Data Analytics to Support Telecom Cloud Self-Adaptation

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The Telecom Cloud

- New Business models
- Introduce new attractive data-driven services
  - Predictive analytics
  - Context-aware applications

![Diagram of the Telecom Cloud]

- Optical core network
- Large data center
- Small data center
- U2U
- U2DC
- DC2DC
- Edge Computing
- MPLS Area
Orchestrating the Telecom Cloud

![Diagram of orchestration components: Virtual Infrastructure Manager, Orchestration, Cloud Resource Manager, Networking Functions, Transport Network Orchestrator, Datacenters with interconnections.]
Adding Cognition to the Telecom Cloud

1. Observe
2. Analyze
3. Act

Big Data Infrastructure Manager

Orchestrator

Cloud Resource Manager

Networking Functions

Transport Network Orchestrator

Data Collector

Query Engine

NoSQL DB

Big Data Analytics Engine

Virtual Infrastructure Manager

Monitoring

Configuration

Datacenter

Datacenter

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Use Case 1: L0 Failure Detection and Localization


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Use Case 2: L2 VNT self adaptation

Use Case 3: L2 traffic anomaly detection

Use Cases 2-3: L2 traffic anomaly detection and VNT self adaptation

- L2 Traffic Anomaly and Network Reconfig
- Network Cntl & Mgmt
- L2 Traffic Model
- L2 Traffic Anomaly Detection

Domain Control and Management
  - Data Analytics
  - Network Cntl & Mgmt

Virtual Network Topology
  - vLink
  - MPLS Switch

OAA loop
Use Case 4: Traffic models aggregation

Use Case 5: C-RAN reconfiguration

• Single monitoring and data analytics architecture for the whole infrastructure
• Castor connects virtualized components together and enables secure data exchange among them.
Domain Control and Management

Data Analytics

KDD

Get samples

Process

KDD API

Notify

Run

Save configuration

Notifications

Commands

Orchestrator

Extended Node

Local KDD

Config

Notif

RESTCONF Server

Collected Repo

Store samples

Data Manager

Notifications

IPFIX Speaker

RESTCONF Client

Encryption

Sample Handler

Repo Config

AppRepo

Message mapping

Process Config

Process

IPFIX from Node

IPFIX

Notifications

Decision Maker

Notif

Run

Send configuration

Config

Send configuration

Store samples

Notifications

Decryption

Obs Group Handler

Monitoring samples

IPFIX

Notifications

Notify

Save configuration

RESTCONF Client

Monitoring samples

Encryption

Sample Handler

Repo Config

IPFIX Speaker

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Thank You!

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