

# SALTSTACK®

## Training - Admin II

### Course Syllabus

This is the second course in the SaltStack Admin training series. It builds on the concepts of the Admin I course by presenting additional topics above the fundamentals of SaltStack administration. The topics are presented with scenario-based labs.

#### PREREQUISITES

Complete the SaltStack Admin I training course

#### OVERVIEW

This course begins by presenting the different aspects of deploying SaltStack minions. It presents SaltStack support for cloud control, custom deployments of Linux, Windows, and Salt Proxy Minions. Alternative topologies such as implementing master failover strategies. Salt Syndic and other hierarchical solutions are presented outlining the requirements, benefits, and caveats of each type.

Building on the fundamental administrative tasks presented in the Admin I course, this course shows how to address administrative tasks in large environments. It provides a detailed outline of various execution paths in SaltStack architecture. Execution topics include Salt events, state and file rendering, and more. The security of a SaltStack implementation is covered and includes running as a non-root user, using external authentication, and troubleshooting SaltStack.

The course adds to configuration management concepts by outlining best practices for state formulas. There will be scenarios presenting the best use of templating with Jinja. The course also shows how to utilize the Salt state system with a deep-dive into the stages of execution. Salt orchestration scenarios will show how to automate enterprise-wide deployments. The content also includes information about creating a dynamic, event-driven infrastructure with Salt reactors and beacons.

#### CERTIFICATION

Completing “Admin I” and “Admin II” will prepare an attendee to sit for the **SaltStack Certified Engineer (SSCE)** exam.

## OFFERING

All students are provided:

- A printed course training manual
- A Salt Cloud environment for hands-on labs during training

## FORMAT

This course is offered in the following instructor-led formats:

- 3 full-days
- 5 half-day days

This training is offered publically at SaltStack headquarters in Lehi, UT with virtual instructor-led (vILT) access for remote attendees on the 5 half-day format.

When offered privately onsite or virtually the training follows the 3-day format.

## COURSE TECHNICAL REQUIREMENTS

The technical requirements for SaltStack Training are:

### Video Conference

For remote attendees we offer remote virtual instructor-led (vILT) access. We typically use Zoom for remote virtual instructor-led attendees. If you are not familiar with Zoom, [please refer to this Zoom getting started guide](#) before your course begins.

Sometimes a video conferencing technology may be used. In such cases technical requirements will be given.

### Labs

Each student will be given a group virtual machines containing a Salt master with minions hosted in AWS. You will need to be able to SSH (destination port 22) from your network to access them. Detailed information about accessing the lab environment will be provided at the beginning of class.

### Class Portal:

The class portal is a website located at <http://training.saltstack.com> contains links to resources and end of chapter knowledge checks. A login to this site will be given at the beginning of class.



## COURSE OUTLINE

### **Introduction**

Welcome  
Objectives  
Getting Started  
Topics Covered  
Summary

### **Salt Cloud**

Objectives  
What is Salt Cloud?  
Salt Cloud Components  
The salt-cloud Command  
Configuring Salt Cloud  
Querying Available Data  
Defining Virtual Machine Profiles  
Salt Cloud Options  
Creating VMs with Profiles  
The Salt Cloud Provisioning Process  
Salt Cloud Command Output  
Querying for VMs  
Destroying Virtual Machines in the Cloud  
Managing Multiple VMs Instances  
Provider-Specific Commands  
Salting Existing Systems  
The Class Setup  
Your Salt Lab Environment  
Summary  
Lab - Accessing the Lab Environment  
Lab - Use the EC2 Salt Cloud Driver  
Lab - Create and Destroy Cloud VMs  
Lab - Create a Cloud Map  
Lab - Add Existing Systems to the Salt Master  
Cleanup

### **Windows Minions**

Objectives  
Salt Windows Minion Management  
The Salt Windows Management Framework  
Deploying Windows Minions  
User and Group Management  
Managing Windows Permissions  
Software Management  
Managing Windows Features and Roles  
Summary  
Lab - Provision Windows Minions  
Lab - Software Management  
Lab - Managing Windows Roles and Features

Lab - Windows Updates

### **Proxy Minions**

Objectives  
What is a Proxy Minion?  
Salt Proxy Minion Topology  
Using Proxy Minions  
Summary  
Lab - Provision Proxy Minion

### **Salt Execution and Architecture**

Objectives  
Salt Execution  
Salt Components  
Calling Modules Locally on a Minion  
Sending Jobs to the Salt Master  
The Event System  
Salt Master Processes  
The "salt" Execution Architecture  
Summary  
Lab - View Master Processes  
Lab - Listening to Events  
Lab - Analyze Salt Activity  
Cleanup

### **The Salt State System**

Objectives  
Uses of the Salt State System  
SLS Files  
Salt State Processing  
State Rendering  
State Compile  
State Runtime  
Summary  
Lab - Analyzing State Execution

### **Salt Renderers**

Objectives  
Salt State Rendering  
Using the Python Renderer  
Using the Jinja Renderer  
Conditional "if" Statements  
Jinja Variable Assignments  
Leveraging Lookup Lists and Dictionaries  
Jinja Filters



Calling Execution Modules with Jinja  
Using the GPG Render  
Summary  
Lab - Create Users and Groups Management State

### **Building Salt Formulas**

Objectives  
Salt Formulas  
Salt State Formulas Best Practices  
Using Inline Pillar Data  
Use Lookup Dictionaries Based on Grains  
The Online Salt Formula Repository  
A Complete State Example  
Summary  
Lab - Create States with Salt Formulas  
Lab - Webstack: Web Server State  
Lab - Webstack: Configuring an HAProxy Load Balancer  
Lab - Webstack: Configuring the "top.sls" File

### **Salt Orchestration Formulas**

Objectives  
Running Jobs on the Salt Master  
Salt Orchestration  
Orchestration Declarations  
Using Inline Pillar with Orchestration  
Using State Modules in Orchestration  
The Salt Mine  
Summary  
Lab - Webstack: Create the Pillar Data for the Web Servers  
Lab - Webstack: Configuring Web Server Mine Functions  
Lab - Webstack: Creating the Web Servers Orchestration State  
Lab - Windows Orchestration

### **Reactors and Beacons Formulas**

Objectives  
Reactor System  
Beacons  
Reactor Best Practices  
Summary  
Lab - Windows Beacons  
Lab - Windows Reactors  
Lab - Webstack: Configure the Load Beacon

Lab - Webstack: Creating the Web Server Reactors  
Lab - Webstack: Triggering the Scale Up Event

### **Supporting and Troubleshooting Salt**

Objectives  
Introduction  
Viewing Salt Activity  
Network Settings  
Salt Keys  
Salt States  
Summary  
Overview  
Loading Lab Troubleshooting Scenarios  
Lab - Troubleshooting Scenario 1  
Lab - Troubleshooting Scenario 2  
Lab - Troubleshooting Scenario 3  
Lab - Troubleshooting Scenario 4  
Lab - Troubleshooting Scenario 5  
Lab - Troubleshooting Scenario 6  
Lab - Troubleshooting Scenario 7  
Lab - Troubleshooting Scenario 8  
Lab - Troubleshooting Scenario 9  
Lab - Troubleshooting Scenario 10  
Lab - Troubleshooting Scenario 11  
Lab - Troubleshooting Scenario 12

### **Salt Security**

Objectives  
More About Keys  
The "pki\_dir"  
Increasing Security  
Decreasing Security  
Client ACLs  
External Authentication System  
Hardening Salt  
Security Issues  
Summary  
Lab - Understanding Salt Keys  
Lab - Configuring Client ACLs  
Lab - External Authentication Cleanup

### **Multi-Master**

Objectives  
Multi-Master  
Sharing Files Between Masters  
Summar





## ADDITIONAL INFORMATION

For additional information please contact:

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