

How we are modernising our network

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A bit of History

The early beginnings

FIRST GENERATION IP NETWORK

1

First routers were Bay Networks back in 1997

2

These were replaced with Cisco 7200, 7500, 6509 and GSR routers

3

Access Network was Frame Relay, ATM, Ethernet Switching, DSL and Dialup

4

The business network was known as DIAS (Dedicated Internet Access Service), provided a National, International and Satellite level service

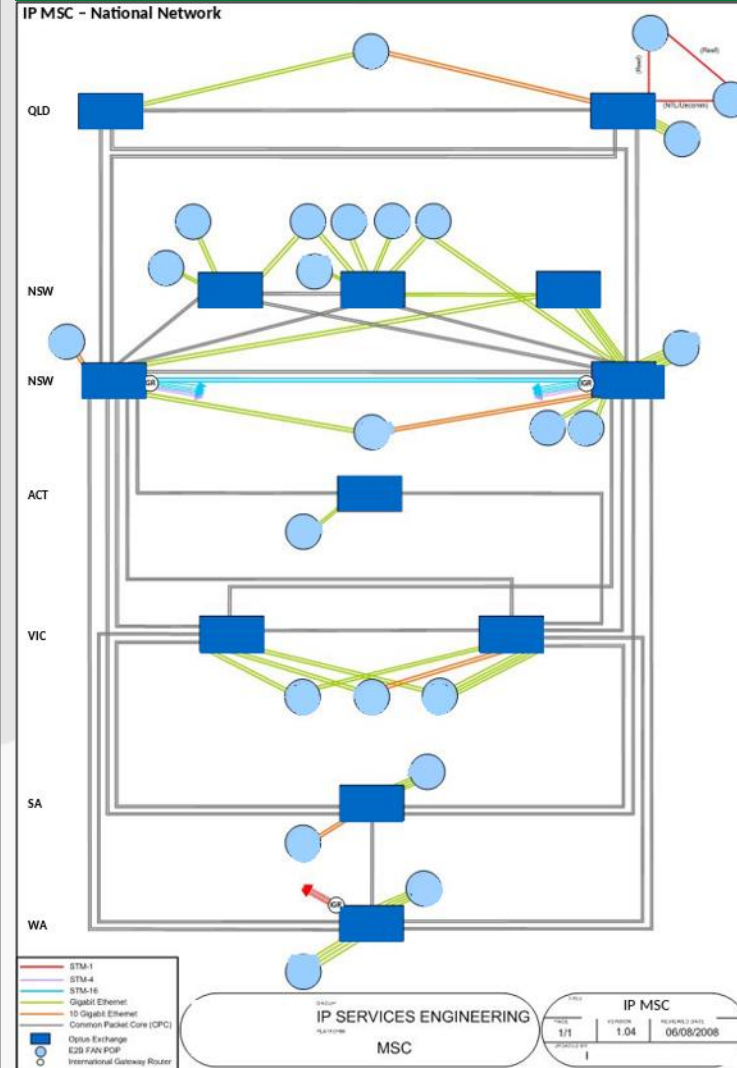
5

The consumer network routing was OSPF with 0/0 and islands of BGP for national routes

6

IGP was OSPF and LDP for MPLS label distribution

OLD NETWORK



This diagram is a view from ~2008 and is not current

A bit of History

The next generation

THE NEXT GEN

1

The Packet Core and Evolve networks were deployed in 2007. These were based on Juniper M320s

2

These were replaced later with MX960 and PTX routers

3

Access Network was Ethernet Switching, Mobile and Carrier Ethernet Access

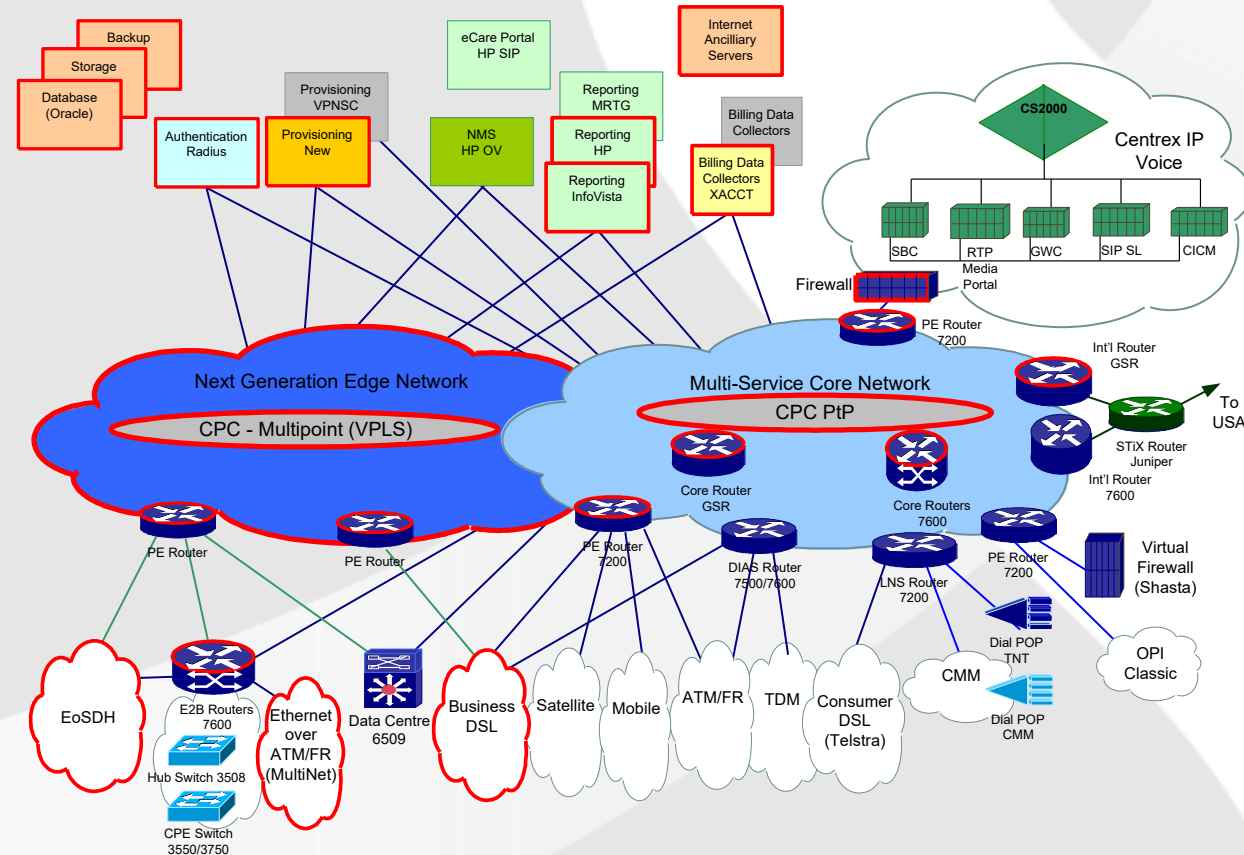
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Initially was based on VPLS planes, later replaced by a Seamless MPLS architecture

5

The consumer network utilised L2 pseudo wires and migrated to a Seamless MPLS architecture

BUSINESS & PACKET CORE NETWORK



This diagram is a view from ~2008 and is not current

OPTUS

A bit of History

The next generation

THE PACKET CORE

1

The Packet Core originally provided Layer 2 services, a point-to-point pseudo wire and a VPLS service

2

IGP is OSPF, RSVP-TE for LSP traffic engineering

3

Two logical service planes managed by two BGP instances

4

LSPs between routers have a primary path and a secondary path, these are diverse.
Diversity is managed by colouring the links.

5

Diverse fibre routes

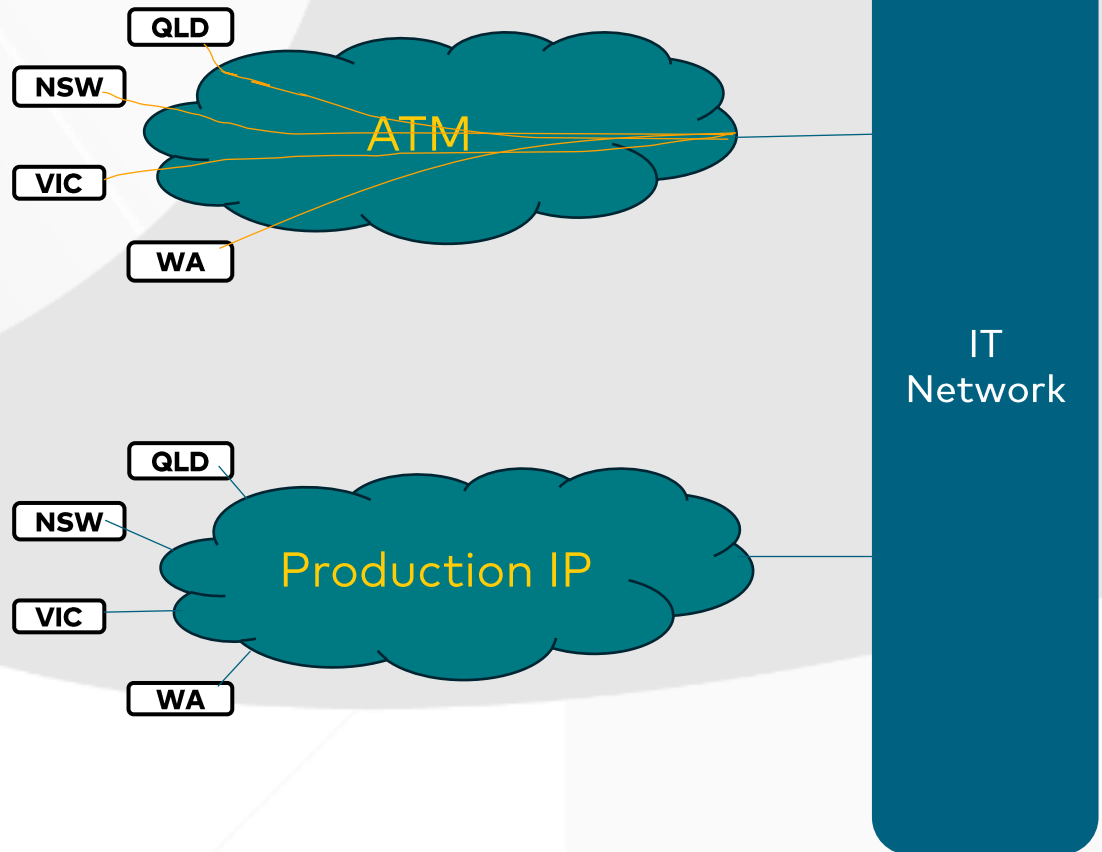
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Evolved to provide MPLS transport using BGP-LU

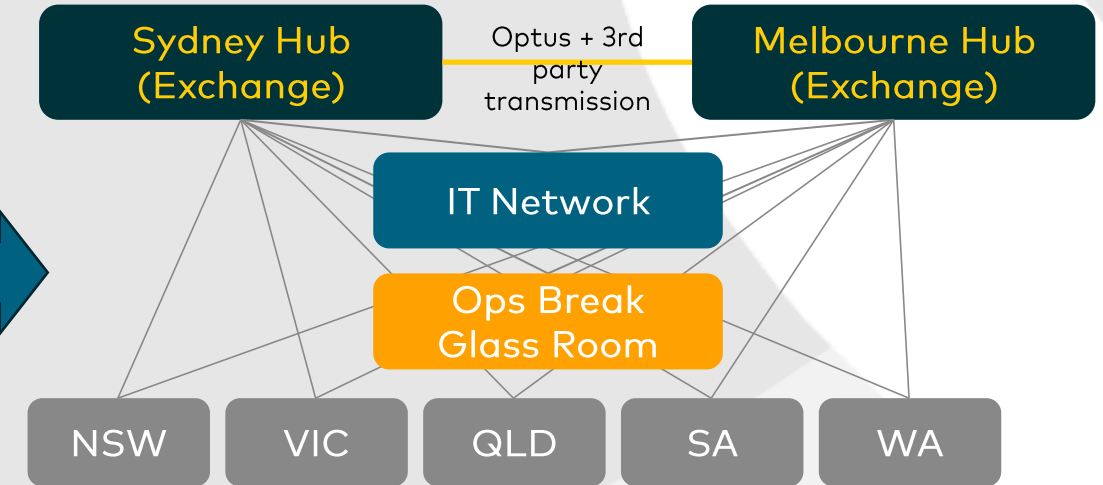
Out of Band Access

Last Resort Access

IMPROVEMENTS



NATIONAL OOB NETWORK



IP routers	migrated to OOB – 13 exchanges
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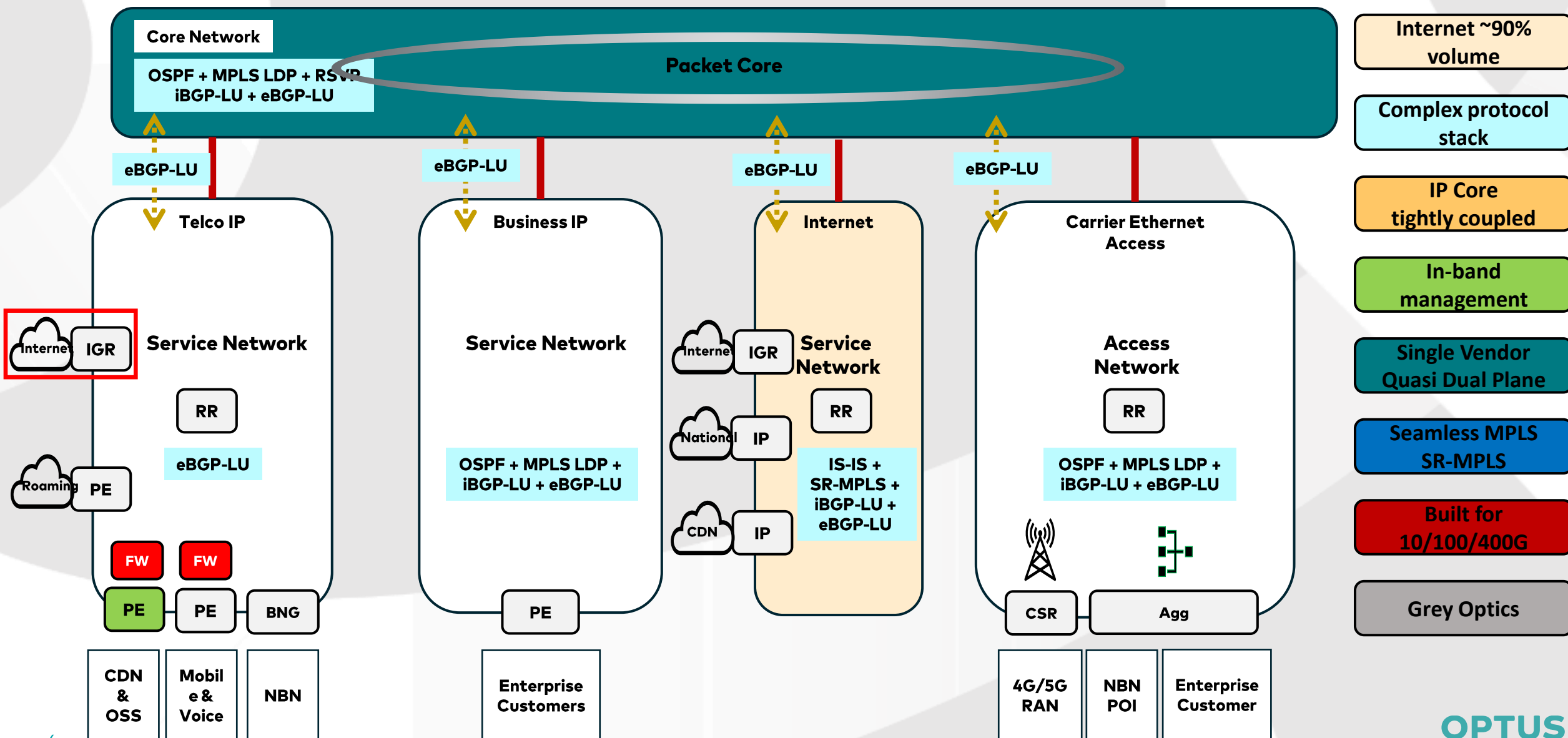
Star topology	dual hubs SYD + MEL
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Uplinks	to IT network + Ops break glass
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Transport	between exchanges on carrier diverse paths
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Current State Architecture

What we have now from years of reorganisations



What we are Incorporating

Some of the philosophies

EXPERIENCE

1 Always evaluate the suitability of default configuration values

2 Documentation

3 Separate Management and OOB networks

4 Know your dependencies

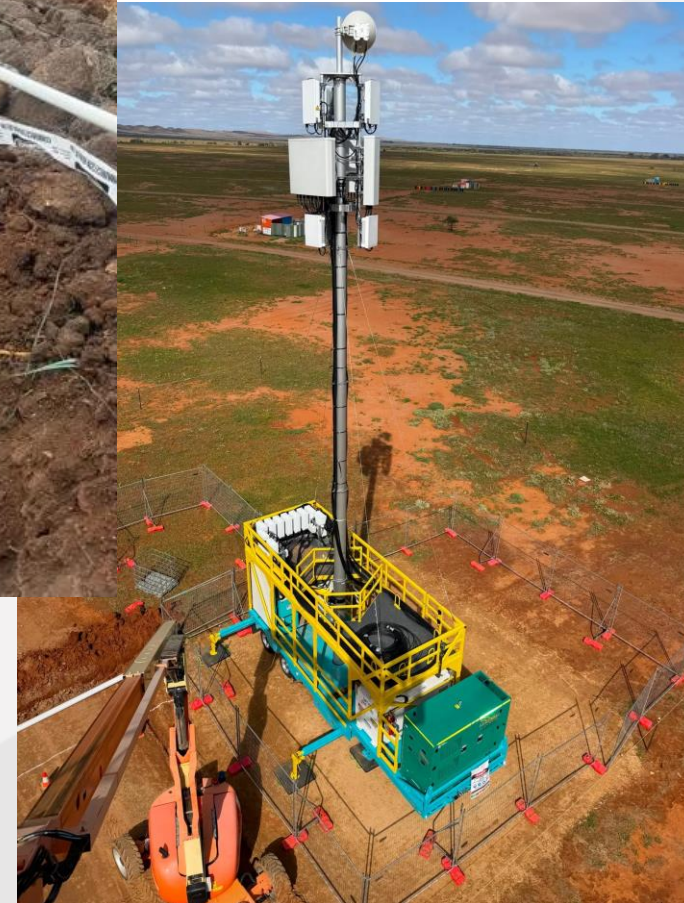
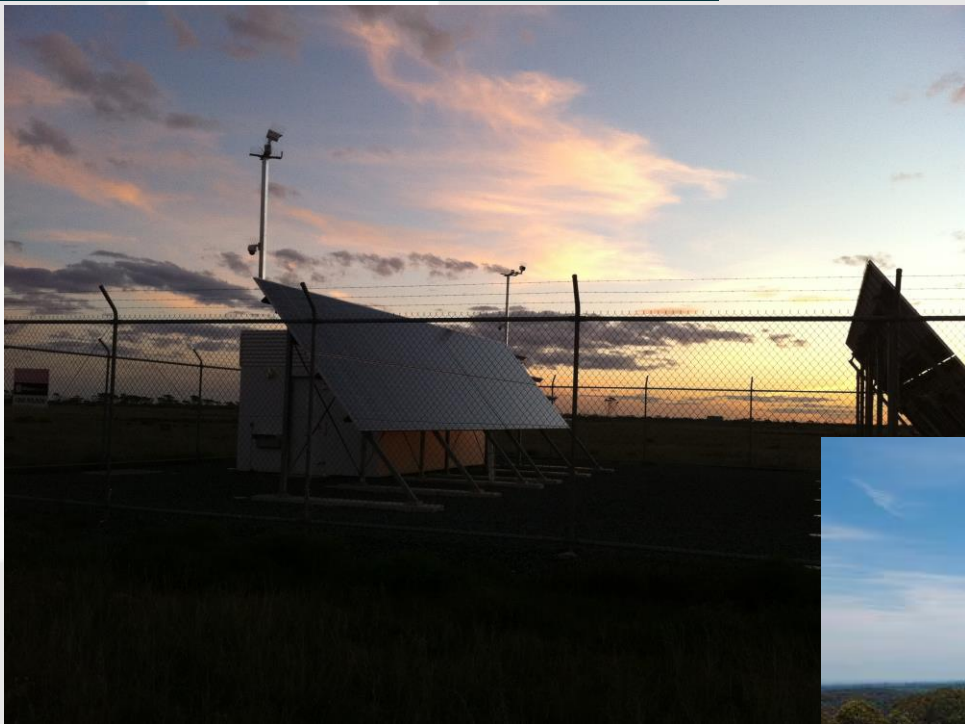
5 Partnerships

6 Automation & Consistency

Building a large network

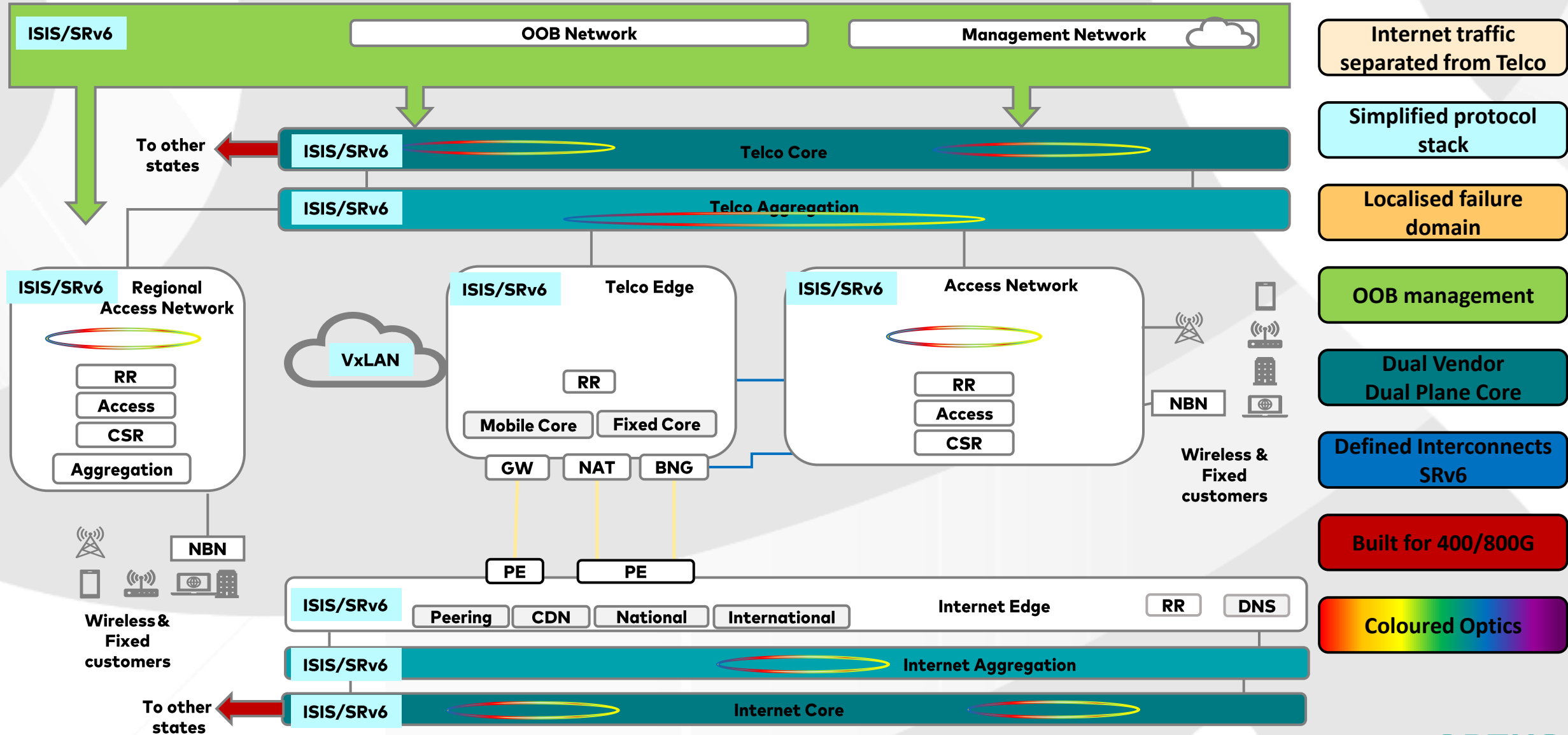
Some locations

NOT JUST IP



Future State Architecture

Where we are heading to



Future State Architecture

From Manual Operations to Intelligent Automation

MOVE FROM

Manual – High touch

✗ Human Error

Operator types CLI commands – one typo can cause an outage

✗ Reactive Operations

Faults discovered by customers or NOC alerts, not prediction

✗ No Automated Rollback

50%+ of changes have no automated baseline or rollback plan

✗ Knowledge Silos

Config logic lives in engineers' heads and ad-hoc MOP documents

✗ Vendor Specific

Each vendor requires separate CLI knowledge and manual processes

"How do I configure this device right now?"



MOVE TO

Automated – Low Touch

✓ Predictive Operations

AI detects anomalies and drift before they become outages

✓ Zero-Touch Rollback

Every change via CI/CD – atomic commit, auto-rollback on fail

✓ 100% Peer-Reviewed

All changes auto-validated + human approved before deployment

✓ Single Source of Truth

Git + NetBox + NSO CDB replace engineer memory and MOPs

✓ Vendor-Agnostic

One YAML intent layer works across all vendors – Cisco, Juniper

"How do I define what this device should always look like?"

**24/7 Continuous Drift
Detection**

**Network and Services are
Modelled**

AI Assists – Humans Decide

Every Change is Reversible

Any Questions?