GENESYS™

Performance Management Advisors Hardware Sizing Guide

WA Deployment Architecture and Recommendations for Optimal Performance

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Contents

WA Deployment Architecture and Recommendations for Optimal Performance

The following table describes the high-level dimensions controlling the environment used to achieve the results described in Load-Carrying Capacity.

Workforce Advisor Presentation Object Configuration

Object	Count
Contact Groups	1552[*]
Contact Centers	20
Application Groups	200
Reporting Regions	20
Operating Units	1
Applications	600
Agent Groups	1300

[*] In this environment, the forecast data for all 1552 contact groups is updated every 10 minutes.

The following diagram shows the environment topology used to successfully achieve 1500 concurrent users of Workforce Advisor (WA). "VM" is a *virtual machine*. The *Aggregation Instance* performs data aggregation; the *Presentation Instance* services the dashboard.
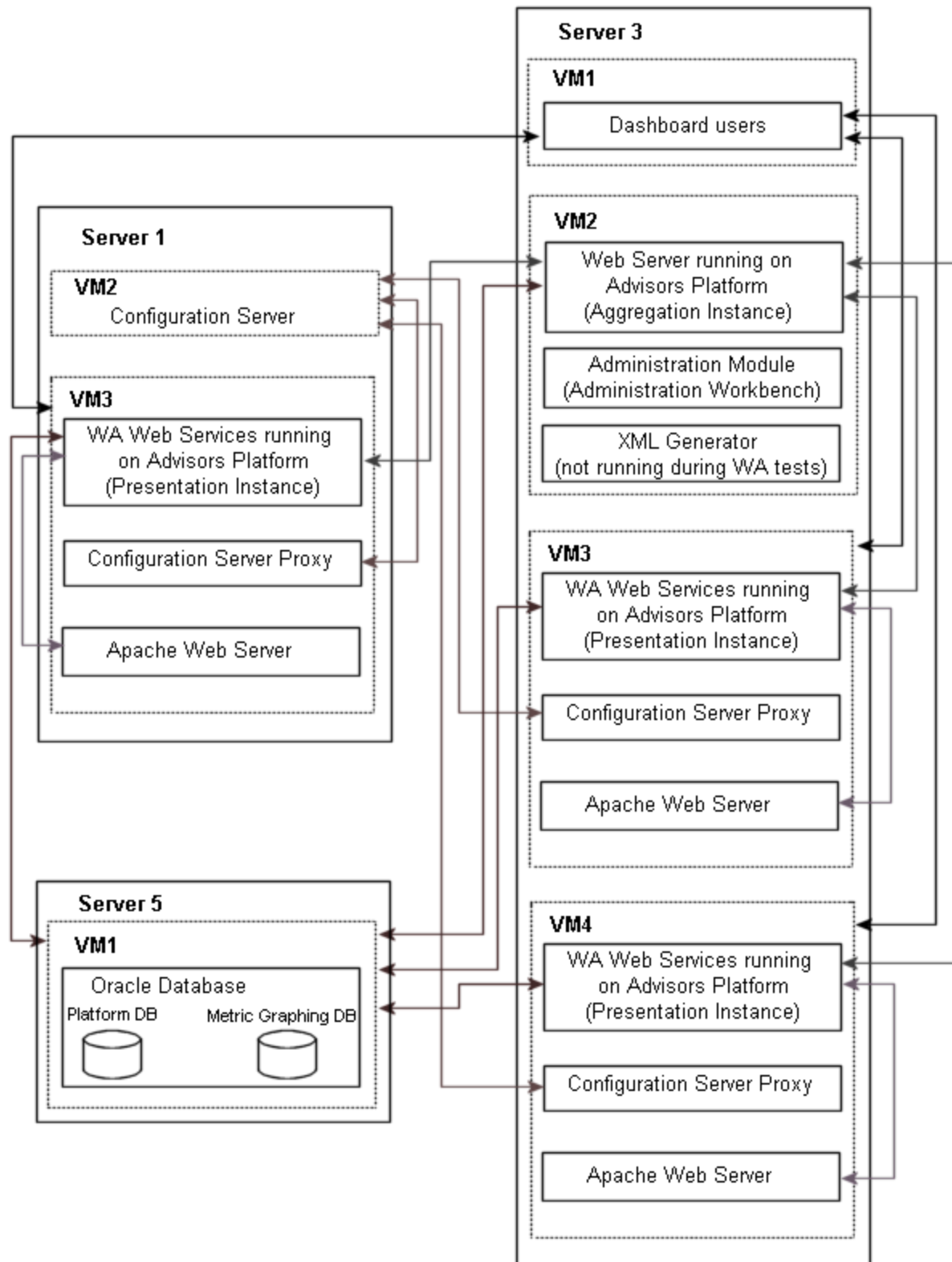
Workforce Advisor Environment Topology

Workforce Advisor Presentation Machine and VM Information

The following table describes the characteristics of the hardware and virtualization environment shown in the figure, Workforce Advisor Environment Topology, which supports 1500 concurrent users of WA.

Server	# of Processors	Processor Type	# of Cores	Total Cores	RAM	OS	Application
Server 3: VM-Host	2	Intel Xeon X5675 @ 3.07GHz	6	24 logical cores with hyper-threading	32 GB	VMWare ESXi 5.0 Standard 64bit	
Server 3: VM-1	1	Same as host	1	1	8 GB	Windows Server 2008 Standard SP2 64bit	Dashboard simulator
Server 3: VM-2	2	Same as host	2	4	8 GB	Windows Server 2003 Standard SP2 64bit **NOTE:** At the time of testing, Genesys supported Windows Server 2003. In your enterprise, be sure to use a Genesys-supported operating system.	Apache Geronimo (WA aggregation instance on Advisors Platform)
Server 3: VM-3	2	Same as host	4	8	8 GB	Windows Server 2008 R2 Standard SP1 64bit	Apache Geronimo (WA presentation instance on Advisors Platform), Configuration Server Proxy, Apache
Server 3:	2	Same as host	4	8	8 GB	Windows Server	Apache Geronimo

Server	# of Processors	Processor Type	# of Cores	Total Cores	RAM	OS	Application
VM-4						2008 R2 Standard SP1 64bit	(WA presentation instance on Advisors Platform), Configuration Server Proxy, Apache
Server 1: VM-Host	2	Intel Xeon X5675 @ 3.07GHz	6	12	32 GB	VMWare ESXi 5.0 Standard 64bit	
Server-1: VM-2	2	Same as host	1	2	1.5 GB	Windows Server 2003 Standard SP2 64bit **NOTE:** At the time of testing, Genesys supported Windows Server 2003. In your enterprise, be sure to use a Genesys-supported operating system.	Configuration Server
Server-1: VM-3	2	Same as host	4	8	8 GB	Windows Server 2008 R2 Standard SP1 64bit	Apache Geronimo (WA presentation instance on Advisors Platform), Configuration Server Proxy, Apache
Server 5: VM-Host	2	AMD Opteron 2439SE @ 2.8GHz	6	12	32 GB	VMWare ESXi 5.0 Standard 64bit	
Server 5: VM-1	2	Same as host	1	2	8 GB	RHEL Server 5.7 64bit	Oracle database

Recommendations for Workforce Advisor Performance Improvement

The following table describes settings you can change to improve Workforce Advisor performance.

Location	Sub-directory or File, where applicable	Settings

On each WA node	*<WA home>*\geronimo-tomcat6-minimal-2.2.1\bin\setenv.bat
	
	Tip
	Starting with release 8.5.2, the path to the setenv.bat file changes to *<WA home>*\apache-tomcat-*<version>*\bin\setenv.bat.
		Change
		
		`GERONIMO_OPTS=-ms128m -mx1024m -XX:MaxPermSize=128m`
		
		To
		
		`GERONIMO_OPTS=-Xms6g -Xmx6g -XX:MaxPermSize=256m`
		
		Starting with release 8.5.2, `GERONIMO_OPTS` becomes `CATALINA_OPTS`. In addition, the `XX:MaxPermSize` setting no longer exists. So, starting with release 8.5.2, you make the following change in the `setenv.bat` file:
		
		Change
		
		`CATALINA_OPTS=-ms1024m -mx2048m`
		
		To
		
		`CATALINA_OPTS=-Xms6g -Xmx6g`

	<WA home>\geronimo\var\catalina\server.xml	Under the <Connectorname="TomcatAJPConnector"> section, add `maxThreads="800"` **Tip** Starting with release 8.5.2, you do not change the `TomcatAJPConnector` setting because it does not exist.
On WA presentation nodes only	*<WA home>*\geronimo-tomcat6-minimal-2.2.1\var\config\config-substitutions.properties	Set `MaxThreadPoolSize` to "3000" **Tip** Starting with release 8.5.2, the `config-substitutions.properties` file does not exist. To change the value of the `MaxThreadPoolSize` setting, you update the following file: *<WA home>*\apache-tomcat-*<version>*\config\catalina.properties.
Dashboard administration setting		For optimal performance: • Select independent configuration mode (not integrated configuration mode) • Set **Show Totals and Averages** to No
On AGA	**Releases 8.1.5**	**Releases 8.1.5 and 8.5.0:**

Location	Sub-directory or File, where applicable	Settings

	and 8.5.0:
	
	<AGA home>\conf\ wrapper.conf
	
	Release 8.5.1 and later:
	conf\run.bat (Windows)
	bin\setenv.sh (Linux)
		Change
		
		`Wrapper.java.initmemory=128`
		`Wrapper.java.maxmemory=1024`
		
		To
		
		`Wrapper.java.initmemory=4096`
		`Wrapper.java.maxmemory=14336`
		
		Release 8.5.1 and later:
		In the JAVA_OPTS parameter, change
		
		`-ms128m`
		`-mx1024m`
		
		To
		
		`-ms4096m`
		`-mx14336m`

On each Apache HTTP proxy	httpd.conf	• Uncomment or add the following modules:
		
		  `LoadModule deflate_module modules/`
		  `mod_deflate.so`
		
		  `LoadModule headers_module modules/`
		  `mod_headers.so`
		
		  `LoadModule proxy_module modules/mod_proxy.so`
		
		  `LoadModule proxy_ajp_module modules/`
		  `mod_proxy_ajp.so`
		
		  `LoadModule proxy_balancer_module modules/`
		  `mod_proxy_balancer.so`
		
		  `LoadModule proxy_http_module modules/`
		  `mod_proxy_http.so`
		
		• Add the following block to increase the number of Apache worker threads (note that this is for a Windows-based server):
		
		`<IfModule mpm_winnt_module>`
		`ThreadsPerChild 512`
		`MaxConnectionsPerChild 0`
		`</IfModule>`
		
		  • If you use a Linux server, add the following block:
		
		`<IfModule mpm_event_module>`
		`StartServer 6`
		`ServerLimit 32`
		`MinSpareThreads 150`
		`MaxSpareThreads 250`

Location	Sub-directory or File, where applicable	Settings
| | | ```
ThreadsPerChild 25
MaxRequestWorkers 800
MaxConnectionsPerChild 0
</IfModule>
```<br><br>• Add the following to enable a request response proxy:<br>```
ProxyPass /am/ ajp://localhost:8009/am/

ProxyPass /admin/ ajp://localhost:8009/admin/

ProxyPass /ca-ws/ ajp://localhost:8009/ca-ws/

ProxyPass /ea-ws/ ajp://localhost:8009/ea-ws/

ProxyPass /dashboard/ ajp://localhost:8009/
dashboard/

ProxyPass /nav-service/ ajp://localhost:8009/
nav-service/

ProxyPass /prefs-service/
ajp://localhost:8009/prefs-service/

ProxyPass /ca-xml/ ajp://localhost:8009/ca-
xml/

ProxyPass /wu/ ajp://localhost:8009/wu/

ProxyPass /base-ws/ ajp://localhost:8009/
base-ws/

ProxyPass /fa/ ajp://localhost:8009/fa/

ProxyPass /static/ ajp://localhost:8009/
static/
``` |

Best Practices for Workforce Advisor Sizing

Use the following notes and best practices for optimizing WA performance:

- Use Gigabit connectivity between the WA aggregation node and WA presentation node(s).

- Enable an AJP connection between the Apache HTTP proxy and WA presentation layer(s).

- Allocate as much CPU resource to WA as possible; WA performance is improved if you provide multiple CPU cores and faster clock speeds.

- Allocate sufficient memory for WA components (Genesys recommends 6GB).

- Genesys recommends increasing the number of presentation nodes if the dashboard request response time exceeds acceptable thresholds.

- Apply role-based access control to minimize the number of hierarchy objects and metrics that each user can access.

- Avoid unnecessary updates to forecast data; that is, avoid calculations that consume processing power unnecessarily. For example, do not configure 10-minute updates of forecast data if hourly updates are sufficient.

- Regarding Stat Server performance:

  - Stat Server is a single threaded process. Carefully monitor the CPU usage of your Stat Server(s).

  - Consider adding more Stat Server pairs if a Stat Server is saturating a CPU. You may require up to four pairs of Stat Servers for best performance.