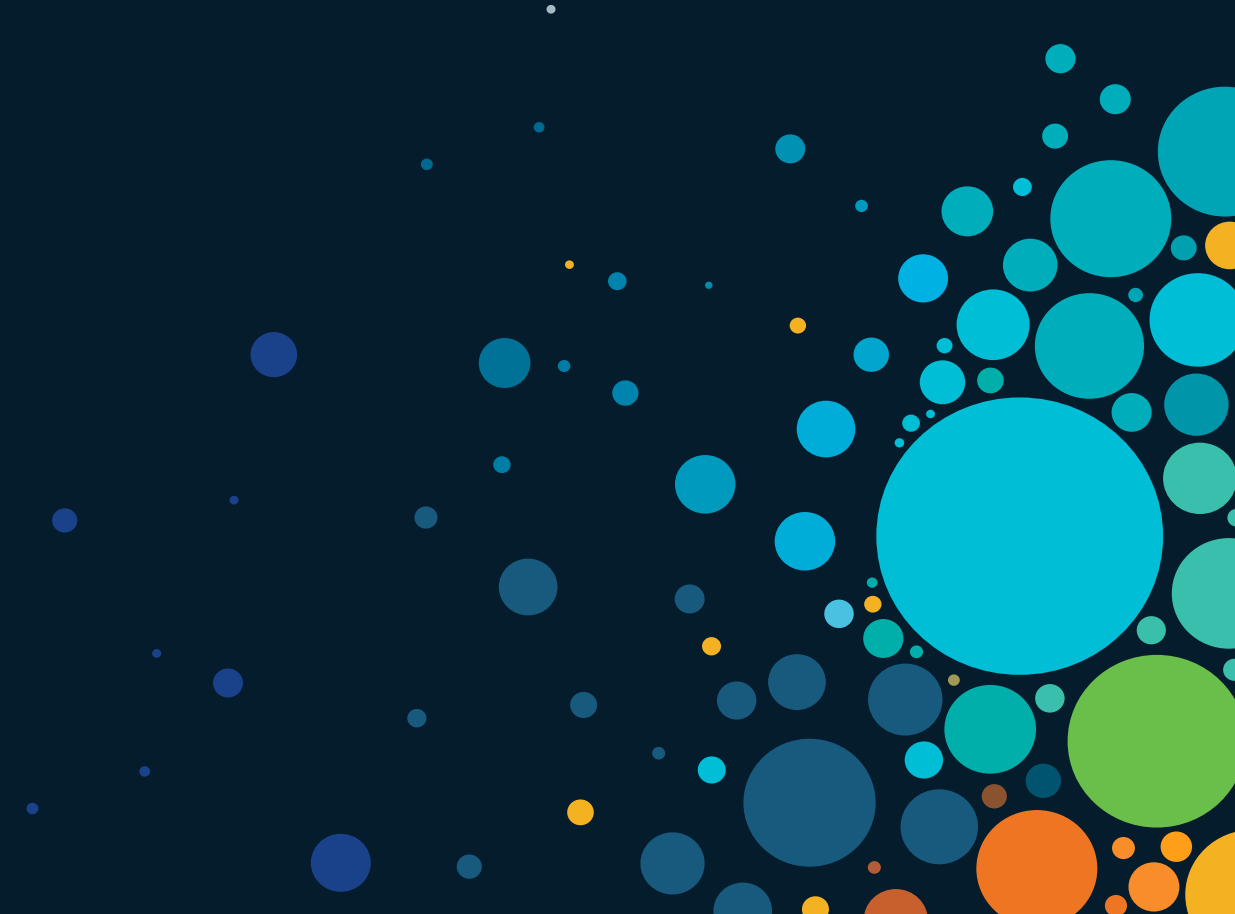


T-Com Network and Services

- 250+ MPLS-PE devices
- > 4000 L2VPNs (VPLS)
- > 3000 L3VPNs
- ~ 250.000 Subinterfaces



The Problem



Usual Suspects, with a Twist

Operations	
Configs	• Every engineer left a mark • Left-overs, non-standards • Semi-manual, error-prone • Highly skill-dependent
Hardware Upgrades	• Complicated, slow • Error prone
Hardware Replacement	• More complicated, slower
Service Upgrades	• VPLS -> ?
Documentation	• “Incomplete”

Business Workflow	
Service Activation	• Semi-manual, error-prone • Affects other tasks
Service Accuracy	• Reconciliation between billing and service config not easy
Workflow Automation	• Semi-automatic • Lots of manual work in workflow chain
Time-to-Service	• Days
Time-to-Repair	• Skill-dependent • Hard to achieve targets

Multivendor MPLS Network

Warming up to Orchestration

From Assessment to Proof of Concept

Task: Analyze Network and Services

- Topology
- Hardware & Software
- Traffic
- Protocols & Config
- Services

Identify problems and recommend solutions

Outcome: Restructure the Network

- Standardize configs
- Perform service audits
- Re-purpose equipment
- Move from VPLS to EVPN

Great ideas, but how can we implement them?

Conclusion: Need to Orchestrate

- How? Seeing is believing
- **Step 1:** Your configs -> Orchestrated Services
- **Step 2:** PoC with Power of Orchestration
- **Step 3:** Implementation

Bending the learning curve by using proven models

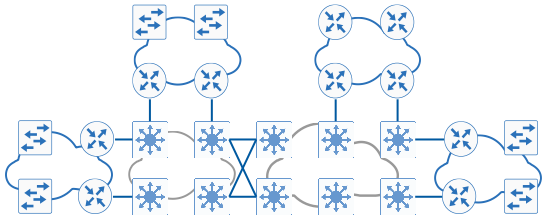
A Word or Two about Cisco NSO

- Orchestrates Services (End-to-End)
- Abstracts the Network and Services
- Modeled, automatic API
- Multivendor
- Intelligent and forgiving
- Has a learning curve
- Zero opened cases

The Difference

CLI Expert

- Service provisioning takes days
- Mistakes, troubleshooting



Noob + NSO

- Service provisioning takes seconds
- 0 mistakes

Running Start with Pre-Developed Models

L2VPN

All Flavors

VPLS, EVPN, Both
Point-to-Point
Multipoint
MEF Compliant
Sensible Defaults

L3VPN

With Multicast

Auto RD, RT
All Topologies
PE-CE Protocols
Bridge-Domain Mode
Sensible Defaults

Magic Commands

The Power of Orchestration

Create Pingable Interfaces
VPLS -> EVPN Transition
Virtual Interconnection
Consistency Checks
Service Tests

Cisco IOS, Cisco IOS XR, Cisco NXOS, Huawei, Juniper

Implementation in the Brownfield

Working with Existing Configs

PoC

- Tweaking existing models
- Detailed demo for all services
- Tests on lab equipment

Two weeks

Reconciliation

- Models for existing state & ideal state
- Automatic service discovery and reconciliation
- 100% match with existing configs

Three months

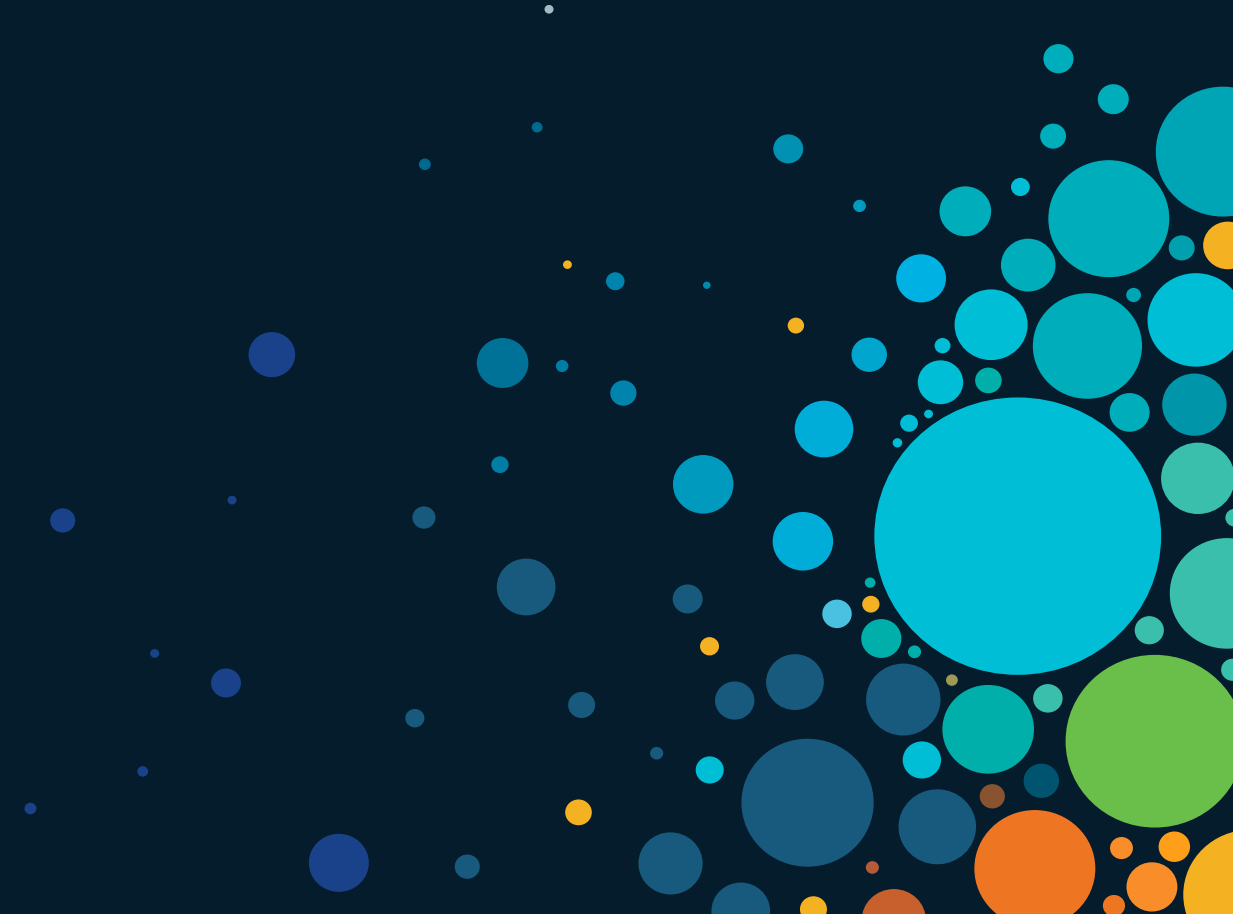
Production

- Day-one – All services
- Standardization
- Cleanup
- Knowledge transfer
- Half-day training to provision all L2/L3VPN services

Future work

Key: Most of the burden is on the competent integrator

Results and Impact



Business Outcome

Operations	
Configs	• 0 errors
Hardware Upgrades	• Trivial
Hardware Replacement	• Trivial
Service Upgrades	• Planning move from VPLS to EVPN
Documentation	• Automatic

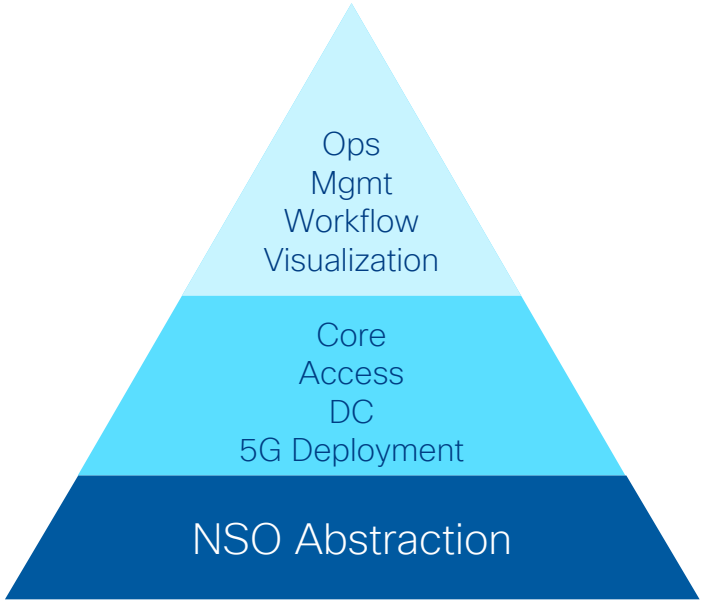
Business Workflow	
Service Activation	• Much more automated and integrated
Service Accuracy	• Unique source of truth
Workflow Automation	• Services abstracted • Easier workflow integration
Time-to-Service	• Seconds • Trivial rollback
Time-to-Repair	• Automated tasks

Ability to do much more with same operations

True Business Transformation

More than Orchestration

- Non-technical personnel can provision complex services
- Integration into DevOps
- Ability to attract talent
- Time-consuming tasks become trivial



You will never look back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