



PUPPET ADVANCE TRAINING

Level - Advance

Email – contact@DevOpsSchool.com

TRAINING AGENDA

DAY 1

Introduction to Configuration Management & Puppet

- Why Configuration Management matters
- Why Puppet vs other tools (Chef, Ansible, Salt)
- Puppet Open Source vs Puppet Enterprise
- Puppet release overview (2025 focus, key changes, deprecated features)

Puppet Architecture & Internals

- Puppet Master / Puppet Server
- Puppet Agent workflow
- Catalog compilation
- Facter overview (facts, facter.conf, custom facts, external facts)

Getting Started with Puppet Enterprise

- Puppet Enterprise documentation overview
- Choosing an architecture for PE (monolithic vs split)
- Preparing infrastructure requirements

- Introduction to PE console & role-based access control
- Navigating the Puppet Enterprise GUI (Console)

Installation & Setup

- Installing Puppet Server
- Installing Puppet Agents (*nix & Windows)
- Crash demo: setting up Puppet Master, Agent, and environment
- Accessing the console and first logins

DAY 2

Puppet Language Basics

- Puppet DSL introduction
- Resources, attributes, and resource types (file, package, service, exec, user, group, notify, etc.)
- Variables, conditional expressions, ordering, and relationships
- Node definitions and classes
- Defined resource types

Working with Templates

- Embedded Puppet (EPP) and ERB templates
- Expressions, operators, and built-in functions
- Hieradata integration (data lookups, hieradata.yaml configuration)

Puppet Development Kit (PDK)

- Overview and workflow
- Installing PDK
- Creating & converting modules
- Customizing module configuration
- Building and packaging modules

Module Development & Testing

- Puppet style guide and best practices

- puppet-lint, metadata-json-lint
- rspec-puppet and rspec-puppet-facts
- Rubocop integration for Ruby functions
- Crash demo: building a module, testing, and deploying

DAY 3

Advanced Puppet Language

- Managing nodes in the console
- Node classification & groups
- Managing access and permissions
- Inspecting infrastructure via PE console

Orchestration with Puppet

- Puppet orchestrator & running Puppet on demand
- Bolt overview: tasks & plans
- Orchestrating multi-node runs
- Demo: deploy & orchestrate a module across multiple nodes

SSL & Certificates

- Puppet CA commands
- Autosigning & CSR attributes
- Regenerating certificates
- External CA & SSL termination (intro level)

Maintenance & Troubleshooting (Intermediate Level)

- Common Puppet errors & debugging catalogs
- Logs and report analysis
- Puppet Enterprise backup & restore (overview)
- Demo: troubleshoot a failing Puppet run
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DAY 4

Writing custom functions in Puppet

- Custom functions
- Custom Puppet functions
- Writing custom functions in Ruby
- Secrets store integrations and agent-side data retrieval
- Write a Puppet function to store secrets

Working with Puppet Hiera

- About Hiera
- Getting started with Hiera
- Configuring Hiera
- Creating and editing data
- Looking up data with Hiera
- Writing new data backends
- Upgrading to Hiera 5

Working with Tracking Puppet activity with reports

- Reporting
- Report reference
- Writing custom report processors
- Report format

Working with Puppet Certificate authority and SSL

- Puppet Server CA commands
- Intermediate CA
- Autosigning certificate requests
- CSR attributes and certificate extensions
- Regenerating certificates in a Puppet deployment
- External CA

- External SSL termination with Puppet Server

DAY 5

Puppet Enterprise Maintenance

- Routine maintenance tasks
- Log management
- Backup and recovery

Upgrades

- Upgrading Puppet Enterprise
- Upgrading Puppet Agents
- Migrating from Puppet Open Source to PE

Security

- Securing Puppet Enterprise infrastructure
- RBAC & role-based access management
- Certificate lifecycle management
- Best practices for securing Puppet code

Troubleshooting

- Common Puppet errors and fixes
- Debugging catalogs and manifests
- Using Puppet logs and reports
- Troubleshooting SSL issues
- Case studies and hands-on troubleshooting labs

Capstone Exercise

- End-to-end Puppet Enterprise deployment
- Write, test, and deploy a Puppet module
- Orchestrate a change across multiple nodes
- Monitor, report, and troubleshoot in real-time