

# Maximo Anywhere 762, Best Practices

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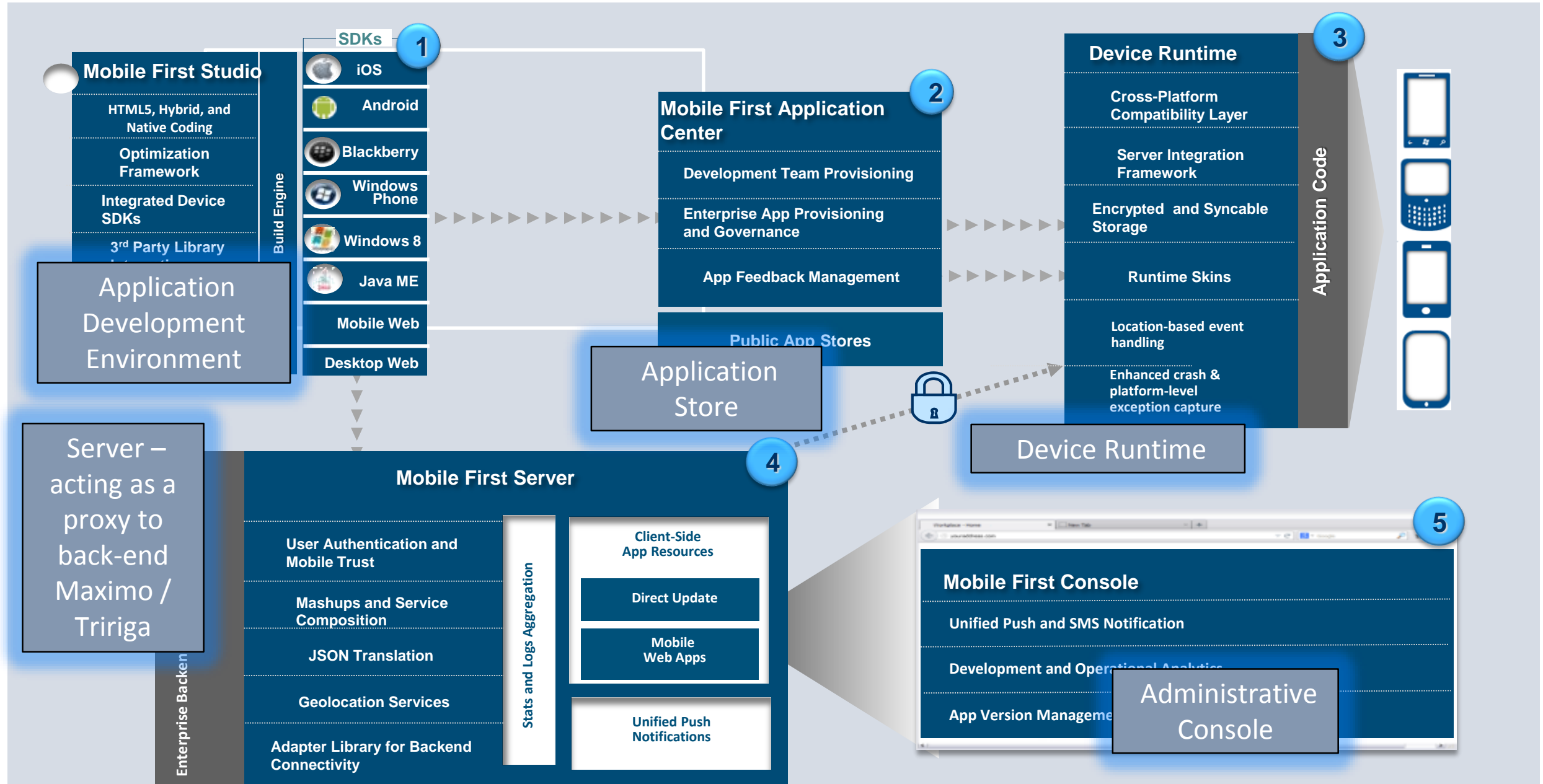
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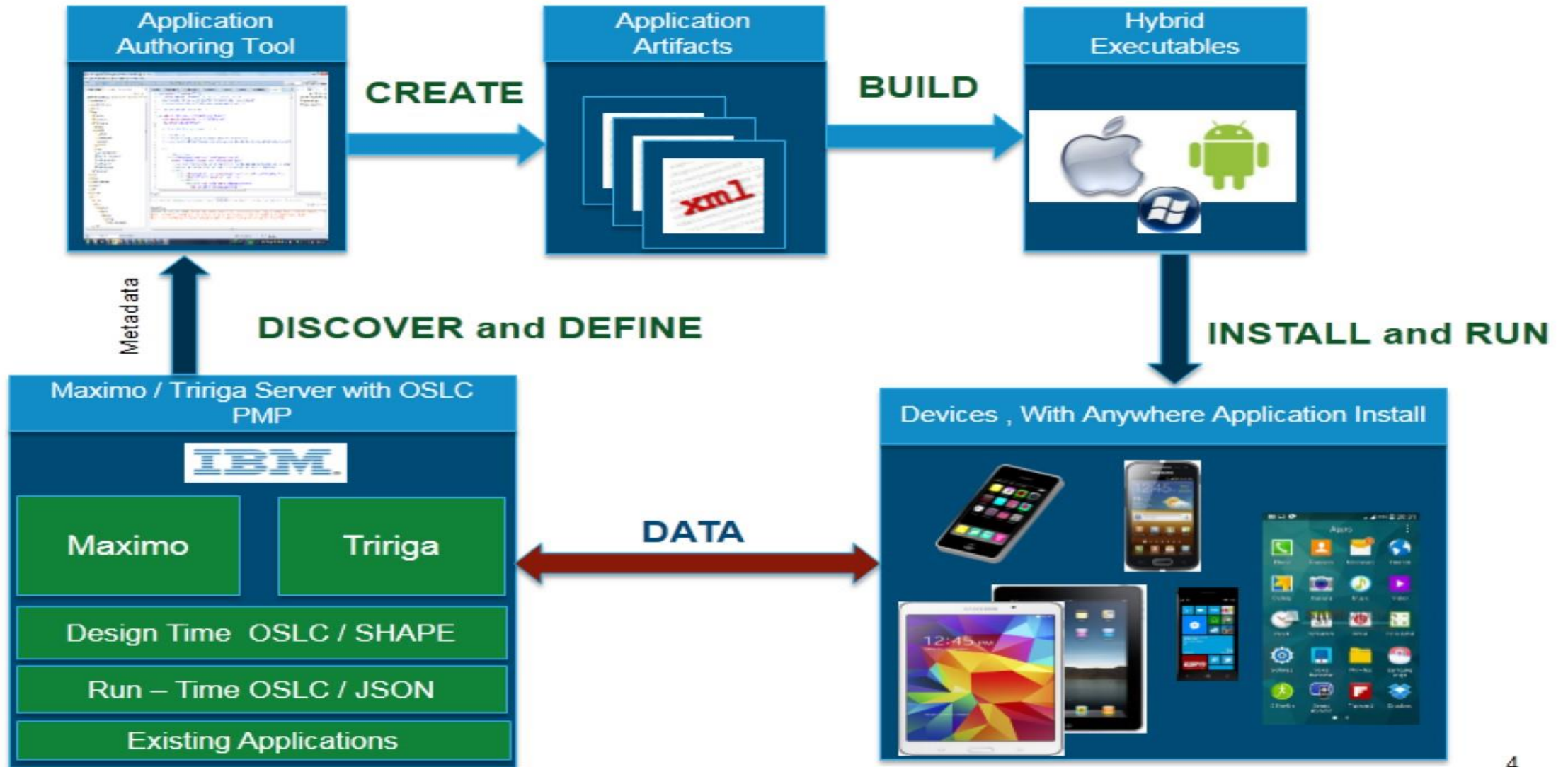
# Agenda

- Architecture overview
- Application Life Cycle
- Best Practices
  - Installation best practices
  - Sizing Best practices
  - Performance best practices
  - Development best practices
  - Serviceability & Troubleshooting best practices

# Maximo Anywhere Platform Architecture with MobileFirst



# Anywhere Architecture and App LifeCycle Flow



# Anywhere considering customer setup and deployment environment

- **Proactive Planning**
  - Understanding Maximo Anywhere Component
  - Understanding Maximo Anywhere – Deployment topology
  - Sizing Customer Environment for right topology
  - Understanding Implementation requirement for the
  - Installation best practices
    - Planning hardware for required loads and throughput
    - Planning Software's for deployment
  - Implementation Options
- **Best Practices**
  - Implementation experiences
  - **Application Development / Implementation**
  - Production
- **Reactive Action**
  - Usually done in response to a problem. (this is the least desirable option as it means that users have already been impacted)
  - Expensive and time consuming
  - Focuses on analysis and most likely cause

# Maximo anywhere – Supported topology installation and deployment topology

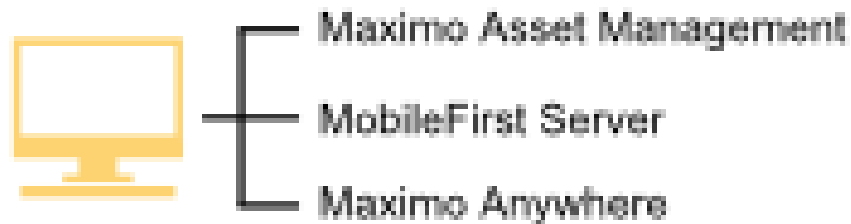
- Single Sever Topology
- Multi Server Topology
- Enterprise Server deployment Topology

# Single Server Deployment – for Development , Test

For small enterprises, a single-server deployment can be used for production purposes. Larger enterprises can use a single-server deployment as a pre-production test environment.

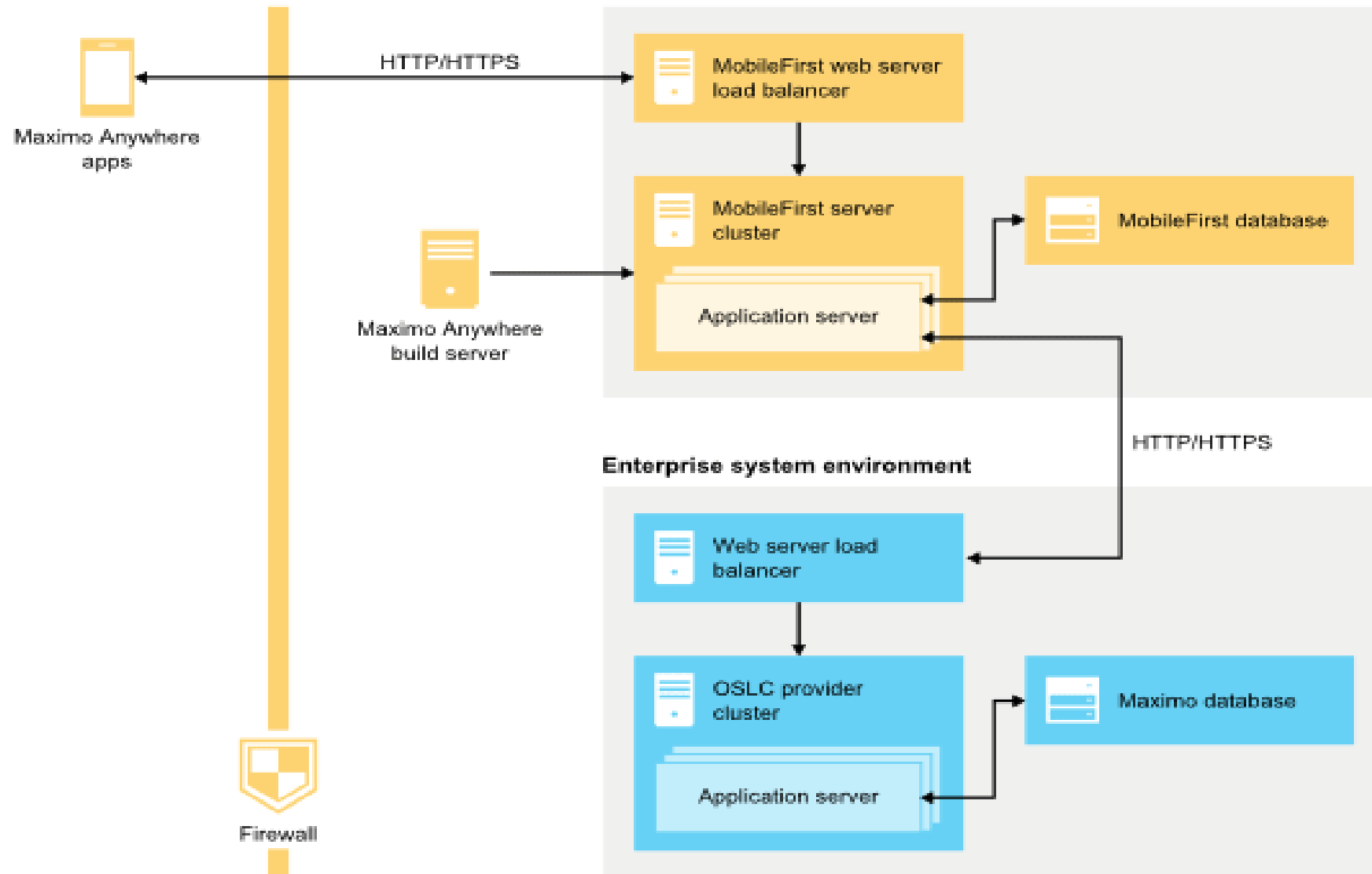
To create a single-server deployment, you install MobileFirst Server and Maximo Anywhere on a single computer. A test instance or a production instance of Maximo® Asset Management is also required, either on the same computer or on a remote computer.

- A single-server deployment of Maximo Anywhere and MobileFirst Server.
  - You can configure an instance of MobileFirst Server.
    - WebSphere® Application Server,
    - WebSphere Application Server Liberty, or Apache Tomcat for use.
  - You can also configure an existing production database, such as
    - DB2®, Oracle Database, or MySQL Database.
- Maximo Anywhere build environment for
  - You can build, deploy, and preview the mobile apps in the MobileFirst Operations Console. You can then deploy the apps to the Application Center where mobile workers can download them to a mobile device.

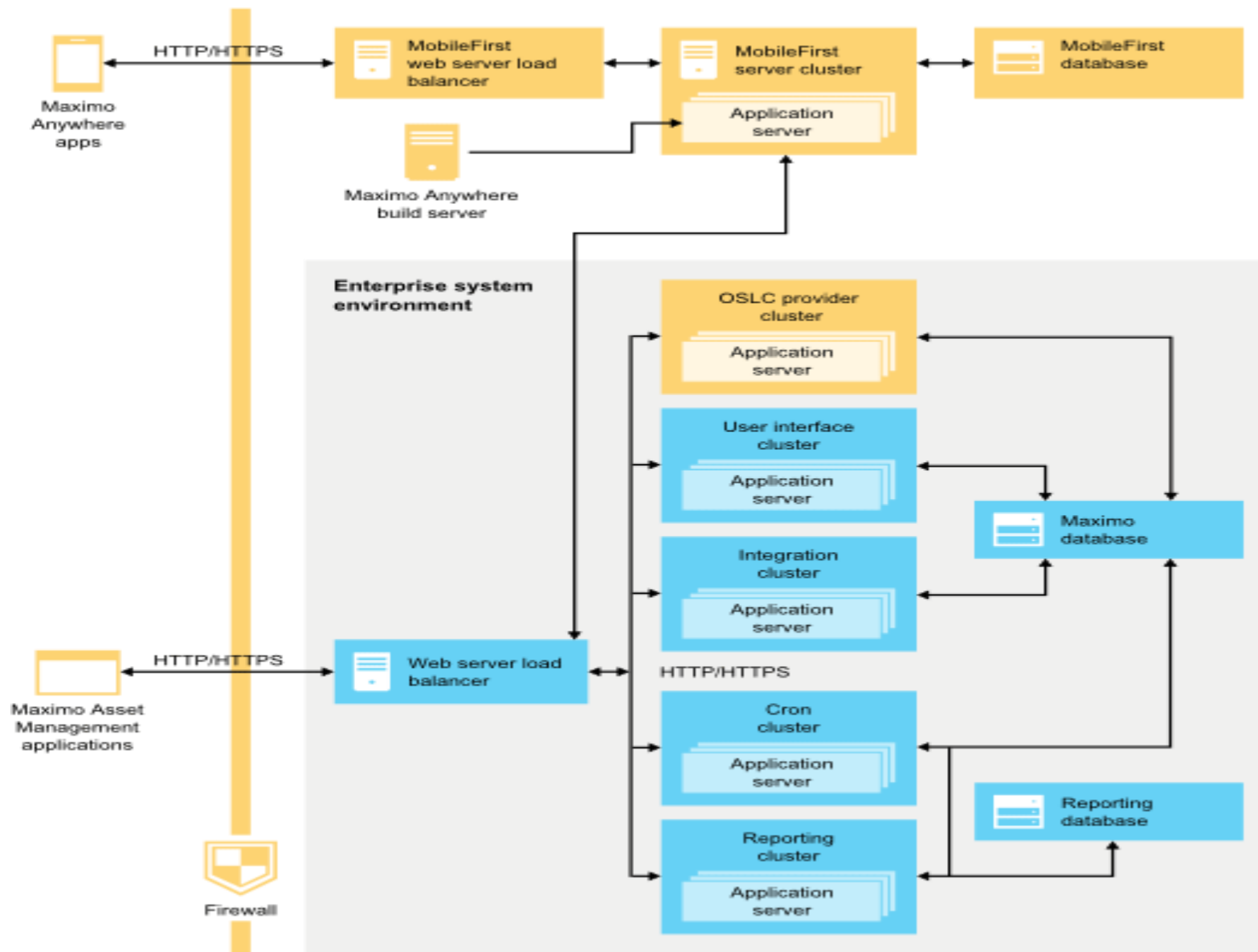




# Multiple Server Deployment – for Production , Development , Test (Recommended)



# Enterprise Server Deployment – for the Production



# Maximo anywhere – How to consider sizing for your environment

- Number of users support for Maximo Anywhere mobile deployment
- What hardware
- MobileFirst Server Sizing
- Maximo OSLC Server Sizing
- Database Server
- Devices

# Maximo Anywhere Sizing Guideline

- First, we recommend that you start with the [IBM MobileFirst Platform V7.1 Scalability and Hardware Sizing](#) document and the [Hardware Calculator](#) available from [IBM MobileFirst](#), especially if you plan to use IBM MobileFirst for purposes in addition to Maximo Anywhere.

Then, you can use the following information to assist you with specific details for Maximo Anywhere.

- **MobileFirst Server:**

- The Maximo Anywhere platform deploys the adapter on the MobileFirst server which acts as an http proxy server and can manage up to **300 users per JVM**.
- Each JVM requires **2 dedicated CPU cores** and **4-6 GB** allocated for the JVM heap space (plus an additional 30% available RAM for JVM overhead).

- **Maximo OSLC Server:**

- The Maximo OSLC Server can manage up to **100 users per JVM** under normal user load. Refer to the exceptions below for specific guidance on certain end user activities.
- Each JVM requires **2 dedicated CPU cores** and **4-6 GB** allocated for the JVM heap space (plus an additional 30% available RAM for JVM overhead).

- **Database Server:**

- Maximo Database

- A minimum **extra 30% CPU and memory resources** should be added to the DB server to handle Maximo Anywhere load. Refer to the exceptions below for specific guidance on certain end user activities.

- WorkLight Database

- Worklight database requires **2 dedicated CPU cores** and **4 GB** Memory.

# Maximo Anywhere Sizing Guideline

- **Best Practices, Usage Notes, and Exceptions:**
- For more information on tuning, refer to the [Maximo Best Practices for System Performance 7.6.x](#) white paper.
- For application storage and reports, consider separate JVMs and refer to the [IBM MobileFirst Platform V7.1 Scalability and Hardware Sizing](#) document to assist in scalability and sizing.
- The "Download lookup data" feature is used to download a large amount of data to mobile devices.
  - This is typically not a daily activity for the user, but can happen periodically based on how often this data needs to be refreshed.
  - This activity may consume significant system resources on the **Maximo OSLC Server** reducing the number of managed users to as low as **50 users per JVM**. As a best practice, introduce users in batches to avoid a large number of end users accessing this feature concurrently.
  - For internal testing, the lookup data consisted of 50000 Assets, 5000 Locations, 5000 Items, 400000 Failure Lists, 500 Tools, and 250 Persons. All remaining lookup data consisted of 100 record each. Maximo Anywhere may be able to support higher numbers of lookup data with appropriate system resources.
- The "Download current work list" feature is used to download the list of current work orders to the mobile device.

- Resource Link

- [https://www.ibm.com/developerworks/community/blogs/a9ba1efe-b731-4317-9724-a181d6155e3a/entry/Maximo Anywhere 7 6 x Sizing Guidelines?lang=en](https://www.ibm.com/developerworks/community/blogs/a9ba1efe-b731-4317-9724-a181d6155e3a/entry/Maximo%20Anywhere%207.6.x%20Sizing%20Guidelines?lang=en)

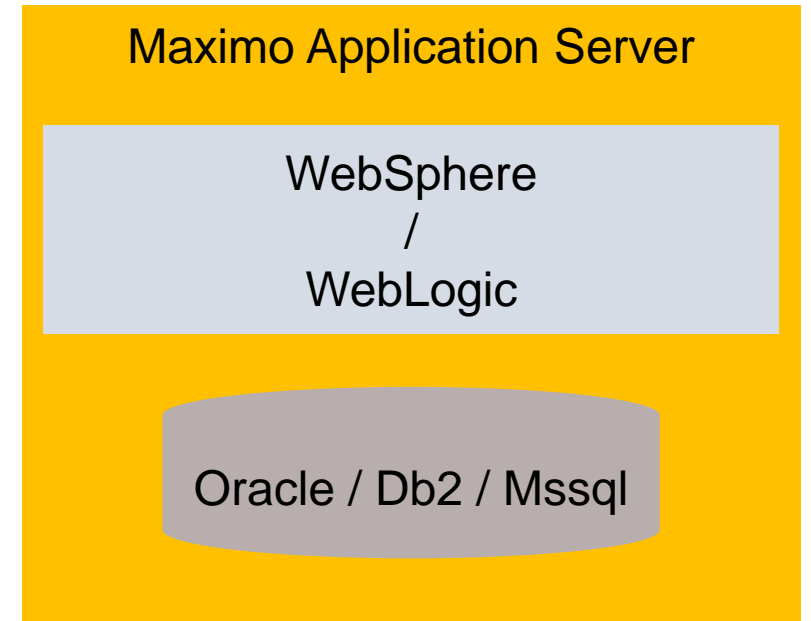
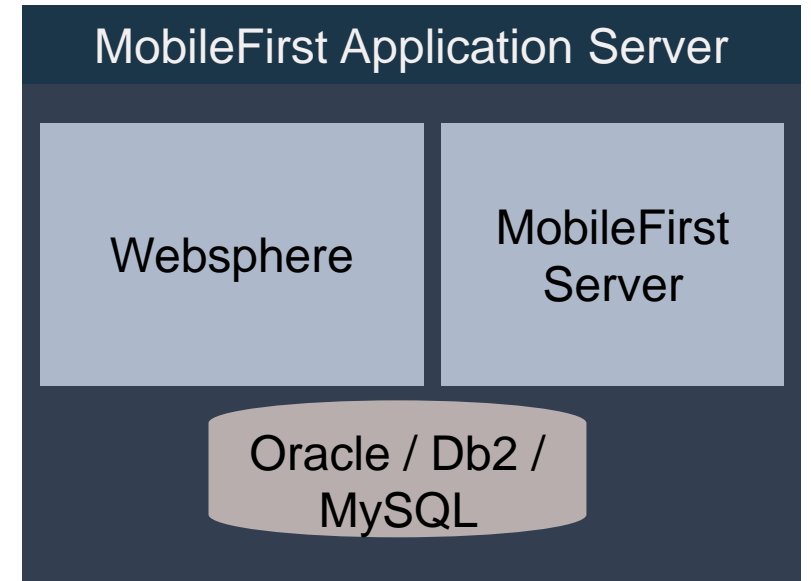
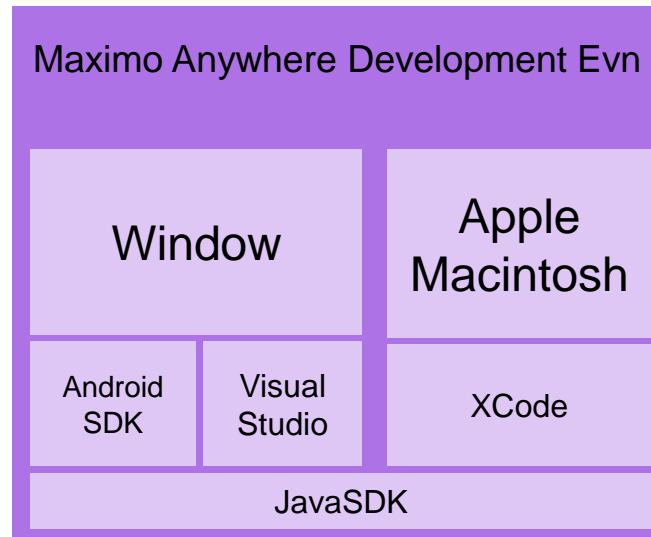
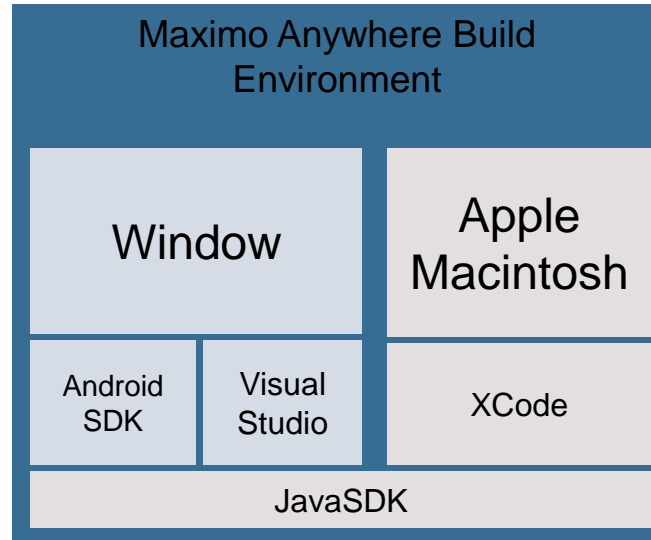
# Maximo Anywhere Sizing Guideline

- Device Sizing
  - Memory
  - CPU Power – Processor ( Benchmarks : <https://browser.primatelabs.com/processor-benchmarks>)
  - Battery ( Benchmarks: <https://browser.primatelabs.com/battery-benchmarks>)
    - Android Device Benchmark - <https://browser.primatelabs.com/android-benchmarks>
    - IOS Device Benchmarks : <https://browser.primatelabs.com/ios-benchmarks>

# Maximo anywhere – Installation

- Understanding Installation Component
- What Steps I should follow for successful installation
- Software and Hardware Requirement
- Installation Worksheet
- Implementation of Maximo Anywhere

# Understanding installation component





# Steps for installation

## 1. Collecting all required Software for installation

- Downloading software

## 2. Planning for server Installation

- Preparing database for installation
- Preparing the installation files
  - Installing Anywhere Maximo PMP (Installation of Maximo Anywhere Required Components)
  - Installing MobileFirst Server
    - Installing the MobileFirst Administration Component.

## 3. Planning for build Server installation

- Installing Maximo Anywhere 7.6.1 ( Window / Android )
  - Preparing the Android SDK
  - Preparing Microsoft Visual Studio
- Installing Maximo Anywhere 7.6.1 on MAC OSX

## 4. Client

- Installing the Applications to the device.

## 5. Implementation

- Configuring Anywhere Administration

## 6. Development & Build

- Setting up MobileFirst Studio to allow for application development and previewing.

# Software and Hardware Requirements

## Required for all installations

The following can be found under the Maximo Anywhere entitlement on Passport Advantage.

1. IBM Maximo Anywhere V7.6.1 Launchpad for Maximo Asset Management V7.6 Multiplatform Multilingual ( Download the 7.5 installation instead if required )
2. IBM Maximo Anywhere V7.6.1 Mobile First 7.1 Multiplatform Multilingual
3. Java 1.8 JDK (1.7 can be used as well, if using **older** android build tools.)

\* Ensure JAVA\_HOME is set as a system variable before starting the installation of Maximo Anywhere.

## Required for Android

1. Android Studio and Platform Tools

<https://developer.android.com/studio/index.html>

## Required for Windows

1. Microsoft Visual Studio 2013 or 2015 (community edition will work)
2. The windows applications must be built on a Windows 2012 R2 Server, Windows 8.1 or Windows 10.
3. 2012 C++ Redistributable ( Installed to devices using Maximo Anywhere)

## Required for iOS

1. Applications must be built on a MAC OSX 10 or higher workstation
2. xCode (can be downloaded from the app store)
3. Provisioning profile and certificate

For more details system requirements, head over to the following wiki page: [Maximo Anywhere 7.6.1 system requirements](#)

**For Maximo Anywhere\MobileFirst we support 3 database types in production**

**Oracle  
DB2  
MySQL**

[Document](#)

# Installation worksheet

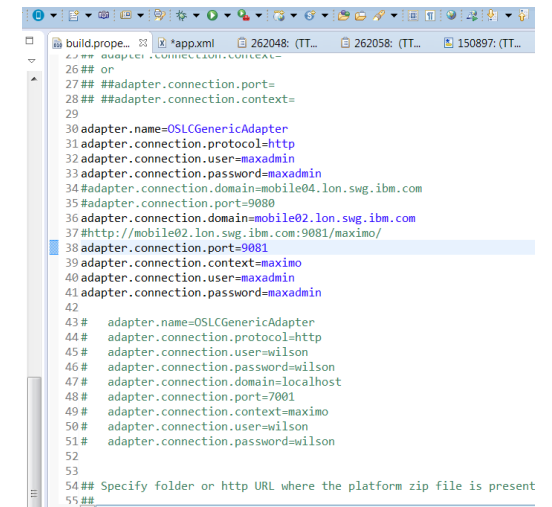
Variable	Default value	Example value	Your value
Maximo Anywhere installation directory	Windows: C:\IBM\Anywhere UNIX and Linux: opt/ibm/Anywhere		
MobileFirst Server Administration protocol	On Windows: http On Mac OS X: https		
MobileFirst Server Administration host name		<i>hostname.yourdomain.com or 1.234.567.89 or localhost</i>	
MobileFirst Server Administration port (Stand-alone server)	9080		

# Implementation - Understand Customer Requirements

- Number of users are planning to use this application
  - Types of users
    - Time of the day
- Size of Look-up data
  - # Assets
  - # Failure Code
  - # Classification
  - # Items
- Size of Transaction Data
  - # work order
  - # Items on device
- Network Types -
  - WIFI
  - 3G , 4G
- Types of Devices they are planning to support
  - Android
  - iPhone
  - Windows
- Authentication types they like support
  - Maximo
  - LDAP , Single Sign on
- Understand use cases and users roles and group for the applications
  - Connected / Disconnected
  - User role , technician , supervisor
- Attachment Support
  - # attachments store on device
  - Size of attachment ,
  - Types ( pdf , jpg , gif ,doc more..)
- Implementation Planning
  - Lookup filtering for diff groups and persona ( required to collect input from business users)
  - Query Base planning for list page for diff group and persona ( required to collect input from business users)
  - Understand customer configuration and customization requirements

# Anywhere Application Implementation Best practices

- Test all host connections before building anywhere application for the users
  - Maximo connection
  - MobileFirst Admin Server connection
  - MobileFirst AppcenterConnection
  - Validate you credentials
- Consider using fully qualified host information part of build.properties ( adapter connection , MobileFirst connection , application center connection)
- Validate Appropriate SDK Levels before following build process.
  - E.g Android sdk , IOS xcode versions , Windows – appropriate level of visual studio install,
  - E.g JDK version.
- Make sture for IOS valid provisioning profile and certificates are installed on build server.
- For IOS make sure SSL enabled for application center store
- Use build all command to build anywhere apps , - out of box
- Understand when to run what part of the build process
  - E.g when to run RDF Puller , When To run Install Platform (only applicable when fix packs are install ) , and More



```
build.prope... *app.xml 262048: (TT... 262058: (TT... 150897: (TT...
adapter.connection.context=
26## or
27## ##adapter.connection.port=
28## ##adapter.connection.context=
29
30 adapter.name=OSLGenericAdapter
31 adapter.connection.protocol=http
32 adapter.connection.user=maxadmin
33 adapter.connection.password=maxadmin
34 #adapter.connection.domain=mobile04.lon.swg.ibm.com
35 #adapter.connection.port=9080
36 adapter.connection.domain=mobile02.lon.swg.ibm.com
37 #http://mobile02.lon.swg.ibm.com:9081/maximo/
38 adapter.connection.port=9081
39 adapter.connection.context=maximo
40 adapter.connection.user=maxadmin
41 adapter.connection.password=maxadmin
42
43 # adapter.name=OSLGenericAdapter
44 # adapter.connection.protocol=http
45 # adapter.connection.user=wilson
46 # adapter.connection.password=wilson
47 # adapter.connection.domain=localhost
48 # adapter.connection.port=7001
49 # adapter.connection.context=maximo
50 # adapter.connection.user=wilson
51 # adapter.connection.password=wilson
52
53
54## Specify folder or http URL where the platform zip file is present
55##
```

# Anywhere Application Implementation Best practices

- For production use always consider using admin app
- Configure correct timeouts for the application using admin app ( sometime for slow running servers you might have to use this )
  - # Timeout to be used when connecting with adapter to get working data (in milliseconds)
  - si.device.connectivity.timeout=10000
  - ## Timeout to be used when downloading large sets of data like lookup data using stable pagination (in milliseconds)
  - si.device.connectivity.timeout.stablepagination=360000
  - ### Waiting time before try to access the remote system after a timeout error (in milliseconds)(use 0 for no interval)
  - si.device.connectivity.timeout.interval=5000

The image displays two screenshots from the Maximo Anywhere Administration interface. The left screenshot shows the 'Applications' list, and the right screenshot shows the 'Global Properties' configuration table.

**Applications List:**

ID	Description
ASSETAUDIT	Maximo Anywh
ASSETDATAMANAGER	Maximo Anywh
INSPECTION	Maximo Anywh
ISSUESRETURNS	Maximo Anywh
PHYSICALCOUNT	Maximo Anywh
SERVICEREQUEST	Maximo Anywh
TRANSFERS	Maximo Anywh
WORKAPPROVAL	Maximo Anywh
WORKEXECUTION	Maximo Anywh
WORKEXECUTIONDEMO	Maximo Anywh

**Global Properties Table:**

Property	Description	Value
si.att.proxy.maxfilesize	The max file size of the attachment files to download, anything larger is skipped, 5 Mbytes	5242880
si.attach.docklink.doctypes.defpath	Attachments upload path	anywheredoclinks
si.attach.uploadmaxsize	Default 10 MB. Upload limit for the file attachment to the server, make sure size configured here is equal or less then server size	10485760
si.attachment.basedirectory	Controls the location of the folders that are created by multiple users. If you share a mobile device, the attachments could reside in multiple user directories.	anywhere
si.device.connectivity.timeout	Timeout to be used when connecting with adapter to get working data (in milliseconds)	10000
si.device.connectivity.timeout.interval	Waiting time before try to access the remote system after a timeout error (in milliseconds)(use 0 for no interval)	5000
si.device.connectivity.timeout.stablepagination	Timeout to be used when downloading large sets of data like lookup data using stable pagination (in milliseconds)	360000
si.device.downloadAttachmentsWithBulkDownload	Should we automatically download the attachment files when the worklist is being downloaded	true
si.device.onlyBulkDownloadPrintWithReportAttachments	Should we only download attachment files whose print with report flag is set to true	true
si.map.directionsPathColor	Configure the color of path used on directions. The pattern is: AARRGGBB	7F0000FF
si.map.directionsPathWidth	Configure the thickness of path used on directions	5
si.map.esri.authentication.isEnabled	When set to 1, this property defines that authentication support is enabled	0
si.map.esri.isGetMethodEnabled	The method that will be used to generate token for directions routes	0
si.map.esri.password	The password for accessing esri server services	
si.map.esri.refererService	The url used as parameter for the server that will be used to generate the token	http://www.arcgis.com

**Maximo Anywhere Work Execution Table:**

Resource	QueryBase	Filter	Count
woHistory	woHistoryFilter	Query to filter Worker Order result by c	10
workOrder	getMyAssignedWo	My Assigned Work	20

**Anywhere Administration**

Find Application

Find Navigation Item

Go To Applications

More Actions

Anywhere Global Properties

List View | List Data | **Lookup Data** | Settings | Notification Events

**Maximo Anywhere Work Execution** Filter > 1 - 15 of 20

Resource	Query	Base ID	Group
additionalDataSheetTemplate	<input type="text"/>	<input type="text"/>	<input type="text"/>
additionalInventory	<input type="text"/>	<input type="text"/>	<input type="text"/>
additionalamcrew	<input type="text"/>	<input type="text"/>	<input type="text"/>
additionalasset	<input type="text"/>	<input type="text"/>	<input type="text"/>
additionalbin	<input type="text"/>	<input type="text"/>	<input type="text"/>
additionaldatasheetassetlink	<input type="text"/>	<input type="text"/>	<input type="text"/>

**Global Properties**

Filter > 1 - 15 of 20

Property	Description	Value
si.att.proxy.maxfilesize	The max file size of the attachment files to download, anything larger is skipped, 5 Mbytes	<input type="text" value="5242880"/>
si.attach.doclink.doctypes.defpath	Attachments upload path	anywheredoclinks
si.attach.uploadmaxsize	Default 10 MB. Upload limit for the file attachment to the server, make sure size configured here is equal or less then server size	10485760
si.attachment.basedirectory	Controls the location of the folders that are created by multiple users. If you share a mobile device, the attachments could reside in multiple user directories.	anywhere
si.device.connectivity.timeout	Timeout to be used when connecting with adapter to get working data (in milliseconds)	10000
si.device.connectivity.timeout.interval	Waiting time before try to access the remote system after a timeout error (in milliseconds)(use 0 for no interval)	5000
si.device.connectivity.timeout.stablepagination	Timeout to be used when downloading large sets of data like lookup data using stable pagination (in milliseconds)	360000
si.device.downloadAttachmentsWithBulkDownload	Should we automatically download the attachment files when the worklist is being downloaded	true
si.device.onlyBulkDownloadPrintWithReportAttachments	Should we only download attachment files whose print with report flag is set to true	true
si.map.directionsPathColor	Configure the color of path used on directions. The pattern is: AARRGGBB	7F0000FF
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si.map.esri.authentication.isEnabled	When set to 1, this property defines that authentication support is enabled	0
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si.map.esri.password	The password for accessing esri server services	
si.map.esri.refererService	The url used as parameter for the server that will be used to generate the token	http://www.arcgis.com

OK Cancel

**Anywhere Administration**

Find Application

Find Navigation Item

Go To Applications

More Actions

Anywhere Global Properties

List View | List Data | Lookup Data | **Settings** | Notification Events

**Maximo Anywhere Work Execution** Filter > 1 -

Property	Description	Value	Group-Level
androidLocalMapUrl	Android Map Location	<input type="text"/>	<input type="text"/>
checkEachDataStorageMaxSize	Max storage size of the resource for individual record.	800000	
checkResorceEachDataStorageSize	Name of the resource you like to check data storage size for individual record.	dataSheetResourceMax_dataSheetResourc	
iosLocalMapUrl	IOS Map Location		
provider	Provider	esri	
providerUrl	Provider URL.	http://server.arcgisonline.com/ArcGIS/rest/s	
si.wohistory.limitrecords	The maximum number of records to that are displayed in Asset Work Order History and Location	5	
windowsLocalMapUrl	Windows Map Location		

New Row

## Anywhere Application Implementation Best practices

- Test and validate QueryBase configured part admin application
- Make sure attachments configured correctly part of maximo
- Tune page Size , part of app.xml <resource pageSize="200" , to improve overall throughput and performance of anywhere application. ( for lookup data , for transection data)
- To avoid large set of look up data on device , Use admin app to configure lookup data for appropriate groups with query bases.
- To avoid large set of transection data download for specific user , use group and query base configurations to manage data download on device.
- Before applying fix packs make sure backups are taken for entire maximo anywhere directory.
- Before following customization or configuration changes , make sure keeping backup of out of box app.xml as well as \common\js directory.



# Anywhere Application Implementation Best practices

- To validate anywhere implementation - Use Mobile First console using chrom browser simulator to verify anywhere application implementation (Development only )
  - Note : browser has limitation to download only 200 lookup data for the resources on device.
  - Each application verification may required to clean up browser cache
- To validate each and every feature of anywhere implementation - Use actual device
- Avoid - changes to worklight.properties files required build and redeployment of MaximoAnywhere War file. Required restart of server.
- Always use server configuration tools to deploy the MaximoAnywhere War file
- Development Best Practices
  - Use Eclipse with supported Mobile First Plugin with MaximoAnywhere.
  - Make sure you build and validate out of box application before starting any configuration and customization changes.
  - Use simulator , emulator and device to validate your application before moving to production.
  - Leverage inbuilt MobileFirst server to deploy and validate the application.
  - Use custom directory to write you own business logic to avoid overwriting of existing file during fixes and patch installation.
  - Always keep back up copy of out box MaximoAnywhere Project
  - Use source control to manage changes in team development environment.
  - Test your changes before move to production environment.

# Anywhere Performance Best practices

- ❑ Consider JVM clusters
  - ❑ Anywhere Cluster.
  - ❑ Maximo OSLC Cluster .
- ❑ Application Server/JVM settings
- ❑ IBM HTTP Server settings
- ❑ Logging and Tracking
- ❑ Process to be consider before move to production
- ❑ Maximo Performance Best Practices
  - ❑ [https://www.ibm.com/developerworks/community/blogs/a9ba1efe-b731-4317-9724-a181d6155e3a/entry/maximo\\_anywhere\\_7\\_5\\_sizing\\_guidelines?lang=en](https://www.ibm.com/developerworks/community/blogs/a9ba1efe-b731-4317-9724-a181d6155e3a/entry/maximo_anywhere_7_5_sizing_guidelines?lang=en)
  - ❑ Keep a spreadsheet of your entire setup information.

# Performance : Application Server / JVM Best Practices ( Anywhere / Maximo )

## ❑ JVM clusters for like functionality

- ❑ Anywhere Cluster
- ❑ Maximo OSLC Cluster

## ❑ JVM heap memory settings are very important and play a big role in application server performance.

- ❑ Consider 64 bit application servers.
- ❑ 64 bit – You can increase the heap memory and keep
  - ❑ **Initial: 4096m / Maximum: 4096m ( 4 GB TO 6 GB )**
  - ❑ **Note:** When planning for overall system memory consumption, include additional overhead memory to be used by the JVM outside of the heap size as well as available RAM for the operating system. A general rule of thumb is to include an additional 30% - 40% of memory to account for this overhead.

## ❑ **-Dsun.rmi.dgc.ackTimeout=10000 ( Only useful for maximo)**

- ❑ Extremely important setting for Maximo due to heavy use of java rmi objects.
- ❑ Without this setting, Maximo objects are held in memory for longer duration, which can lead to
  - ❑ Out of Memory situations
  - ❑ Too many database connections

## ❑ Garbage collection policy

- ❑ gencon policy: **-Xgcpolicy:gencon**
- ❑ **Nursery Size**
  - ❑ 25% of maximum heap size: **-Xmn1024m**

**JVM Thread pool tuning recommendations**

- Minimum size:** Specifies the minimum number of threads to maintain in the pool.
  - Default thread pool: **20**
  - WebContainer thread pool: **120**
- Maximum size:** Specifies the maximum number of threads to maintain in the pool.
  - Default thread pool: **50**
  - WebContainer thread pool: **120**
- Thread inactivity timeout:** Specifies the amount of inactivity (in milliseconds) that can elapse before a thread is reclaimed.
  - Default thread pool: **30000**
  - WebContainer thread pool: **60000**
- Allow thread allocation beyond maximum thread size:** Specifies whether the number of threads can increase beyond the maximum size configured for the thread pool.
  - Value: **Enabled**

# Performance : IBM Http Server Tuning Best Practices

IBM Http Server settings are part of httpd.conf file

## TimeOut

Value: **900**

The TimeOut directive sets the amount of time the server waits for certain events before failing a request.

## KeepAliveTimeOut

High Network Bandwidth: **10**

Low Network Bandwidth: **60**

The KeepAliveTimeout directive sets the amount of time the server waits for subsequent requests on a persistent connection. Set this value to 60 for those environments that may have high network latency, such as when users are located in areas that are geographically different from the location of the servers.

## MaxKeepAliveRequests

Value: **0**

The MaxKeepAliveRequests directive sets the number of requests allowed on a persistent connection. Setting this value to zero allows unlimited requests.

## MaxRequestsPerChild

Value: **0**

The MaxRequestsPerChild directive sets the limit on the number of requests that an individual child, server handles during its life. Once this limit is reached, the child process dies. Setting this value to zero ensures that the process never expires.

## ThreadLimit

For environments: **2400**

The ThreadLimit directive sets the upper limit on the configurable number of threads.

## ThreadsPerChild

Value for environments: **2400**

The ThreadsPerChild directive sets the number of threads created by each child process.

## Performance : IBM Http Server / LB Tuning Best Practices...

- ❑ Sites that have bandwidth or latency issues can use one of the following techniques to improve performance:

- ❑ **HTTP Compression**

- ❑ HTTP compression is a capability that can be built into web servers, such as IBM HTTP Server and Apache HTTP Server 2.x and above, and web browsers to make better use of available bandwidth, and provide faster transmission speeds.
- ❑ IBM HTTP Server: Use Apache mod\_deflate and set DeflateCompressionLevel to 3 or 6 to improve response time in environments that have low bandwidth and high latency.
- ❑ How to configure compression - [http://httpd.apache.org/docs/2.2/mod/mod\\_deflate.html](http://httpd.apache.org/docs/2.2/mod/mod_deflate.html)

- ❑ **Hardware Compression**

- ❑ Network appliances, such as Juniper and Riverbed, provide compression and caching features. Network appliances can help compress data and optimize bandwidth. Customers report that network appliances can prove to be beneficial to system performance, especially in a high-latency and/or a low bandwidth environment.
- ❑ Hardware compression affects all servers in the configuration.

## Anywhere / Maximo Logging / Tracking Best Practices

- Keep Anywhere Device Level Logging off ( default is off )
- Mobile first logging enablement ([http://www-01.ibm.com/support/knowledgecenter/SSZH4A\\_6.2.0/com.ibm.worklight.monitor.doc/admin/r\\_logging\\_and\\_monitoring\\_mechanisms.html](http://www-01.ibm.com/support/knowledgecenter/SSZH4A_6.2.0/com.ibm.worklight.monitor.doc/admin/r_logging_and_monitoring_mechanisms.html))
- Keep Anywhere Application server and Maximo as well as application server logging to minimal level unless investigating a problem.
  - Set everything including Maximo root logger to INFO (not much overhead) .
  - Logging adds 5% + overhead.
- Clean up log folders from filling up.
  - SystemOut , SystemError , Maximo Specific Logs
  - Watch out for heap dumps as these files are very large.
- Since logging changes can be applied dynamically, turn logging on when needed and turn it off when done.
- For SQL performance analysis, ( OSLC Object structure internally use mbo, which generate sqls )
  - Use logSQLTimeLimit , extremely useful. ( Default to 1000 ms)
  - Collect them in separate log files.
- If analyzing memory usage,
  - Use verbose GC logging. Clean up old log files.
  - Use Garbage Collection and Memory Visualize to analyze.

# Maximo Anywhere Development Best Practices

- **Develop Your Mobile App with Your Audience in Mind**
  - Which Persona going to use this app , Involve Potential Users in the Design Process
- **Understand the requirements and Use Cases**
  - What are use cases , How much work is happening in connected mode and disconnected mode.
- **Invest in User Experience**
  - Make the App Easy to Understand
  - Create a Consistent flow, Build wireframes
- **Ask you self a question**
  - Are you converting one of maximo app feature and function as mobile
  - Instead of building new one can you clone existing app and start on fast track.
- **Planning**
  - Understand Maximo functionality correctly
  - Plan OSLC Object Structure
    - Is all object structure exist , do you need new object structure and relationship
- **Development and Implementation ( Faster Development process, Time to Market is key)**
  - How many views you need , how many dialogs you need , How much business logic needs to be written on device
  - How many resources you need , ( transection resource , lookup resource , system resource , complex resources
- **Test the Design and implementation**
  - Check is this design right , is this implementation working as expected
- **Get and Learn from feedback**
- **Learn from Competitors**



## Maximo OSLC Server Built in Logging & Troubleshooting Tools

### System Properties used as part of logging

- Enabled through System Properties application. Dynamic, can be enabled without re-building application ear file.
- SQL logging to collect all SQL statements – Logging Application. ( Object Structure Internally use mbo)
- Set OSLC Logger to Info
- Use the following system properties to collect useful log information.
  - mxe.db.fetchResultLogLimit
  - mxe.db.logSQLTimeLimit
  - mxe.db.logSQLPlan
  - mxe.db.sqlTableScanExclude

### FetchStopLimit

- Enable and use until you reach a stable state. Returns an error to the end user. Can collect the information from the log and contact support.
  - mxe.db.fetchStopLimitEnabled
  - mxe.db.fetchResultStopLimit
  - mxe.db.fetchResultStopLimit.OBJECTNAME
  - mxe.db.fetchStopExclusion
  - Using fetch stop limits to prevent out-of-memory errors
    - <https://www-304.ibm.com/support/docview.wss?uid=swg21412865>

### FetchResultLogLimit

- This greatly helps in identifying excessive data fetch.
- Use this to identify the code that is fetching excessive data.
- Depending on data or code fix, adjust the data or get a code fix.

## Process to be consider - implementing anywhere for production use

### ❑ Development

- ❑ Team development user source control system to control the changes
- ❑ Use individual development environment using eclipse , leverage MobileFirst development environment
  - ❑ Inbuilt MobileFirst Sever
  - ❑ Simulators
  - ❑ Emulators
- ❑ Always test before move to stage or production

### ❑ Stage and QA

- ❑ Consider Near to production environment. ( Mini replica of production )

### ❑ Production

- ❑ Follow Change Control Process move to production.
- ❑ User Production build server in control mode.

# Anywhere Troubleshooting

- **Viewing Logs**

- Our messages go to the default device log our you can email logs through the Settings->Logging action within our application
- By default, we only log Errors
- Retrieving Logs from Android
  - Plug in your device to your laptop, and startup Logcat from your Android Tools
- Retrieving Logs from iOS device.
  - Plug in your device to your Mac, use LemonJar's iOS Console to output the logs
- Windows Tablet
  - Need to install weinre
  - <http://blogs.windows.com/buildingapps/2013/06/12/remote-html5-debugging-on-windows-phone-with-weinre/>

# Anywhere Troubleshooting

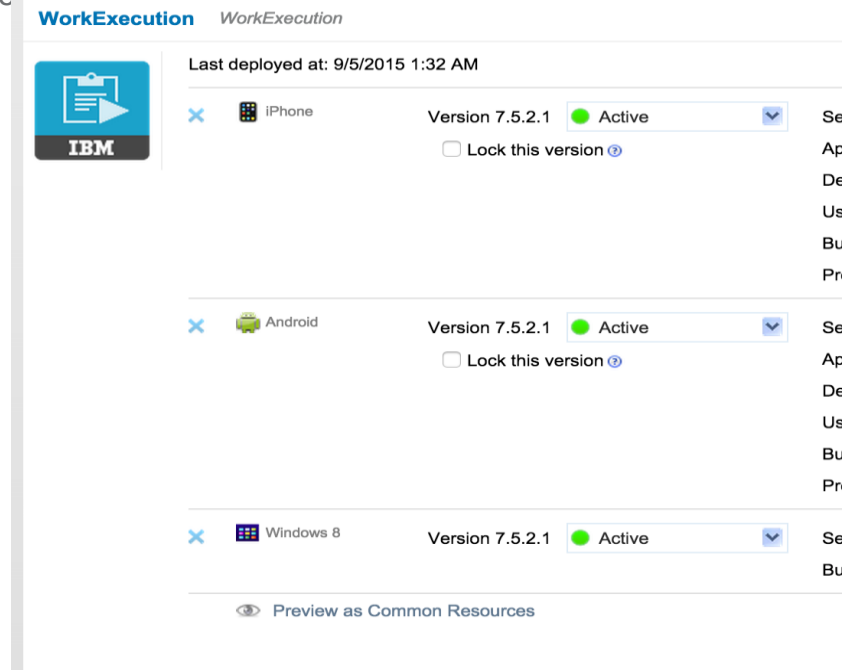
## • Enabling Trace Logs

- Enable debug logs in the application to get more information about problems.
  - Option 1. Set the `logLevel='2'` in `app.xml`, rebuild and redeploy the apps. For example:
    - `<app id="ServiceRequest" logLevel="2"`
  - Option 2. If you can login to the application successfully, Go to Settings -> Logging and Enable Debug Logging

# Anywhere Troubleshooting

- Debugging in Chrome
- You can test any non-native feature of the Anywhere apps using the Chrome Simulator
- You launch this from `http://<mobilefirsthostname and port>/worklightconsole`
- Click on the Preview As Common Resource link

- Click More Tools->Developer Tools->
- And choose the console tab. You'll see our logs.
- You can attach a debugger and debug our code.
- <https://developer.chrome.com/devtools/docs/javascript-debugging>

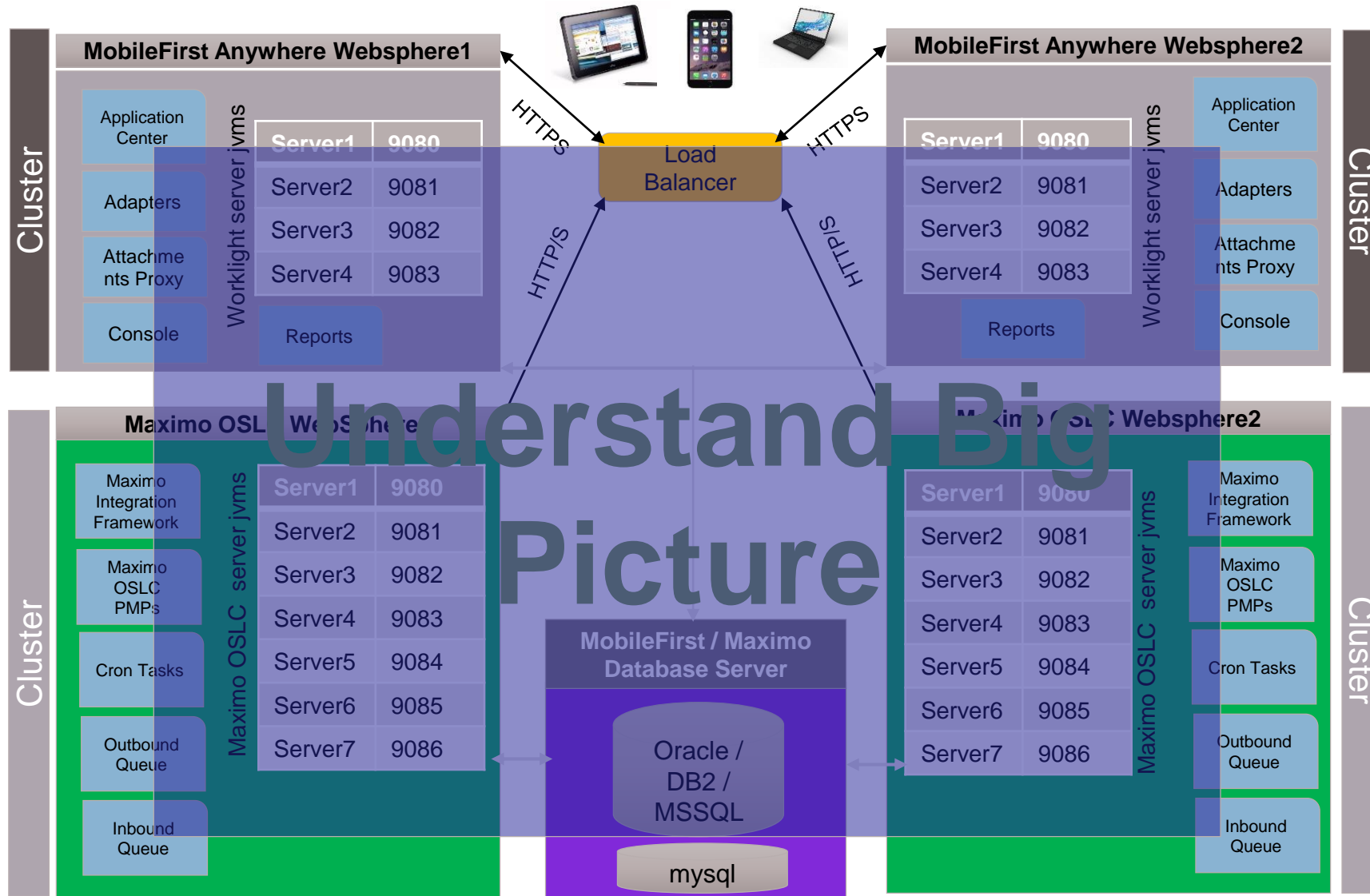


The screenshot displays the 'WorkExecution' console interface. At the top, it shows 'Last deployed at: 9/5/2015 1:32 AM'. Below this, there are three rows representing different device types:

- iPhone:** Version 7.5.2.1, Active (indicated by a green dot), with a 'Lock this version' checkbox.
- Android:** Version 7.5.2.1, Active (indicated by a green dot), with a 'Lock this version' checkbox.
- Windows 8:** Version 7.5.2.1, Active (indicated by a green dot), with a 'Lock this version' checkbox.

Each row has a close button (X) on the left and a 'Se' (likely 'Settings') link on the right. At the bottom, there is a link for 'Preview as Common Resources'.

# Reactive Actions



Understand Big Picture

## **Apk is not installed on application center**

- Answer : make sure application center is up and running and user and password access to app center is configured correctly in build.properties file.

## **IPA is not installed on application center**

- Answer : make sure application center is up and running with ssl and user and password access to app center is configured correctly in build.properties file.

## **MobileFistconsole is not showing deployed application**

- Answer : make sure worklight console is up and running

## **RDF puller is not updating my object structure changes.**

- Make sure build properties configured with admin user and password to pull the shapes from the server , also make sure it is connecting to the maximo server you change the object structure.

## **After installing fix pack , my problem is still not solved**

- Make sure you follow InstallPlatform script process to get latest fixpack changes part of build process.

•

\* **Bold items most common with highest impact**

# Resources

- Knowledge center
  - [https://www.ibm.com/support/knowledgecenter/SSPJLC\\_7.6.1](https://www.ibm.com/support/knowledgecenter/SSPJLC_7.6.1)
- Installation Start to finish  
[https://www.ibm.com/developerworks/community/blogs/a9ba1efe-b731-4317-9724-a181d6155e3a/entry/Maximo\\_Anywhere\\_7\\_6\\_1\\_Installation\\_Start\\_to\\_Finish?lang=en](https://www.ibm.com/developerworks/community/blogs/a9ba1efe-b731-4317-9724-a181d6155e3a/entry/Maximo_Anywhere_7_6_1_Installation_Start_to_Finish?lang=en)
- Anywhere Sizing  
[https://www.ibm.com/developerworks/community/blogs/a9ba1efe-b731-4317-9724-a181d6155e3a/entry/Maximo\\_Anywhere\\_7\\_6\\_x\\_Sizing\\_Guidelines?lang=en](https://www.ibm.com/developerworks/community/blogs/a9ba1efe-b731-4317-9724-a181d6155e3a/entry/Maximo_Anywhere_7_6_x_Sizing_Guidelines?lang=en)



Thank You



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