



American Data Group, Inc.
Integrated Enterprise Software
Solutions for Government

Application Architecture

Compatibility

Flexibility

Scalability

Web Technologies

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Application Architecture

Here at ADG, we are serious about our long-term commitments to our clients. This is why we made a strategic decision to choose a software platform that is not dependent on one proprietary operating system or hardware configuration. Rather we offer compatibility and flexibility to our clients with software that can be installed on your choice of hardware.

Let's face it, not everyone is a fan of every operating system out there and we don't want to trap our users into certain hardware or software platforms. Our systems are as flexible as we can make them. So, if you are looking for software that will run in a Windows environment, we can do it. If you are looking for a system that can run in a Linux environment, we can do that too. If your current system has you stuck on an expensive AS 400 server and you just know that there is no way to keep justifying that, we can help set you free.

Client Software

Data is presented to the end user at the desktop in one of the following formats:

HMTL

The entire user interface is via an appropriate desktop web browser. Current supported browsers are:

- Microsoft Internet Explorer
- Mozilla Firefox
- Apple Safari Browser
- Google Chrome
- Any other browser that supports W3C HTML and CSS standards

ADG issues guidelines on an occasional basis as to required upgrades to take advantage of bug fixes or new features in browser software.

- Browser must have Javascript enabled.
- Browser must have popup blocking disabled for the application host.
- ADG may require Java RT support for future functionality.

PDF

The client should have Adobe Acrobat Reader, or any appropriate alternative, installed on each workstation.

XLS

Spreadsheet data is presented as an XLS file. This can be opened using Microsoft Excel or any other application, such as Open Office, which allows importation of this data format.

Common Text Outputs

Data may be exported in common output formats such as Comma or Tab separated formats.

Hardcopy Output

Output may be sent directly to printers. Currently supported formats are:

- HP LaserJet and compatible printers that support the PCL language. Tray and copies selection is available at run-time.
- Plain text for line printer type operations.
- Multiple receipt printing languages, such as EPL and EPOS, are supported, with support for functions such as check or document endorsement.

Client Operating System

Any client capable of running a modern web browser is acceptable. Known compatible systems include:

- Microsoft Windows products from Windows 7+.
- Linux desktop products, using any available browser.
- Apple OS X, using any appropriate browsers.

Notes

1. No client-side batch processing is performed. All batch jobs, including production of hard copy, are performed server side.
2. The application supports unlimited application sessions open on workstations. Each session works independently.
3. The minimum screen resolution supported is 1024x768, using standard fonts.
4. Use of a lower resolution or large fonts will work, but windows will not necessarily display without scrollbars.

5. Uses of ease-of-access tools are not impeded.
6. The Browser may be made available to the end user by normal or virtual desktops.
7. ADG may, with reasonable notice, specify a larger minimum desktop resolution.

Server Software

The server side portion of the ADG application suite is designed specifically to be vendor independent, allowing maximum choice of configuration and scalability. ADG can supply turnkey type installations for smaller operations, or integrate its software into numerous existing configurations when required. The following items are required, choosing one item from each group.

Web Server Software

The currently supported minimum platforms are as follows:

- Microsoft IIS running on Windows 7+ client for a small system installation.
- Microsoft IIS on Windows server 2008+.
- Apache 2 running on a supported Linux platform. Linux platforms should be server-centric, such as Red Hat, Fedora, or CentOS.

Application Server Software

The system is normally configured with the web and application servers on the same physical machine. For very high throughput environments, multiple web/application servers may be installed, accessed via load-balancing configurations. In addition, a separate server may be utilized for batch processing.

Database Server Software

The application software is designed to be database vendor independent. The following DBMS are qualified and actively supported.

- Oracle Version 11g +
- Microsoft SQL server versions 2008 and 2012 +
- MySQL Version 5.5 +
- IBM DB2 Version 10 +

Notes

1. The database may normally reside on any platform supported by the database manufacturer. For lower throughput applications the database may reside on the same physical machine as the web/application server.
2. Databases may require manufacturer supplied add-ons.
3. MySQL does not normally require commercial licensing.
4. The customer must license commercial databases appropriately, especially with regard to client connectivity from separate web servers.
5. Systems management, tuning and backups of commercial database products are normally the responsibility of the customer.

Virtualization

The application will perform as expected when installed on a virtual machine. Generally, VM will have 3-7% loss in CPU performance, 3-7% loss in memory performance, and 5-25% in Disk I-O performance over a physical server.

Scalability

The table in Appendix 1 shows sample system scalability. The database selections are purely for example, and are not intended to suggest any limit in performance or functionality, nor are they intended to recommend or endorse any specific manufacturers product or configuration.

Computing Hardware

Client

Client computing requirements are low, consistent with running a modern web browser. The current **lowest known configuration** in a live environment is Windows XP workstation / Mozilla Firefox / 2MB memory.

Server

Server Hardware specifications depend on estimated load and database manufacturer recommendations.

The current **minimum configurations** in a production environment are:

Windows 2008R+ Server / 16GB memory / Xeon processor Quad Core Processor / 2MB L2 Cache / 4 MB L3 Cache / 350 GB Disk Drive

Citizen Link Applications

For security purposes, ADG recommends that Citizen Link applications are installed on a separate server, placed in a network DMZ. The hardware requirements for the server are low, based on the low number of page hits. The following requirements must be met:

- The firewall will need to port forward port 443 (https) to a system in the DMZ (Citizen Link Server) where the application will be installed. The firewall will need ports 3306 and 80 open between the DMZ system and the ADG application server. The DMZ operating system may be Server 2008R2, 2012R2, Windows 10, or Linux. Minimums include 8GB Memory, 200 MB Disk Space

--OR--

- Firewall will need to port forward 443 (https) to the ADG Application Server which will also function as the Citizen Link Server.

Additionally –

1. The Citizen Link Server (either DMZ or ADG Application Server) will need an SSL Certificate installed.
2. DNS entries adjusted so the DNS used for the SSL Certificate and Citizen Link Server is found by the internet.
3. The client's website home page to be updated with the Citizen Link webpage link/button to point to the Citizen Link Server DNS/URL.

Network Hardware

Client

- The average page size delivered to the client is in the 10-25kb range.

Server

- The minimum recommended connection speed between Web/Application and Database servers is 1GB. Database manufacturers may specify higher requirements.

Systems Integration

Database Accessibility

- By default, ADG makes the entire content of the database accessible to users with the necessary query tools such as ODBC/JDBC and manufacturer specific tools.
- Restrictions may be placed using normal database management tools.
- Certain fields containing sensitive data may not be readable outside of the normal user environment.
- The schema of the database is written using context appropriate, English language terminology.
- ADG provides a simple browser based query tool with access to the data schema. This may be made available to selected users, and shares password protection with the main application.

Interface Programming

In order to protect the integrity of the data in the database, ADG provides on-request access to specific areas of the database via an API of the customers choosing. Existing methods currently include:

- XML interchange via POST/GET
- SOAP services
- FTP interchanges

Standards include:

- Various Federal document interchange standards
- Various State document interchange standards
- Commercial standards such as MultiSpeak

In addition, data may be provided in a number of formats for automated batch loading into the system.

Appendix 1

The following table shows sample system scalability. The database selections are purely for example, and are not intended to suggest any limit in performance or functionality, nor are they intended to recommend or endorse any specific manufacturers product or configuration.

Users, indicates the number of logged in users, not open sessions.

Users	Database	Configuration
1	MySQL	Windows 7 Workstation/IIS
1-100	MySQL	Single Linux server running both Apache 2 and Database
	MS SQL Server	Single Windows 2008 Server running both IIS and SQL Server database
Over 100	MySQL	1. Linux Server running Apache 2 2. Linux Server running Database 3. Windows 2008R+ Web/AppServer
	MS SQL Server	1. Windows 2008R+ Web/AppServer 2. Windows 2008R+ Database Server
Over 500	Oracle 11	Multi-processor Linux Web/App server running Apache 2 HPUX database server Separate Linux Server For Batch Processing.
Over 1000	IBM DB2	Multiple Multi-processor Windows 2012 Web/App Servers IBM Z Series server