THE JOURNEY INTO NETWORK AUTOMATION

MARK PRIOR
INTRODUCTION
MY BACKGROUND

31 YEARS IN NETWORKING AND NETWORK SECURITY

21 YEARS AS A CCIE

SOLUTION LEADER IN THE OFFICE OF THE CTO

DEVELOPING PROPOSITIONS AND SERVICES
POSITIONING THEM

PIVOTAL CHANGES IN THE NETWORKING INDUSTRY

SDN AND SOFTWARE
AUTOMATION
CLOUD
HYBRID WORKING

WHAT DOES THAT MAKE ME
THE BENEFITS OF AUTOMATION IN NETWORKING

**COMPLIANCE AND ASSURANCE**
- **CHALLENGES**
  - Configuration drift
  - Manual audit and analysis
  - Schedule remediation seperately

- **Automation Benefits**
  - Standards baked in
  - Repeatability audit, validation and remediation

**CHANGE**
- **Challenges**
  - Human error makes change control essential

- **Automation Benefits**
  - Reduce the number and impact of failed changes
  - Accelerate new deployments
  - Simplify/remove change control
  - Network no longer ‘in the way’

**TESTING**
- **Challenges**
  - Non-standard
  - Hit and miss

- **Automation Benefits**
  - Eternity memory of a test library
  - Minimise MTTR/MTT
  - Reduce user frustration

**TROUBLESHOOTING**
- **Challenges**
  - Resolution time depends upon tools available, how effectively they are in use and the skills of the engineer

**Network Operations**
- Agile
- Stable and compliant
- Fault resolution optimised
- Meet modern business needs

**The network – the foundations of the house**
THE STEPS TO NETWORK AUTOMATION SUCCESS

1. DIP YOUR TOE IN THE WATER
   One clever person exploring ‘art of the possible’

2. DETERMINE A STRATEGY
   Use cases to determine ROI to determine approach

3. ENABLE THE TEAM
   - Skills
   - Tools
   - Processes
   - Environments

4. START SMALL
   Focus on simple/high value use cases initially
   Start as you mean to go on
   Track your ROI
THE STEPS TO NETWORK AUTOMATION SUCCESS

BUILD ON SOLID FOUNDATIONS TO MAKE ALL THESE THINGS POSSIBLE

- STANDARD, CONSISTENT TESTING
- STANDARD AND FAST CONFIGURATION
- ROLLBACK
- END TO END ITSM PROCESS
- INTEGRATE TECHNOLOGIES

STABLE AND EFFICIENT CHANGE GUARANTEED COMPLIANCE

- CHECK DEVICE CONFIGURATION, VALIDATE COMPLIANCE, FIX ISSUES
- AUDIT ALL DEVICE COMPONENTS AND REPORT

SELF SERVICE

- OPTIMISED OPERATIONS
- EVENT BASED AUTOMATION

AGILE

STABLE AND COMPLIANT

FAULT RESOLUTION OPTIMISED

MEET MODERN BUSINESS NEEDS

STABLE AND COMPLIANT

FAULT RESOLUTION OPTIMISED

MEET MODERN BUSINESS NEEDS
CUSTOMER EXAMPLES

In the first year of implementing an automation first strategy a customer saved 900 man days automating BAU tasks.

That customer fully automated a firewall rule migration from classic firewalls to an SDN distributed firewall in the Cloud, with no errors and saving an estimated 300 man days.

An MSP reduced network tenant deployment from 1 week to 2 hours – they had to deploy 250 tenants in 6 months and were able to do this with 1 person part time.

An e-commerce customer automated their firewall changes to accelerate and stabilise those changes and is in the process of extending that automation into a new network segmentation project.

A finance customer implemented self-service automation of an SDN Firewall to effectively reduce the time impact of adding/removing rules from 2 weeks to 1 day, with the attendant benefits of guaranteed standardisation.

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NETWORK AUTOMATION INDUSTRY CHALLENGES THAT WE SEE

INITIAL ADOPTION CHALLENGES

- We are definitely going to do network automation!
  - But…
  - Fear, uncertainty and doubt!
  - No Time!

SCALE OUT CHALLENGES

- We have enabled a network automation operating model for a specialist team!
- We now want all of the team to have automation capability
  - But…
  - How do we do this safely and at pace? No Time!

NETWORK AUTOMATION KICK START SERVICE

- ACCELERATE ENABLEMENT
  - NETWORK SPECIFIC TRAINING
  - GAIN EXPERIENCE
  - INCORPORATE LESSONS LEARNT
  - BUSINESS VALUE
  - PLATFORM

HELPING HAND
THE NEW UNICORN (CCIE) – NETWORK (SECURITY) ENGINEER 2.0

AUTOMATION FIRST

RETHINK THE POSSIBLE

NETDEVOPS
Ansible | Terraform | Python
Git

CLOUD PLATFORMS
AWS | Azure | GCP | VMware
Kubernetes

SECURE CLOUD NETWORKING
SDN | CNI | Service Mesh |
Multi-cloud Networking Software

NETWORK OBSERVABILITY
AIOps | End-to-end

CLASSIC NETWORKING
Routing | Switching | Wireless | Load Balancing | Firewalls
THANK YOU
NETWORK AUTOMATION KICK START SERVICE

WORKSHOP

CREATE A PRIORITISED LIST OF AUTOMATION CANDIDATES TO DELIVER DURING THE PROCESS

UNDERSTAND CURRENT STATE

CAPTURE AUTOMATION IDEAS

PLATFORM DEPLOYMENT (OPTIONAL)

AUTOMATED DEPLOYMENT OF A COMPREHENSIVE TOOL SET

5 DAY INTRODUCTORY TRAINING COURSE – TRAIN PEOPLE READY FOR THE NEXT PHASE

FOUNDATIONS TRAINING

MANAGED AND SUPPORTED HANDS ON EXPERIENCE

GUIDED SPRINTS

COMPUTACENTER PROVIDE STRUCTURE AND DIRECTION

CUSTOMER WORKS ON REAL AUTOMATION SOLUTIONS FROM THE WORKSHOP

COMPUTACENTER PROVIDES ADVICE AND GUIDANCE ALONG THE WAY
NETWORK AUTOMATION KICK START SERVICES

**USE CASE WORKSHOPS**
- Real World Automation Candidates Defined

**OPTIONAL PLATFORM DEPLOYMENT**
- Automated and Comprehensive Tool Chain Deployed

**ENABLEMENT**
- Guided Training and Hands On Experience While Delivering Real World Automation Solutions

**RUN AND OPERATE**
- Accelerate You to Automation as Part of Business As Usual

**BENEFITS**
- Quickly and Safely Gaining Skills and Experience
- Delivering Business Relevant Automation
- Strategic Adoption of Automation

De-Risk and Accelerate Time to Automation Value
### The Benefits of Automation in Networking

<table>
<thead>
<tr>
<th>Manual Audit</th>
<th>Compliance and Assurance</th>
<th>Change</th>
<th>Testing</th>
<th>Troubleshooting</th>
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<tr>
<td>Compulsory audit for which there are no tools in place, or there are gaps in the tools, or it is time consuming to extract the data from the tools.</td>
<td>Either regulatory requirements or just to know how far you have drifted away from standards.</td>
<td>Changes to the network are invariably slowed down because of change control. This particular requirement is driven due to any outage caused by change is nearly always visible to the business.</td>
<td>Testing is typically left up to the individual. At best there will be a view taken through peer review in relation to a change.</td>
<td>The time it takes to resolve an issue that may or may not be the network is variable and depends on tools in use, how well those tools have been integrated into the process and the skills of the engineer.</td>
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<td>Accelerate and remove human error by writing automation once to be rerun on demand to provide the required report.</td>
<td>Run a workflow as often as you like to validate your compliance position and remediate if safe to do so.</td>
<td>Automation bakes in standards, removes ‘fat fingering’ and enables reliable roll back solutions.</td>
<td>Having a standard set of tests for pre and post change introduces reliability of testing. No missing tests, no is-interpreted tests, using orchestration/IaC to automatically halt a change if your pre-tests fail.</td>
<td>Having a standard set of tests to run. Having better analytics and actionable insights, coupled with the right automation skills and tools, will allow you to revolutionise your MTTO/MTTR.</td>
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<td>Reduce time spent and accuracy.</td>
<td>Reduce risk by ensuring you are always in compliance.</td>
<td>Reduce the number of failed changes due to human error and improve networks reputation with the business.</td>
<td>Standard tests that are consistently executed and always interpreted correctly to further ensure change is more reliable or problems are resolved quicker.</td>
<td>Every resolved issue stored in memory. AIOps plus leveraging automation tools and capability to revolutionise</td>
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**The Network as the Foundations of the House**
THE COMPUTACENTER ‘JOURNEY’ INTO NETWORK AUTOMATION

1.0 FIRST NETWORK AUTOMATION ENGAGEMENT - 2016
The power of Ansible when used to deploy new DC networks

2.0 AUTOMATION FRAMEWORK - 2018
Customer enablement focused framework for strategic automation adoption

3.0 AUTOMATED IT OPS SHOWCASE - 2020
The business case for automation
Self service app deployment with network and security connectivity

4.0 NETWORK AUTOMATION STRATEGIES START TO ARRIVE EN MASSE - 2021
Tipping Point

EXISTING TEAM ENABLEMENT

CUSTOMER WORKSHOPS
The why, the what and the how of network automation

CUSTOMER ENGAGEMENTS
- MSP
- SUPERMARKET
- GOVERNMENT
- FINANCE
- GAMES DEVELOPER
- E-COMMERCE
- E-GAMING

HOW CAN WE HELP CUSTOMERS GET STARTED?
ACCELERATE ENABLEMENT
- NETWORK SPECIFIC TRAINING
- REAL WORLD EXPERIENCE
- BENEFIT FROM LESSONS LEARNT
- DELIVER VALUABLE SOLUTIONS