Topics covered in GH track

Day 7

Overview of Middleware

Middleware is software that provides common services and capabilities to applications outside of what's offered by the operating system. Data management, application services, messaging, authentication, and API management are all commonly handled by middleware.

Middleware helps developers build applications more efficiently. It acts like the connective tissue between applications, data, and users.

For organizations with multi-cloud and containerized environments, middleware can make it cost-effective to develop and run applications at scale.

What kinds of middleware are there?
New application development
Optimization of existing applications
Comprehensive integration
Application Programming Interfaces (APIs)
Data streaming
Intelligent business automation

Introduction to client server computing: Client – Server – File Server, Database server, Group server, Object server, Web server, Client / server building blocks.

Emergence of Middleware: Objects, Web Services – Middleware Elements – Vendor Architecture – Interoperability – Middleware requirements- Middleware in Distributed Applications – Types of Middleware – Transaction-Oriented Middleware.

Exploring Other Types of Middleware: Real-time Middleware – RT CORBA – multimedia Middleware–Reflective Middleware – Agent-Based Middleware – RFID Middleware.

Mobile Middleware: : Evolution of Mobile Network Standards, Mobile Systems – Evolution- Mobile services vs. Mobile applications- Need for a Middleware-.

EJB architecture: Overview of EJB software architecture – View of EJB – Conversation – Building and deploying EJBs – Roles in EJB.

EJB APPLICATIONS: EJB session beans – EJB entity beans – EJB clients – EJB deployment – Building an application with EJB.

Web services: Introduction –XML Web Services standards – Creating Web Services.

Extending Web Services: Messaging Protocol – Describing – Discovering – Securing-Study of technology for business driven information technology management.

Introduction to Web Server
Introduction to application servers
Understand that a Web server's delegation
Transactions or database connection pooling, it may employ various strategies for fault tolerance and scalability such as load balancing, caching, and clustering—features oftentimes erroneously assigned as features reserved only for application servers.
How Application Server exposes business logic to client applications through various protocols, possibly including HTTP?
Graphical user interface running on a PC, a Web server, or even other application servers.

Web server with an application server

Caveats

Role of Database in 3 tier architecture
How database can be used as Data layer in distributed systems.

Day 8

Tomcat and Jboss

Apache tomcat contents

Installation of Tomcat on Docker
- Installing Apache
- Apache starting, stopping and Apache restarting
- Apache uninstalling
- Finding Apache's files location

Using OpenShift cartridge for Tomcat installation

Jboss Server Contents

Installing Core Components on Docker Container
- Installing the Java environment
- Installing JBoss EAP
- Application server features
- Creating a custom server configuration
- Using OpenShift cartridge for installation

Customizing JBoss EAP Services
- How to monitor JBoss AS services
- JBoss AS thread pool
- Configuring logging services
- Configuring the connection to the database
- Configuring the transaction service

Deploying EJB 3 Session Beans
- Developing Enterprise JavaBeans
- Configuring the EJB container

Deploying a Web Application
- Developing web layout
- Configuring JBoss Web Server

Deploying Applications with JBoss Messaging Service
- The new JBoss Messaging system
- Developing JMS applications
- Advanced JBoss Messaging

Managing JBoss AS
- Introducing Java Management Extension
- JBoss AS Administration Console
- Managing applications
- Administering resources

Day 9

Web server installation

Installing IBM HTTP Server
Web servers for WebSphere Application Server
Web server plug-in installation
IBM HTTP Server: Installation
IBM HTTP Server: Select package
IBM HTTP Server: License agreement
IBM HTTP Server: Installation directory and package group
IBM HTTP Server: Features
IBM HTTP Server: Port values

Adding Common Modules
- Installing a Generic installation modules
- Installing Unix mod_dav
- Installing mod_perl
- Installing Unix mod_php
- Installing mod_ssl SSL (Secure Socket Layers)
- Finding Modules Using modules.apache.org
- Installing mod_security

Logging
- Getting more logs entries and Details
- Logs rotating

Virtual Hosts
- Setting Up Name-Based Virtual Hosts
- Setting Up address-based virtual hosts

Aliases, Redirecting, and Rewriting

- Mapping a URL to a Directory
- Creating a New URL for Existing Content
- Giving URLs (Uniform Resource Locators) users having own URLs Users Their Own URLs
- Redirecting to another location
- Redirecting Several URLs to the same Destination
- Rewriting elements between path and query string
- Turning URL Segments into query arguments

SSL

- Installing SSL
- Generating self-signed SSL certificates
- Generating a trusted CA
- Serving a portion of site via SSL
- Authenticating with Client certificates

Day 10

WebSphere Application Server

Installation of WAS on OpenShift by using Cartridge

Installation of WAS on Docker Container

WebSphere product family overview
WebSphere software platform
WebSphere application infrastructure
WebSphere Application Server family
WebSphere Application Server V8.5.5 packaging

WebSphere family products
WebSphere family products
WebSphere Application Server for Developers
WebSphere Application Server Hypervisor Edition
Mobile application development
WebSphere eXtreme Scale
WebSphere eXtreme Scale entitled capabilities
WebSphere DataPower XC10 Appliance
WebSphere eXtreme Scale and DataPower XC10 Appliance

IBM Workload Deployer

IBM Tivoli Composite Application Manager for WebSphere Application Server

Rational Application Developer

IBM Assembly and Deploy Tools for WebSphere Administration

WebSphere Application Server architecture – stand-alone

Architecture runtime

Version 8.5 packaging

WebSphere Application Server basics

JDBC providers

Data sources

     Architecture administration

WebSphere architecture administration Profiles

WebSphere profile overview

WebSphere profile benefits

Managing profiles

Profile types

WebSphere Application Server architecture – federated

Network deployment concepts

Network deployment runtime flow

Administration flow

File synchronization

WebSphere Network Deployment profiles

Managing web servers

Web servers within a cell

Managed versus unmanaged nodes

Web server definitions

Web server custom plugin-cfg.xml

Managing plugin-cfg.xml files

Managing web server plug-in properties

Virtual hosts

Defining virtual hosts

Managing web servers with WebSphere

Unmanaged web server

Managed web server on a managed node (local)

IBM HTTP Server as unmanaged node (remote)

IBM HTTP Server administration overview

IBM HTTP Server administration server

Profile creation with command-line tool
Verifying an installation
First steps
Installation verification
Post installation tasks
Applications installed following installation
Uninstall
Directory structure
Configuration files
Common command-line tools
Server commands
Configuration backup and restore
Accessing the information center: Online
Accessing the information center: Offline options

WebSphere Customization Toolbox overview
WebSphere Customization Toolbox: Offerings
WebSphere Customization Toolbox: Installation
WebSphere Customization Toolbox: Selective tool installation
WebSphere Customization Toolbox: Features
Starting WebSphere Customization Toolbox
Embedded WebSphere Customization Toolbox
Stand-alone WebSphere Customization Toolbox
WebSphere Customization Toolbox: Command line
WebSphere Customization Toolbox: Restrictions

Installing web server plug-ins
Web server plug-ins: Package installation
Web server plug-ins: License agreement
Web server plug-ins: Package group and installation directory
Web server plug-ins: Features
Web server plug-ins: Summary and results
Plug-ins Configuration Tool: Add location
Plug-ins Configuration Tool: Web server selection
Plug-ins Configuration Tool: Administration server
Plug-ins Configuration Tool: Web server definition name
Plug-ins Configuration Tool: Configuration scenario

WebSphere Application Server administrative console
Administrative console
Starting the administrative console

Administrative console in a cell topology
Console login
Recovering prior changes
Administrative console session timeout
Administrative console panels
Administrative console areas

Administrative console preferences, filters, and scope
Guided Activities
My tasks
Users and groups
Troubleshooting information
Tivoli Performance Viewer

Day 11

Introduction to the PlantsByWebSphere application
PlantsByWebSphere application
Shopping

View Server Info page
Admin home page
Application assembly
   Overview of Java EE application packaging
   Overview of application assembly and installation
   Java EE 6 packaging
   WebSphere: Application packaging
   WebSphere application contents
   Application assembly and deployment tools
   Application assembly and deployment tools
  Assembling an enterprise application
  Import modules
  Java EE perspective
  Application deployment
  Enterprise applications without application.xml
  Packaging enterprise applications for deployment
  Application scope resources
  Enhanced EAR
  Java EE modules
EJB module assembly

EJBs included in the web module
Web module assembly
Web module
Adding metadata through the menus
Web deployment descriptor editor
Application client assembly
Generating an EAR file for deployment
     Java EE annotations
Stateless session bean
Using annotations to inject EJB references
Application bindings

Application installation
Installing enterprise applications
Creating a J2C authentication alias
Creating a data source
Installing a new application
Example of fast path installation
Example of detailed installation
Enhanced EAR
Removing enhancements
Application settings and interaction
Starting an application
Application update
Other application configuration settings
Application startup behavior and auto start
View the application deployment descriptor
The application deployment descriptor
Manage modules
Metadata for modules

 Monitored directory
Overview of monitored directory deployment
Enabling the monitored directory
Notes about the monitored directory
Drag-and-drop properties files
Properties file based configuration
Steps to use properties file to deploy applications
Problem determination
Server logs and diagnostic tracing
Examining server log files
WebSphere Application Server logs

Server log files: Types and locations
Configuring JVM logs
Viewing runtime messages in the console
HTTP plug-in logs and tracing
Diagnostic tracing

Using diagnostic tracing
Enable and configure tracing
Setting the log detail level
Trace output content and format
Reading a log or trace file
High Performance Extensible Logging (HPEL)
HPEL logging and tracing configuration
Configure HPEL logging
The HPEL Log Viewer
LogViewer command-line tool

What is Cross Component Trace (XCT)?
 Administering XCT
XCT request IDs
Use XCT request ID information to track requests
Gathering diagnostic data
Gathering JVM diagnostic data
Enable verbose garbage collection
Java memory dumps and cores
Generating a JVM thread dump (javacore)
Generating a JVM heap dump
Hung thread detection
Connection leak diagnostic messages
Checking version levels and applying APARs
Problem determination tools
Problem determination tools: Administrative console
Dumping the JNDI namespaceIBM Support Assistant

IBM Support Assistant
What is the IBM Support Assistant?
IBM Support Assistant workbench home page
IBM Support Assistant: Search component

        IBM Support Assistant:

Using the IBM Support Assistant Data Collector

Introduction to wsadmin and scripting

wsadmin versus administration console

Scripting benefits

wsadmin

wsadmin invocation options

Jython versus Jacl

Administrative functions that use wsadmin

Administrative objects in wsadmin

Starting wsadmin

Starting wsadmin with security enabled

wsadmin properties

Profile scripts

AdminConfig: Managing configurations

AdminApp: Managing applications

AdminControl: Managing running objects

AdminTask: Accessing administrative functions

Help within wsadmin

Administrative command help

Important points to remember when using wsadmin

Jython script library

Configuration repository: The issues

Properties file based configuration

Create, test, and debug Jython scripts

Start the Jython debugger

Jython debugger perspectiveCommand assistance

Using command assistance within IBM Assembly and Deploy Tools

Day 12

Federating a cell

WebSphere cells

WebSphere Application Server process types

Network deployment concepts

Profiles in network deployment

Application server profile

Deployment manager profile

Custom profile

Creating profiles

Profile Management Tool
Profile creation: Command-line tool
Directory structure
Server commands review
Profile precautions
Deployment manager console versus stand-alone console
Common command-line tools
Adding a node to a cell

Adding a node
Managed versus unmanaged nodes
Cell topology
Configuring synchronization
Remove a node from a cell
Synchronization
Managing a web server: Adding a node to a cell
Managing a web server: Add the web server
Managing a web server: Plug-in configuration file

Workload management
Workload management concepts
What is workload management (WLM)?
Clusters and cluster members
Clusters
Clusters and cluster members
Configurations: Vertical scaling
Configurations: Horizontal scaling
Configurations: Vertical and horizontal scaling
Creating a cluster
Installing enterprise applications to a cluster
Controlling a cluster
Cluster members
Modification of clustersRouting concepts and session affinity
Routing concepts and session affinity
Basic routing algorithms
HTTP session management
Session affinity
JSESSIONID cookie
WebSphere session affinity
Plug-in
Plugin-cfg.xml

Interpreting the plugin-cfg.xml file
Weighted round robin
Weighted routing example with no affinity
Weighted routing example with affinity
Weighted routing example with counting affinity
Routing alternative: Random

Using Intelligent Management
Failover
Edge Components failover
HTTP server failover
Web container failover
EJB container failover
Session persistence

Session persistence
Session configuration: Memory-to-memory
Session configuration: Replication domains
Database persistence configuration
Tuning session persistence
eXtreme Scale persistence configuration
Deployment manager high availability
Deployment manager high availability
Highly available deployment manager
WebSphere security
WebSphere security basics
Basic security end-to-end model

WebSphere Application Server security overview
WebSphere security service: Big picture
Types of security
Administrative security
Application security
Authentication and authorization
Challenge mechanism: Authentication basic steps
Defining the challenge type
WebSphere user registries
Registries and authentication mechanisms
Defining user registries
Manual security configuration
User registry support

Federated repositories
Custom registry: Configuration
Authentication mechanism: LTPA
LTPA provides delegation
LTPA provides single sign-on (SSO)

Administrative security
Console security
Additional console security roles
Administrative roles
Console security: Mapping users and groupsApplication security
Application security
Authorization
Security roles: Application authorization
Applying application security
Creating security constraints
Using the console to map security roles
Creating a security domain
Configuring a security domain

Java 2 security
Java security model
Java security overview
Enabling Java 2 security
SSL basics
SSL basics
What is SSL?
Symmetric key encryption
Asymmetric key encryption
How does SSL work? Certificates and certificate authorities
Certificates and certificate authorities
What is a certificate?
Types of certificates
What is a certificate authority (CA)?
SSL: Putting it all together
        SSL within a WebSphere cell

SSL within a WebSphere cell
SSL within WebSphere Application Server
WebSphere SSL management
What are key rings, keystores, and truststores?
Node certificates

Deploying an application by using the drop-ins directory
Creating the production image
Deploying Liberty topologies
Example: A shared topology
Security

Security
Liberty profile security
Enable SSL
Advanced SSL
User registries
Basic user registry
LDAP user registry
SAF user registry
Authorization
Liberty administrative security
            Using the job manager to manage Liberty profile servers
Using the job manager to manage Liberty profile servers
Administering Liberty profiles by using the job manager
Job manager Liberty profile jobs
Deploying a self-contained topology
HTTP request routing
Job type: Generate merged plug-in configuration
Merged plugin-cfg.xml

Liberty collectives and clusters
Liberty collectives and clusters
Liberty collectives and clusters
Example of server clusters and a Liberty collective
Administering Liberty profiles in collectives
Liberty profile collective controller and collective members
Liberty clusters
Performance monitoring
Performance tuning and monitoring
Tuning performance suggested practices
Performance terminology
Tuning parameter hot list
Solving performance problems
Measuring performance and collecting data
WebSphere performance tools

PMI architecture
Types of performance data
PMI data collection settings
Using the administrative console to enable PMI
Start monitoring
Tivoli Performance Viewer
Performance servlet overview
Performance servlet output

Day 26

ISM Tool Chain
Introduction to ISM tool Chain & Monitoring
Infrastructure & Database Monitoring - Agent Deployment

Introduction to Solarwinds
Microservices and Container Monitoring - Agent Deployment
Application monitoring using JMeter
Application availability, API and Synthetics Monitoring
Working on Nagios
Auto-Discovery
Graphs
Alerting (SMS, Email)
Reporting
Configuration wizards

Event Management basics - Tool Chain Integrations
Notification and Collaboration - Tools walkthrough
Incident Management