

HP 教育訓練中心課程簡介

HP Serviceguard I (H6487S)



本課程介紹 ServiceGuard 的知識與技巧，幫助 HP-UX 系統管理者確保系統的可用性，並學習設定 ServiceGuard 叢集及套件。

適合對象

- HP-UX system administrators who currently, or soon will, develop, design, implement, and monitor Serviceguard clusters

先修課程

- HP-UX System and Network Administration I (H3064S) and HP-UX System and Network Administration II (H3065S) or
- HP-UX System and Network Administration for Experienced UNIX® System Administrators (H5875S) and
- HP-UX Logical Volume Manager (H6285S) or HP-UX VERITAS Volume Manager (HB505S) and
- POSIX Shell Programming (H4322S)

課程目標

- Configure a volume group or disk group that can be used on multiple systems and a basic package to run in a Serviceguard environment
- Configure and maintain a Serviceguard cluster
- Configure and implement an application monitor
- Replace a failed LVM lock disk
- Change the cluster configuration and add or delete a package to a running cluster

Course title: HP Serviceguard I

HP product number: H6487S

Category/Subcategory: HP-UX / UNIX

Course length: 5 days

Level: Advanced

To order: To review course schedules and to register for a course, visit www.hp.com.tw/education

- Set up a Serviceguard package using the NFS toolkit and Oracle toolkit
- Configure a highly available network using redundant hubs, routers, and networks
- Perform a rolling upgrade
- Use Serviceguard Manager to manage a Serviceguard cluster
- Perform troubleshooting activities to resolve Serviceguard configuration problems

課程效益

- Protect your mission critical applications against a wide variety of hardware and software failures through effective use of Serviceguard
- Deliver highly available application services to your LAN-attached clients by configuring up to 16-nodes in an enterprise cluster
- Reduce your application downtime to near zero by learning how to configure your Serviceguard cluster and using Serviceguard's rolling upgrade facility
- Minimize, and in some instances eliminate, your application downtime by learning how to automate the detection of failures and restoration of application service

為什麼選擇HP教育訓練中心?

- Focus on job-specific skills
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進階課程

- HP Serviceguard II: ContinentalClusters, CFS, & Oracle RAC (U8601S) or HP Metrocluster (HB507S), HP Integrity Virtual Machines (HB506S), HP StorageWorks XP Disk Arrays (H6773S)

課程大綱

Introduction to High Availability

- What Are the Risks?
- Reducing the Risk: Redundant Data
- Disk Configurations
- Reducing the Risk: Asymmetric Clusters
- Reducing the Risk: Minimizing Downtime
- Reducing the Risk: Network Redundancy
- Multi-Network Environment
- Redundant LAN Cards
- Redundant Hubs
- Redundant Routers
- Redundant Client Networks

High Availability with Serviceguard

- Introducing Serviceguard
- High Availability with Serviceguard
- Features and Benefits of Serviceguard

- How Serviceguard Works
- Serviceguard Packages
- Redistributing Application Packages
- Minimizing Planned Downtime
- Serviceguard Bundle/Products
- HP Serviceguard Solutions
- Serviceguard and Integrity VM
- Cluster File System
- Multi-Node Packages and Package Dependencies
- Oracle RAC and CFS
- Storage choices based on your priorities
- SGeRAC and LVM MORE
- System Management Homepage
- Serviceguard Manager
- Serviceguard Storage Management Suite
- Metrocluster
- Continentalclusters

Storage for Serviceguard

- Serviceguard Disk Space Management Overview
- Boot and Root disk concepts
- General disk concepts
- Volume management in Serviceguard for HP-UX
- LUN, Disk, and DVD DSF Names for 11.31
- Review of LVM Concepts
- Configure a Shareable LVM Volume Group
- LVM Issues with Serviceguard
- Common LVM Commands
- LVM and VxVM Command Comparison
- Configure a Shareable VxVM Disk Group
- CFS Filesystem

Cluster Concepts and Configuration

- Definition of a Cluster
- Major Components of a Cluster
- Network Interface Configuration
- Cluster Lock Configuration Using LVM Disks
- Cluster Lock Configuration Using a Quorum Server
- Quorum Server Redundancy

- Cluster Lock Configuration using Lock LUN
- Lock LUN support for HP-UX
- Lock LUN rules
- Comparison
- Heartbeat Configuration
- cmcl Process
- Cluster Formation Requirements
- Steps to Configure a Cluster
- Cluster Configuration Procedure
- Viewing the Cluster — cmviewcl Command
- Checking the Cluster Log

Additional Cluster Features

- Serviceguard Volume Groups
- Marking Volume Groups for use in Serviceguard
- Exclusive Mode Volume Group Activation
- Cluster Formation and Reformations
- Ways to Initially Form the Cluster
- Node Failures and Node Joins
- Cluster Reformation ExamplevLocal LAN Card Failover - Normal Network Flow
- Local LAN Card Failover - Network Flow to Standby LAN Card

Packages and Services

- Packaging Concepts
- Sample Package Configuration
- Sample Configuration after Node Failure
- Package Switching
- Viewing Package Status
- Package Owner and State
- Modifying Package Status
- Review Commands for Controlling a Cluster
- Configuration of Packages
- Package Modules Types
- Modularized Package Control Script
- Modularized Package Control File
- Package Configuration Procedure
- Create the Package Configuration File
- Edit the Package Configuration File
- Verify and Distribute the Binary File
- Enhancements to cmapplyconf/cmcheckconf

- The Package Script Log File

Package Policies

- Package Policies
- Package Type
- Failover Policies
- Failback Policies
- Example of Automatic Failback
- Access Control Policies
- Node Fail Fast and Service Fail Fast
- Package Dependencies
- Dependency Rules
- Complex Dependencies
- Cross node dependencies example
- Exclusionary dependency example
- cmapplyconf warning
- Complex dependency challenge
- Package Priorities
- Setting Package Priority
- Resource Dependency
- cmrunpkg review
- Package Weight/Node capacity
- Node Capacity / Package Weight challenge
- Configuration file example
- Node Capacity Configuration
- Package Weight Configuration Methods
- Package Weight/Node Capacity Rules
- Capacity “package_limit”
- Package priority & package weight rules
- Priority and Weight challenge

Application Monitoring Scripts and ECMT Toolkits

- Package Startup and shutdown
- Rules for Service Processes
- Application Monitoring Script
- HA Toolkit Overview (or how to use monitoring)
- ECMT Version B.06.00
- Modular toolkit architecture
- Modular Oracle db toolkit deployment
- Configuration directory operations for Modular Packages

Cluster Troubleshooting

- Troubleshooting in Serviceguard
- Approaches to identifying problems
- Double-checking supported configurations
- Log files
- Monitoring the syslog File
- Monitoring the package log file
- Useful Troubleshooting Commands
- Using cmviewconf and cmgetconf
- Using cmquerycl and cmcheckconf
- Using cmviewcl
- Common problem categories
- System administration errors
- Package control script hangs or failures
- Package Log File Enhancements
- Causes of cluster reformations
- Approaches to fixing problems
- Resolving Serviceguard command hangs
- Modifying debugging options
- Modifying startup debugging options
- Starting applications outside of a Serviceguard package
- cmgetconf
- The Built-in Safety Net
- Patch recommendations
- Common Cluster Configuration Issues
- Testing Cluster Operations
- Testing the package manager
- Testing the cluster manager
- Testing the network manager
- Notification for Package Failure

Cluster and Package Online Reconfiguration

- Serviceguard Online Reconfiguration
- Online cluster reconfiguration
- Storage reconfiguration
- Add a Node while a Cluster Is Running
- Remove a Node while a Cluster Is Running
- Add a Package while a Cluster Is Running
- Remove a Package while a Cluster Is Running
- Modify a Package while the Cluster and Package are Running

- Modify a Package while the Cluster Is Running, but the Package Is Down
- New Preview Functionality
- SG commands –t option

Highly Available NFS

- Highly Available NFS Server Package
- Using the modular NFS Server Toolkit
- Highly Available NFS Client Package

The Highly Available Oracle Database

- Highly Available Oracle Package – Overview
- Serviceguard Toolkits
- ECMT modular Toolkit Contents
- Create Oracle Package

WBEM, EMS Resources and Serviceguard Packages

- EMS Overview
- Configuration of EMS Requests
- What can be configured
- Select EMS Resources
- Select EMS Configuration
- Resource Dependency
- Setting up a Package to use an EMS Resource
- WBEM Overview
- WBEM Services Value Proposition
- WBEM relative to SNMP, DMI and EMS
- HP WBEM Based Enterprise Management
- HP-UX 11i WBEM Providers

High Availability Networking

- Network Redundancy
- Multi-Network Environment
- Redundant LAN Cards, Hubs and Routers
- Redundant Client Networks
- Multiple IP Addresses
- Cross-subnet support
- Serviceguard Command Changes
- Serviceguard Package Configuration Changes
- Cross subnet network configuration requirements
- APA Auto-Port Aggregation (APA) Overview
- APA/LAN Monitor Requirements

- Configuring APA
- IPv6 Networks
- IP Monitor
- Failures and Recovery

Rolling Upgrade

- Minimizing Planned Downtime
- Rules for Rolling Upgrade
- New Cluster Manager (CM2) in SG 11.19
- Special Considerations for Upgrade to Serviceguard A.11.20
- CM2 Changes
- CM2 similarity to CM
- Cluster Reformation
- Rolling Upgrade CM to CM2 Process
- Special Considerations for Upgrade to Serviceguard A.11.20
- syslog messages during protocol switch
- Rolling upgrade to A.11.19 restrictions
- Special Considerations for Upgrade to Serviceguard A.11.20
- Serviceguard Rolling Upgrades
- Operating System Rolling Upgrades
- Cluster before Rolling Upgrade
- Example of a Rolling Upgrade — Running Cluster with Packages Moved
- Example of Rolling Upgrade — Node1 Upgraded to HP-UX 11.31
- Example of Rolling Upgrade — Install Serviceguard, Rejoin Cluster
- Example of Rolling Upgrade — Run Cluster with all Packages on Node1
- Example of Rolling Upgrade — Upgrade Node2
- When a Rolling Upgrade Is Not Possible
- Dynamic Root Disk (DRD) for Serviceguard
- DRD Use-case – recovery
- DRD Use-case – maintenance

Storage Maintenance for Packages

- Storage Maintenance for Packages
- Modifying a Volume Group
- Modifying a Logical Volume
- Extending a Logical Volume to a specific disk

- Reducing the size of a Logical Volume
- Moving all data on one LVM disk to another
- Make a Logical Volume / File System Larger or Smaller
- LVM Maintenance to a Package
- Add Disk to Volume Group Owned by a Package
- Add Logical Volume / File System to Volume Group Owned by a Package
- Add a Volume Group to a Package
- Manage VxVM Disk Groups
- Manage VxVM Volumes

Serviceguard Manager

- HP Cluster Monitoring Tools
- Serviceguard Manager B.03.xx for SMH
- SG Mgr B.03.00.10 Enhancements
- Topology Map Feature Highlights
- Graphical Map
- Navigation
- Contextual Menu
- Pop-up Summary
- Drag and Drop

Live Application Detach and Other Features

- Serviceguard 11.20 Enhancements
- Live Application Detach (LAD)
- Live Application Detach - Rules
- Application Packages Can Use NFS
- Cluster-Wide Device File Names
- Cluster-Wide Device Files
- Cluster Verification
- Cluster Verification with SG Manager
- VxVM and LVM Monitor
- Serviceguard Manager A.05.03
- Easy Deployment

Easy Deployment

- Easy Deployment Commands - cmdeploycl
- Easy Deployment Commands - cmpreparecl
- Easy Deployment Commands - cmpreparestg
- Easy Deployment Commands – cmquerycl
cmapplyconf

- Serviceguard Manager B.03.00 Enhancements
- Serviceguard Manager Easy Deploy
- Easy Deploy Cluster Creation

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