
Continuous Integration and Deployment (CI/CD) with Git & Jenkins

Explore CI/CD, Git, Git Tools, Functional Testing, Jenkins & More

Course Snapshot

- **Course: Continuous Integration and Deployment (CI/CD) with Git & Jenkins (TTDV7560)**
- **Duration:** 5 days
- **Audience & Skill-Level:** Intermediate
- **Hands-on Learning:** This course is approximately 50% hands-on lab to lecture ratio, combining engaging expert lessons, demos and group discussions with real-world, skills-focused machine-based labs and exercises. Student machines are required.
- **Delivery Options:** This course is available for **onsite private classroom presentation, live online virtual presentation**, or can be presented in a **blended learning format**. Please also ask about our **Self-Paced / Video / QuickSkills** or **Mini-Camp / Short Course** flexible delivery options.
- **Public Schedule:** This course has active dates on our live-online open enrollment **Public Schedule**.
- **Customizable:** This course agenda, topics and labs can be further adjusted to target your specific training skills objectives, tools and learning goals. Please ask for details.

Overview

Continuous Integration and Deployment (CI/CD) with Git & Jenkins is a paradigm-shifting technique that brings together the best practices of source code management, test-driven development, and automated build systems to significantly lower both time and cost of development while reducing bugs and improving software quality. This course provides developers and systems administrators who support them the key knowledge and skills in creating a Git and Jenkins-based CICD platform

Learning Objectives

This course is approximately **50% hands-on**, combining expert lecture, real-world demonstrations and group discussions with machine-based practical labs and exercises. Working in a hands-on learning environment led by our expert team, students will explore:

- How to fully and best use Git, including branching, diffs, and tagging
- How to integrate Unit Testing as part of a cohesive TDD strategy
- How to integrate with Jenkins to continuously build on checkin
- How to create build-test-deploy pipelines in Jenkins
- How to use and configure key Jenkins Plugins to create a CICD platform
- How to integrate security into Jenkins
- How to create build reports in Jenkins
- How to create distributed build and test clusters
- How to setup and exploit Selenium RC (Optional – can be added upon request)
- The basics of testing for mobile platforms

Audience & Pre-Requisites

This class assumes some prior experience with Git, Jenkins basics, plus basic coding or programming knowledge.

Take Before:

- TTDV7550 Introduction to Git
- TTDV7520 Introduction to Jenkins

Need different skills or topics? If your team requires different topics or tools, additional skills or custom approach, this course may be further adjusted to accommodate. We offer additional GIT, Jenkins, CI/CD, DevOps, Docker, container, security, programming, and other related topics that may be blended with this course for a track that best suits your needs.

Enhanced Learning Services: Please also ask about our **Pre-Training Class OnRamp & Prep / Primer** offerings, **Skills Gap Assessment Services, Case Studies, Knowledge Check Quizzes, Skills Immersion Programs & Camps, Collaborative Mentoring Services** and **Extended Learning Support & Post Training** services.

Course Topics / Agenda

Please note that this list of topics is based on our standard course offering, evolved from typical industry uses and trends. We will work with you to tune this course and level of coverage to target the skills you need most. Topics, agenda, and labs are subject to change, and may adjust during live delivery based on audience interests, participation, and skill-level.

Continuous Integration, Testing, and Deployment Overview (CI/CD)

- Shifting Paradigms
- Source Code Repos (GitHub Enterprise)
- Binary Repos
- Test-Driven Development (TDD)
- Build Servers
- Automated Testing
- Automated Deployment

Git Essentials Review

- Creating Repositories
- Local and Remote Repos
- Managing SSH Keys
- Committing Code
- Pushing Code
- Best Practices
- Exercise: Git Essentials

Git Branching

- Branching and Merging
- Branch Management
- Branching Workflows
- Remote Branches
- Rebasing
- Branching Best Practices
- Lab: Branching with Git
- Lab: Merging with Git

Git Tools

- Diffs and Patches
- Reverting
- Tagging
- Submodules
- Subtree Merging
- Lab: Diffs and Patches with Git
- Lab: Creating Submodules
- Lab: Git Subtree Merging

Functional Testing Overview

- Unit Testing

- Mocks
- Integration Testing
- Progressive Integration Testing
- End-to-End Testing

PHPUnit

- xUnit
- PHPUnit Test
- Mocks for PHPUnit
- Running Tests
- Test-on-build
- PHPUnit in Integration Testing
- Lab: Unit Tests with PHPUnit

Related Testing Tools

- Selenium, Selenium, and Selenium Grid
- Services testing with PostMan, SoapUI, Boomerang
- DBUnit
- Lab: Working with Selenium
- Lab: Testing with Postman [Optional]

Non-Functional Testing

- Strategies and Best Practices
- Performance Testing
- Scalability Testing
- Availability Testing
- Security Testing
- Lab: Unit Tests in Performance Testing

Jenkins Overview

- Administration Overview
- Creating Jobs
- Reporting Overview
- Notification Overview
- Plugins Overview

Jenkins Core Builds

- Jenkins and SCM (GitHub)
- Building Pipelines

- IM integration and Build Notifications
- Deploying Builds
- Blue Ocean
- Lab: Creating Jobs in Jenkins
- Lab: Linking GitHub and Jenkins
- Lab: Creating a Jenkins Pipeline
- Lab: Integrating IM in Jenkins
- Lab: Working with Blue Ocean [Optional]

Jenkins

Authentication/Authorization

- Authentication and Authorization choices
- Integrating A&A
- Matrix-based security
- Lab: Configuring Security in Jenkins

Jenkins Reporting

- Creating Reports
- Report Deployments
- Lab: Creating Build Reports in Jenkins

Jenkins and Virtual Machines

- VM Provider comparison
- Cluster Management
- DevOps & OpenShift
- Distributed Builds with VMs
- Distributed Testing with VMs
- Lab: Slave builds in Jenkins
- Lab: Distributed Testing in Jenkins

OPTIONAL: Jenkins - Testing with Selenium

- Selenium Server setup
- VM instance Setup
- Jenkins-Selenium Plugin Setup
- Lab: Setting up a Selenium Grid in Jenkins

Looking Forward

- State of the Art in Software Engineering

- Build and Test Automation with VMs
- Automated Deployment to

Production

Related Git / GitHub / GitLab Training Courses

- TTDV7550 Introduction to Git | Git Quick Start
- TTDV7551 Introduction to GitHub for Developers
- TTDV7553 Working with GitLab
- TTDV7555 Advanced Git and GitHub
- TTDV7560 Explore CI/CD, GIT, GIT Tools, Jenkins Integration, Functional Testing & More
- Please see our complete course catalog for additional Git and related course

Student Materials & Lab Environment

All course software (limited versions, for course use only), digital courseware files or course notes, labs / data sets and solutions (as applicable) are provided for you in our “easy access / no install required” high-speed remote lab environment. Our tech team works with every student to ensure everyone is set up with working access and ready to go prior to every course start date, ensuring a smooth delivery and great hands-on experience. Please ask for details.

For More Information

All courses can be presented **onsite** or **online**, or in a **combined / flex / blended learning format**, tailored to target your specific audience, needs and learning goals. We also offer focused, flexible **short courses, self-paced learning options, recorded sessions** and more. We train beginner to advanced skills in all areas we cover, and offer **New Hire / Cohort Training, Boot Camps, Skills Immersion Programs, Reskilling Programs, Skills Migration & Transition Programs**, and more. We collaborate with you to ensure all courses are truly targeted to meet your specific needs and learning skills, maximizing your valuable training time, as well as your important budget.

Please also visit our extensive **Public Training Schedule** for training for smaller groups or individuals. Please contact us for course details, **Corporate Rates** and **Special Discount Offers**.

For more information about our dedicated training services, collaborative coaching services, courseware licensing options, public course schedule, training management services, partner programs, or to see our complete list of course offerings and special offers please visit us at www.triveratech.com, email Info@triveratech.com or call us toll free at **844-475-4559**. Our pricing and services are always satisfaction guaranteed.

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