Please Note:

- IBM’s statements regarding its plans, directions, and intent are subject to change or withdrawal without notice at IBM’s sole discretion.

- Information regarding potential future products is intended to outline our general product direction and it should not be relied on in making a purchasing decision.

- The information mentioned regarding potential future products is not a commitment, promise, or legal obligation to deliver any material, code or functionality. Information about potential future products may not be incorporated into any contract.

- The development, release, and timing of any future features or functionality described for our products remains at our sole discretion.

- Performance is based on measurements and projections using standard IBM benchmarks in a controlled environment. The actual throughput or performance that any user will experience will vary depending upon many factors, including considerations such as the amount of multiprogramming in the user’s job stream, the I/O configuration, the storage configuration, and the workload processed. Therefore, no assurance can be given that an individual user will achieve results similar to those stated here.
Motivation

What’s new in WAS Traditional?
What’s new in WAS Liberty?
What’s new in WebSphere eXtreme Scale?
Positioning and looking forward
WebSphere Application Server

16 years of Leadership & Trusted Delivery

WAS v8.5 GA
• Lightweight Liberty profile
• Intelligent Management
• Java SE 7
• WAS 8.5 HV for PureApp

WAS v8.5.5 GA
• Liberty Profile
• Web Profile Certification
• Clustering & resiliency
• WAS Liberty Core
• Caching (WXS)

WAS v8.5.5.x
• Liberty Profile
• Java EE7 cert
• Java SE 8
• WAS Docker
• Caching (WXS)
• WAS on Cloud
• WAS v9 Beta
• WAS Tradit.
• Java SE 8
• WAS Beta Update
• API Discovery

WAS v9 GA
• WAS Tradit.
• Java EE 7 cert
• eXtreme Scale Liberty Deployment

WAS v7 GA
• Web 2.0 & Mobile FEP

WAS v8 GA


JEE5

JEE6

JEE7 (Liberty)
Reasons to love WebSphere traditional …

- Very secure
- Java EE Compliant
- Scalable
- Well-tooled
- Very fast
- IBM Support and Training
- Robust
But you asked us for something more …

**Optimized for rapid development**
- Lightweight
- Composable
- Simple to install, configure, ...
- Flexible
- Dynamic
- Open and Extensible
- Cloud Ready

**In addition production-ready**
- Easy to install and configure
- Scalable
- High available
- Cloud-Ready

WebSphere Application Server
Liberty Profile

**Fidelity to WAS Traditional**
- Same reliable container & QOS
- Choice with consistency
  - Develop on Liberty
  - Deploy on Liberty or Traditional

**Notes:**
- WAS traditional remains fully supported and strategic
- If it meets your requirements, there’s no need to move
WebSphere Application Server Variations

WAS Traditional AND Liberty Profile provide flexibility and fidelity
Agenda

Motivation

What’s new in WAS Traditional?
What’s new in WAS Liberty?
What’s new in WebSphere eXtreme Scale?
Positioning and looking forward
What is new in WebSphere Application Server traditional?

  - IBM Java SDK Version 8 is the Java SDK version for WAS Version 9.0.
  - Only the 64-bit IBM Java SDK is supported.
  - The IBM Java SDK is no longer embedded with any WAS offerings.
  - WAS V9 supports a decoupled JVM, meaning the JVM life-cycle is now independent from WAS and be updated without updating WAS fixpack level

- Programming model APIs and specifications for WAS v9 Traditional
  - Java EE 7 programming model support
  - Java EE 6 programming model support

What is new in WebSphere Application Server traditional?

- Discovering REST API documentation
  - Discover and expose Swagger documentation for your deployed RESTful endpoints.
  - Use the built-in Swagger user interface to invoke the APIs.
  - Based on OpenAPI Specification (fka Swagger RESTful API Documentation Specification)

Exposé WAS services as APIs to others

WAS includes API Connect Essentials as part of the WAS offering itself!

The API Connect Family of Offerings

**WebSphere Application Server**
- For Liberty Core, Base, and ND
- V8.5.5.9
- And includes as a Supporting Pgm...

**API Connect Essentials**
- For Developers
- No charge / Forum Support
- 50K API calls/mo
- Micro Gateway

**API Connect Essentials “plus”**
- With IBM Support
- 500 API calls/mo per WAS PVU

**WebSphere Connect in 1Q 2016**
- Facilitates integration with API Connect to manage and secure APIs
- Easily download API Connect Essentials from PPA with your WAS software
- Obtain IBM Support through WAS S&S
- Increased API call limits

**API Connect Professional**
- For Departments with a single API project
- Paid, with IBM support
- 5 Million API calls/mo
- Micro Gateway

**API Connect Enterprise**
- For Departments & Cross Enterprise
- Paid, with IBM support
- 25 Million API calls/mo
- Micro & Advanced Gateway

Use the included API Connect Essentials to enhance WebSphere’s ability to Publish, Discover, Manage, and Secure APIs

Use the included API Connect Essentials to enhance WebSphere’s ability to Publish, Discover, Manage, and Secure APIs

Use the included API Connect Essentials to enhance WebSphere’s ability to Publish, Discover, Manage, and Secure APIs

Use the included API Connect Essentials to enhance WebSphere’s ability to Publish, Discover, Manage, and Secure APIs
WebSphere performance improvements

- This cumulative chart shows the improvement of WAS performance due to both JAVA improvements and WAS product improvements.
- Dynacache and Large server pages were used where applicable in these measurements.
- JDK8 first supported in v8559 as an optional install. JDK8 is the default for V9.
- Daytrader3 used for benchmarking

**Performance** is based on measurements and projections using standard IBM benchmarks in a controlled environment. The actual throughput or performance that any user will experience will vary depending upon many factors, including considerations such as the amount of multiprogramming in the user’s job stream, the I/O configuration, the storage configuration, and the workload processed. Therefore, no assurance can be given that an individual user will achieve results similar to those stated here.

---

**System Configuration:**
DayTrader3: AIX7: Power7 - 2 proc - SMT2, 32 GB RAM
IBM provides pre-built Docker images for IBM WebSphere Application Server for Developers traditional and IBM HTTP Server.

**ibmcom/websphere-traditional**

**Supported tags**
- 9.0.0.1-install, install
- 9.0.0.1-profile, profile, latest
- 9.0.0.0-install
- 9.0.0.0-profile
- 8.5.5.10-install
- 8.5.5.10-profile
- 8.5.5.9-install
- 8.5.5.9-profile

https://hub.docker.com/r/ibmcom/websphere-traditional/

**ibmcom/ibm-http-server**

**Supported tags**
- 8.5.5.9, latest

The Docker image contains IBM HTTP Server, IBM WebServer Plugins and IBM WebSphere Customization Tools.

https://hub.docker.com/r/ibmcom/ibm-http-server/
Agenda

Motivation
What’s new in WAS Traditional?

What’s new in WAS Liberty?
What’s new in WebSphere eXtreme Scale?

Positioning and looking forward
WebSphere Application Server Liberty Profile

For rapid development and light-weight production deployment with high scalability

- Web Profile certified (Liberty Core Edition)
- Full Profile certified (Liberty Base/ND)
- Small footprint (< 54MB), quick startup (< 3 sec)
- Developer-first design of simple, shareable XML configuration
- Dynamic runtime and configuration
- Unzip install and deploy
- Fidelity to WebSphere Application Server traditional
- Monitoring and mgmt through Admin Center or scripting
- Install new features from repository with no server restart
- Lightweight collective management scales to 10,000 servers
Liberty – A Composable Java EE Runtime for Cloud

WebSphere z/OS
- zosConnect-1.2
- zosLocalAdapters-1.0
- batchSMFLogging-1.0
- zosTransaction-1.0
- zosWlm-1.0
- zosRequestLogging-1.0
- zosSecurity-1.0

WebSphere ND
- collectiveController-1.0
- clusterMember-1.0
- scalingController-1.0
- healthAnalyzer-1.0
- healthManager-1.0
- scalingMember-1.0
- dynamicRouting-1.0

WebSphere Base
- Java EE 6 subset
  - sipServlet-1.0
  - rtcomm-1.0
  - couchdb-1.0

Javaee-7.0
- cloudant-1.0
- mongodb-2.0

WebSphere Liberty Core
- osgiBundle-1.0
- microProfile-1.0
- json-1.0
- javaMail-1.5
- wab-1.0
- blueprint-1.0
- webProfile-6.0
- webProfile-7.0

osgiApplIntegration-1.0
bells-1.0
httpWhiteboard-1.0
concurrent-1.0
osgiConsole-1.0
restConnector-2.0
sessionDatabase-1.0
timedOperations-1.0
webCache-1.0
distributedMap-1.0
logstashCollector-1.0

Java EE 7
- eventLogging-1.0
- requestTiming-1.0
- adminCenter-1.0
- apiDiscovery-1.0
- bluemixUtility-1.0
- serverStatus-1.0
- monitor-1.0

WebSphere Liberty Core
- oauth-2.0
- scim-1.0
- ldapRegistry-3.0
- openid-2.0
- openidConnectClient-1.0
- openidConnectServer-1.0
- spnego-1.0
- federatedRegistry-1.0
- constrainedDelegation-1.0
- passwordUtilities-1.0
- samlWeb-2.0

Programming Model
Production
Security
Liberty Server Config: simple server ‘shaping’

<server description="new server">

<!-- Enable features -->
<featureManager>
  <feature>servlet-3.1</feature>
  <feature>jdbc-4.1</feature>
</featureManager>

<webApplication id="blogapp"
  location="blogapp.war" name="blogapp"/>

<include location="${shared.config.dir}/datasource.xml"/>
</server>

Features control which capabilities (bundles) are installed in the server.

'instance' configurations specify multiple resources like applications and datasource definitions.

Any of this configuration could be put into a separate xml file and 'included' in this 'master' configuration file or overridden using configDropins directory.
WebSphere Liberty Repository:
Key to Continuous Delivery of Business Value

The Liberty Repository holds all of the content that you can install on the Liberty Kernel to make your own customized app server: New Features, Samples, Scripts, Open Source integration, Betas

• Repo hosts IBM code as well as open source integration samples for popular open source pkgs
• Enables our continuous delivery
• Serves as the base for dynamically built Buildpacks for Bluemix.
• Hosted on www.wasdev.net or on-premise
Eliminate Future Migration Costs

New Liberty features, and config, augment rather than replace old ones

**Zero migration** for unchanged apps on WAS Liberty, regardless of Java EE version

Point to your existing JRE
Within supported software levels. Java 6 will soon be out of service. Each features has a minimum level of Java
WAS V9 introduces a new 9.0.0.0 service stream for traditional WAS fixpacks. WAS Liberty follows a continuous delivery model with a single service stream – it makes no sense to persist with a major version for Liberty fixpacks in a ‘versionless’ single delivery stream. To properly reflect this we are changing Liberty fixpack numbering to:

Y.R.M.F: year.release.modlevel.fixpack

eg 16.0.0.4 would be the fourth fix pack in 2016

The next fixpack after 8.5.5.9 is the second fixpack of 2016 and is numbered 16.0.0.2. Its just a number - there is no migration required at all to the first V9 release of Liberty: 16.0.0.2.

http://www-01.ibm.com/support/docview.wss?uid=swg21984970
Continuous Delivery

- password encryption SPI
- default principal mapping
- jaas config file
- runnable server jar
- Liberty app accelerator
- cors: http access control
- bluemixUtility
- wsAtomicTransaction
- server start configs
- logstash collector
- wdt dev in local docker

8.5.5.9
1Q16

- oauth token propagation
- default map role to group
- enhanced password utils
- jaxrs SAML tokens
- apiDiscovery enhanced
- zosRequestLogging
- jaxws policy attachments
- dashDB service plugin
- collective docker & node
- wdt docker dev enhanced
- wdt swagger enhanced
- migration tools enhanced
- install consolidation
- server pckge file perms

- json web token issue & accept
- vmm custom adapter spi
- jsse helper api
- collective user cert doc
- plugin config auto generation
- restConnector-2.0 feature
- z/os local adapter for ims
- async tcpip for zos
- unwrapped jdbc vendor apis
- sqlj for db2
- java batch logs from native config
- batchSMFLogging-1.0 feature
- java batch events to jms
- java batch multi-files props/params
- wdt custom p/w encrypt
- wdt jax-rs gen from swagger
- cloudant-1.0 feature
- microProfile-1.0 feature
- node.js in docker + autoscale

16.0.0.4
4Q16

- Plugin config util for clusters
- merge jvm.options files
- logstashCollector w/binary log
- z/OS angel management +
- arbitrary SQL at connection init
- DB conn validation/pretest
- MS SQL 2016 certification
- batch events at timer intervals
- Admin Center Batch tool
- jwt-1.0 & enhancements
- Windows service
- WAMT skeleton server.xml gen
- WAMT pre-deploy app analysis
- WDT docker workspace apps
- WDT fine-grained auto feature
- WDT apiTypeVisibility
What’s new: MicroProfile

- The MicroProfile is an initiative supported by many people from the Java EE community and key Enterprise Java vendors.
- MicroProfile.io Mission: Optimizing Enterprise Java for a microservices architecture
- The goal is to create a standard subset of components of the Java EE specifications.
- The first release of MicroProfile brought together a foundation consisting of CDI, JAX-RS, and JSON-P.
Admin Center updates – Explore Tool, Deploy Tool

- The Explore and the Deploy Tool have been redesigned for a better user experience.
- You can now explore and deploy Node.js application packages and Docker containers.
Enhance pluginUtility to ease generation of plugin config

- 16.0.0.3
  - plugin-cfg.xml auto-generated by server
  - wlp.install.dir/bin/pluginUtility –merge

- 16.0.0.4
  - pluginUtility –generate
    - --server
      local or remote
      app server or collective controller
    - --cluster
      used with collective controller
    - --targetPath
      copies existing file or prompts running server to generate

```bash
pluginUtility –generate –server=CC1
--cluster=appA --targetpath=./pluginFile/plugin-cfg.xml
```
Merging of multiple jvm.options files

- **Before 16.0.0.4:**
  - jvm.options file is read by server script which passes options to JVM process at startup
  - two locations checked for this file
    - `${wlp.install.dir}/etc/jvm.options` for all servers in this installation
    - `${server.config.dir}/jvm.options` to override whole file for individual servers
- **New in 16.0.0.4:**
  - Multiple files can now be merged, allowing different teams to contribute Java settings
  - Uses existing config directories
    - `${shared.config.dir}` – multiple servers
    - configDropins – individual servers
  - Follows same precedence as for server.xml file merging
  - If none of those files are present, will look for `${wlp.install.dir}/etc/jvm.options`
Liberty on z/OS: angel management improvements

- Prior to 16.0.0.4, only 1 Angel process per LPAR
- 16.0.0.4+, multiple Angels on a single LPAR, distinguished by name
  - Multiple Angels on a single LPAR, distinguished by name
  - Names constrained to certain characters and a max length of 54
  - The Angel name is specified in the Angel’s started task JCL
  - The Liberty server specifies the Angel it want to use in bootstrap.properties
    - `com.ibm.ws.zos.core.angelName=W01ANGL`
  - Angel names are appended to BBG.ANGEL to form new SAF profiles for authorization
  - Server can be prevented from starting if angel isn’t available
    - through use of bootstrap property: `com.ibm.ws.zos.core.angelRequired=true`
  - Angel Check API allows for programmatic determination of angel status
Admin Center new tool: Java Batch

URL - https://.../adminCenter/#javaBatch
follows Admin Center tools pattern

- Dashboard of batch jobs
- Custom filters
- Execution steps, detail, logs
Separation of duties …

1. **Servers designated as dispatchers handle job requests, and place them on JMS queue**
   The executors listen on the JMS queues and pick up the job submission request based on criteria you set in `server.xml` to indicate which jobs to pick up.

2. **Executor servers run the batch jobs**
   Deploy the batch jobs where most appropriate; co-locate some batch jobs and others have their own server.

3. **JMS queues (either Service Integration Bus or WMQ) serve as integration between two**
   This provides a mechanism for queuing up jobs prior to execution.

If the customer already has WMQ, why define additional Liberty servers to act as a JMS provider? Better to use WMQ.
The batchManager and batchManagerZos utilities provide this

1. **batchManager** is a command line interface that integrates with REST interface.
   This can be used on z/OS or on other platforms, same LPAR or across-LPARs.

2. **batchManagerZos** is the same command line interface but uses cross-memory WOLA.
   Used on the same LPAR as the batch server, it is very fast because of cross-memory WOLA.
   The identity of the submitter can be propagated to the Liberty server running the batch application when using batchManagerZos with a SAF user registry.

Submit jobs, check status of jobs, retrieve job logs.
Monitor batch jobs via JMS

Emit messages to a JMS topic space at key events during the batch job lifecycle:

Liberty Server

IBM JSR 352

Topic Space

Batch

/job
/instance
/submitted
/dispatched
/completed
/stopped
/failed
/execution
[starting
/started
/stopped
/failed
/step
[started
/checkpoint
/completed

Monitoring Process

A monitoring process can subscribe to a general topic of interest (completed jobs), or something more specific (job step checkpoints taken).

Can wildcard the subscription (for example, batch/jobs/*) and get everything under that.

server.xml

=batchJmsEvents>
  JMS configuration elements
  MQ or WebSphere default messaging
</batchJmsEvents>
Each quarter we host a free webcast to explain all the great new stuff in WebSphere Liberty and host a Q&A & labs session.

- **Speaker:**
  - Alasdair Nottingham
  - IBM Senior Technical Staff Member, WAS Liberty Architect

- **Agenda:**
  - Part 1: Executive summary: Liberty value and evolution
  - Part 2: Technical deep-dive: what’s new in Liberty this quarter
  - Part 3: Labs with live support plus Q&A

- **Schedule**
  - Session #1 (US): April 12th from 1 pm to 3 pm ET (7 pm to 9 pm CET)
    - Registration: [http://ibm.biz/WebcastAprilvPoTSs](http://ibm.biz/WebcastAprilvPoTSs)
  - Session #2 (EU): April 25th from 2 pm to 4 pm CET (8 am to 10 am ET)
    - Registration: [https://www.imwuc.org/p/ca/vi/sid=541](https://www.imwuc.org/p/ca/vi/sid=541)
Agenda

Motivation
What’s new in WAS Traditional?
What’s new in WAS Liberty?
What’s new in WebSphere eXtreme Scale?
Positioning and looking forward
WebSphere eXtreme Scale Integration

- WebSphere eXtreme Scale packaged with WAS v8.5.5+ with entitlement by edition
- Enables installation of elastic caching with WXS on WAS server out of the box
- Gain the advantage of integrated caching
- Grow your environment to distributed caching servers as load increases

**Entitlement by Edition**
- ND = Unlimited
- Base = HTTP Session and DynaCache
- z/OS = WXS client on z/OS
- Express/Liberty Core = N/A
Typical caching scenarios

1. Application State Store Pattern
   - Elastic Cache (In-Memory Data Grid)
   - Application Server

2. Side Cache Pattern
   - RDBMS
   - TPM
   - Elastic Cache
   - Application Server

3. In-line cache
   - RDBMS
   - Elastic Cache
   - Application Server

4. eXtreme Transaction Processing
   - RDBMS
   - Elastic Cache
WebSphere Extreme Scale-Ease of use enhancements

Configure an caching grid in minutes

**WebSphere Extreme Scale-Ease Highlights**

- Ease of configuring Liberty based WXS grid using scripting and Rest APIs
- WAS v9 Interoperability
- WXS-Liberty Deployment (XSLD) -- UI and Rest API to:
  - Create & Access Grids
  - Monitor Usage
  - Add Remove Capacity
  - Manage Grid
  - Manage and Monitor Cache Member Group

XSLD is a new WXS feature; Not a new product offering!

---

“*A developer can easily configure Liberty based WXS grid using scripting and Rest APIs*”

“*Enterprise Architect wants the highest performance from high-end hardware to achieve microsecond latency*. ”

Ron
Enterprise Developer/Architect
Various clients connect to XSLD servers for caching

- Liberty server running WXS client with the Liberty application using cache
  - Liberty apps
  - Liberty Session apps
  - Liberty Dynacache apps
- WAS server running WXS client with the WAS application using cache
  - tWAS apps
  - tWAS Session apps
  - tWAS Dynacache apps
- Other App Servers (Tomcat/Apache Servers)
- Standalone Java WXS client applications using cache
- All general clients running as web servers and using cache via HTTP/REST calls
WebSphere eXtreme Scale 8.6.1 Fixpack 1

- Released on Nov 28, 2016
- Highlights:
  - JCACHE support
  - XSLD Grid Template
  - XSLD Docker support on “Docker for Mac”
  - Ubuntu 16.04 support
Agenda

Motivation
What’s new in WAS Traditional?
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What’s new in WebSphere eXtreme Scale?

Positioning and looking forward
WebSphere supports the entire hybrid cloud landscape

**WebSphere traditional**
*Speed of Operation*
Manage & maintain stable, mission critical transactional applications
Systems of Record

- Longer release cycles
- Cost savings with workload consolidation

**WebSphere Liberty**
*Speed of Innovation*
Explore, develop and deploy for growth opportunities
Systems of Engagement, DevOps, Continuous Delivery, Microservices, Cloud

- Composable
- Continuous delivery
- Continuous integration
- Autonomic scaling
- Continuous monitoring

---

**Marathoner**

- IT-centric user requirements
- Longer life cycles

**Sprinter**

- Contextual contents
- Zero migration
- Cloud and Mobile friendly security

---

**WebSphere Application Server**

- 24 x7 availability
- Rock solid security
- Deployment flexibility
WAS Liberty Or WAS Traditional Server Farm

- HTTP/S
  - IHS, DataPower, or generic HTTP

- Load Balancing and Session Affinity/Failover
  - WAS Liberty/Tradit.
  - WAS Liberty/Tradit.
  - WAS Liberty/Tradit.

- Session & Messaging Database
- WAS Core License
- WAS ND License

- Operations target individual servers
- Web server plugin is a merge of the individual servers’ plugins.
- Session failover uses DB or session cache.
Intelligent Management Overview

**Autonomic Computing - Providing Continuous Availability**

- **Intelligent Routing**
  - Self-configuring
  - Self-protecting
  - Quick route around slow or failing servers
  - Automatically route to Auto Scaling Clusters
  - Multi-cell load balancing & failover. Request prioritization & overload protection (CPU & mem.)
  - **Continuous availability** during soft-hang or cluster/cell outage.

- **Dynamic Clusters & Auto Scaling**
  - Self-optimizing
  - Elastically scale applications based on demand and service policies.
  - **Continuous availability** during traffic surges.

- **Health Management**
  - Self-protecting
  - Self-healing
  - Monitor the status of your applications
  - Sense and respond to problem areas.
  - **Continuous availability** during failures: application, middleware, or hardware.

- **App Edition Mgmt**
  - Self-managing
  - Enable interruption free application rollout.
  - **Continuous availability** during app updates.
ND Intelligent Management: Also for Node.js & Docker

Collectives

- **Administratively defined policy**
- **Added deploy rules and REST API on controller for Liberty Docker and Node.js**
- **Dynamic Routing Collective Controller** provides routing updates to Plugin
- **Auto Scaling Controller** starts and provisions cluster members (Node.js added 16.0.0.3)
- **Health Management** Takes actions if policies are breached (Node.js added 16.0.0.3)

Diagram:
- HTTP/S to IHS/DP
- IHS/DP to controllers
- Load balancing and session affinity/failover
- Controllers to collective cluster members
- Node.js and Docker interconnect

Admin Script:
- Connect to Liberty
- Explore settings
- Trust Registry
- Manage policies
- Bootstrapping process
- Administratively defined policy
- Added REST API for controller
- Dynamic start/stop
- Health Management
Intelligent Management with WAS ND

- Administratively defined policy
- Operations target individual servers or clusters
- HTTP/S
- Load balancing and session affinity/failover
- Dynamic Clusters
  - Controller starts and provisions cluster members
  - Takes actions if policies are breached
- Dynamic Routing
  - Deployment Manager & Node Agents provide routing updates to Plugin
- Node agent
- WAS trad
- Resource: Node Agent/Deployment Manager/Plugin

Cell
Cluster members
Node agent
WAS trad
DMGR
IHS/DP

get dynamic topology
dynamic start/stop
Choose Your WAS Platform

On Premises / Cloud Enabled

<table>
<thead>
<tr>
<th>Code</th>
<th>Data</th>
<th>Runtime</th>
<th>Middleware</th>
<th>OS</th>
<th>Compute</th>
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<tbody>
<tr>
<td>Customer Managed</td>
<td>Customer Owned Patterns</td>
<td>Platform Managed</td>
<td>Platform Pre-configured for WAS</td>
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## WAS EOS Announcements - September 13th 2016

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<th>WAS Release</th>
<th>WAS EOM</th>
<th>WAS EOS</th>
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<tbody>
<tr>
<td>7.0 - all editions including z/OS</td>
<td>Dec 16, 2016 (2)</td>
<td>Apr 30, 2018</td>
<td>Apr 30, 2021 (1)</td>
</tr>
<tr>
<td>8.0 - all editions including z/OS</td>
<td>Dec 16, 2016 (2)</td>
<td>Apr 30, 2018</td>
<td>Apr 30, 2021 (1)</td>
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### WAS EOS Announcements

<table>
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<tr>
<th>WAS Release</th>
<th>Java 6 EOS in WAS</th>
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<tbody>
<tr>
<td>7.0</td>
<td>April 2018</td>
</tr>
<tr>
<td>8.0</td>
<td>April 2018</td>
</tr>
<tr>
<td>8.5</td>
<td>April 2018 (1)(3)</td>
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<th>WAS Release</th>
<th>Java 7 EOS in WAS</th>
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<tbody>
<tr>
<td>8.5</td>
<td>Sept 2019</td>
</tr>
</tbody>
</table>

EOM – End of Marketing  
EOS – End of Service  
EOES – End of Extended Support

(1) After December 2018, Java SDK 6 support is limited to ‘usage & known defects’  
(2) WAS on z/OS EOM will be Feb 2017. Announcement occurred in June 2016.  
(3) WebSphere Application Server Liberty has a single support stream for all product versions. Support for Java SE 6 with Liberty will end in September 2017 to allow the Liberty code and included open source packages to move forward.
An Overview of WebSphere Migration Toolkits

A set of tools that help you:
- Migrate from third-party application servers to WebSphere Application Server
- Migrate between versions of WebSphere Application Server
- Migrate to WebSphere Application Server on Cloud

<table>
<thead>
<tr>
<th>Migration discovery (WDT)</th>
<th>Binaries analysis</th>
<th>Source migration (WAMT)</th>
<th>Config migration (WCMT)</th>
</tr>
</thead>
<tbody>
<tr>
<td>On-line tool that helps you</td>
<td>Command-line analysis of application binaries that provides</td>
<td>Eclipse plugins that scans application source to provide</td>
<td>Eclipse plugin that helps migrate server configuration</td>
</tr>
<tr>
<td>• Estimate the effort required to migrate your application to WebSphere Application Server from third-party application servers</td>
<td>• High level evaluation report showing the Java EE technologies your application uses</td>
<td>• High level evaluation report</td>
<td>• From third-party application servers to WebSphere Application Server</td>
</tr>
<tr>
<td>• Select the IBM cloud platform suited to host your application and estimate migration to that platform</td>
<td>• Detailed analysis for migration between versions of traditional WAS, Liberty, and Liberty Core</td>
<td>• A line-by-line analysis of code changes required</td>
<td>• Between versions of traditional WAS, Liberty, and Liberty Core</td>
</tr>
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<td></td>
<td>• Cloud migration for instant runtimes differences</td>
<td>• Detailed analysis from third-party applications servers</td>
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<td>• Cloud connectivity analysis</td>
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<td>• Cloud connectivity analysis</td>
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</tbody>
</table>
WebSphere Application Server Editions

1 PVU of Family Edition entitles:

- 1 PVU ND *or*
- 4 PVUs Base *or*
- 8 PVUs Liberty Core

OR mix & match

AND can redeploy new mix over time

REMEMBER: Devt desktops cost 0 PVU (*) for any family member

**Liberty Core**
- 8x
- Web, mobile, OSGi apps (Web profile specification)
- High performance transactions
- Subset of Liberty features

**WAS**
- 4x
- Full enterprise applications for WAS traditional and Liberty
- Extended programming models

**WAS ND**
- 1x
- High availability
- Intelligent management
- High scalability
- and more…

**WAS Family Edition**
Introducing the new Virtual Processor Core – VPC

- Newly introduced simplified license metric
  - The Virtual Processor Core (VPC) is sold as a monthly license charge
  - Will replace PVU as the WAS monthly pricing metric
    - PVU remains as WAS perpetual licensing metric. No change.

- Virtual Processor Core
  - Virtual Cores available to the operating system
    - 1 VPC for every VPC available to a virtual Servers Operating System, or 1 VPC for each physical core of a non-partitioned physical server
    - If the number of VPCs is greater than the physical cores, then you only need to license the number of physical cores on the machine

- Benefits to Customers
  - Simplifies Processor and Sub-capacity Licensing
  - Aligns to Cloud Hosted Solution Licensing standards across MSP’s
  - Makes it easier for customers On-prem and in Cloud to stay in compliance

In general 1 VPC will be price equivalent to 70 PVUs

WAS VPC announcement
Key reasons for upgrading to WAS 9

- **Innovation Platform**: Take advantage of an additional development and new capabilities driven into WAS including being the first commercial software vendor to certify to Java EE7.

- **Cloud ready**: Take advantage of the WebSphere Java runtime on Bluemix, various vendor clouds or in a mix of hybrid cloud environments using instant runtimes, Docker images or virtual machines.

- **Fit for Purpose server**: WAS 9 allows you choose the right fit server for your application with the Family Edition licensing option. WebSphere Liberty provides micro service capability to full qualities of service and Java EE7 compliance – choose the server that fits your application.

- **Security**: Stay current on Java versions for currency with security fixes. Use the latest security protocols in your applications.

- **Performance and Operational efficiency**: WAS 9 provides significant performance benefits with throughput over previous releases. Enhanced dynamic clustering, polygot administrative management and health management policies.

- **DevOps ready**: Ease-of-integrating WebSphere runtimes in the DevOps workflows for continuous integration and continuous delivery.

- **Cost effective License options**: WAS Family Edition – mix and match the server editions that you need. New Virtual Processor Core (VPC) - a simplified license metric that is sold as a monthly license charge and is offered for WebSphere Application Server for on-premise deployments and on-cloud deployments.
Get started today

1. Start your migration at IBM’s “One Stop Shop” for free tools and offers

2. Plan and estimate your migration path with the Migration Discovery Tool

3. Contact IBM or your IBM Business Partner & Join the WebSphere User Community
Useful Links – additional Informationen

- WebSphere Application Server - Product Documentation (KnowledgeCenter):
  - http://www.ibm.com/support/knowledgecenter/SSAW57_9.0.0

- WebSphere Application Server – Beta Knowledge Center
  - http://www.ibm.com/support/knowledgecenter/was_beta_liberty/as_ditamaps/wasbeta_welcome_wlp.html

- WebSphere eXtreme Scale - Product Documentation (KnowledgeCenter):

- WebSphere Application Server Developer Tools

- WebSphere Application Server – Migration Toolkit

- WebSphere Application Server – Migration Documents

- IBM Redbooks (Handbooks with end-2-end examples how to use the product)
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