Accela Automation®

Version 7.3

SYSTEM PLANNING GUIDE

Accela

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Version 7.3
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OVERVIEW

This document provides general guidelines for planning an on-premise Accela system deployment. In addition to the following overview, this document includes a section that describes network topologies for small, medium, and large deployments, a section that documents nominal host machine requirements, and a section that documents host machine ports.

This chapter provides a high-level overview of software products comprising an Accela system.

Topics

Solutions

The Accela system helps government agency users automate their business processes, share information across departments, and communicate with office staff, field staff, the public, external businesses, and other key stakeholders.

The Accela system provides agency solutions for the following four areas:

- **Land Management**. The Land Management solution automates, tracks, and manages land use activities. These activities include permit request processing, plan reviews, inspections, investigations, fee calculations and fee collections, signoffs, permit issuance, and so forth. The Land Management solution enables agency staff to access data that public users enter, verify activities, check permit status, and obtain complete parcel information from a centralized database.
- **Licensing and Case Management**. The Licensing and Case Management solution automates the business process for license applications, registration, and renewals. The solution tracks the fees, exams, continuing education, and approvals associated with each license type.
- **Asset Management**. The Asset Management solution tracks and manages assets, work orders, and agency resources. The solution automates asset costing, inventory, maintenance, investigations, and inspections. The solution manages all agency assets, including fleet, street, water, wastewater, parks and recreation, plant and facilities, sewer, railway, roadway, and so forth.

- **Service Request**. The Service Request solution automates and manages interdepartmental or citizen requests for service, complaints, or inquiries. The solution organizes and manages requests, to improve citizen interaction.

Accela Automation

Accela Automation provides the core functionality for the system. The Accela Automation web server receives instructions to construct and deliver web pages to an Accela Automation browser-based client, and provides information from the browser-based client to the application server for processing. The ColdFusion MX web server provides the user interface environment for the Accela Automation Classic administrative tool.

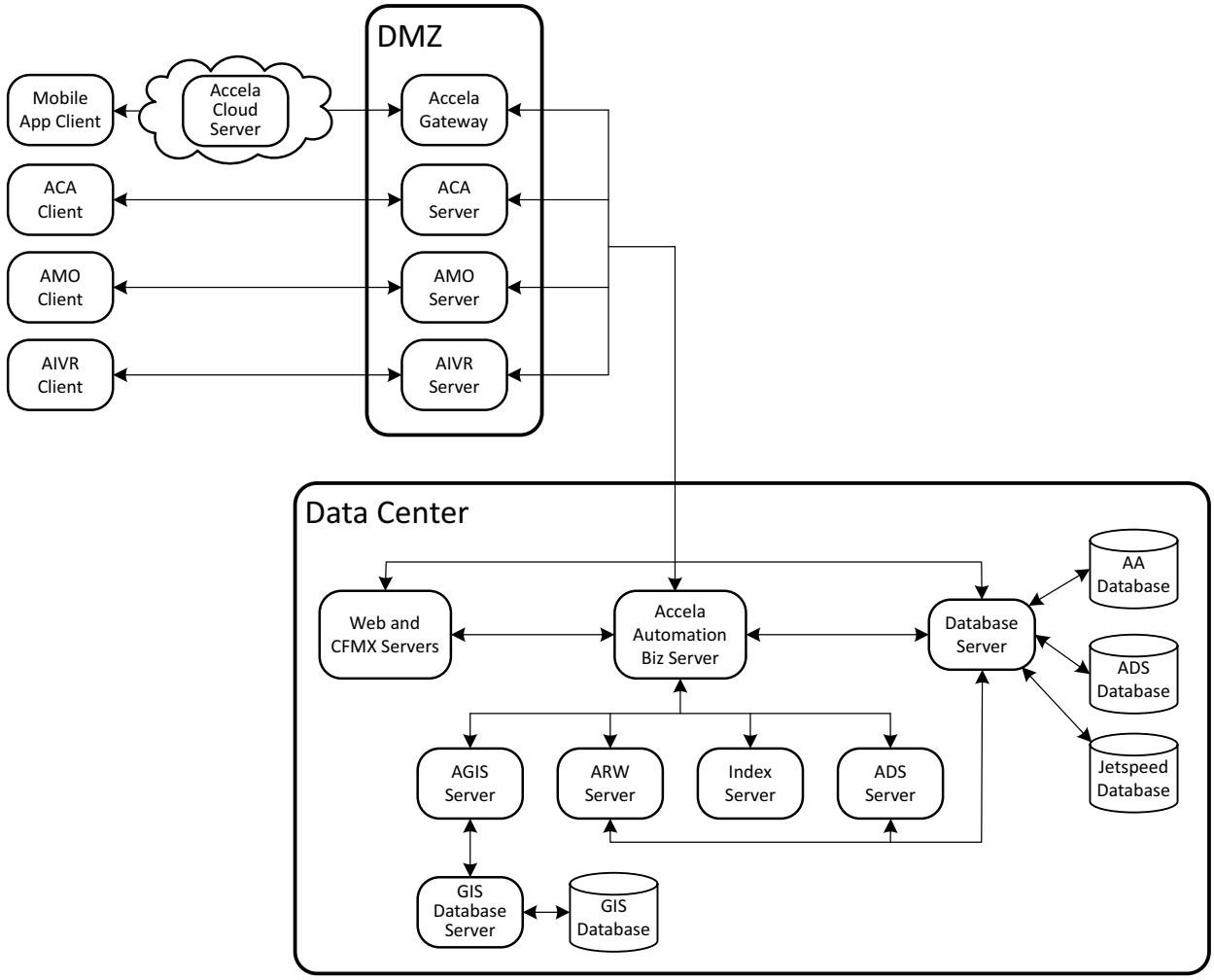
The application (biz) server executes the main functionality of Accela Automation. The application server retrieves and writes record content to the database, and works with the web server to send and receive information to and from the client. The application server processes requests from other system products.

The system stores all Accela Automation record content in the Accela Automation database, except for attachments. The system stores attachments (documents) in the Accela Document Services (ADS) database store or another third party Enterprise Document Management System. The ADS server provides access to stored documents. The ADS server uses the same database server, but a different database schema and database store, than Accela Automation and ARW.

The index server performs global full-text searches across all Accela Automation records. Without the index server, Accela Automation can perform exact match searches and wildcard searches for record metadata within specified application types.

The Accela Report Writer (ARW) server generates reports of information that the Accela Automation database stores.

Figure 1: Accela System Functional Diagram



Add-on Products

Topics

- Accela Citizen Access
- Accela Mobile Office
- Accela IVR
- Accela Mobile Apps, Mobile Cloud Server, and Mobile Gateway
- Accela GIS

Accela Citizen Access

Accela Citizen Access provides a web based and mobile phone based interface that works with Accela Automation applications and databases to provide citizens with online access to government services and information. The Accela Citizen Access server constructs and delivers web pages to the Accela Citizen Access client and provides information from the client to the Accela Automation application server for processing.

Accela Mobile Office

Accela Mobile Office runs on Windows, using the Microsoft .NET Framework, and mobile devices such as PDAs, tablet PCs, and laptops. Accela Mobile Office provides field access for activities such as inspections, investigations, disaster response, code enforcement, work orders, and service requests. The Accela Mobile Office client uses Windows Communication Foundation (WCF) to communicate with the Accela Mobile Office server.

The Accela Mobile Office server receives requests from the Accela Mobile Office client, transforms the requests into GovXML format, then submits the GovXML requests to the Accela Automation application server. The Accela Mobile Office server receives GovXML responses from the Accela Automation application server, transforms these responses into a format for the Accela Mobile Office client device, and submits these transformed responses to the Accela Mobile Office client.

The Accela Mobile Office server supports multiple users and multiple agencies at the same time. The Accela Mobile Office server uses a local database (Oracle or MS SQL Server) for storing configuration values, such as the location of multiple application servers.

Accela IVR

Accela IVR provides a voice response interface to execute Accela Automation business processes. Accela IVR includes recognition of selected voice inputs and keypad inputs from a touch tone telephone. Accela IVR responds with text-to-speech, custom text-to-speech, or custom audio file voice prompts and voice messages .

The Accela IVR server provides a web interface to administer the Accela IVR. The Accela IVR server integrates a third-party voice system (not shown) with an Accela Automation application server to deliver two-way voice messaging with end users through their phone. The Accela application server to processes requests from the Accela IVR server and provides responses to the Accela IVR server.

Accela Mobile Apps, Mobile Cloud Server, and Mobile Gateway

Accela provides five apps that run on smartphones and tablets.

- Accela Civic Hero
- Accela Analytics
- Accela Code Officer

- Accela Inspector
- Accela Work Crew

The Accela apps access a subset of core Accela Automation functionality that Accela targets for specific business needs. Accela apps interface with the Accela Automation platform through the Accela Cloud Server and Accela Mobile Gateway. The Accela Cloud Server hosts a website for administering and creating mobile apps, and provides limited functionality for processing public user requests. The Accela Automation platform processes most of the requests from the Accela mobile apps. The Accela Mobile Gateway provides proxy functionality for requests and responses to and from the Accela Automation platform.

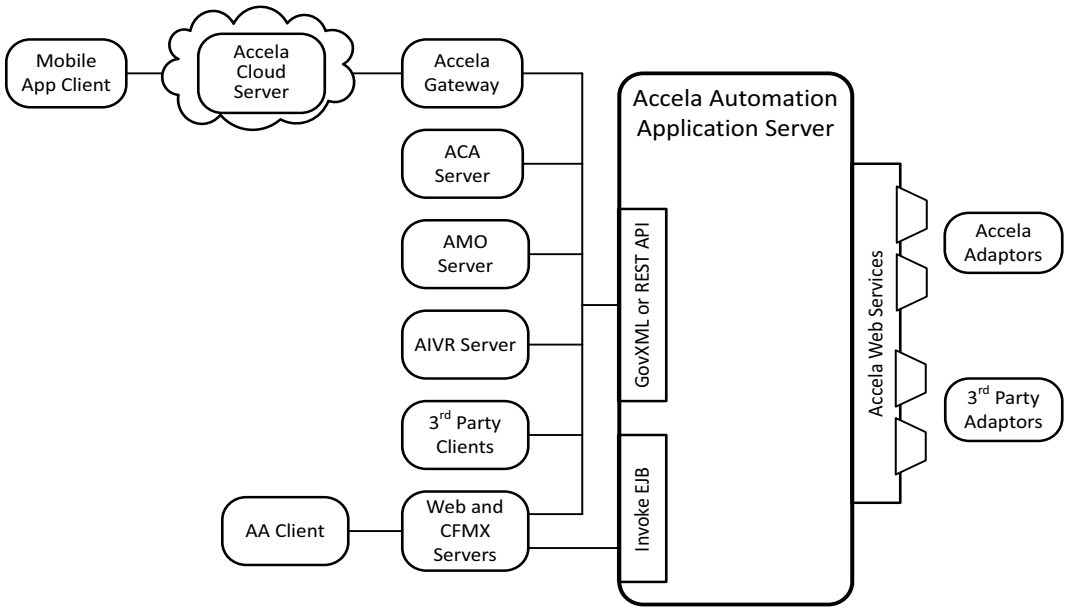
Accela GIS

Accela GIS (Geographic Information System) leverages geospatial data to provides a geographic view of all land-use, zoning, and infrastructure information associated with agency records, such as parcels, permits, inspections, plans, assets, work orders, and service requests. Users access Accela GIS maps through other system clients (Accela Automation, Accela Mobile Office, Accela mobile apps, and Accela Citizen Access). The Accela Automation application server processes map request from the system clients and delivers map data from the GIS server to the system clients.

Interfaces

Accela client products and third-party products integrate with the Accela Automation application server through the Accela GovXML API, the Accela REST API, one of many provided web services, or a pre-built adapter. Figure 2: Accela Automation Interfaces illustrates these interfaces. GovXML uses an XML based request and response paradigm, and an HTTP based service, that communicates with the Accela Automation application server. Accela external web services use a standard request/response web service architecture. The web and CFMX servers also invoke Enterprise Java Beans (EJBs) on the Accela Automation application server.

Figure 2: Accela Automation Interfaces



NETWORK TOPOLOGY

The number of concurrent Accela Automation users provides the single best criterion that predicts system load (number of transactions, searches, and so forth). This section provides sample topologies for small (less than 50), medium (50 to 200) and large (more than 200) numbers of Accela Automation users.

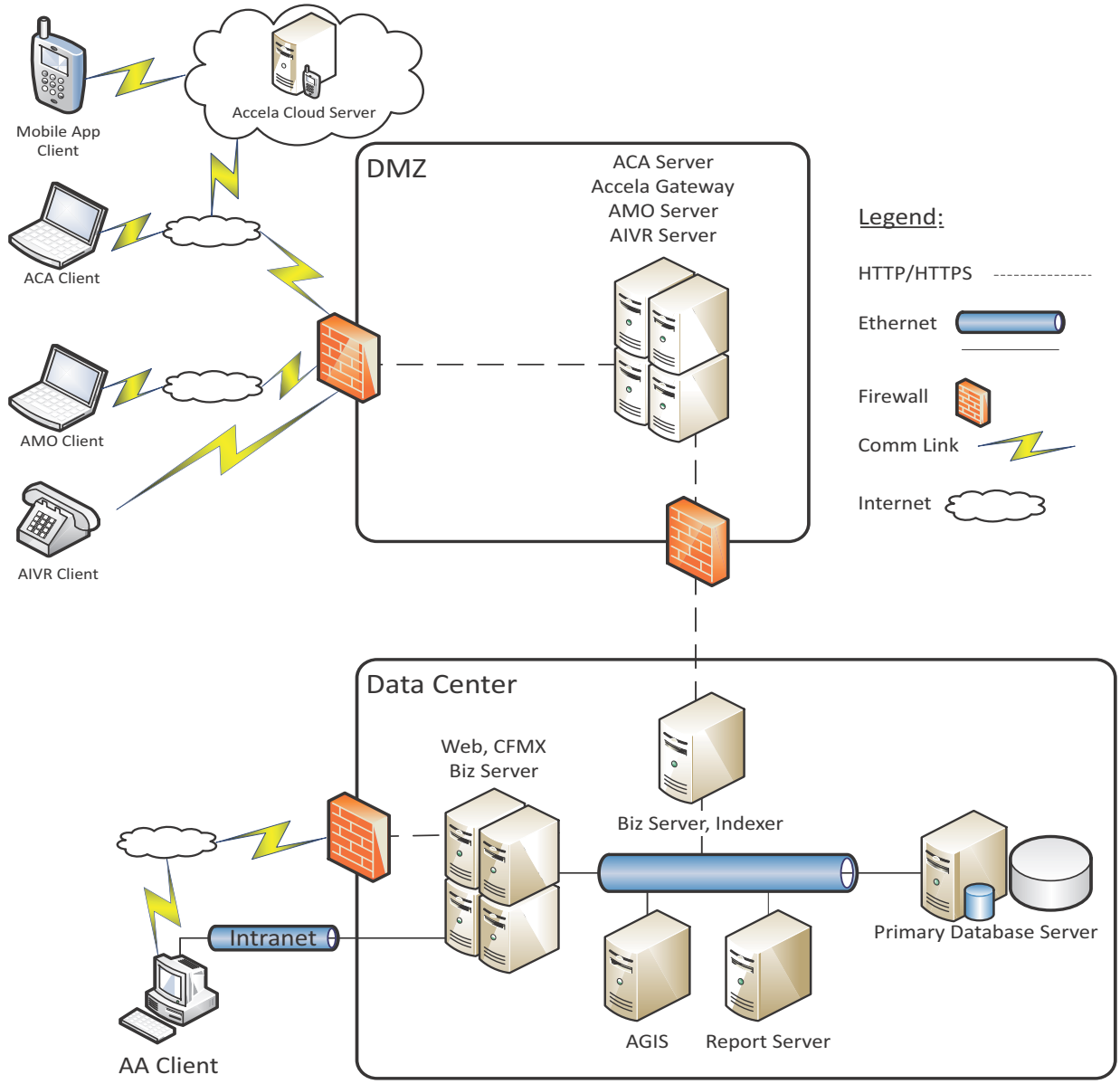
> **Note:** *Transactions that originate from public users (Accela Citizen Access or Accela Mobile apps users) create the same load on the Accela Automation back end as similar transactions that originate from Accela Automation users.*

Topics

Small Size Sample Topology

Figure 3: Small Deployment shows a sample consolidated deployment for agencies with less than 50 named users. In this configuration, the Accela Citizen Access server, Accela Gateway, Accela Mobile Office server, and Accela IVR server reside on a single host in the DMZ. The Accela Automation application server and web server reside on the same host. An additional Accela Automation application server handles request load and response load from the DMZ-hosted servers.

Figure 3: Small Deployment



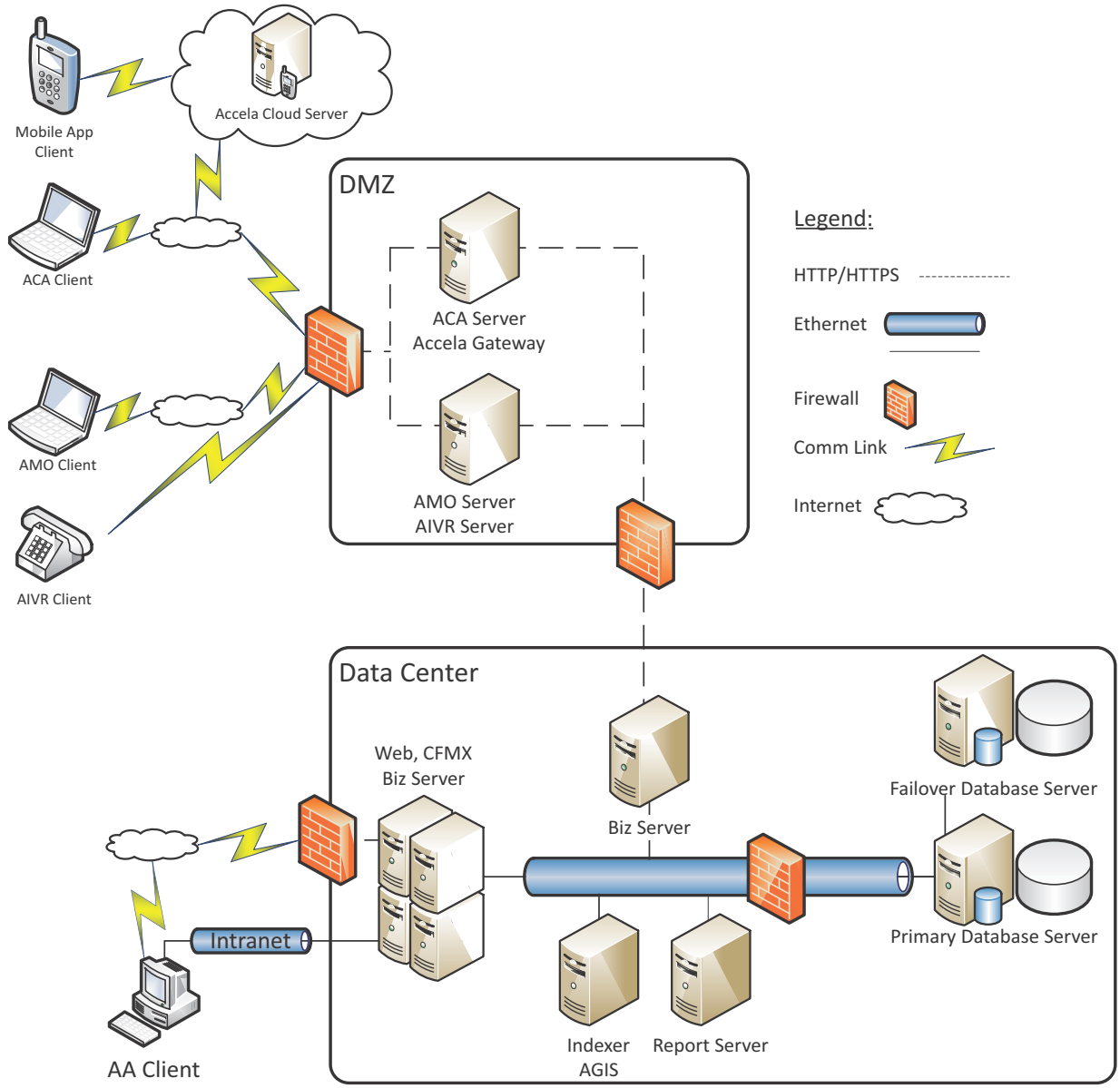
Medium Size Sample Topology

Figure 4: Medium Size Deployment Topology shows a sample typical deployment for agencies with between 50 and 200 named users. In this configuration, use a separate host for the Accela Citizen Access server and Accela Gateway, and a separate host for the Accela Mobile Office server and Accela IVR server. This topology partitions the increased load, from the additional users of add-on products, to two different hosts.

For medium size deployments, deploy the index server on the Accela GIS host so that the application server, that services the DMZ servers, can dedicate more capacity to the increased level of requests and responses from the DMZ server hosts.

For medium and large sized deployments, implement failover at the database level.

Figure 4: Medium Size Deployment Topology



Large Size Sample Topologies

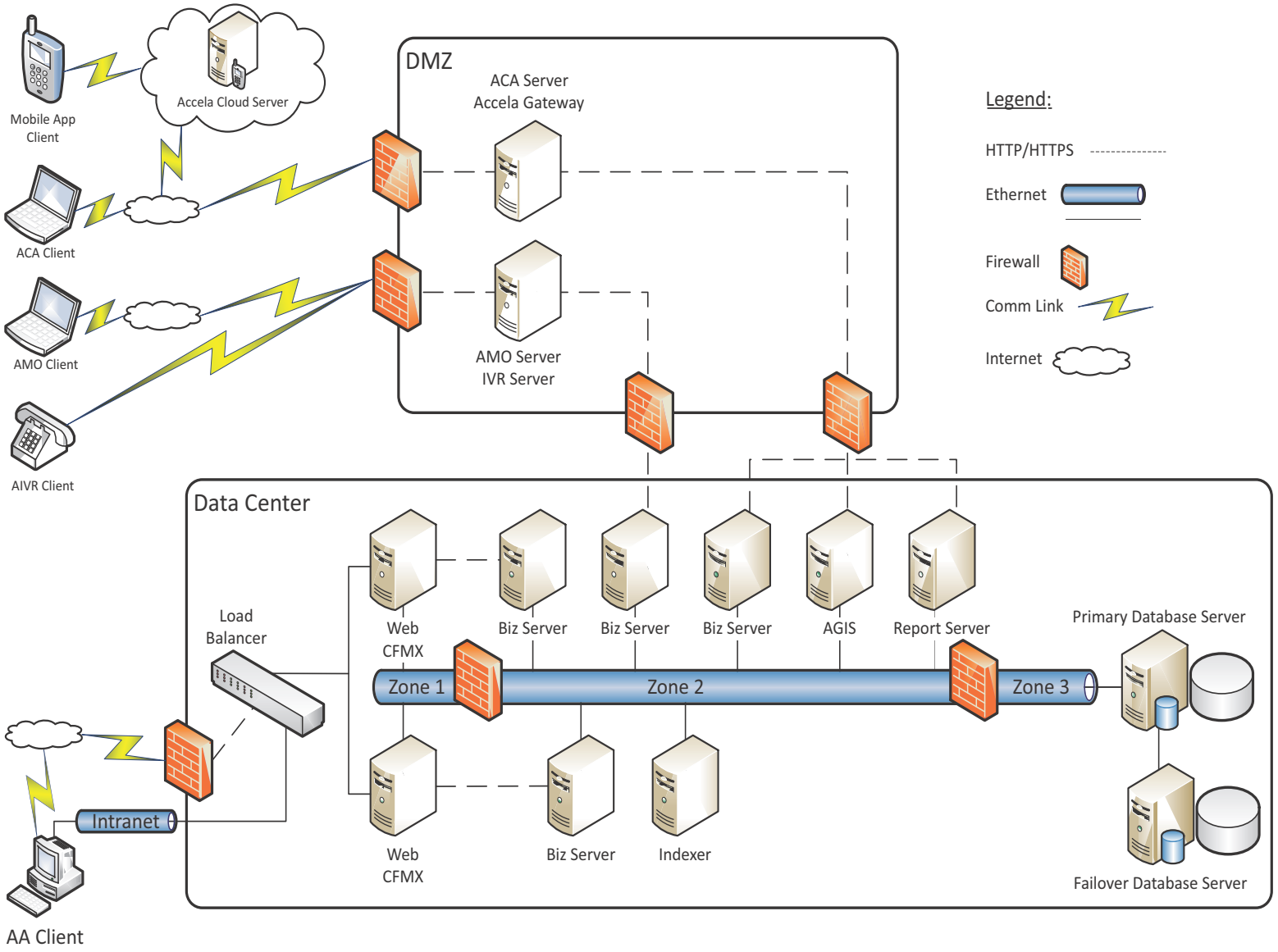
Figure 5: Large Size Deployment Topology, Option 2 shows a sample deployment topology for agencies with more than 200 named users. In this configurations, use a separate application server host to service requests and service responses that come from the additional users of add-on products and each of the two hosts in the DMZ.

To handle the increased load from Accela Automation users, use a load balancer with duplicate hosts for the Accela Automation application server and web server. You can also use two different hosts for the Accela Automation web server and application server for each of the load-balanced pathways.

The ADS server (not shown) requires a database instance while the report server shares the Accela Automation database instance. You can consolidate these optional components on one or more physical (or virtual) hosts, depending on the requirements of your deployment. Figure 5: Large Size Deployment Topology, Option 2 on page 13 shows the optional components on separate physical hosts for clarity only. You can partition your data center network into zones, depending on your business requirements.

Note: *Add-on products use a different deployment topology for the client.*

Figure 5: Large Size Deployment Topology, Option 2



HOST REQUIREMENTS

Topics

Software Requirements

See the applicable version of the *Accela Automation Release Notes* for the operating systems and third-party products required to run on the Accela system hosts.

Hardware Requirements

Table 1: Host Machine Requirements lists the nominal sizing requirements for the host machines comprising an Accela system deployment.

Table 1: Host Machine Requirements

Host Name	Installed Software	Processor	RAM	Hard Drive	Network	Notes
Clients						
Accela Automation Client	• Silverlight Run-Time Edition • PDF Viewer/Writer, Adobe Reader (optional), Adobe Acrobat X Pro (required) • JRE (Optional) • Microsoft Windows Internet Explorer	Pentium dual core processor, 3GHz	1 GB	2 GB free space	Internet connection	
Accela Mobile Office (client)	• Microsoft .NET Framework • ArcGIS runtime engine, Network extension for ArcGIS runtime engine[1] • Crystal Reports • MS SQL Reporting Server	Intel Pentium or Intel Centrino dal core processor	2 to 4 GB	40 GB	Wireless card (not necessary if AMO client use is offline/store and forward mode)	Devices tested: • Motion Computing J3500 • Motion Computing F5v • Panasonic Toughbook CF-19 and H1 • Dell E6400 XFR • Asus Eee Slate EP121
DMZ Hosts						

Table 1: Host Machine Requirements (Continued)

Host Name	Installed Software	Processor	RAM	Hard Drive	Network	Notes
Accela Mobile Office Server	• Microsoft .NET Framework • Microsoft SQL Server[2] • SSL Certificate (optional) • Microsoft IIS	Multicore Intel Processor (single or multisocket). 2vCPUs if virtualized.	6 GB	RAID-1 (or better) storage with 10 GB free space	1Gbps NIC	
Accela Citizen Access Web Server	• Microsoft .NET Framework • SSL Certificate (optional) • Microsoft IIS	Multicore Intel Processor (single or multisocket). 2vCPUs if virtualized.	6 GB	RAID-1 (or better) storage with 8 GB free space	1 Gbps NIC	Additional servers for load balancing and high availability if needed
Accela IVR Application Server	• Jboss integrated with Tomcat, Java EE SDK[1] • Voxeo Prophecy Server Prophecy VoiceXML, Premium ASR/TTS Or Nuance	Multicore Intel Processor (single or multisocket). 2vCPUs if virtualized.	6 GB	RAID-1 (or better) storage with 20 GB free space	1Gbps NIC	Additional servers for load balancing and high availability if needed
Accela Mobile Gateway Server	• Microsoft .NET Framework • Microsoft IIS • ASP.NET State Service	Multicore Intel Processor (single or multisocket). 2vCPUs if virtualized.	6 GB	RAID-1 (or better) storage with 8 GB free space	1 Gbps NIC	
Data Center Hosts						
Accela Automation Web Server	• Jboss integrated with Tomcat, Java EE SDK[1] • Railo open source CFMX engine (alternative to Adobe ColdFusion Enterprise Edition) • Adobe ColdFusion Enterprise Edition	Multicore Intel Processor (single or multisocket). 2vCPUs if virtualized	8 GB	RAID-1 (or better) storage with 8 GB free space	1 Gbps NIC	Additional servers for load balancing and high availability if needed
Accela Automation Application Server	• Jboss integrated with Tomcat, Java EE SDK[1] • SSL Certificate (optional)	Multicore Intel Processor (single or multisocket). 2vCPUs if virtualized	8 GB	RAID-10 storage with 20 GB free space	1 Gbps NIC	
Accela GIS Application Server	• Silverlight Run-Time Edition • Microsoft .NET Framework • SSL Certificate (optional) • Microsoft IIS • Arc SDE • Esri ArcGIS Engine • Esri ArcGIS Server Network Extension • Esri ArcGIS Server Standard; Esri ArcGIS Server Enterprise Advanced	Multicore Intel Processor (single or multisocket). 2vCPUs if virtualized.	6 GB	RAID-1 (or better) storage with 20 GB free space	1 Gbps NIC	Additional servers for load balancing and high availability if needed

Table 1: Host Machine Requirements (Continued)

Host Name	Installed Software	Processor	RAM	Hard Drive	Network	Notes
Accela Index Server	• Jboss integrated with Tomcat, Java EE SDK[1]	Multicore Intel Processor (single or multisocket). 2vCPUs if virtualized.	8 GB	RAID-1 (or better) storage with 8 GB free space	1 Gbps NIC	
Accela Report Writer Server	•	Multicore Intel Processor (single or multisocket). 2vCPUs if virtualized.	8 GB	RAID-1 (or better) storage with 8 GB free space	1 Gbps NIC	
Accela Document Services Server	• Jboss integrated with Tomcat, Java EE SDK[1]	Multicore Intel Processor (single or multisocket). 2vCPUs if virtualized.	8 GB	RAID-1 (or better) storage with 8 GB free space	1 Gbps NIC	
Database Server	• Oracle • Solaris[2] • Microsoft SQL Server	Multicore Intel processor w/ large (preferably multisocket) processor cache	16 GB	• Oracle: RAID-10 storage sufficient to hold historical data and new data. • Microsoft SQL Server:Raid-10 storage for database log files sufficient to hold peak log file generation rate.	1 Gbps NIC (teamed aggregates recommended)	Use as many disk spindles (minimum 8) as possible so that disk I/O is not a bottleneck.

[1]Provided by installer.

[2]See vendor information about supported environments.

[3]AMCA client requirements are the same as ACA client requirements with the addition for AMCA of Smartphone access using one of the following: BlackBerry OS 4.x or newer, iOS 3.1.x or newer, or IE9 Mobile 9.

[4]Accela Automation Client should be Silverlight 4 to work with Silverlight Run-Time Edition 4.0.

[5]Accela Wireless client can only be .Net Framework 3.5 SP1, not 4.0.

[6]Accela GIS server supports Esri ArcGIS Mobile and ESRI ArcGIS Server Enterprise Advanced 10. Esri ArcGIS Mobile and ESRI ArcGIS Server Enterprise Advanced 10 are not required for Accela Wireless client.

[7]Accela IVR only needs part of it: Tomcat 6, Java 6; but does not need JBoss.

[8]Accela Wireless only supports J# 2.0.

Sizing JVM Memory Settings for Data Center Servers

Provide the following Java memory settings for 32 and 64 bit servers in the data center:

- 32 Bits: Java.init = 768MB, Java.Max = 1300MB
- 64 Bits: Java.init=1024MB, Java.Max=2600MB

Do not allocate more memory to the JVMs than half the physical server memory. Allocate 3 GB of memory for each Accela Automation service. Scale up the system by adding additional servers with load balancers.

NETWORK PORTS

Accela Automation implements standard web communication protocols (HTTP/HTTPS, SSL, and so forth). Use the commonly available communication speed, 1 Gbps for example, for your network communication speed.

Table 2: Accela Automation External Communication Ports lists default ports communication ports between external Accela hosts comprising a system deployment.

Table 2: Accela Automation External Communication Ports

Component	Example\Default Port Values	Notes
ColdFusion MX web server	• HTTP: 80 • HTTPS: 443 • JBoss port bind base: 3 • SMTP mail server: 25	Note 1
Web server	• HTTP: 80 • HTTPS: 443 • JBoss port bind base: 3	Note 1 Note 2
Application server	• JBoss port bind base: 3 is preset	Note 3
Index server	• JBoss bind port base: 3	Note 1
Report server	• HTTP: 80 • JBoss port bind base: 3	Note 2
Report server with Oracle database	• DB: 1521	
Report server with MS SQL Server database	• DB: 1433	
Oracle database server	• DB: 1521	
Jetspeed Oracle database server	• DB: 1521	
MS SQL Server database server	• DB: 1433	
ADS server	• HTTP: 80 • JBoss bind port base: 22	Note 1
ADS server with Oracle database	• DB: 1521	
ADS server with MS SQL Server database	• DB: 1433	

Table 2: Accela Automation External Communication Ports

Component	Example\Default Port Values	Notes
Accela Mobile Office server	DB:1433	
Accela Citizen Access server	App server:*3080 or 3443.*	
Accela IVR server	Tomcat: 8080 Tomcat shutdown: 8005. App server: 3080	Note 4
Accela Gateway server	• HTTPS: 443	Note 5
Accela GIS server	9080 or 3080	

- Note 1: Port Bind Base is the base number for all other ports except HTTP and HTTPS ports. The value should typically be a single-digit or double-digit between 1~65 (such as 2, 3, etc.), and becomes the 'thousands' prefix for all other pre-defined values. The 'Port Bind Base' concept applies to the setup of other Accela products. Each Accela product if installed on the same server should have a unique base.
- Note 2: If the server is on the same host as the application server, they have the same IP address, use a different HTTP port number and HTTPS port number from the ones used for the application server (Setting Up Multiple-Homed Servers on page 19).
- Note 3: Application server clients specify port 3080 as the default port for communicating with the application server. Reserve JBoss binding port base 3 for the application server.
- Note 4: Use unique port numbers for multiple Tomcat instances.
- Note 5: Accela Mobile Gateway can support multiple application servers. Each supported application server uses a different port.

Table 3: Internal Communication Ports lists internal communication ports between the Accela Automation application server and other system servers.

Table 3: Internal Communication Ports

Ports	Servers
1777 3080 3083 3093 3098 3099 3443 3444 3445 3446 3873 5001	CFMX, Web, Index, Other application servers

Setting Up Multiple-Homed Servers

Best practices prescribe installing Accela Automation using a multi-homed configuration. Multi-homed describes a computer host that has multiple IP addresses to connected networks. You physically connect a multi-homed host to multiple data links that can be on the same or different networks.

To install multiple Accela products on a single physical server, the recommended configuration is to set up multiple-homed environment on that server. IT professionals accomplish this by setting up multiple IP addresses. Each Accela service requires a unique TCP/IPv4 address.

Installing the Database

Accela Automation requires an existing Oracle or MS SQL database server and database (refer to the database documentation to set up your database). Ensure that your database works well. Check the network connections and driver connections. For more information on the database installation and related preparation work, please refer to the respective database section below.

Installing Oracle

While installing the Oracle database server software, or during post installation, choose to install one empty database (SID). When you install one empty SID, users can own the SYS account and password.

The oradata directory needs to have at least 2G for a new Accela database with no converted data.

Installing MS SQL Server

Create a user account with SYSADMIN role and specify the user's default database as the master.

The MSSQL residing location (e.g. C:\Program Files\Microsoft SQL Server\MSSQL\Data) need to have at least 2G disk space for storing data files.