SALTSTACK | NICE · nexidia

NICE Nexidia Customer Spotlight

Applying unified cloud automation across on-premises Windows environments.

SUMMARY

The NICE Nexidia DevOps team uses the SaltStack automation platform to create consistency and control across 100+ single-tenant Windows environments—each with its own bespoke customer requirements.

RESULTS

Time required to stand up a POC environment reduced from 30 days down to 5 hours.

80% reduction in personnel required for periodic maintenance updates.

Reduced MTTR by 85% with targeted monitoring and troubleshooting.

SOLUTION

- SaltStack Enterprise automation platform
- SaltStack event-driven orchestration
- SaltStack Windows support
- Integration to proprietary monitoring tools
- SaltStack professional services

> "Before SaltStack, it took about 30 days for an engineer to go in and stand up POC servers every time. We've got that down to five hours."
>
> **Jim Watson**
> *Principal DevOps Engineer at NICE Nexidia*

About NICE Nexidia

Founded in 1997, NICE creates software for large-scale voice analysis through phonetic-based audio indexing and search technology. NICE was acquired by Nexidia in 2016 and together the two organizations provide businesses with advanced insights into their customers' journey—helping improve everything from customer experience to compliance and security.

Providing big data analytics via distributed, highly-regulated private clouds

The NICE Nexidia unique product offerings create specific requirements and challenges, including:

- Providing big data processing and hosting via private cloud.
- Building and maintaining custom analytics engines.
- Supporting more than 100 single-tenant environments to ensure customer data segmentation.
- Ensuring compliance with dozens of regulatory and security standards.
- Maintaining strict adherence to data availability SLAs.
- Managing 100% Windows environments.

The NICE Nexidia DevOps team works closely with operations, engineering, security, and customer service to build technology solutions that support these requirements and ensure NICE Nexidia customers have uninterrupted access to secure, optimized voice data and analytics.

Before SaltStack

According to Jim Watson, an engineer on the NICE Nexidia DevOps team, "...that single-tenant architecture means every customer is a snowflake...We offer a lot of different things like redaction.That's a feature we have to install. There are a lot of different requirements and every customer is very different."

NICE Nexidia performs maintenance and server updates every six weeks. Since the environments are Windows-based, the team must reboot all 900 or so servers across all 100 single-tenant environments—sometimes multiple times. Prior to SaltStack, this was a massive undertaking that required extensive pre-planning to account for data restrictions, exceptions, and regional seasonality (such as holidays and tax seasons).

The team is required to adhere to a strict 48-hour maintenance window and the update process typically involved 24 engineers working more than 30 consecutive hours to ensure each server, process, and application was taken offline, updated and brought back online in the correct order to avoid data loss or downstream connectivity issues. Once the updates were complete, the team would need to manually log in to each environment, troubleshoot issues, and ensure the environment was working properly before the customer resumed operations on monday morning.

After SaltStack

By replacing their manual update process with SaltStack event-driven orchestration, NICE Nexidia reduced the 30-hour consecutive effort down to 15 hours broken up across two days. In addition, the operation that used to require 24 engineers can now be managed and tested by a team of five, an 80% reduction in personnel.

SaltStack has also greatly increased the consistency and reliably of the process. SaltStack uses intelligent orchestration to restart each service in the correct order, ensuring that the system comes back up in a good working state.

The NICE Nexidia DevOps team also pulls event data being generated and tracked by SaltStack intelligent agents (known as minions) into their monitoring dashboard, allowing them to easily identify outlier issues and dispatch engineers to those systems to troubleshoot.

According to Greg Grieves, a principal DevOps engineer at NICE Nexidia, "It's so much more targeted. It reduces the amount of troubleshooting time because we know exactly which system, what component, and what server to go to and look for the issue—rather than coming in and having to start an entire troubleshooting flowchart. The speed of being able to rectify these issues has increased dramatically."

The SaltStack solution

The NICE Nexidia solution is mainly built on four powerful SaltStack components: Salt State files, target lists, orchestration files, and jobs.

State files

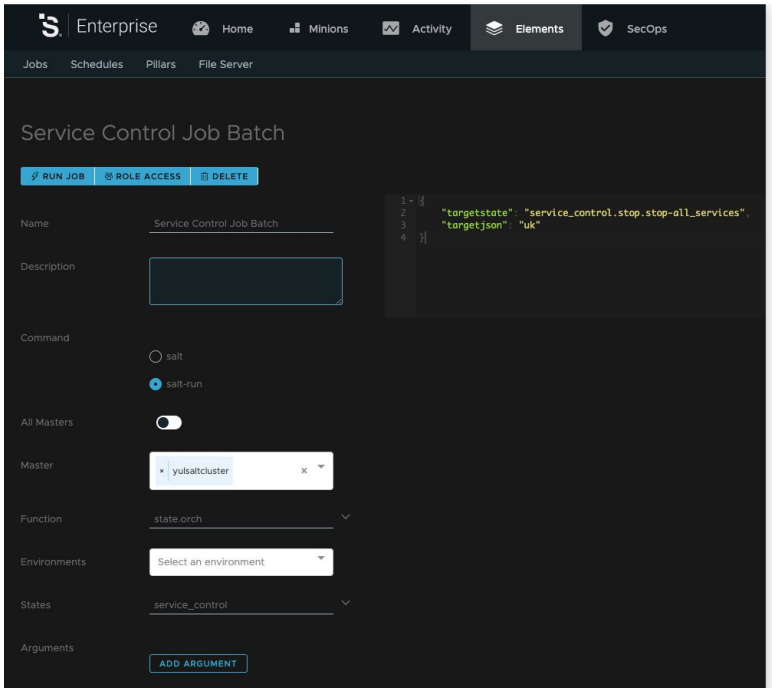
A State file is a powerful playbook, defined in simple, human-readable YAML, that tells systems to perform a series of actions. In this case, NICE Nexidia uses Salt State files to stop automatic Windows services in order and, when ready, start them in order across multiple environments. This helps ensure that systems come online correctly and that no critical data is lost or corrupted during an update window.

Target lists

Next, the team uses the granular targeting capability in SaltStack to perform precise remote execution actions on target machines. By pre-defining and storing target lists in JSON, the team can easily update the list to handle exceptions such as regional needs or seasonality.

Orchestration files

Orchestration files combine State files and target groups and use them to execute jobs asynchronously and intelligently across systems. Because SaltStack orchestration is event-driven, it can automatically detect when a system is ready for a next step (such as after a reboot) rather than trying to execute steps arbitrarily based on a timeline. This makes SaltStack an exceptional answer for Windows management.



SaltStack Enterprise allows teams to target systems by any attribute (in this case, region) and run repeatable orchestration jobs such as stopping or starting services during maintenance.

NICE Nexidia reports that this new process this has been so successful that manual validation is no longer necessary. Rather than logging into each customer environment and tracking down issues caused during the update, the team now has a high degree of confidence that when their customers log back in on Monday morning, it will be as if nothing happened.

Additional accomplishments with SaltStack

While the team will continue to optimize their monthly update process with SaltStack, they've already been able to apply SaltStack powerful automation capabilities to improve other parts of the business. Here are a few examples.

Roll out and continuously update new monitoring tools

Due to the unique variables in their environment, the NICE Nexidia DevOps team has built their own in-house monitoring tools to track the performance of the infrastructure, network, and highly data-intensive applications and services. Before SaltStack, rolling out and updating these home-grown monitoring tools was painful and time-intensive, meaning they were deployed only on the highest priority systems.

By using SaltStack remote execution, the team is now able to easily deploy and update their monitoring applications in every environment, providing unprecedented visibility into the health of their products.

In addition, the team uses the SaltStack event-driven state system to track unauthorized changes and configuration drift across their entire IT landscape. Issues that used to take days to find and fix, and which had significant impact on downstream users, are now detected and fixed in minutes or hours.

Automate the deployment of POC servers for the sales team

Another area the NICE Nexidia DevOps team improved with SaltStack intelligent automation was the automated provisioning and deployment of POC environments for the sales team.

Prior to SaltStack, when a customer wanted to engage in a POC it would take a sales engineer approximately 30 days to stand up the environment. Using SaltStack automation and orchestration, the entire environment, including the installation of a third-party big data analysis application, five pieces of proprietary software and dummy data, is ready to go in less than five hours. This has significantly improved the NICE Nexidia customer experience and helped shorten the sales cycle.

Build a configuration framework for IaC

Finally, because SaltStack Enterprise keeps an encrypted data record of every system under management, NICE Nexidia can now know what version of Windows each of their customers is on at any given time. Achieving this oversight was a critical prerequisite to begin the process of transitioning to infrastructure as code.

According to Jim Watson "infrastructure as code was a complete impossibility even six months ago… the team is already working on building templates on what our existing systems look like today to try to figure out what exactly is the best solution for our customers. Because every one is different."

Jim and his team are confident that the critical system data they receive from SaltStack will help them build an IaC framework that will support the 80% and allow enough flexibility to accommodate special requirements for the rest of their customers.

Putting it all together

SaltStack automation and orchestration has transformed the operations at NICE Nexidia and allowed the DevOps team to deliver unprecedented support to their internal and external customers, all while improving the performance and security of their highly-complex and unique products and offerings.

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