



Dynamic Network Compliance

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Compliance Reporting

- **Agenda**
 - Network Challenges
 - NSO Solution
 - Compliance Reporting
 - Q&A

Compliance Reporting

- **Network Challenges**
 - Complex Multi Vendor Networks
 - Undefined Standards
 - Noncompliant Configurations
 - Security Risk Due to Discrepancies



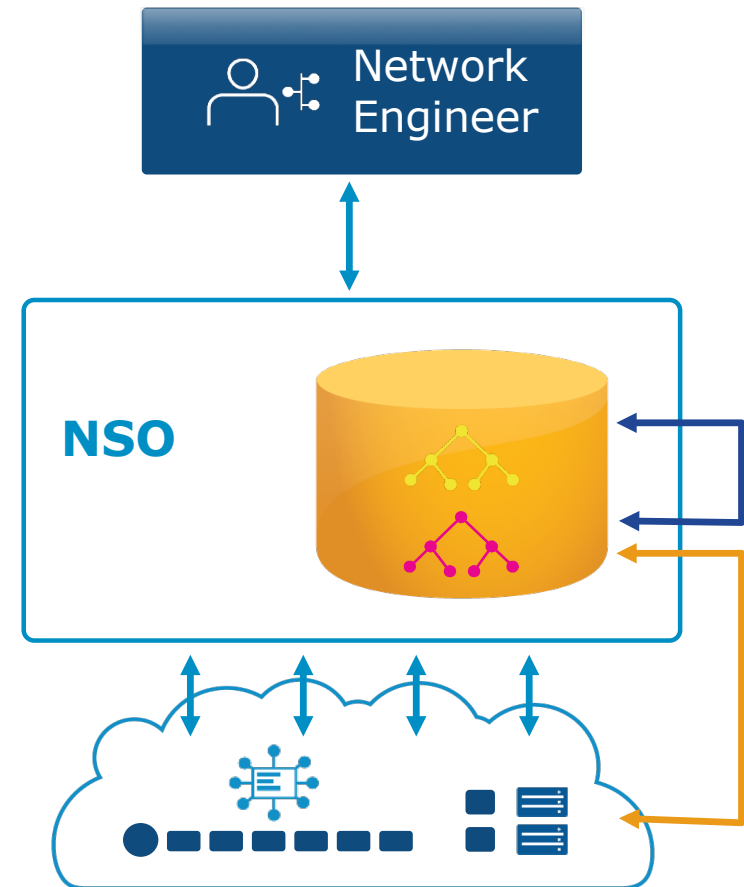
Compliance Reporting

- **NSO Solution**

- Powerful YANG Models & APIs
- Transaction Integrity
- Enforce Configuration Standards
- Compliance Report

- **Compliance Report Benefits**

- Identify Broken Device Configurations
- Audit Report on Historic Events
- Out of Sync Services



Compliance Reporting

- **Core Components**
 - Golden Template
 - Device Group, List of Devices
 - Generate Compliance Reports
 - Supported Formats – text, html, xml
- **Compliance Implementations**
 - Static Report
 - Dynamic Report
 - Hybrid Report



Compliance Reporting

- **Static Report: Check Prefix List**

- Problem Statement
 - Golden Prefix List
 - List of Devices
 - Report Noncompliance
 - Fix Discrepancies
- User Input
 - Device Group

Golden Prefix List

```
prefix-set V6-BGP-PFX
  2001:558:32::/48 1e 128,
  2001:558:312::/48 1e 128,
  2001:558:72::/48 1e 128
```

Compliance Reporting

- **Solution**

- Create Golden Template
- Create Device Group
- Generate Compliance Reports
- Fix Discrepancies

Golden Template

```
prefix-set V6-BGP-PFX  
    2001:558:32::/48 le 128,  
    2001:558:312::/48 le 128,  
    2001:558:72::/48 le 128
```

Compliance Reporting

- **Dynamic Report: Check Device Compliance in HA**
 - Problem Statement
 - Devices in HA (High Availability)
 - Non-Identical Prefix List Entries
 - Report Noncompliance
 - Fix Discrepancies
 - User Input
 - Prefix List Name
 - List of Devices

Device A

```
prefix-set V6-BGP-PFX
  2001:558:32::/48 1e 128,
  2001:558:312::/48 1e 128,
  2001:558:72::/48 1e 128,
  2001:558:182::/48 1e 128
```

Device B

```
prefix-set V6-BGP-PFX
  2001:558:32::/48 1e 128,
  2001:558:312::/48 1e 128,
  2001:558:72::/48 1e 128,
  2001:558:222::/48 1e 128
```


Compliance Reporting

- **Solution**

- Dynamic Golden Template
- Dynamic Device Group
- Generate Compliance Reports
- Fix Discrepancies

Dynamic Golden Template

```
prefix-set V6-BGP-PFX  
    2001:558:32::/48 le 128,  
    2001:558:312::/48 le 128,  
    2001:558:72::/48 le 128,  
    2001:558:182::/48 le 128,  
    2001:558:222::/48 le 128
```

Compliance Reporting

- **Hybrid Report: Regional Compliance Checks**

- Problem Statement
 - RADIUS Servers
 - TACACS Servers
 - NTP Servers
- User Input
 - Region ID
 - List of Devices

Region East

```
RADIUS ip, name, key
```

```
TACACS ip, name, key
```

```
NTP ip, name
```

Region West

```
RADIUS ip, name, key
```

```
TACACS ip, name, key
```

```
NTP ip, name
```

Compliance Reporting

- **Solution**

- Store Regional Data in NSO
- Predefined Golden Template
- Create Device Group
- Generate Compliance Report
- Fix Discrepancies

```
<regions>
  <region>East</region>
  <radius>
    <name>rad</name>
    <ip>10.10.10.19</ip>
    <key>key-detail</key>
  </radius>
</regions>
<regions>
  <region>West</region>
  <radius>
    <name>rad2</name>
    <ip>10.10.10.20</ip>
    <key>key-detail</key>
  </radius>
</regions>
```





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TOMORROW starts here.