

Increasing IT Operations Efficiency with Collaborative Runbooks and Automation

An innovative approach to capture and automate operational best practices

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Background

IT Operations plays a critical role in any organization, especially when the underlying services are core to the organization's business such as telecommunications carriers and service providers or the financial services industry. However since operational expenses take away from new innovation and revenue generation, IT Operations are continually under pressure to deliver greater efficiency and to improve service quality and assurance with limited resources.

A recent study conducted by the Gartner Group on IT spending indicates that 77% of firms rated improving IT efficiency as the most important operational priority, with labor comprising over 70% of the total spending. In addition, further tools investments continue to increase in complexity and scope yet they have delivered only diminishing returns in improving efficiency and business value.

IT Operations Challenges

A fundamental step in the maturity model for managing highly-distributed complex IT infrastructures is the consolidation of problem remediation processes into a single place. Industry leading solutions such as the one from IBM Tivoli Netcool provides the foundation required to manage the growth of these complex environments by consolidating event or fault management into a single IT Operation.

The consolidation enables organizations to streamline their tools, processes and people (e.g. training) and improve their ability to adapt to the continually changing IT environment. However, in reality what most organizations experience is usually:

- overwhelmed Level 3 / Engineering
- underutilized or ineffective Level 1 and Level 2 Support
- minimal or no automated diagnostics or problem resolution

often with the following symptoms:

- frequent problem escalation and re-routing
- ineffective problem triage and diagnosis by Level 1 and Level 2 support
- repetitive or similar problem occurrences
- costly personnel training and ramp up time
- varying levels of service quality and response time

- difficulty in implementing automated diagnostic tests and resolutions
- undefined support scope and coverage
- no collaboration or communication of clear expectations between organizational groups

These conditions results from over-focusing on tools and technology without adequately addressing people and processes.

Core Problems

The leading cause of inefficiencies in IT Operations, particularly for Level 1 and Level 2 support, is manual or ad-hoc problem remediation. The lack of standardized procedures and best practices (i.e. runbooks) indirectly causes many problems such as those described above.

Organizations however do invest resources in creating runbooks, commonly seen as binders or Microsoft Word documents, but these documents often become inaccurate due to a continually evolving IT environment. This causes users to avoid and not rely on the runbooks. The lack of use in turn, reduces visibility and causes the documents to become further out-of-date.

In addition managing runbooks as static documents introduces additional overheads which often deter the subject matter experts from contributing their best practices for common use e.g. check-in / check-out documents to ensure version consistency and history, document publication and approval processes, etc.

Another approach used to assist problem remediation is the use of knowledge-bases or expert systems. These solutions are helpful when the problem space is well defined and the results are mostly static and do not change e.g. product support knowledge-base is a good example. For the constantly changing IT complex environment however, this is clearly not the case.

Organizations often are required to establish dedicated teams to manage and add content the knowledge-base to sustain the solution. However these teams are usually not the same team actually fixing problems so the disconnect produces less than ideal results.

So what are the core requirements that must be addressed to instill a runbook-centric IT Operation and improve efficiencies and overall effectiveness?

The solution should:

- allow users to directly access runbooks corresponding to the problem alert

- ensure that runbooks are utilized and not avoided
- ensure best practices and runbook procedures are documented by the subject matter experts with the least inconvenience
- ensure runbooks are visible and kept up-to-date
- promote collaboration and standardization of runbook procedures
- enable automation of tools and actions to diagnose and resolve problems

An Innovative Approach

Fundamental to a runbook-centric IT Operation is the ability to capture and standardize best practices from the Level 3 / engineering subject matter experts. With the undeniable success of Wikipedia and the ubiquitous use of wikis by software development groups to promote and collaborate processes and tools a wiki-based collaborative documentation system should be selected as the foundation for any solution.

For those unfamiliar with the wiki technology, a wiki is essentially a website where all the web pages are directly modifiable by users with appropriate permission roles. Wikis simplifies collaboration and ensures consensus / standardization of common knowledge, in this case, runbooks.

For IT operations, the use of a wiki-based documentation system engages the Level 3 subject matter experts to proactively collaborate on their expertise with their peers and more easily transfer their knowledge and experience to Level 1 and 2 Support in a manageable and standardized way. The “open” and collaborative approach to knowledge capture is essential to successfully create and sustain these operational runbooks. For Level 1 and 2 Support however, a more tightly controlled read-execute-only approach is more effective for focused execution and avoiding erroneous updates.

Simply using a wiki however does not address the challenge of ensuring that runbooks are consistently utilized and not avoided. The innovative approach introduced by generationE is to transform the runbook procedures (which previously are simply procedural reference guides) into actionable tools that can directly invoke diagnostic tests and resolution actions.

Embedded within the runbook procedures is the ability to carry out action tasks on-demand or as an orchestrated process. Users can simply click on a link to invoke a repetitive diagnostic test (such as listing what processes are running on the server) to quickly triage and diagnose

problems. Conversely, the runbook may be triggered by an alert which automatically executes the entire coordinated runbook procedure to perform a series of tests at the time of the problem’s occurrence as opposed to waiting until the technician is available to diagnose the alert.

In other words, unlike existing runbook automation solutions, this intrinsic integration between the runbook procedure and the automation system greatly simplifies the coordination between the “process” and the “tool” and in essence transforms the runbook itself into the tool that is used to remediate problems. As a result, the “tool” i.e. runbook is used more often, has greater visibility and is kept up-to-date.

generationE Technologies has introduced an innovative wiki-based runbook automation solution, known as Resolve, designed specifically to address these challenges.

Use Case - Resolve Runbook and IBM Tivoli Netcool

Successful implementation of standardized procedures or runbooks in IT Operations must not only address the technology challenges but must consider the people and process needs specific to the organization.

Common to all Tivoli Netcool deployments by generationE Technologies, implementation of an Event Acceptance Process (EAP) is a critical requirement to ensure a successful approach to event data interpretation, filtering, response and action.

Traditionally, the EAP focuses on addressing the following issues:

- missed problems
- false alarms
- resolution inconsistency
- duplication of effort
- improper problem assignment
- undiagnosed intermittent problems

by:

- eliminating informational messages to easily identify real problems
- validating problems
- responding consistently to events
- suppressing event storms and extraneous indications of problems
- dividing alert flows into manageable SME domains

With the introduction of Resolve, the generationE enhanced Event Acceptance and Remediation Process (EARP) directly targets runbook procedures in response to alerts as a core component of the process.

Ideally, each alert problem should have a corresponding runbook procedure, however in large complex IT environments this is a considerable challenge. Critically analyzing and aligning infrastructure alerts with respect to the business services they support helps identify key objectives that will deliver the most impact and returned value.

The deterministic association between alerts and runbooks (or guided diagnostic runbooks) is essential to effective management of both alert acceptance and runbook submissions. In other words, all managed infrastructure alerts must be *actionable*.

From the users' point-of-view, the integrated Tivoli Netcool and Resolve solution allows them to simply right-click on an alert and navigate directly to the runbook procedure that clearly outlines in people-friendly descriptions (and not convoluted flow diagrams) the necessary steps to test, diagnose and resolve the problem. This enables Level 1 and 2 Support to become greatly more efficient and not require that they have prior experience on how to handle the problem. As a result, considerable more problems are resolved and not escalated.

Further, to avoid manually carrying out repetitive tests and actions, automations can be embedded directly within the runbooks that utilize existing tools, scripts and solutions such as IBM Tivoli Netcool Impact policies. By embedding actions directly within the procedures, the runbooks are transformed into tools rather than just reference documentation.

In addition, these actions can greatly extend and simplify what the users are able to perform without having them become experts in using the tool that is providing the information. For example, an operator may want to determine whether an application service is accessible and correctly configured in the router. An action task can be defined to perform this test without the operator having to remember vendor specific commands for the router to extract the required information.

Resolve also introduces the concept of a runbook worksheet. Analogous to a medical worksheet, the runbook worksheet allows one or multiple users to collaborate and see in one place all the tests and results that were carried out to diagnose and resolve the problem. This is particularly helpful for complex

problems that can span multiple infrastructure components, technologies and even operational groups (e.g. networks, applications, servers, etc.).

Finally the ability to audit, measure and report the performance improvements helps quantify the return value of the investment.

Conclusion

The investment in consolidated event management such as Tivoli Netcool provides the essential and critical starting point to much larger process optimization possibilities that address people and operational runbooks.

Traditional approaches to managing the best practices such as document repositories and knowledge-bases however are often ineffective and the initiative quickly loses momentum and interest, becomes out-of-date and is avoided.

generationE has introduced an innovative solution called Resolve that leverages new wiki-based technology for collaborative process documentation to capture the procedures or runbooks from the Level 3 subject matter experts. These runbooks, together with embedded diagnostic tests and resolution actions, are utilized by Level 1 and 2 Support to greatly improve their efficiency, capabilities and minimize problem escalation.

About generationE Technologies

generationE is a pioneer in delivering innovative solutions for Service Management, leveraging its strong relationships with industry vanguards like IBM to design and deploy the best solutions for clients. As leading experts in IT service management, generationE also offers its own innovative solutions to enhance the portfolios of its premier partners. Value-added solutions like *RESOLVE* can significantly reduce time to value and total cost of ownership.

Our consultants bring firsthand knowledge in working with IT organizations at varying levels of infrastructure maturity and complexity. Through our experience, we have developed tailored methodologies for the financial services, service provider, retail, commercial and manufacturing sectors. We have served over 75 of the Fortune 500 companies.

To learn more about Resolve, please visit:
www.generationEtechnologies.com