NTT DATA

Point of view | Hybrid Infrastructure Managed Services

Unlock zero-touch IT with intelligent runbook automation

Executive summary

Manual intervention and siloed adoption of automation still prevail widely. IT teams must replace costly, error-prone and time-consuming manual touchpoints. Hyperautomation and rule-based automation enhance employee productivity and make operations more resilient. The tools unify disparate automation to deliver integrated outcomes. Learn how intelligent runbook automation can make IT operations robust.

Embrace the automation-first approach

Deeply automated experiences are no longer science fiction; they're increasingly commonplace in our daily lives and businesses. Automation led by artificial intelligence (AI) is transforming everything from smart grocery stores and virtual assistants to automated medical diagnoses and autonomous driving.

Similarly, AI-led automation helps organizations achieve greater efficiency, business resilience and customer-centricity. It allows users to focus on strategic projects while automating repetitive and complex tasks that require accurate decision-making.

Traditionally, IT infrastructures needed costly hardware and specialized teams for configuration, maintenance and troubleshooting. Human intervention was also involved, to access the infrastructure, gather data, and diagnose and fix issues. Some organizations have adopted cloud-based platforms that enhance reliability, elasticity, security and manageability to modernize IT infrastructures.

Manual intervention and siloed automation adoption remain common despite automation enhancing employee productivity and making operations more resilient. IT teams find it challenging to identify where the entire orchestration of tasks and processes can be automated. They need to replace costly, error-prone and time-consuming manual touchpoints. The solution to these challenges is hyperautomation and rule-based automation, which unifies disparate automation to deliver integrated outcomes.

Rule-based automation solutions automate mundane, standardized and repetitive tasks based on the "if this, then that" principle. Doing so allows users to focus on designing complex and innovative solutions. We're not far from a sophisticated, AI-driven, predictive and self-healing IT infrastructure. One that self-manages, runs efficiently, removes human touchpoints and secures itself. It'd also free up humans to use their strengths where they matter.

Reducing manual interventions

Imagine a scenario where a user raises a ticket through a ticketing tool or email to access restricted data. Once an administrator approves it, the security department assesses the request and grants access to the user according to security protocols before ticket closure.

To reduce manual touchpoints, user-generated service requests can be automatically assessed and correctly categorized. If the user meets the required protocols, a specific command execution fulfills the request.

In line with an organization's security policies and the sensitivity of data, automated systems grant access upon request, revoke it at the end, log and record activities for audit purposes, and even record rejection reasons — all without human intervention.

Runbook automation makes IT operations robust

Automation adoption maturity varies from organization to organization. Through our decades of experience, we've identified four key levels of automation sophistication into which organizations fall:

1. **Beginner.** Organizations at this level have a minimal automation strategy with tactical pockets of automation. The focus of automation is primarily on quick fixes and cost savings.
2. **Reactive.** With buy-in from leadership, the IT department works to determine relevant automation use cases to improve operations, select appropriate automation technology and define potential metrics.
3. **Automated.** Automation is rapidly becoming ubiquitous in these organizations. The focus is on implementing automation across towers with end-to-end process and data alignment.
4. **Zero-touch.** These organizations have fully integrated automation into infrastructure operations, driving business value. The IT organization has optimized the full automation portfolio with best-in-class automation execution capability.

Zero-touch is the most advanced stage in the automation journey, where IT operations run with little to no human intervention. It enables organizations to streamline operations, prevent incidents, reduce costs, perform predictive maintenance, enhance service health, improve availability and increase agility. All of which boost customer satisfaction.

Runbook automation can help organizations quickly achieve zero-touch IT operations. IT departments can automate runbooks with specific incident actions. Some examples include logging into the system, checking the CPU, pinging the server or checking the database. Based on the root cause assessment, zero-touch IT operations can trigger predefined routines like restarting a service or executing a specific script to resolve the problem and restore the service.

Automating runbook actions helps automate repetitive manual tasks and improve mean time to repair. It also reduces the cost of operations to avoid service-level agreement (SLA) breaches and the risk of human error.

The primary goal of zero-touch operations is to deliver the following results:

- Reduce operating costs
- Accelerate time to resolution
- Reduce ticket volumes
- Reduce ticket-handling errors
- Reduce alert-to-ticket compression ratio
- Improve SLAs
- Enable accurate, real-time insights
- Reduce business process risk

Typical runbook automation use cases:

IT operations teams: Remediate server and network device health and performance issues.

Site reliability engineering teams: Identify server and network device key performance indicator trends that indicate potential health and performance issues.

DevOps teams: Provision and tear down test environments that integrate compute cycles, network components and applications.

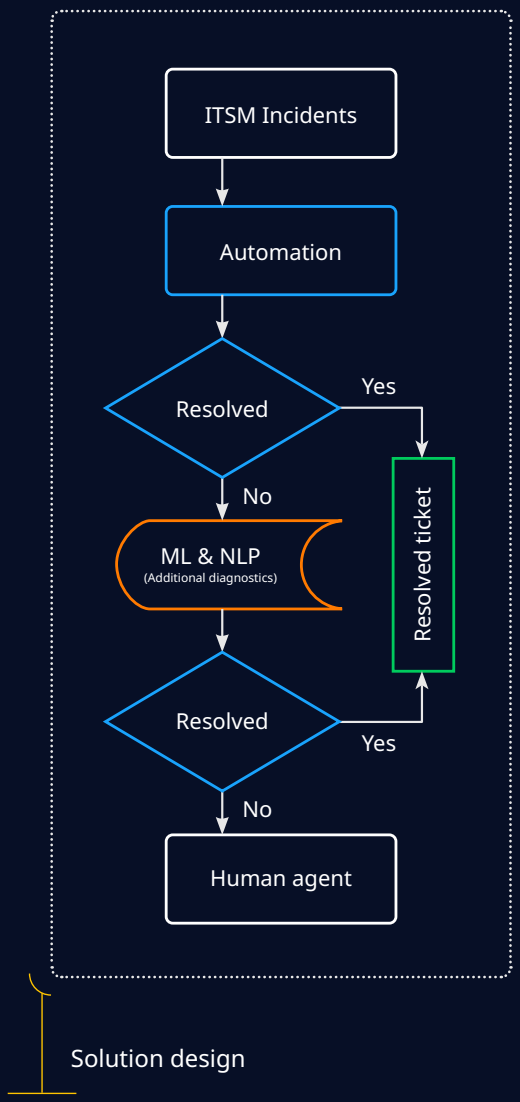
Make runbook automation more intelligent with NTT DATA Nucleus Runbook Automation

NTT DATA realized that traditional runbook automation was unable to fix most problems. With the Nucleus Intelligent Enterprise Platform — which is both a platform and a suite of products — we revamped IT service management (ITSM) ticket handling. Over existing workflow functionalities, we added intelligence from historical resolutions via machine learning (ML) and natural language processing (NLP) technologies.

The Nucleus Runbook Automation framework implements automation through infrastructure as code (IaC). This framework includes over 200 pre-developed scripts for automated incident diagnostics, resolution or escalation that aim to enhance performance and reliability.

Key benefits:

- Eliminate manual reading. NLP reads and filters ticket dumps contextually, identifying the data sets that train an ML model and increasing its accuracy as well as confidence in the model.
- Gain more precise insights. ML and NLP analyze historical ticket data. For example, ticket description, continuous improvement, work notes, ticket type, resolution time and resolution type. The filtered data is used to create an NLP model that detects call closure patterns.
- Achieve faster resolution. For a new ticket, NLP logic reads ticket remarks and recommends resolutions such as hold time, increasing the likelihood of automated resolution and boosting the auto-resolution rate.

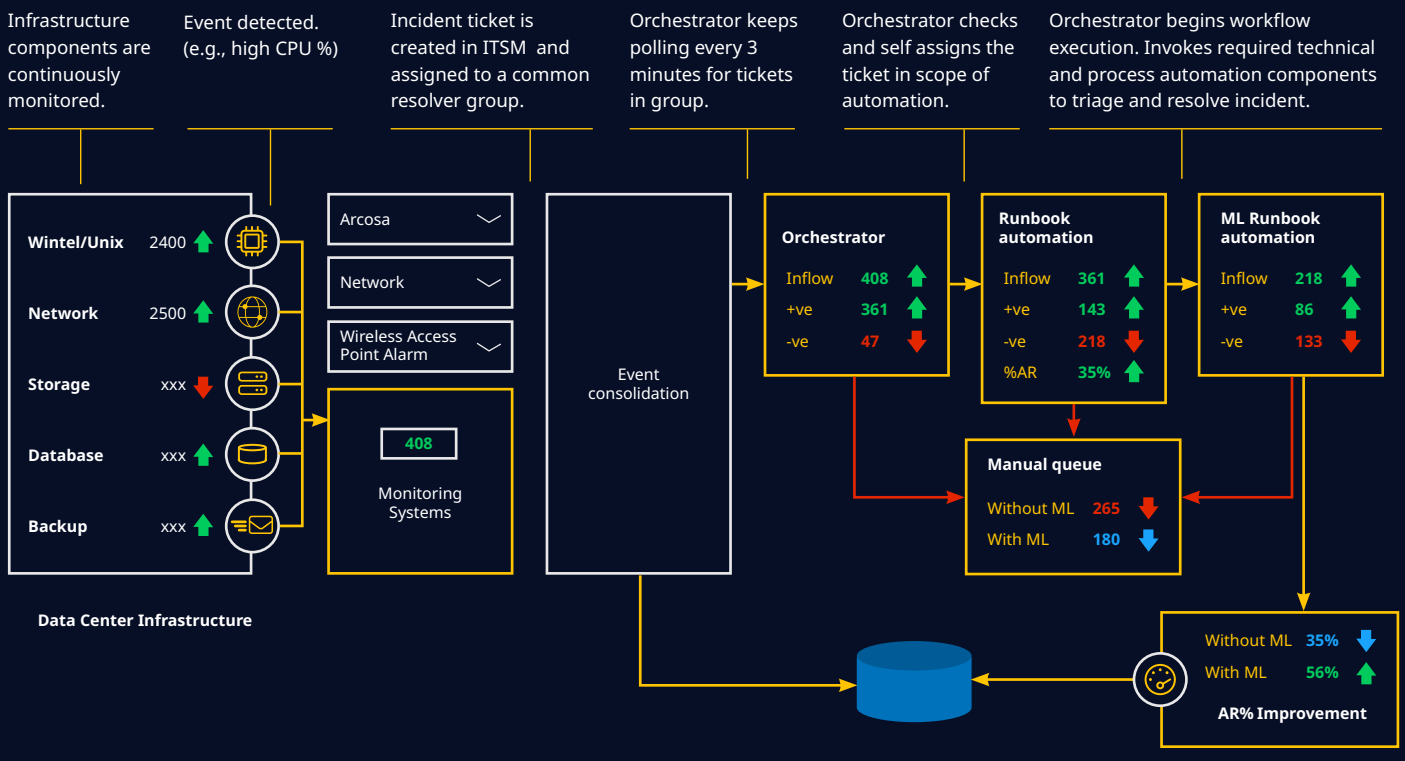


Applicability of Nucleus Runbook Automation

Intelligent runbook automation is backed by use cases to reduce manual intervention in the network, Windows, Unix, storage, database and backup towers. For example, if an organization has an auto-resolve (AR) proportion of 25%, it indicates that there are a lot of tickets that need manual resolution. To start, intelligent runbook automation can focus on existing auto-detect (AD) cases.

Before any AD tickets are redirected to human agents, the ML engine intervenes and tries to resolve the tickets, converting AD tickets to AR tickets. ML identifies incidents where automation performs the diagnostics for an extended time. Alternatively, it identifies an additional diagnostic window for automation to perform diagnostics before escalating those incidents to human agents.

In scenarios where the AI is unable to resolve tickets, it tries to learn from a human agent. The AI creates a self-learning loop that addresses similar problems in the future. With AD going down and AR going up, the goal is to reduce and ultimately end human intervention in the ticket resolution loop. In later phases, it targets the unmapped tickets (human queues) and identifies the potential AR percentage scope. Through ML-based use cases such as “Not Mapped Activity” and “Incident Correlation,” we anticipate a 50% or greater enhancement in AR percentage based on our current experiences.



Getting started with runbook automation

Despite its clear advantages and proven effectiveness, adopting zero-touch IT operations can pose daunting challenges for some organizations. These challenges include high initial transformation costs, inability to automate the entire lifecycle and not having a failover mechanism in place, which can cause a cascading effect on business.

To overcome these challenges, organizations tend to move toward full-fledged runbook automation. However, the implementation journey isn't straightforward. You can take traditional runbook automation to the next level by integrating AI, ML and NLP. Doing so enables processes to become more data-driven and adaptive. Here are some steps to help you get started:

1. Identify your processes and use cases. Assess your existing processes thoroughly, along with the use cases that intelligent automation can improve. Explore processes that involve repetitive decision-making, demonstrate certain patterns and interface with users. Gather pertinent data related to your processes from various sources, including historical records, logs and user interactions.
2. Select the right tools and platform. Evaluate the AI and ML tools and frameworks that best support your use cases. Make sure to use the libraries and resources available for developing intelligent models. We highly recommend leveraging cloud platforms like Microsoft Azure, Amazon Web Services (AWS) and Google Cloud. You can integrate them easily into your automation workflows.
3. Create and train models to add intelligence. Identify the data sets that you must segregate for building and training an ML model. For processes that require data analysis and predictions, leverage your data to build AI and ML models. Select an appropriate algorithm (for example, classification, regression and clustering) for your use case. Train the models to recognize patterns, make predictions and suggest optimal decisions. Doing so reduces manual intervention.

4. Build adaptive automation logic. Runbooks become more powerful when they use real-time data and predictions to dynamically alter their behavior. Leverage the insights from your trained models to create adaptive automation logic.
5. Add natural language capabilities. By incorporating NLP into your runbooks, you can enhance the user experience. NLP allows users to interact with your system via natural language queries or commands. You can achieve this by creating an intuitive user interface such as a web-based dashboard, an API or a chatbot.
6. Continuous improvement. Intelligent runbook automation is a dynamic and iterative process that improves based on user feedback. As processes evolve, refine your AI models and automation logic to stay ahead of the curve. Invite users to share their experience to make sure intelligent runbooks remain at their best.

Conclusion

Intelligent runbook automation amplifies ITSM operations for incidents and service requests. It orchestrates all types of infrastructure elements, such as applications, network components and servers. With AI, you can aggregate knowledge from multiple enterprise sources to build a unified knowledge base. Doing so enables intelligent management of the incident resolution lifecycle. AI also automates change management, problem management and root cause analysis, providing relevant solutions with no manual intervention.

It's crucial for you to have the right set of well-integrated tools in place to get started. Built with extensibility in mind, NTT DATA Nucleus goes beyond traditional runbook automation to completely revamp ITSM ticket handling for faster, higher-quality and zero-touch operations.

About the authors

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Neeraj leads Managed Infrastructure and Workplace Services for the Digital Core Services organization. He has over 34 years of experience in profit center management, IT service delivery, strategic planning, enterprise tools and IT solution selling for large clients.

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See what NTT DATA can do for you

With Nucleus Runbook Automation, NTT DATA has helped more than 150 clients achieve more agile outcomes — including up to 97% auto-processing of tickets, nearly 99% time savings in manual efforts and up to 50% increased output. Nucleus not only identifies automation opportunities but also optimizes resource deployment, reducing costs and elevating performance.

Why NTT DATA

- Deep industry expertise and market-leading technologies
- Tailored capabilities with your objectives in mind
- Partnerships to help you build and realize your vision

Contact our Nucleus platform experts to get started today.

Visit us.nttdata.com to learn more.

NTT DATA is a $30 billion trusted global innovator of IT and business services. We help clients transform through business and technology consulting, industry and digital solutions, applications development and management, managed edge-to-cloud infrastructure services, BPO, systems integration and global data centers. We are committed to our clients' long-term success and combine global reach with local client service in over 80 countries.