SaltStack Enterprise Overview

Intelligent, Event-driven Automation at Scale
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Introduction

SaltStack Enterprise is an intelligent IT automation platform that can manage, secure, and optimize any infrastructure—on-prem, in the cloud, or at the edge. It’s built on a unique and powerful event-driven automation engine that detects events in your environment and reacts intelligently to them, making it an extremely effective solution for managing large and complex IT environments.

This paper will explore the unique capabilities of SaltStack Enterprise and demonstrate how IT teams use SaltStack to create resilient, optimized data centers that deliver business value at scale.

Modern data centers need SaltStack Solutions

The Problem: Modern businesses require IT scale and complexity that outstrip human capacity.

“Digital business isn’t a sideline anymore. CIOs must commit to help CEOs drive the scaling-up of digital business.”

- Mark Raskino, Vice President and Gartner Fellow

CIOs Need to Help Scale the Digital Business | Smarter with Gartner, May 22, 2017

The era of “digital business” is here, and it’s creating a paradigm shift for companies of every size, shape, and industry. In order to stay relevant and competitive, modern businesses must move faster than ever before and constantly deliver new, innovative solutions.

This shifting paradigm in business has created a parallel shift in the IT world. No longer is it sufficient for IT teams to just hit SLAs and ensure that on-prem systems remain viable and secure. Now, IT leaders must find a way to take resources that are already stretched thin in pursuit of maintaining core operations and stretch those resources even further to adopt new technologies, support a growing mix of distributed, complex systems, and address the security threats and compliance requirements that accompany these changes. Meeting the challenge without automation is next to impossible. Existing systems management and configuration management tools can provision new resources, but they aren’t designed to provide the ongoing management, flexibility, and control that today’s evolving data centers require.
The Solution: Event-driven IT automation to control, optimize, and secure any infrastructure.

SaltStack Enterprise is the solution for modern data center management. Its unique event-driven automation, orchestration, and remediation capabilities allow IT teams to provision new machines—whether there are 30 or 300,000 of them—and then actively manage and secure them throughout their entire lifecycle.

IT operations, devops, and security teams use SaltStack’s unique and profoundly powerful technology to tackle pervasive IT challenges like configuration automation, orchestration, hybrid cloud management—even security and compliance remediation—at a speed and scale that simply can’t be matched.

Event-driven automation and orchestration: The future is now

Why event-driven automation?

SaltStack Enterprise event-driven automation capabilities allow it to manage complex, dynamic infrastructure, but why is it so crucial for modern IT management? Here are two real-world examples:

Auto-healing systems
Every time a production server went down, an SRE team had to manually open a service ticket, investigate, fix the issue, and close the service ticket. Now, they use SaltStack to detect server response issues, automatically submit a service ticket, reboot the server, and test. If it’s working properly, SaltStack automatically closes the ticket and notifies the SRE team via Slack of the fix. Creating a self-healing environment with SaltStack event-driven automation reduced the SRE team service ticket workload by 40%, allowing them to focus on high-value projects and dramatically improve uptime.

Instant, self-service VM provisioning
It used to take an ops engineering team 32 days to deploy a multi-OS virtual machine cluster for testing. Now, when the app dev team needs a test environment provisioned, they submit a simple
request, and SaltStack kicks off an orchestration routine. This routine provisions and configures the machines with the appropriate OS, then launches the required services to get them up and ready for testing—all in under 5 minutes.

As illustrated in the examples above, SaltStack listens for events happening anywhere in an environment and automatically responds to them by triggering an intelligent action or series of actions in real time. An “event” can be virtually anything happening in your systems, such as: file system changes, processor load, memory usage, service status, disk usage, API requests, compliance violations, or unauthorized access.

Managing modern environments requires almost constant action that no amount of human resources can keep up with. With SaltStack’s event-driven automation, IT teams can turn a collection of disparate systems into a central IT nervous system that senses, learns, and reacts to important events anywhere in the digital environment.

How does event-driven automation work?

SaltStack Enterprise is built on powerful, yet simple components. Here is a simplified breakdown of how it works:

**Nimble Master and Minion architecture:** Intelligent agents, known as Minions, run on each managed node. These nimble, low-impact agents run on anything that can run a few lines of python code and intelligently detect events in your infrastructure and relay them to a Master.

**Lightning-fast Event Bus:** A Master server maintains persistent communication with every Minion via a fast, persistent event bus. This allows the Minion to both receive communications from the Master and send information back, in real-time.

**Beacons and Reactors:**
Beacons are special processes that allow a Minion to listen for specific events that happen on any of your nodes. Reactors automatically respond to events by triggering an intelligent action or orchestrated routine—ensuring your response is always fast and precise.
**Additional SaltStack capabilities**

In addition to event-driven automation, SaltStack includes a wide range of powerful capabilities designed to help IT teams manage digital infrastructure at scale.

**Ultimate flexibility**

SaltStack Enterprise is the only IT automation and orchestration platform that offers agent, agentless, and proxy-agent deployment options, supports both push and pull communication methods, and offers multi-OS support for Linux, Unix, Windows, Mac, AIX, and Solaris.

As a result, IT teams can take advantage of SaltStack's flexible options to maximize the benefits and reduce the limitations of any single approach. For example, agentless models make provisioning new resources simple and fast, but they don't offer the event-based management or scale that comes with SaltStack Minions. IT teams can take a “best-of-both-worlds” approach that includes provisioning new machines agentlessly and then simultaneously installing lightweight agents for ongoing event-driven management and orchestration.

SaltStack's nimble Minions can manage anything that can run a few lines of python code—virtual machines, public cloud instances, bare metal servers, even desktops and network devices. In addition, SaltStack Enterprise offers Proxy Minions for managing dumb devices that can’t run python. Proxy Minions abstract the device management layer, allowing IT teams to manage older network devices and IoT or edge devices just like any other node in their environment.

**Automation and orchestration**

SaltStack Enterprise does IT automation. And it does it very well—it will configure and load software onto every node you control, from Linux on a laptop to Windows on a cloud VM. It does all of this while maintaining system speed, whether you have ten thousand or two hundred thousand machines.

In addition, SaltStack Enterprise understands orchestration and how the sequencing of various steps needs to occur. SaltStack Enterprise can handle the necessary conditional logic that controls configuration and installation steps. For example, it will orchestrate the provisioning of Windows servers that require multiple system reboots throughout the process. By handling automation and orchestration from a single platform, IT operations and development teams can speak a common language and reduce the complexity inherent in enterprise toolchains.

**Remote execution**

The SaltStack was originally built as an extremely fast and powerful remote execution engine, allowing users to execute commands asynchronously across thousands of remote systems in milliseconds.

This remote execution capability allows SaltStack to act as a command and control abstraction layer so IT professionals can execute complex tasks across tens of thousands of diverse and heterogeneous systems with the click of a button. Using SaltStack remote execution, IT tasks that used to require three of your best engineers and a week to complete can now be performed in seconds by anyone on the team.
Simple, dynamic management options

SaltStack Enterprise can be managed through a simple, interactive management console or via a CLI. The best part? It runs on standard Python and YAML. There’s no need to learn a new domain-specific language or know a complex, increasingly-obscure language like Ruby. The result is low technical debt, increased efficiency, and no worrying about who will update your config files if one of your engineers gets hit by a bus…or takes a day off.

SaltStack for enterprise IT

SaltStack Enterprise provides the utility, support, and security features required for enterprise IT operations teams running regulated, production environments at scale. SaltStack support subscriptions and services engagements are also available for all SaltStack Enterprise customers.

Manage 30 nodes or 300,000

Whether your growing IT requirements are based on organization, geography, or resource usage, SaltStack Enterprise offers a powerful API-based operations framework that allows large organizations to scale horizontally with multi-Master management. In addition, SaltStack Enterprise Operations Framework provides failover and SLAs to ensure your system is always up.

See the big (IT) picture

With SaltStack, your system data is persistent, encrypted, archivable with an optimized and integrated PostgreSQL database and can be analyzed with relevant, out-of-the-box dashboards.
Data from SaltStack Enterprise is always easily accessible via SaltStack dashboards or third-party visualization tools.

Available reports include:
- Configuration state assurance
- OS auditing
- User control and security assurance
- Infrastructure control and security assurance
- Audit-ready system compliance reports

Follow trends and changes across your infrastructure or drill into specific jobs to get a complete and accurate picture of your environment at any given moment.

**So pluggable, much integrated**

SaltStack exists to help businesses get the most out of their IT investments. Your current IT tools are good, they just need to be introduced to the 21st century. That said, we know we aren’t the first, nor will we be the last, so SaltStack Enterprise is built to efficiently integrate with your existing open and proprietary systems management and data center infrastructure portfolio.

SaltStack Enterprise provides deep integrations to enterprise products from SUSE, Hewlett Packard Enterprise, VMware, Cisco, Nutanix, Zenoss, ServiceNow, and more.

**Manage and schedule jobs**

Free up your most expensive IT engineers to work on high value projects, rather than constantly rebuilding and repeating ad-hoc jobs. Targets and jobs in SaltStack Enterprise are persistent, and can be reused over and over again, maintaining consistency and repeatability for the most efficient and scalable enterprise data center environment.

Stay in control of your growing infrastructure with the insight into all the jobs that are scheduled, in progress, and completed in the system. Schedule automated jobs that run on a defined basis, freeing up time address critical tasks day to day.

**Role-based access controls and LDAP integration.**

Maintain strict control over your infrastructure by creating user roles that designate who has access to Jobs, Targets, and Minions. Plus, integrate with your existing LDAP directory to implement existing permissions automatically.
Introducing SaltStack for SecOps

SaltStack for SecOps is a new add-on solution for SaltStack Enterprise that delivers full-service, closed-loop automation for compliance and security. With SaltStack for SecOps, security and operations teams can work together to define a compliance policy, scan all systems against it, detect issues, and actively remediate them—all from a single platform.

Access a live, hosted library of compliance profiles

SaltStack for SecOps includes access to a live, growing repository of standard compliance profiles. Each profile includes hundreds of up-to-date issue scans, detailed descriptions, and the automated remediation actions for each.

Available profiles include:
- Center for Security (CIS)
- Security Technical Implementation Guide (STIG)
- National Institute of Standards and Technology (NIST)
- Industry specific profiles, such as PCI and HIPAA

Deploy real, automated remediation

SaltStack for SecOps uses SaltStack’s event-driven automation capability to automatically remediate policy violations detected anywhere in your systems. It can also create jobs for review and approval before changes are executed. SaltStack for SecOps integrates with third-party systems like ServiceNow for change tracking and reporting.
Build policies for your business

When it comes to corporate security policies, there’s no such thing as one size fits all. SaltStack for SecOps offers complete policy customization. Create your own company-specific checks, turn off pre-built checks that don’t apply, or create exemptions and rules for specific machines as needed.

Ask your SaltStack representative for more information about SaltStack for SecOps or visit https://www.saltstack.com/secops/

Customer Success

SaltStack customers come in all shapes and sizes with a common thread of success. Examples include:

- Adobe: Automating infrastructure security compliance and saving hundreds of hours on blade chassis deployment and configuration
- Clemson University: Distributed control of a heterogeneous infrastructure running Windows, Linux and OpenStack
- Intuit: Data center deployment and ongoing maintenance of customer-facing infrastructure
- LinkedIn: Ubiquitous production infrastructure and application orchestration at massive scale
- Tyson: Event-driven automation for powerful and efficient management and security of enterprise IT assets
- TD Bank: Automating the migration and configuration of thousands of applications to a new cloud infrastructure

Ready to see how SaltStack can transform your business?