

System Administration of Windchill 10.2

Overview

Course Code TRN-4340-T

Course Length 3 Days

In this course, you will gain an understanding of how to perform routine Windchill system administration tasks, including how to manage Windchill services and optimize Windchill components for performance. You will focus on daily, weekly, and monthly system maintenance tasks required by the Windchill system administrators. You will also learn how to install and configure Windchill system components and how to implement file vaulting and content replication. Other topics that will be reviewed include managing an Oracle database, troubleshooting background queues, controlling system backup procedures, and setting up the client environment.

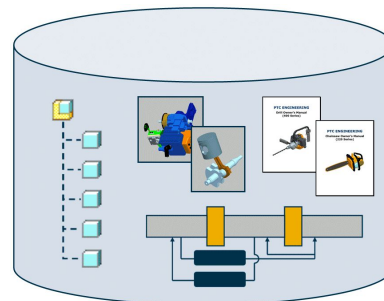
At the end of each module, you will complete a set of review questions to reinforce critical topics from that module. At the end of the course, you will complete a course assessment in Pro/FICIENCY intended to evaluate your understanding of the course as a whole.

Note: Due to the subject matter of this class, simulated software is used for Windchill installation to provide an accurate, effective, and efficient training experience that could not otherwise be duplicated in a standard classroom environment.



Course Objectives

- Understand Windchill architecture
- Install and configure Windchill solutions
- Start and stop Windchill components
- Manage Windchill configuration properties
- Implement file vaulting and content replication
- Tune Windchill components for performance
- Tune Windchill workflows for performance
- Manage background queues
- Manage Oracle database
- Manage system backups
- Manage Windchill system logs and alerts
- Monitor daily, weekly, and monthly administration tasks
- Configure browser and JAVA settings for clients



Prerequisites

- Familiarity with the Windchill PDMLink 10.1 or Windchill ProjectLink 10.1 user interface
- Familiarity with the Windows command prompt and the ability to form and execute basic SQL statements

Audience

- This course is intended for System Administrators and Application Developers. People in related roles will also benefit from taking this course.
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Agenda

Day 1

Module	1	Introduction to the Windchill System Environment
Module	2	Installing Windchill Components
Module	3	Managing Windchill Services
Module	4	Managing Windchill Properties
Module	5	File Vaulting and Replication Overview
Module	6	Implementing File Vaults
Module	7	Implementing Content Replication

Day 2

Module	8	Tuning Windchill Server
Module	9	Managing Background Queues
Module	10	Tuning Workflow Processes
Module	11	Oracle Database Management
Module	12	Windchill Backup and Recovery

Day 3

Module	13	Managing Log Files and Alerts
Module	14	System Monitoring — Daily Tasks
Module	15	System Monitoring — Weekly Tasks
Module	16	System Monitoring — Monthly Tasks
Module	17	Setting up the Client Environment

Course Content

Module 1. Introduction to the Windchill System Environment

- i. Client Requirements
- ii. Windchill Architecture — Server
- iii. Windchill Architecture — Database
- iv. Windchill Architecture — Windchill Server
- v. Windchill Architecture — Database
- vi. Windchill Architecture – Optional Servers
- vii. Role of the System Administrator
- viii. Understanding Windchill Contexts
- ix. Windchill Product Characteristics
- x. Windchill Library Characteristics
- xi. Using Folders
- xii. Data Management Objects
- xiii. Iteration and Revision Controls
- xiv. Access Controls
- xv. Process Controls
- xvi. Understanding the Windchill User Interface
- xvii. Using the Navigator
- xviii. Navigating Products and Libraries
- xix. Locating Information
- xx. Understanding Information Pages
- xxi. Accessing Help

Module 2. Installing Windchill Components

- i. Windchill Software Matrices
 - ii. Supported Virtualization Platforms
 - iii. Sizing a Windchill System
 - iv. Setting Application Name
 - v. Software Downloads
 - vi. Windchill Technical Documents
 - vii. Windchill Required Components
 - viii. Installing Oracle
 - ix. Oracle Post Installation Activities
 - x. The PTC Solution Installer (PSI)
 - xi. Understanding Installation Types
 - xii. Selecting the Database Size
 - xiii. The Staging Area Options
 - xiv. Installing Windchill Solution
 - xv. Installing on Multiple Machines
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- xvi. Installing Optional Components

Module 3. Managing Windchill Services

- i. Identifying Major Windchill Services
- ii. Starting/Stopping Apache Web Server
- iii. Starting/Stopping Windchill Directory Server
- iv. Starting/Stopping Oracle
- v. Starting/Stopping Windchill
- vi. Running Apache as a Windows Service
- vii. Windchill Directory Server Control Panel
- viii. Running Windchill Directory Server as a Service
- ix. Running Windchill as a Windows Service
- x. Automating Windchill Startup
- xi. Automating Windchill Shutdown

Module 4. Managing Windchill Properties

- i. System Administration Utilities
- ii. The Windchill Command
- iii. The Windchill Shell
- iv. Windchill Configuration Properties Files
- v. The site.xconf File
- vi. The JMX Clients
- vii. Using JConsole to Modify Property Values
- viii. The xconfmanager Utility
- ix. The xconfmanager: Options
- x. The xconfmanager: Example
- xi. The xconfmanager: Validate Changes
- xii. Properties Managed by the Windchill Configuration Assistant
- xiii. Creating a Custom XCONF File

Module 5. File Vaulting and Replication Overview

- i. File Vaulting
 - ii. File Storage Options
 - iii. Local File Vaulting Architecture
 - iv. Content Replication
 - v. Content Replication Architecture
 - vi. Windchill File Servers
 - vii. Centrally Vaulted Content
 - viii. Remotely and Centrally Vaulted Content
 - ix. File Vaulting Strategies
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- x. Types of File Vaults
- xi. Checking an Object into a Windchill Main Server
- xii. Requesting Objects That Have Not Yet Been Replicated
- xiii. Requesting Objects from File Servers That Are Not Preferred
- xiv. Server to Server Replication
- xv. Content Synchronization and Replication
- xvi. Local Replication for File Servers

Module 6. Implementing File Vaults

- i. Planning External File Storage
- ii. Multiple Vaults Configuration
- iii. Vaulting Rules
- iv. Single Vault Configuration
- v. Forcing Contents to a Single Vault — Implications
- vi. Single Vault vs. Multi Vault Configuration
- vii. Vaults with Automatic Folder Creation
- viii. The Central Cache Vault
- ix. Setting Up External Storage
- x. Managing Revaulting
- xi. Maintaining Vaults
- xii. Changing the Location of Files in Vaults
- xiii. The Default System Target Vault

Module 7. Implementing Content Replication

- i. Installing the File Server — Requirements
- ii. Enabling Remote File Server Support
- iii. Generating the Security Key
- iv. Using the File Server Management Utility
- v. Registering the File Server
- vi. Configuring Replica Vaults
- vii. Creating Replication Rules
- viii. Creating Replication Schedules
- ix. Replication Performance and Scalability
- x. Replication and Visualization Service
- xi. Setting the Preferred File Server
- xii. User-Initiated Replication

Module 8. Tuning Windchill Server

- i. Windchill Server Tuning Objectives
 - ii. Monolithic Windchill Configuration
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- iii. Multi-Tiered Windchill Configuration
- iv. Server Heap Size
- v. Setting Windchill Cache Sizes — wt.properties
- vi. Setting Windchill Cache Sizes — db.properties
- vii. Viewing Windchill Cache Statistics
- viii. Limiting Search Results
- ix. Windchill Configuration Assistant (WCA)
- x. Affected Files
- xi. Running the Windchill Configuration Assistant
- xii. Propagating Values from Intermediate Properties Files
- xiii. Rolling Back Configuration Changes
- xiv. Number of Method Servers
- xv. Cleaning Windchill System Cache
- xvi. Why Do Windchill Method Servers Stop Unexpectedly?
- xvii. Using Anti-Virus Software
- xviii. Server Cluster Configuration
- xix. Server Status
- xx. WAN Performance Optimizing Options
- xxi. WAN Acceleration

Module 9. Managing Background Queues

- i. Windchill Background Queues
- ii. Queue Manager
- iii. Queue Entry States
- iv. Out-of-the-Box Background Queues
- v. Single Method Server Configuration
- vi. Configuring a Background Method Server
- vii. Configuring Multiple Background Servers
- viii. Distributing Background Queues
- ix. Tuning Background Queues
- x. Performing Regular Queue Maintenance
- xi. Deleting a Queue

Module 10. Tuning Workflow Processes

- i. Workflow Queues
 - ii. Pool Queues
 - iii. Monitoring Workflow Queue Entries
 - iv. Configuring Queue Pooling
 - v. After Queue Pooling
 - vi. Configuring Dedicated Workflow Queues
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- vii. Tagging Dedicated Workflow Queues
- viii. After Dedicated Queues

Module 11. Oracle Database Management

- i. Reviewing Instance and Database
- ii. System Global Area (SGA)
- iii. Reviewing Background Processes
- iv. Understanding Oracle Storage Hierarchy
- v. Oracle Enterprise Manager Database Control
- vi. Oracle Initialization Parameters
- vii. Control Files
- viii. Oracle Tablespaces
- ix. Oracle Datafiles
- x. Redo Log Files
- xi. Automatic Memory Management (AMM)
- xii. Automatic Shared Memory Management (ASMM)
- xiii. Approximating Initial Memory Sizes
- xiv. Automatic Workload Repository (AWR)
- xv. Automatic Database Diagnostic Monitor (ADDM)

Module 12. Windchill Backup and Recovery

- i. Windchill Backup Architecture
 - ii. Windchill Data Repositories
 - iii. Types of Backup
 - iv. Performing a Cold Backup
 - v. Recovering from a Cold Backup
 - vi. Performing a Hot Backup
 - vii. Recovering from a Hot Backup
 - viii. Oracle Backup and Recovery — Enterprise Manager
 - ix. Oracle Archive Log Mode
 - x. Oracle Flash Recovery Area
 - xi. Oracle Suggested Backup Strategy
 - xii. Suspending Background Queues
 - xiii. Read Only Mode for Vaults
 - xiv. Generating Vault Backup Information
 - xv. The WContentVerify Tool
 - xvi. Mirroring the Local Cache Vault
 - xvii. Rebuilding Replica Vaults
 - xviii. Backing up the Windchill Directory Server
 - xix. Backing Up LDAP Data using the Backup Command
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- xx. Restoring Windchill Directory Server
- xxi. Backing Up LDAP Directory Data using Control Panel
- xxii. Restoring LDAP Directory Data using Control Panel
- xxiii. Exporting LDAP Data
- xxiv. Importing LDAP Data

Module 13. Managing Log Files and Alerts

- i. Windchill Logging Mechanism
- ii. Windchill Log Properties
- iii. Setting Windchill Log Levels
- iv. Populating JMX-Administrators
- v. Viewing Windchill Log Files
- vi. Managing Log Files using JConsole
- vii. System Error Reporting
- viii. Using the Persisted Log Events Page
- ix. The Log File Viewer Page
- x. The Log Event Details Page
- xi. Administration Actions After Receiving Error Reports
- xii. System Configuration Collector
- xiii. Oracle Alerts
- xiv. Oracle Alerts — Setting Up a Mail Server
- xv. Setting Up Direct Oracle Alert Notifications
- xvi. Oracle Alerts — Setting Metric Thresholds
- xvii. Managing Directory Server Logs
- xviii. Managing Web Server Logs

Module 14. System Monitoring — Daily Tasks

- i. Daily System Monitoring Tasks — Checklist
 - ii. Perform and Verify Scheduled System Backups
 - iii. The Server Status Page
 - iv. PTC System Monitor
 - v. System Monitoring using JMX Clients
 - vi. Monitoring CPU and Memory Usage by Windchill Processes
 - vii. System Components Availability
 - viii. Monitoring Queues using Queue Manager
 - ix. Monitoring Queues using JMX Clients
 - x. Monitoring Queues using Queue Analyzer
 - xi. Queue and Workflow Health Check Script
 - xii. Monitor File Vaults
 - xiii. Monitoring Vaults using the System Configuration Collector
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- xiv. Review Application Server Logs
- xv. Review Database Logs
- xvi. Check Database Schema Statistics
- xvii. Monitor Network Health
- xviii. Review PTC Technical Support Subscription E-mails

Module 15. System Monitoring — Weekly Tasks

- i. Weekly System Monitoring Tasks — Checklist
- ii. Monitor Disk Space Usage
- iii. Identifying BLOBS That Have Not Been Vaulted
- iv. Remove Unreferenced Files from File Vaults
- v. The RemoveUnreferencedFiles Tool
- vi. Automated Cleanup of Replica Vaults
- vii. Generating Unreferenced Files Report
- viii. Defragment Windows Disks
- ix. Check Performance using Monitoring Tools
- x. Perform Database Maintenance

Module 16. System Monitoring — Monthly Tasks

- i. Monthly System Monitoring Tasks — Checklist
- ii. Execute Performance Benchmarks
- iii. Windchill File Server Test
- iv. Perform Database Diagnostics
- v. Resolve Disconnected Principals
- vi. Cleaning up Data for Deleted Users
- vii. Evaluate System Settings using Windchill Configuration Assistant
- viii. Generate Throughput and Security Audit Reports
- ix. Perform Workgroup Manager Maintenance Tasks
- x. Review Windchill and Creo Settings
- xi. Purge Obsolete or Unused Data
- xii. Apply Maintenance Patches and Updates
- xiii. Clone Production Server to Test Server
- xiv. Yearly Administrative Tasks

Module 17. Setting up the Client Environment

- i. Setting Up Your Browser
 - ii. Browser's ActiveX Settings
 - iii. Pop-Up Blocker Interference
 - iv. Browser Locale Settings
 - v. Memory Allocation for Applets
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- vi. Installing Creo View
 - vii. Installing Desktop Integration
 - viii. Setting Your Preferred File Server Site
 - ix. Product Structure Explorer Preferences
 - x. Configuring the Windchill Home Page
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