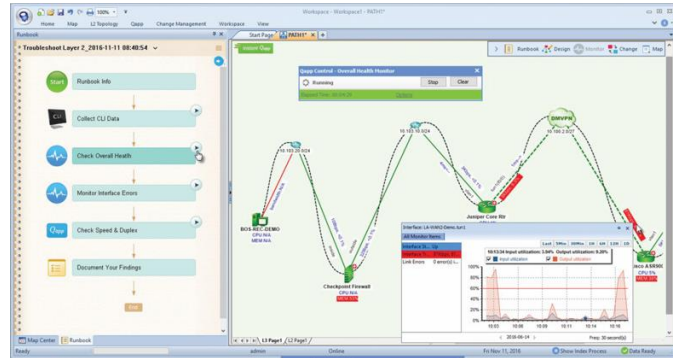


## Runbook Automation for Enterprise Network Operations

- Empower engineers with expert-level experience, through standardization of best practices.
- Reduce troubleshooting times by minimizing manual tasks and reducing duplication of work.
- Enhance collaboration during troubleshooting or escalation events.



*Runbook Automation for Layer 2 Troubleshooting*

For troubleshooting enterprise network environments, processes are typically documented in playbooks to reduce mean time to repair (MTTR). Playbooks provide a methodology or set of best practices for the organization to increase effectiveness of IT personnel. Although playbooks are valuable for standardizing troubleshooting processes, the process itself remains largely manual.

For troubleshooting, network operations teams face three critical challenges:

1. The vast majority of problems (e.g. slow applications, link utilization, route flapping) are not new. How can teams leverage lessons-learned from previous troubleshooting experience?
2. When new technologies are deployed (e.g. Nexus 7K, QoS) only select engineers can troubleshoot them effectively. How can the broader team be enabled to troubleshoot these technologies too?
3. Handoff and escalation between NOC Tier 1, Tier 2, and Tier 3 engineers is ineffective. How can collaboration minimize duplication of work at each tier?

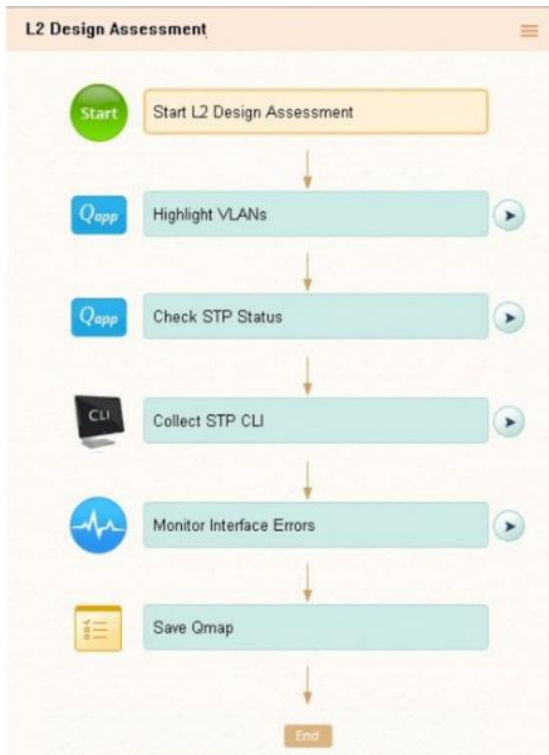
### Accelerate Troubleshooting with Runbook Automation

According to Gartner, organizations need to move from opportunistic to systematic automation of IT processes and best practices to improve accountability, efficiency and predictability, while reducing cost, variability and risk. Runbook automation provides an executable workflow which is carried out to support network operational processes. It fundamentally enhances IT operations making it more efficient by potentially interacting with all types of infrastructure elements.

With NetBrain’s Runbook Automation, organizations can digitize their playbooks to make them fully executable. Runbooks integrate multiple features of NetBrain (e.g. Qapp, Monitor, Auto-CLI, Ping/Traceroute, etc.) into a single workflow which is repeatable and shareable. Tribal leaders can now digitize their knowledge and processes for the entire team to run. Runbook automation has many benefits:

- Extremely powerful - powered by discovery, dynamic mapping, and Qapp
- Highly programmable - via Visual Programming, without scripts
- Simple to share –results from each step are self-contained in the Runbook

#### About NetBrain Technologies



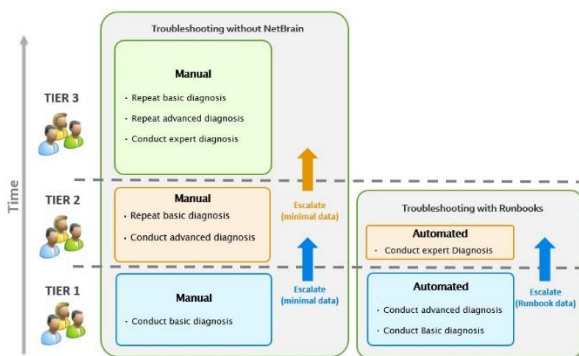
Runbook for Layer-2 Design Assessment

### Troubleshooting Common Problems

Recurring problems (e.g. slow applications, route flapping, etc.) may have a clearly defined procedure for determining root-cause resolution, but resolving these issues is time consuming. With Runbooks, organizations now have a simple workflow which can be executed to troubleshoot these common problems as they occur. Network engineers can digitize troubleshooting steps and share them within the organization. Runbooks make IT personnel more efficient and shortens Mean-Time-To-Repair (MTTR).

### Troubleshooting New Technologies

Enterprises adopt new technologies (e.g. software-defined networking, cloud-based applications, etc.) to provide cutting-edge services to their users. The challenge is systematically managing and troubleshooting these new technologies with only select engineers trained on them. With Runbooks, network experts can 'digitize' troubleshooting processes for these new technologies, which can be leveraged by the broader organization.



How Runbook Automation Streamlines Escalation

### Troubleshooting Escalation

In any organization, network engineers have different levels of technical skills, knowledge and training. In many circumstances, the incidents may require advanced troubleshooting know-how and need to be escalated. Engineers can automate diagnoses and capture the resulting data along with their analysis inside a Runbook. That Runbook can be shared, along with a map of the problem, area during escalation. This eliminates the need to execute the same actions at each level, and builds collaboration.

Troubleshooting one device at a time and 'shooting from the hip' is both ineffective and costly. Automation of user troubleshooting workflows empowers engineers to divide and conquer network problems without losing control over the process. Runbooks eliminate the mundane repetitive tasks making IT personnel more effective and focused on other strategic initiatives. Runbook Automation for troubleshooting makes organizations more agile and helps them to significantly reducing downtime and the associated costs. Last but not the least, Runbooks enhance collaboration within teams making them more proficient and nimble.

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