

WAS TRAINING COURSE CONTENT

Introduction to WAS

- ✦ What is WAS (WebSphere Application Server)? A recap to the client-server architect.
- ✦ A recap to what is a server, application server, and web server
- ✦ What is an enterprise application, application hosting, application deployment, and application maintenance?
- ✦ What is the role of WAS in application hosting?
- ✦ What other application servers are available in the industry and how WAS can serve the purpose in a better way.
- ✦ Introduction to WAS packages, Base and ND (Network Deployment).
- ✦ The bottleneck of the Base package and evolution of the ND package.
- ✦ Introduction and evolution of WAS to different versions namely 6.0, 6.1, 7.0, 8.0 and 8.5.
- ✦ Availability of WAS packages and license & support from IBM.
- ✦ Architect of WAS. Introduction to web servers like IHS & IIS, JNDI concept, messaging, admin & security server, web and enterprise containers and LDAP (Lightweight Directory Access Protocol).
- ✦ Request flow from the user through the browser to the application server.
- ✦ The advantages of learning were as a middleware technology.
- ✦ Integration of WAS with other middleware technologies like MQ, LDAP, and IIS.

Installation and Applying Fix Packs

- ✦ Installation methods: GUI mode using IIM (IBM Installation Manager), CLI mode using silent installation and uses of incl.exe. Concept of record option in incl.exe.

- ✦ Installation of IIM. Introduction to terms like install, update rollback, modify and uninstall.
- ✦ Installation of WAS using various methods. Generation of logs during and post the installation process. Verification of installation.
- ✦ Applying fix packs on WAS using various methods. Generation of logs post update and verification of fix pack update.
- ✦ Rollback fix packs on were using various methods. Generation of logs posts rollback and verification of rollback.
- ✦ Uninstallation of WAS using various methods. Generation of logs post uninstallation and verification of un-installation.

WAS Profile Management

- ✦ Introduction to WAS file system post-installation like /bin, /lib, /logs, /profile Templates. Introduction to various types of profile templates.
- ✦ Introduction to manageProfiles.exe
- ✦ Introduction to profiles like Cell, DMgr, Managed/Custom, Default, Job manager, Administrative Agent, and Liberty & its options to create and delete a profile.
- ✦ Introduction to DMgr start Manager and stop Manager scripts.
- ✦ Federation (add Node (-as Existing Node)) and de-federation (remove Node) of nodes.
- ✦ Concept of Node Agent. Synchronization and Full Re-synchronization.
- ✦ Introduction to stop node, start node, sync node, cleanupNode, deregisterNode and renameNode.

Installation of Webserver and Plugin

- ✦ Installation of IHS as webserver and WebSphere plugin. Post-installation verification.
- ✦ Configuration of web server and generation of configuring Web server.bat.
- ✦ Concept of the webserver as an unmanaged node.
- ✦ Stop and start the procedure of IHS webserver.
- ✦ Concept of generation and propagation of plugin.

- ✦ Role of webserver and plugin in terms of serving static and dynamic pages.
- ✦ Concept of session affinity, session management, and session replication.
- ✦ Connectivity between webserver and plugin.

Clustering and tuning of Application server instances

- ✦ Introduction to WLM (Work Load Management) and HA (High Availability) concept.
- ✦ Creation of a cluster. Introduction to vertical, horizontal and dynamic clustering.
- ✦ Introduction to start Server and stopServer scripts.
- ✦ Concept of heap, max and min heap. Concept of thread pool size of application server instance's web container.
- ✦ Introduction to Stop, Start, Restart, Immediate Stop and Terminate option for application server instances.
- ✦ Introduction to Stop, Start, Ripplestart and Immediate Stop option for cluster instances.
- ✦ Addition or removal of a new application server in an existing cluster.
- ✦ Introduction to WAS config directory and its content.
- ✦ Concept of backup Config and restore Config. Uses of different options while running these scripts.
- ✦ Introduction to httpd.conf (web server) and plugin-cfg.xml (web sphere plugin).
- ✦ Introduction to Gen Plugin Cfg in WAS_ROOT/bin.
- ✦ Introduction to various parameters and tags in these configuration files.
- ✦ Process for updating these configuration files.
- ✦ Concept and significance of /tmp and /wstemp in WAS install directory.

Logs

- ✦ Application server runtime logs (System Out.log and System Err.log), GC logs (native logs) and trace logs.
- ✦ Webserver access_log and error_log logs.

- # log.
- # Logging and tracing settings from WAS admin console.
- # Enabling Verbose garbage Collection (GC) and introduction to multiple GC policies.
- # Significance of FFDC (First Failure Data Capture).
- # Concept of hung threads and out of memory and introduction to core/thread and heap dump.
- # Manual and auto methods to generate dumps.
- # Introduction to IBM provided dump analyzers.

Enterprise Application Deployment

- # What is deployment? Introduction to .jar, .war and .ear packages.
- # Introduction to deployment descriptor.
- # Concept of context root, virtual hosts, shared library and listeners.
- # Concept of class loader policy.Types and ways of setting class loading policy.
- # Application maintenance like Start, Stop,Install, Uninstall,Update, Rollout Update, Remove File, export, Export DDL and Export File.
- # Difference between .war and .ear Installation /update.
- # Activities to be performed post installation /update /uninstallation.
- # Deployment activity logs.
- # Plugin management to get new deployed application's context root in plugin-cfg.xml.

Data Sources

- # Concept of "Scope" in WAS in terms of Cell, Node,Cluster, application server for any configuration.
- # Creation of new environmental WebSphere variables.
- # Introduction to ojdbc.jar and types DB drivers in terms of thin and thick clients.
- # Introduction to JDBC provider, JAAS Authentication.
- # Creation of a new Data Source.Test connection scenarios.
- # Data source connection pool general properties and introduction to multiple timeout values.

- ✚ Purge policies.
- ✚ Introduction to resources.xml in terms of Data Source related tags.
- ✚ XA and Non-XA transactions. Management of transaction logs during XA exceptions.
- ✚ Shared and unshared connections.

JMS – Java Messaging Services

- ✚ Concept of messaging. synchronous and Asynchronous messaging.
- ✚ Concept of Queue and Topic.
- ✚ Concept of QCF (Queue Connection Factories) and TCF (Topic Connection Factories).
- ✚ Concept of Activation Specifications.
- ✚ Creation of Queues and QCFs.

Global Security

- ✚ Significance of global security.
- ✚ Introduction to administrative, application and Java 2 security settings.
- ✚ Introduction to different available LDAP realm definitions like local OS, LDAP, Custom and Federated. Concept of administrative user /group roles.
- ✚ Concept of LTPA (Lightweight Third Party Authentication).
- ✚ Concept of Kerberos.
- ✚ Concept of SSO (Single Sign On).
- ✚ Concept of TAI (Trust Association Interceptor).
- ✚ Configuring LDAP details in global security.
- ✚ Introduction to type of LDAP servers, secure and non-secure ports.
- ✚ Introduction to security.xml in terms of LDAP related tags.
- ✚ Disabling global security in multiple scenarios.
- ✚ Concept of SSL, encryption and decryption of messages over transport layer.
- ✚ Concept of public & private key, personal & signer certificates and self-signed & CA (Certification Authority) signed certificates.
- ✚ Concept of trust store and keystore. Introduction to various stores like .p12, .kdb, .jks and .db.

- ✦ Introduction to iKeyman tool and other command line utilities like gsk, keytool and certutil.
- ✦ Scope of SSL in webserver, plugin , webSphere and in other outbound traffic layers. How to create new key store, generate certificate request, generate self-signed cert, add signers, receive signed cert, rename label, import /export certificates, delete, set default cert, list all certs, list personal certs, check details of any cert label and reset/change password of existing certificate store.
- ✦ Concept of “Key stores and certificates”, “SSL configurations” and “Dynamic outbound endpoint SSL configurations ” in WAS admin console.
- ✦ How to enable SSL in webserver for doing handshake with front-end load balancer or external client.
- ✦ How to enable SSL in WebSphere plugin to do SSL handshake with front-end webserver and back-end application servers.
- ✦ How to enable SSL in Websphere cell /node /cluster/ server scope to SSL handshake with either inbound or outbound client requests.
- ✦ How to enable SSL in IIS, Jboss, iPlanet and tomcat certificate stores.
- ✦ Introduction of security.xml in terms of SSL related tags.
- ✦ How to enable SSL between WAS & MQ using QCF and
- ✦ WAS & LDAP using LDAP configuration.
- ✦ How to disable SSL at different layers.

Introduction to various important files

- ✦ conf and admin.conf in IHS webserver.
- ✦ plugin-cfg.xml in WebSphere plugin.
- ✦ xml, Admin-authz.xml and ltpa.jceks in LDAP configuration.
- ✦ xml in DS and JMS configurations.
- ✦ WAS_ROOT properties files like portdef.props, profileRegistry.xml, properties and soap.client.props.
- ✦ WAS_ROOT bin files like clear ClassCache.sh, collector.sh, convert Script Compatibility .sh, EAR Expander.sh, ejbdeploy.sh,
- ✦ sh, PropFilePasswordEncoder.sh, setupCmdLine.sh,
- ✦ sh, WASPostUpgrade.sh and wsadmin.sh.
- ✦ Other files like virtualhosts.xml, serverindex.xml, variables.xml,

- ✦ xml, server.xml, libraries.xml and sib-service.xml.
- ✦ Overview of WebSphere scripting and supported programming languages like jacl and jython.
- ✦ Launching wsadmin. Command and script invocation
- ✦ Introduction to the wsadmin tool management objects like Help, AdminControl, AdminConfig, AdminApp and
- ✦ How to do the properties file based configuration.

Ws admin

- ✦ Managing WebSphere using script libraries.
- ✦ Assistance with scripting. How to enable command assistance in Websphere admin console.
- ✦ Using scripts with the job manager.
- ✦ Using wsadmin to manually generate heap dump.
- ✦ Writing small scripts to do normal monitor activities.

WAS 8.5 New Advantages

- ✦ Liberty profile.
- ✦ Dynamic clustering.
- ✦ Multiple SDK support (6 and 7 in parallel).
- ✦ Intelligent management. Concept of ODR- On Demand
- ✦ Application Edition Management.
- ✦ Monitored directory.
- ✦ Improved messaging engine.
- ✦ Health policies.
- ✦ HPEL- High Performance Extensible Logging.
- ✦ GUI mode dump generation.
- ✦ Core group and node group.
- ✦ Centralized installation manager. Advantages.
- ✦ Administrative agent configuration.
- ✦ Job manager configuration.
- ✦ Performance tuning.
- ✦ Data source tuning.
- ✦ Web container tuning.

- ✦ Web server tuning.
- ✦ WebSphere plug-in tuning.
- ✦ JVM tuning.
- ✦ Dynamic caching.

Monitoring, Tracing & Restoring

- ✦ TPV- Tivoli Performance Viewer.
- ✦ Enabling PMI.
- ✦ XCT- Cross Component Tracing.
- ✦ Sensitive log and trace guard.
- ✦ Hang detection policy.
- ✦ Memory leak detection policy.
- ✦ MustGather for troubleshooting.
- ✦ Restarting an application server in recovery mode.
- ✦ Recovering a failed managed node of a DMgr.
- ✦ Configuring HA Manager policies and transaction log failover.
- ✦ Left outs or Lagging topics.
- ✦ Frequent issues and solutions with application server's startup or configuration.
- ✦ Frequent issues and solutions with application
- ✦ Frequent issues and solution with DS, JMS, LDAP, SSL and webserver configurations.
- ✦ Q&A sessions.
- ✦ Quiz session on full topic simulated to actual certification test scenario.

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