Charting the future

Consoles to AI-driven infrastructures

Arnab Sen,
Senior Manager Coding and Automation, NTT Ltd.
Four Stages of Organizational Maturity

Level 1: Console Based
- Reliance on network and system engineers to login to devices and configure & manage systems based on organizational requirements.

Level 2: Ad-Hoc Commands
- Using repeated commands in various devices to do perform simple functions or gather reports.

Level 3: DevOps + Automation
- Leveraging DevOps toolset and automations to deploy and manage infrastructure resulting in massive efficiency boost by integrating other systems and services.

Level 4: AIOps
- Allowing Machine learning and AI to gather, train and implement infrastructure management without the need of human intervention.

Three Goals of the Session
- Explain Stages 1, 2 and 3 of Organizational Automation Maturity.
- Achievements and limitations at every level.
- Steps involved to transition from hands-on infrastructure to Autonomous infrastructure and how NTT helps clients achieve that.
Ad-hoc commands in computing refer to one-time, on-the-fly commands designed for specific tasks or situations typically leveraging SSH or APIs of devices.

### Advantages

- Fast parallel execution for a Quick Fix
- Can achieve some amount of standardization
- Can reduce typos and avoid outages

### Disadvantages

- Cannot undo changes
- Reactive rather than proactive
- One time and cannot re-use automations in future
- Cannot handle unexpected output
- Can only run simple commands on similar devices
Advantages

- Permanent code can be modular and reused for one or more use-cases
- Can be orchestrated to run automations in sequence forming a chain of process flow
- Same codes can be executed for various setups — Test and Prod
- Vendor agnostic and intent based idempotent
- Rollback incase of issues and fix deployment outages immediately
- Manual intervention can be added where necessary
- Codes and run-time environments can be imaged using tools like Docker and can be run anywhere
NTT-DATA Managed Automation Platform

24/7 Managed Platform by NTT to build & run your automations

- Built on open-source tools
- Created by Infra Engineers
- Avoid vendor lock-in
- Batteries Included
- Run anywhere

Can be run both of NTT premises or client premises

Integrated with all the services of NTT – Service Portal, CMDB, ServiceNow, etc.

NTT can build, co-develop or port client automations in any language

Selection from a wide variety of available/reusable automations.

Automation use cases

Managed Automation Platform
Orchestration platform saving multiple mil.EUR p.a.

Network Hardening
Solved 65,000 vulnerabilities in 2,500 devices for a client

Backup Manager
Flexible backup solution of any settings for fast recovery

Service Catalogue Dashboard
Saving 100k+ EUR p.a.

Systems Integration
Saving 100 days per year for one client

Device upgrade
Saved 700k EUR work during upgrade of 6k+ switches

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Automation Centralizes Data

- Data is the most important asset of any organization
- All data can be fetched from a central point
- You have complete control over your data
- Generation of reports is easier
- Data can help in predicting issues using AIOps
- Data can be used in solving probable issues
AIOps is often thought of another block in operations.

AIOps requires a full rethinking of operational approach.

Engine is just a piece of the bigger picture.

AIOps solutions must demonstrate that they can:
- differentiate early warning signal
- associate early warning signal with the other portions of the incident signature such as those coming from log files and eventing tools
Architecture of SPEKTRA Platform

**SPEKTRA Cloud**

- **Client Experience – Web Portal**
- **Service Management**
- **Automation**
- **AIOps**
- **Analytics & Reporting**
- **Unified Monitoring**
- **Unified Client Access**

**SPEKTRA Edge/Far Edge**

- **Per-client Agents**
- **Automation**
- **Monitoring**
- **Logs/backup**
- **Service Exp**
- **Edge AI**

**Client Connectivity**

- **Client Network**
  - **SD-WAN**
  - **Wireless**
  - **Private NW**
  - **NW Security**

**Web Portal** catering to different personas – Exec, site manager, site engineer, etc

**Process & Runbook Automation** – Patch deployment, Patch assessments, vulnerability assessments, etc

**Big Data Analytics** – based on big data architecture for data orchestration, analytics and visualization

**Unified Client Access** – Global secure network, Privilege access management

**VPN & VPN Less connectivity**
## SPEKTRA results

in a proactive, noise-free, up-to-date, integrated, and automated IT estate for clients

<table>
<thead>
<tr>
<th>Differentiated Platform Features via AIOps</th>
<th>Business and Operational Benefits</th>
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</thead>
<tbody>
<tr>
<td><strong>Event Correlation and Log Analytics</strong></td>
<td><strong>Noise-free IT estate</strong></td>
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<tr>
<td>(correlates similar events received across the client estate)</td>
<td>~4X reduction in number of tickets per device</td>
</tr>
<tr>
<td><strong>Classification and Root Cause Analysis</strong></td>
<td><strong>Increased network uptime by faster redressal of issues</strong></td>
</tr>
<tr>
<td>(groups corelated events into parent-child clusters, assigns root cause based on historical data)</td>
<td>Decreased ticket handling time</td>
</tr>
<tr>
<td><strong>Anomaly detection</strong></td>
<td><strong>Improved network quality</strong></td>
</tr>
<tr>
<td>(detects points/devices that malfunction repeatedly and flags them as incidents)</td>
<td>Pre-emptive issue(s) detection, ~85% tickets are proactive</td>
</tr>
</tbody>
</table>

These benefits are achieved via SPEKTRA platform features combined with NTT’s skilled operations engineers.
SPEKTRA Features

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### AIOps Smart Clustering

1. **Correlation engine: Inputs**
   - Real-time metric data
   - New detections grouped

2. **Correlation engine: filter and cluster**
   - Filtered events
   - Clustering and classification/correlation models (unsupervised models)
   - Multiple events clustered together

### Site Availability Prediction

- **Prediction Engine**
  - Historical PM, & FM data
  - Historical availability
- **Prediction Models**
  - Current time-series data
  - Client network

### Smart Utilization Prediction

- **Predictor A**
  - Prediction A
- **Predictor B**
  - Prediction B

### AIOps Root Cause Analysis

- **AI Classification & RCA engine**
  - Historical knowledge of Classification & RCA
  - Right parent selection
  - Root cause field provided

### AIOps Anomaly Detection

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Level 3: AIOps
Knowledge required: + ML/AI programming and Statistics.

Level 2: DevOps & Automation
Knowledge required: + Automation & DevOps

Level 1: Ad-Hoc Commands
Knowledge required: + APIs

Level 0: Console Based
Knowledge required: Infrastructure

The more your organization embraces technology, the more benefits it reaps.

NTT-Data guides clients at every stage: from Tech Consultancy to Autonomous Infrastructure Setup.

NTT-Data has tools in place (MAP: DevOps, Spektra: AIOps) to help clients at every stage of their automation journey.

NTT-Data teams have Subject Matter Experts in all the areas combined to provide clients the best experience.
Thank you!

**Join us for a coffee** at the NTT DATA Coffee Lounge in the World of Solutions!

**Visit us** at the NTT DATA Private 5G corner at the Aviation Booth in The Hub!

Together, we do it right.
Network automation – A world of misunderstandings

You develop network automation solutions for others and experience the issue of misunderstanding during the development. Find out how methods like (user-)story-mapping help to create a common understanding of the problem you and your team are trying to solve through network automation projects.

Henry Oelsner, Technical Consultant, NTT Ltd.

When: Thursday, 8 February | 1:30 pm to 2:15 pm
Where: DevNet Theatre