UNLEASH THE POWER OF LIMITLESS CONNECTIVITY
Operational Transformation

Enabling Scale through Advanced Automation

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vCMTS Intro

Distributed Access Architecture with rPHY made virtualization possible and helped us to modernize our access network.

We moved to cloud native architecture using general purpose compute and leaf/spine network
Advantages of vCMTS

- **Near real-time telemetry**
  - Faster
  - Mean time to detect

- **Blast zones**
  - Smaller
  - Via targeted SW upgrades

- **Leverage & build open source**
  - Easier
  - Cost reduction, faster implementation time, easy to customize

- **Fast reactions to course correct**
  - More
  - Software changes
  - Frequently; automation reduces the need for human intervention
Operating vCMTS At Scale

Infrastructure as code

Configurations are code
Removes human error
Predictable behavior
Deploys faster

Software Deployments

Automated rollout schedule
Manage high risk deployments
Automated workflows via Concourse
Continuous monitoring post deployment
Smart rollback

Anomaly Remediation

Event Detection
Event Correlation
Auto Remediation
Smart Alert

Lifecycle management

Automate maintenance workflows
Zero-touch hardware provisioning
Realtime Network Health
Video source toggling
Dynamic provisioning
Automating the vCMTS cluster stand up

- Rack assembled and shipped to HE
- Rack arrives in HE and wired up
- Request of IP block and wait blocks to be assigned

100% automation

- Generate configs
- Validate configs
- Switches Configured
- OS Install
- Kube install
- SW components installed
- Hardware Health Check
- Software Health Check

Operational Readiness Test
Prod Ready
Automating the vCMTS cluster stand up

Number of vCMTS clusters versus time. The automated build process began in September 2019, significantly accelerating the cluster build process.
Automating software and network changes

1. Generate configs
2. Validate configs
3. Pre deployment snapshot of the state of system
4. Ok to proceed
5. Deploy
6. Post deployment snapshot and compare with pre and historic data
7. All ok?
8. Start Long Term Monitor
9. Rollback
10. Long term monitoring failed
11. Evaluate if deployment to other clusters should stop
12. Rollback
13. Reschedule for another day
Automating software and network changes

Number of changes versus time. Automated change deployment pipelines were introduced in September 2019.
Automating incident detection and mitigation

System availability vs time. Availability is plotted on the right side (excluding scheduled maintenances) and the number of major incidents per month caused by human error is plotted on the left.

Introduction of Automation
Run a highly available state of the art network while reducing cost of operations

- Capacity Additions
- Expanding footprint (adding additional switches)
- Enabling Customer Growth
- Enabling Usage Based Billing
- Routine Maintenance
- Server Replacement
- Switch Replacement
- Proactive video maintenance
- On Demand Diagnosis and Self-Healing
- Service Anomaly Detection
- Smart Alert with impact analysis
- Auto Remediate
- Troubleshooting tools
Thank You!

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