servicenow

Now on Now: Maintaining Instance Health with HealthScan

Improving our release upgrades and reducing our technical debt

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Reducing technical debt and improving upgrades

At ServiceNow, we want to ensure that the internal instances we use in our business operations are healthy so we can deploy the latest upgrades as soon as possible. With a yearly growth rate of 30%, we experience dramatic load increases over short periods of time.

We needed a way to improve visibility into our instance health status to prevent performance issues during the upgrades. We also needed ways to compare our instances with best practices to minimize the need for customizations and deliver clean code. By reducing unnecessary customizations, we could more easily scale our development operations to accommodate growth and reduce our technical debt.

Assessing instance health

ServiceNow HealthScan is a system for evaluating the configuration and customization of ServiceNow instances. HealthScan delivers both insights into the health of the Now Platform® as well as guidance in key areas related to upgradeability, manageability, user experience, performance, and security.

HealthScan is one tool we use to reduce our technical debt, or the impact of today's code on the future. It provides best practices as a library of definitions. We can run our ServiceNow instance against these best practices at various points in the development process.

The scan results give our developers detailed insights and recommendations. The team then uses the recommendations to update the code to ensure it aligns to best practices. When the code is finally deployed into production we know that the release upgrade will run more smoothly. In the following section, we describe how we use HealthScan as part of the DevOps process.

Accelerating DevOps

ServiceNow operates in an agile fashion within our DevOps environment. Our first HealthScan implementation was part of the DevOps release cycle for one of our oldest and most complex

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internal instances. This instance hosts many of the applications used by departments such as HR, IT, Sales, Finance, Marketing, Legal, and more. It contains 118 scoped application and 100,000 lines of code, with 15 development teams working on it at any given time.

We use four types of scans to improve and maintain the health of our instance throughout the development process: a high-level scorecard, a sprint scan for releases, a daily automated code review, and a set scan to check code for individual developers.

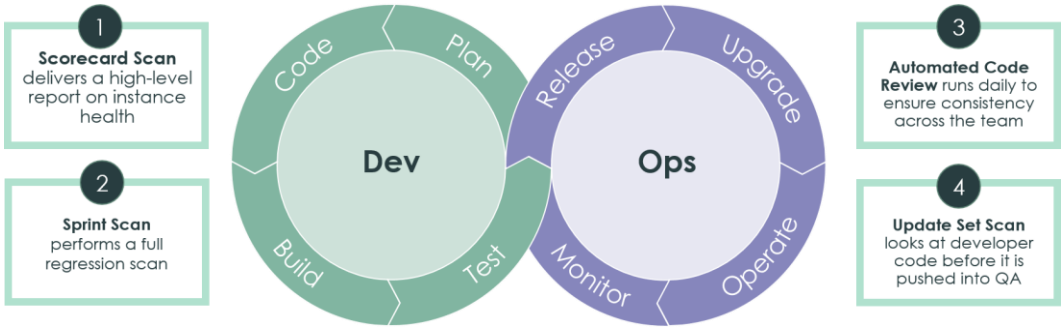

Figure 1: Four scan types

Scorecard. The Scorecard displays overall health scores in five key areas: manageability, performance, security, upgradeability, and user experience. The scores in these five areas are further broken down to correspond with ServiceNow products. The trend lines show improvements over time. A sample scorecard is featured below.

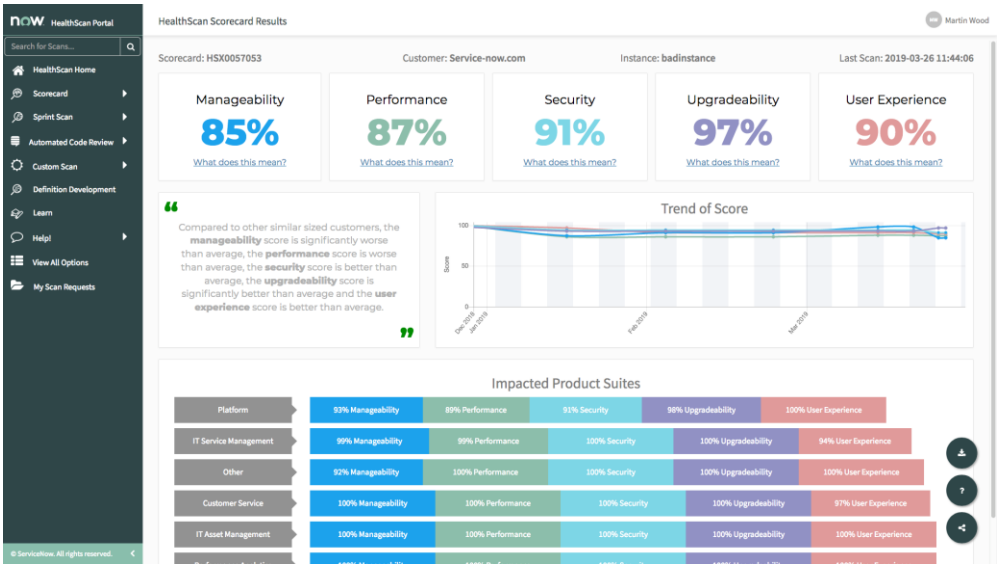

Figure 2: Sample HealthScan Scorecard

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The Scorecard lists the total number of findings needing improvement based on the code's alignment to best practices. For example, we can see the findings trend graph for several scans over time. Between each scan, developers work to resolve the findings.

Sprint Scan. Our sprints last two weeks, usually contain about 300 stories and include over 10,000 lines of code. Sprint Scan acts as a quality control check across the entire instance at the end of every implementation cycle and helps to avoid common missteps or implementation errors. We can easily inspect HealthScan findings: code issues, their line numbers, and affected update sets. Links to ServiceNow's implementation methodology, Now Create in Now Learning, offer suggestions on how to address these findings. This helps developers avoid common implementation errors.

For cases where findings may need to be ignored due to a false-positive result or require a custom solution, we have a Center of Excellence, where experienced engineers review the results and decide on the correct course of action.

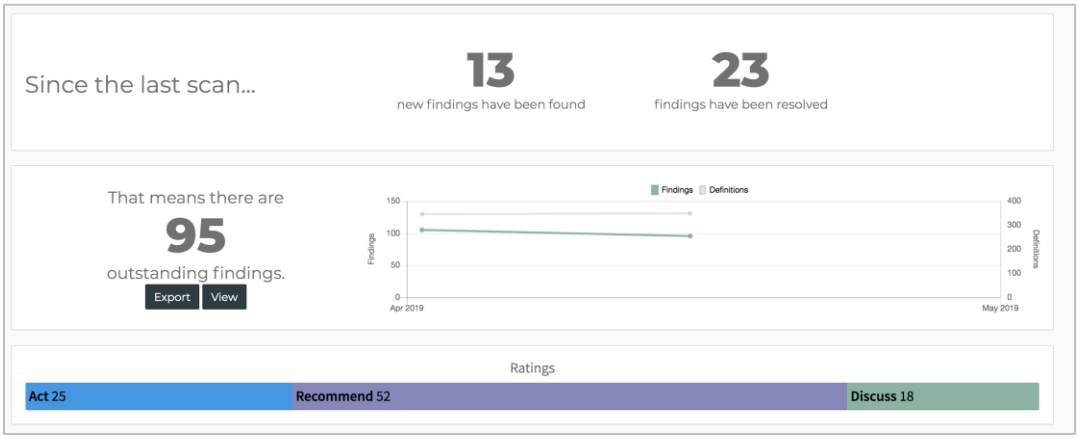

Figure 3: Sprint Scan dashboard

Automated code review. In this type of review, our instance code is automatically scanned daily to provide immediate feedback on the new code to our teams. Findings are sent to the developer and architect. Once again, recommendations are made based on best practices. This scan ensures any customizations in the code follow ServiceNow best practices.

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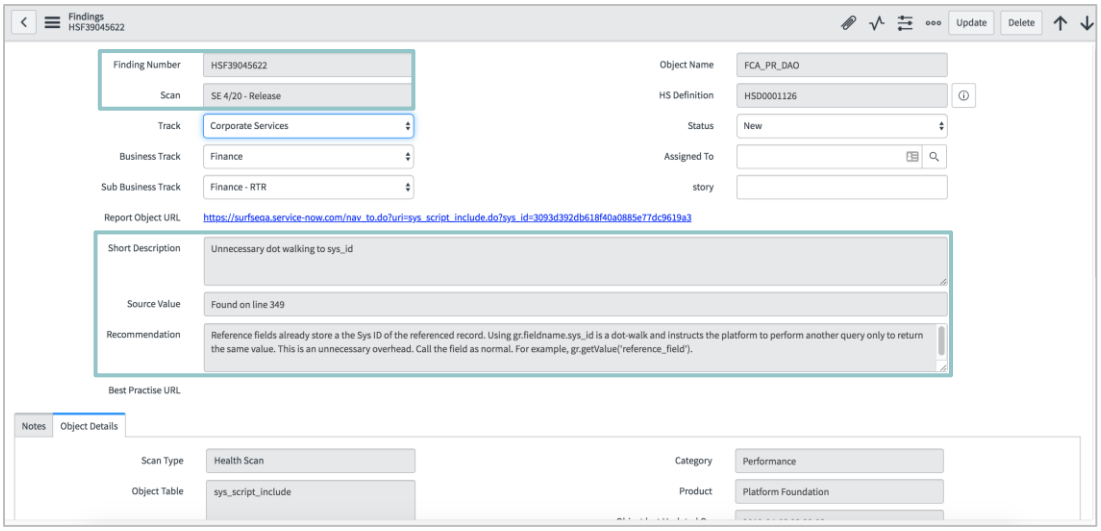

Figure 4: Automated Code Review results

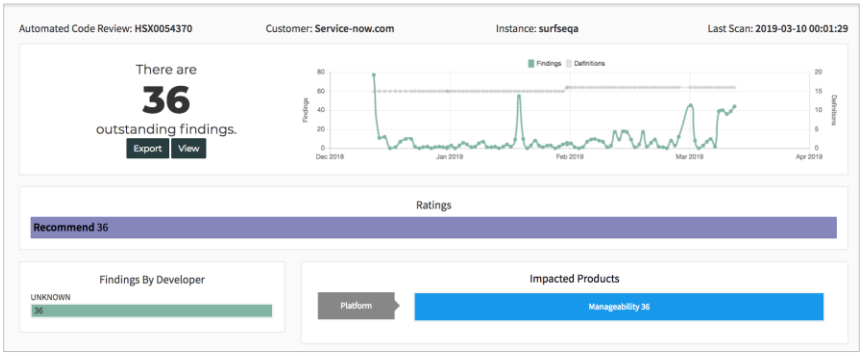

Figure 5: Automated Code Review dashboard

Update set scan. The fourth scan type requires developers to scan their code prior to QA. After the scan, they are emailed a list of findings, including the issue type and the associated impact. A team dashboard acts as a gatekeeper by alerting developers if their code hasn't been scanned prior to pushing it to QA. In the case of false-positive findings, the team has the option of pushing the code forward.

The image below illustrates the first step, where each developer uses the *Scan This Update Set* to scan the set.

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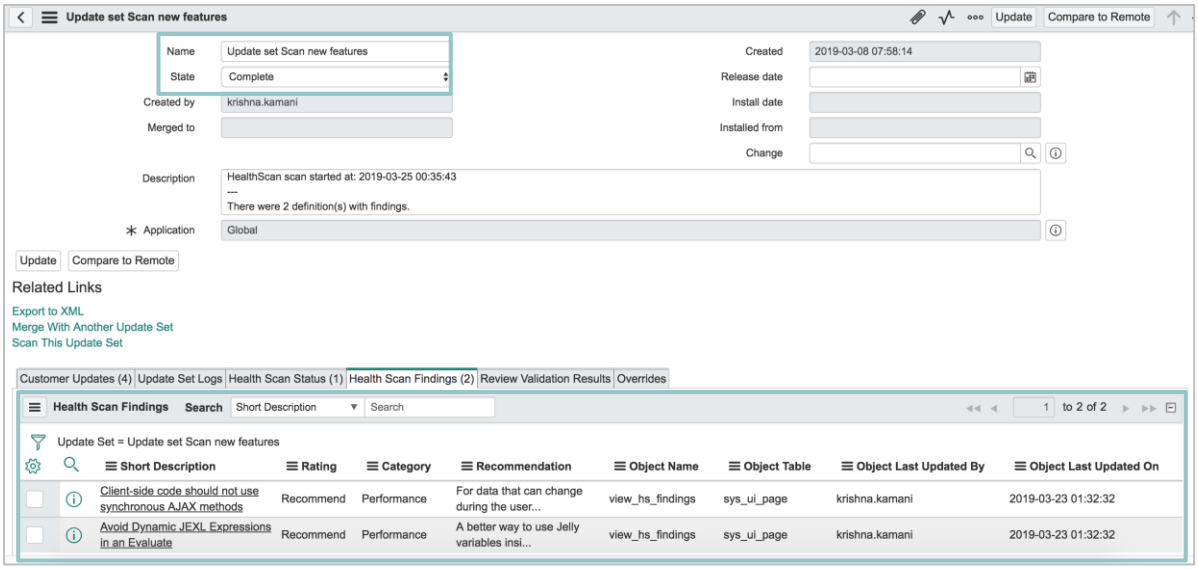

Figure 6: HealthScan Update Set Scan findings and recommendations

Once the scan is complete, the developer receives an email and the results are pulled into the instance for review in the *HealthScan Status* tab, as shown below.

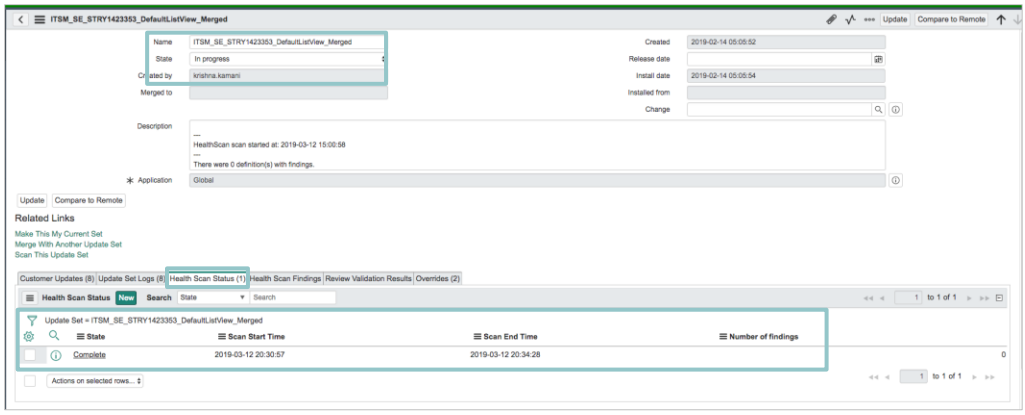

Figure 7: Update Set Scan – no findings

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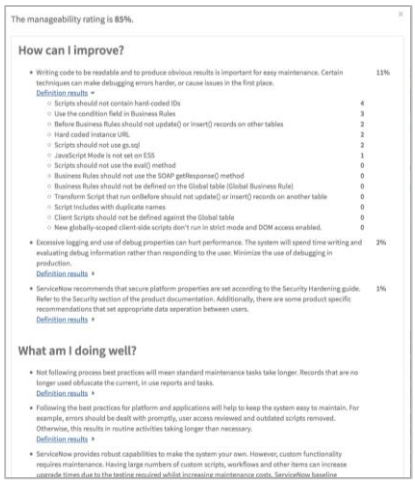

Figure 8: Recommendations to resolve a finding

Delivering real benefits

We have seen dramatic improvements after implementing HealthScan in DevOps, including:

Less customization: By requiring scans as part of the coding process, we have, through early detection, been able to reduce customizations and improve overall performance by implementing cleaner code. Instant feedback also teaches developers better ways to code.

Readiness for release upgrades: HealthScan analysis has helped us incorporate best practices from day one. We are more careful about modifying an out-of-the-box file. As a result, our upgrades are faster and smoother. For example, in London, we had 30 skipped files, but by Madrid we had reduced that number to 19. We can take advantage of upgrades much more quickly to improve processes and efficiency.

Managing the instance is simpler: HealthScan has reduced the number of information logs being generated by 86%. As a result, developers can identify and fix issues more quickly, which then makes it easier to manage the instance.

Centralized best practices: HealthScan incorporates a core set of definitions, including hundreds of KPIs and best practices, into one, easy to use place. This value increases as the number of definitions increases and more data are collected and analyzed. As the library of best practices expands, the quality of our code in all our instances will improve. In the below example, HealthScan generated more than 100,000 findings, which developers were able to reduce by 92% in just six weeks, thus improving our instance health in a short period of time.

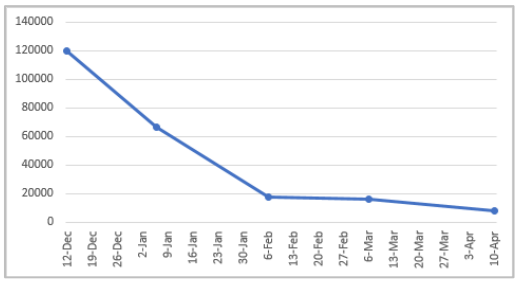

Figure 9: Timeline of findings resolved in a ServiceNow internal instance following a Scorecard Scan

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Optimizing our instance health

Maintaining the health of our internal instances is vital to our company growth, especially when it comes to large and complex instances like ours. Over time, we have seen the value of performing different types of scans at various points in the DevOps process. We have also found that by adopting a rigorous schedule of scans using multiple personas--including developer, manager, leader, and project team--we create a more robust code base without incurring technical debt.

Running HealthScan on HealthScan

Following the initial adoption of HealthScan, its development team ran a Sprint Scan on its own development instance to understand its health. The report showed 624 potential areas of improvement. The team then took a deep dive into the findings and systematically tackled each item.

Figure A: HealthScan on HealthScan Scorecard

Within a week, the team reduced the findings to 112, eliminating 512 findings and improving *instance health to 93%.* (The average overall score for a healthy instance is 80% to 85%.) While the results are above average, the team continues to address the remaining findings as well as scanning code to check for quality every time new code is dropped.

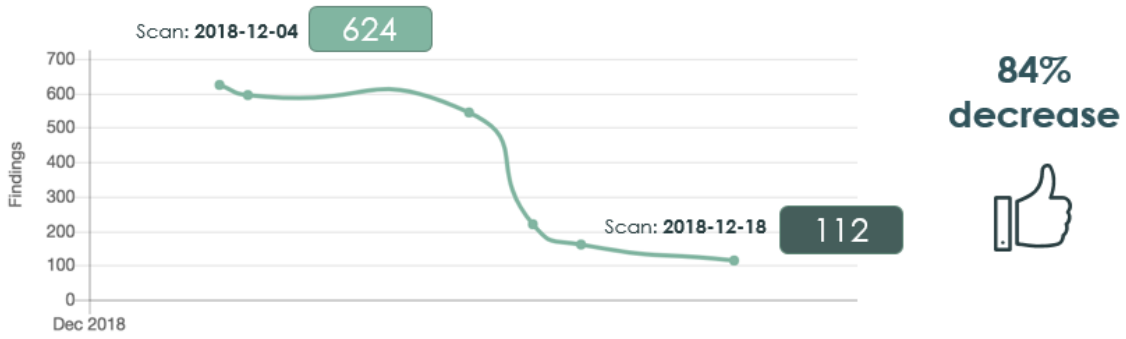

Figure B: HealthScan on HealthScan findings

"HealthScan was leveraged to quickly improve instance health by aligning our code and configuration to best practices and reducing our technical debt," said Martin Wood, ServiceNow HealthScan Product Lead. "Continuous improvement is one of the key values HealthScan brings to the upgrade process."

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For more information

Our use of HealthScan continues as we deploy it in other internal instances. Our goal is to continually reduce the time it takes to upgrade and reduce our technical debt. To learn more about HealthScan, watch this video, read more on the Web, or contact your account representative.

ServiceNow

ServiceNow is changing the way people work. By defining, structuring, and automating work, we are creating a modern service experience for everyone in the enterprise. Our customers have demonstrated that service management isn't just for IT — it is a discipline for every service domain. It's possible now.

Now on Now is about how we use our own ServiceNow solutions to work faster, smarter, and better. With Now on Now, we're achieving true end-to-end digital transformation. To learn more, go to: www.servicenow.com/nowonnow.

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