

## Introduction to IBM Rational ClearCase

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### Course Summary

#### Description

This course is designed to provide students with a solid understanding of the architectural and functional capabilities of ClearCase with the specific objective of enabling students to use ClearCase in their operational environment effectively and efficiently. The course starts from the end user's perspective of the typical person using ClearCase as part of their daily work, then moves on to a detailed and hands on examination of how to set up ClearCase projects and how to customize ClearCase to support the specific needs and requirements of a development team.

#### Objectives

At the end of the course, students will be able to:

- Describe the ClearCase architecture and infrastructure.
- Explain the basics of how VOBs work and store user artifacts.
- Explain the internal structure of Views and how the work with VOBS.
- Write View config specs and diagnose and rectify config spec issues.
- Explain how ClearCase manages elements under version control.
- Create, modify and administer VOBs and Views, including snapshot Views.
- Diagnose and fix common problems with VOBs and Views.
- Explain the various kinds of meta-data used in VOBs – labels, branches, attributes, triggers, data types and hyperlinks – and best practices for their use.
- Create and maintain VOB meta-data.
- Understand the concepts of the ClearCase registry and regions.
- Plan View and Vob creation strategies for meeting specific project requirements.
- Develop administrative support for branching and merging.
- Use extended path names to access elements.
- Perform all ClearCase administrative actions at the command line using ClearTool

#### Topics

- Mounting and unmounting VOBs in Unix and Windows.
- Checking in, checking out and unchecking out elements; using keep files.
- Understanding deltas, version numbers and version trees.
- Creating and using a dynamic view in Windows and Unix.
- Using ClearTool help facilities
- Using ClearTool utilities like lsvob, lsview, etc.
- Adding and removing elements from version control.
- Using the view private area

Once students have mastered the basic ClearCase topics and commands, the following advanced topics are covered:

- Working with version tags.
- Creating and using snapshot views
- Understanding and working with extended version path names
- Branching an element, how to work in a branch.
- Understanding config specs and branches and individual workspaces.
- How merges are related to branches
- Editing basics for config specs.
- Performing Merges and merge tools

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### **Course Summary (cont.)**

#### **Audience**

This course is intended for both end users and anyone either in or moving into an project administrative role who will be managing or supporting the use of ClearCase for a project team, especially for those who will be working in a hands on manner administering the product.

#### **Prerequisites**

The course does not require any prior ClearCase knowledge; however basic knowledge covering at the command line, understanding files, permissions, and basic system process management is required. Experience with the one of the Unix shells is not necessary but is useful. Prior experience with software configuration management concepts is also useful.

#### **Duration**

Two Days

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### Course Outline

- I. Configuration Management Overview**
  - A. Overview of software configuration management (SCM) concepts
  - B. Asset identification, control, audit records and build management
  - C. Describing what ClearCase automates – configuration management processes and policies.
  - D. What are assets anyway?
  - E. What needs to be done before using ClearCase.
  
- II. ClearCase Design and Architecture**
  - A. ClearCase design goals: Operational efficiency and unobtrusive to the user.
  - B. The ClearCase architecture
  - C. The VOB and the view: what they are and how they work together.
  - D. Servers, tags and registries.
  - E. How VOBs and views work when accessed by users.
  - F. Mounting VOBs and setting views.
  - G. How to interact with VOBs through views.
  - H. Getting and using help.
  - I. How to know if you are doing it right.
  - J. The ClearCase registry and ClearCase regions.
  
- III. Clearcase Basics**
  - A. Using ClearTool and the command line.
  - B. Adding and removing elements.
  - C. Checking in and checking out and un-checking out elements.
  - D. Using ClearTool utilities (lsview etc)
  - E. Using the ClearCase metadata – comments and element histories.
  - F. Using the view-private work area.
  
- IV. Version Trees and Deltas**
  - A. Deltas: How ClearCase keeps versions.
  - B. The version tree.
  - C. The “main” branch.
  - D. How to walk a version tree and identify specific versions
  - E. Extended path names.
  
- V. Tags and Attributes**
  - A. The purpose of tags and attributes
  - B. Using tags in release management
  - C. Rules and best practices for tag use.
  - D. Defining and adding tags to versions.
  - E. Creating, using and updating attributes.
  - F. Best practices for tag use.
  
- VI. Extended Path Names and config specs**
  - A. What happens in the VOB when an element is checked in and out
  - B. Version trees of an element
  - C. Element extended paths: eg. elem@@/main/LATEST
  - D. How views interpret extended path names
  - E. Using extended path names to assign meta-data
  - F. How an element gets “branched”
  - G. How Config specs relate to branches
  
- VII. Branching and Merging**
  - A. Why we use branches.
  - B. Branches from a user perspective.
  - C. Branch labels and version trees.
  - D. Branching an element.
  - E. What merges do and why we use them.
  - F. The user role in merging.
  - G. How branches and merges work.
  - H. Additive and subtractive merges
  - I. The ‘findmerge’ and ‘merge’ command line tools

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### Course Outline (cont.)

#### **VIII. Views and Config Specs**

- A. How config specs are used by a view.
- B. Syntax of config spec rules.
- C. Writing and editing config specs.
- D. Creating a view for a specific branch.
- E. Using tags and attributes in config specs.
- F. Auto-branching an element.

#### **IX. Snapshot Views**

- A. Dynamic versus Snapshot views.
- B. Advantages and disadvantages of Snapshot Views.
- C. Updating and refreshing snapshot views.
- D. Working with Load Rules
- E. Best practices for Snapshot views.
- F. Common errors and their fixes when using Snapshot views.

#### **X. Common ClearCase Errors and Fixes**

- A. Moving elements within and between VOBs
- B. Removing versions, names and elements
- C. Common problems: evil twins, eclipsed elements etc.
- D. Working with the lost+found directory
- E. Adding elements to a VOB
- F. Putting wrong types of elements under version control.
- G. Unplanned VOB lifecycles.

#### **XI. Managing ClearCase**

- A. VOB planning for a project
- B. View planning for a project
- C. Backing up, and restoring VOBS
- D. Archiving VOBS, using older VOBS as initial project baselines  
VOB and View design and planning strategies for waterfall, Agile and DevOps