Extending WAE’s Use case using API

Sonny Franslay, Josh Peters

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Agenda

• What’s new in WAE?
• Optimization Prediction Module API
• Use Case Demo
What does WAE do?

• Build an abstracted network model that include topology and traffic model
What’s new in WAE?
New paradigm in WAE 7.1: Real Time Bandwidth Architecture

- Real-time Use Cases
- In-Memory Network Model
- Reactive Model Building
- Real-time Topology using SR-PCE (XTC)

Real Time Use Cases
YANG Data Model

- YANG data structure to represent network model
Optimization Prediction Module (OPM) API

- Northbound API based on RESTconf/Netconf
- High-level pythonic API

```
filename = 'some/plan/file.pln'
with open_plan(filename) as network:
    model = network.model

    # Get NetworkObjectManager for LSPs
    lsp = model.lsp

    # Add new LSP using append()
    new_lsp = lsp.append(
        'source': 'crl1.wdc',
        'name': 'test',
        'destination': network.model.nodes['crl1.atl'],
        'setup_bandwidth': 1000.0,
        'lsp_type': 'rsvp',
        'active': True
    )
```
Use Cases
Network Operation Lifecycle

Establish Intent

Refine Intent

Analyze Intent

Deploy Intent

Monitor Intent

Closed-loop Automation
Use Case: Tactical Bandwidth Optimization

Network Optimization with continuous tracking of network state

- **The Problem**: Network state changes continuously and operators are having problem tracking and reacting to rapid network changes that often lead to congestions.
- **The Solution**: With WAE, XTC and Segment Routing, a closed loop network state tracking enables WAE with Tactical TE engine to continuously track changes and react to optimize the network.
- **The Value**: Real-time optimization that enables the network to continuously run optimally.

1. WAE constantly learns network topology and traffic
2. Network state changes are detected by SR-PCE / WAE which will trigger BW Optimization
3. BW Optimization checks for policy violation
   - If Threshold > X, optimization is run and SR Policy deployed if needed
   - If Threshold <= X, no change
Use Case: Service+Network Assurance

Service assurance with network awareness

- **The Problem**: Service assurance typically does not have awareness of topology context
- **The Solution**: Crosswork Situation Manager integrating WAE to provide topology awareness on service events
- **The Value**: Topology awareness provide better context on service events