



printLogic
Operational White Paper

Revised: May 20, 2010



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Introduction

printLogic is a batch printing and metadata stamping integration for Matrix which does not require opening or viewing documents in order to print them. One of the most important aspects of **printLogic** is the ability to metadata stamp documents based on Administrative parameters and control, removing the individual user from the process. With these constraints in place, **printLogic** helps organizations comply with virtually all Regulatory Agencies.

The concept for **printLogic** has grown from over several years of MatrixOne field implementation experience and seeing the need for such a process at nearly every client Site. In addition to compliance, **printLogic** provides a simple, powerful, and fast method of retrieving, printing, and metadata stamping documents from within the Matrix database.

printLogic provides four convenient ways to print files from Matrix. Each method is described below:

- 1) **Object Method** – When a user has an object in context, or from one of the other locations (the Search Results page, Collections, etc), it is a simple matter to engage **printLogic** thereby creating a list of objects to print. **printLogic** prints and metadata stamps all allowable files (as determined by the administrator) within the selected objects. Users can add to the object list, creating a batch, by searching for additional objects or placing objects in context. The ability to build a complex batch list is referred to as the “Progressive Add” feature. This method is typically used by individuals requiring documents from several related objects at one time.
- 2) **File Method** - Instead of printing all allowed files from the selected object as determined by Administrative parameters, **printLogic** provides the "File Method" from which a user can print individual file(s) from within the selected objects. The files displayed for printing are pre-determined based on the administrator "rule set" as defined within the **printLogicAdmin** utility. This method is primarily used by individuals interested in printing a few specific files.
- 3) **List Method** – This option allows users to enter a predetermined number of Objects (Type, Name, and Rev) into a scrollable list for printing. The Object Type can be entered directly or selected from the standard Matrix Type Selector window. The length of the list is under administrative control so as to carefully limit the total number of objects (and therefore the files within these objects) which can be printed at one time. This method is typically used by individuals who know specifically which objects contain the documents they require and do not wish to search through the database. Individuals working on a shop floor could use this option, for example.
- 4) **CSV Method** – This option allows users to upload a pre-existing text file containing comma-separated values corresponding to the objects from which to print files. This is particularly useful for users who work with the same groups of files repeatedly, or who receive print request lists via other sources.

Component Structure of printLogic

printLogic is comprised of 2 main components and a companion component. These are all described below:

1) **printLogic Web components**

printLogic is compatible with all MatrixOne “Centrals” and comprised of a JPO and several JSP pages. In this way, **printLogic** is entirely server-based, so there is no client machine installation or maintenance of any kind. Additionally, adding the **printLogic** command to existing Toolbars and/or Menus is a simple task that can be automated from **printLogicAdmin** or manually from within Matrix Business. (Note that this refers to Matrix v10.5 or greater. Earlier versions may require additional steps.)

Users are presented with a pop-up web-based window with which they interact to perform the batch printing.

2) **printLogicAdmin**

The **printLogic** administration utility is a separate, stand-alone application which connects directly to the Matrix database. Through this utility all parameters used for printing, queuing and site management are controlled. As well, the **printLogicAdmin** application provides a point-n-click interface for creating metadata stamp “templates”. In addition to pre-programmed metadata, **printLogic** also uses a “shell” program. Administrators can write code within the shell, which is called by **printLogic** at print time. By passing into the shell program several parameters (Object ID, Zone, Line Number and Stamp Name), the administrator can retrieve virtually any metadata required. The metadata is passed back into **printLogic** for placement on the document when printed. **printLogicAdmin** also provides the ability to administer any **printLogic** Site Object defined within the Matrix database. The utility must be run from a Windows PC (Win 2000, XP, and Server 2003) which also has an Matrix Thick Client MQL installed, including a bootstrap file pointing to the current database.

3) **Companion component**

In addition to the 2 **printLogic** components, one more application is required. One license of Coastal Logic’s print spooling application **vueLogic** per server is used for applying metadata stamps and spooling files for print. This application typically resides on any server that has the desired printers installed (local, network or web-based). Both **printLogic** and the print spooling application are UNC compatible, and can reside on separate networked machines/servers.

Matrix Schema Structure

printLogic uses it’s own contained schema constructs within Matrix and is not reliant upon the schema in use within the Enterprise. It is completely non-invasive to existing schemas, and it is fully compatible with the AEF schema.

Within the **printLogic** schema components, one Type is created and used for storing the parameters associated with the conversion process. This Type becomes the Site

Object. The user's Site is "echoed" as a **printLogic** Site Object within the Matrix database. This object contains all parameters required for printing including location of the print server (the print spooling application), stamp templates and web interface parameters.

Site Structure

printLogic works in conjunction with the Matrix concept of Sites. Typically, users within Matrix are designated to exist at a particular "Site" usually defined geographically. Because of this inherent structure, **printLogic** can take advantage of this distinction among users.

In addition to Site distinctions, **printLogic** works with the concept of print servers and print zones. Because of the flexibility of this concept, an enterprise can set up **printLogic** and the print spooling application in a variety of ways. In fact, the number of possibilities can grow exponentially.

Metadata Stamping Capabilities

printLogic provides the capability to stamp metadata onto documents at print time. The determination of whether or not to stamp a document is based on administrator set parameters and can be linked to Object Type, State or Format. The system administrator can make this determination using the **printLogicAdmin** utility.

The stamp is designed within **printLogicAdmin** in a point-n-click interface. The layout tools provide the ability to determine fonts, font sizes, colors, transparency, and specific location of all text. Twelve "banner" areas and one watermark area are available for stamping. Included within the layout tools are 12 standard, and 4 special metadata types which are evaluated at print time:

Type	Name	Revision	Owner
State	Policy	User	Filename
Time12/24	Date	Page	Totalpages
UserInput	Text	Image	Program

UserInput allows the user requesting the print(s) to input as many as 32 characters to be applied as a stamp at print time.

Text gives the admin the ability to add static text anywhere within the stamp layout.

Image allows the administrator the ability to include bmp, jpg or gif files within the Banner stamp zones (1 per zone, automatically scaled to fit 1" x 0.5")

Program is a special indicator used within the metadata stamp layout. Provided with **printLogic** is a shell program (printLogicReturn) within which an administrator can create a Matrix program of any complexity (JPO in Matrix 10.5+).

When this program is called via the **printLogic** JPO, a string of parameters are passed to allow for detailed metadata retrieval: Object ID, Zone (indicating the location on the page where the 'program' parameter was placed such as "TopLeft"), line number (within the specified zone, up to 4 lines) and Stamp Name (indicating

the stamp layout which is “calling” the program). The returned string of information will be used as the metadata stamp in place of the “Program” indicator.

This is a particularly powerful tool in that virtually any information within the database can be returned via this program and applied as a metadata stamp.

Role / Group Based Permissions

Users can be allowed or denied access to many of the functions within printLogic based on their Role and Group setting within Matrix.

The printLogicAdmin interface controls access based on Roles and Groups:

- An Object’s Type, State or Format.
- The four Print Methods available in the Web Interface (Object, File, List, CSV).
- User-added Stamp

Packetization

When a user requests the printing of several files (from any Print Method), they are given the option treating each file as an individual print, or combining all files within the request as a single “packet”. The entire print request is sent to the printer as a single spooled file. This ensures that all files will be printed in order and that another users’ print request cannot be inserted between the files.

Summary Page

Since batch print jobs can include files from a variety of Objects within the database, **printLogic** includes a “Summary Page” feature. Within the **printLogicAdmin** interface, administrators can construct a summary template which can include composite information about the print job. The composite information is evaluated at print time (similar to the metadata stamp) and along with “standard” information such as Time and Date, can also include information about the Objects (TNR, State, Revision) and Files (Filenames). Also available is the ability to include Images, such as a company logo. Summary pages can be included in Zip files (see below) in RTF format.

Zip Files

Under normal circumstances, the desired output will be directed to specified printer(s). However, the user also has the option of directing the files to a single zip archive (no stamping occurs) which is then placed onto a network drive. The user is then sent email with a link to the zip file. This capability is configured through the print spooling application **vueLogic**.

FCS File Handling

printLogic uses proprietary technology to handle print requests that originate from users based on FCS servers. Since the core **printLogic** code is a JPO running on the MCS server, file checkout requests all appear to originate from the MCS server. Within the Matrix ADK, there is no means to allow a checkout request to originate

from the MCS, yet pull the file from a local FCS store. We have developed proprietary technology which allows **printLogic** checkout requests to originate from the MCS server, yet actually checkout the files as though the request was originated from an FCS server. This eliminates the overhead of passing files back and forth between App servers (MCS and FCS) at checkout, and assures that the file(s) checked out will come from the FCS local Store.

Schema Traversal

Under normal print conditions, files are checked out only from the selected Objects and then printed. This means that related Objects and their files are ignored. Our "Schema Traversal" method allows the administrator to create complex methods to traverse the database Schema to locate related Objects and retrieve supporting files. Supporting files are printed directly, rather they are used by **vueLogic** to ensure that the primary file being printed is complete and accurate. For example, a user might print the top-level part file of a CAD structure. By itself, the file is incomplete because it references additional part and assembly files within the Schema. However, **printLogic** can be instructed to locate the related parts and assemblies and to checkout their files. The files are passed to **vueLogic** with the primary top-level file to be printed. When the top-level file is opened for printing within **vueLogic**, the additional referenced files are also automatically opened, completing the structure and allowing an accurate print.

Hardware Requirements

We recommend the following Windows based specs:

OS: Windows 2000 Pro/Server or XP Pro or Server 2003

RAM: 512mb or greater

HD: 100mb Hard Drive space or greater

CPU: Pentium 4, 1ghz or greater

Matrix: Thick client with MQL database connection

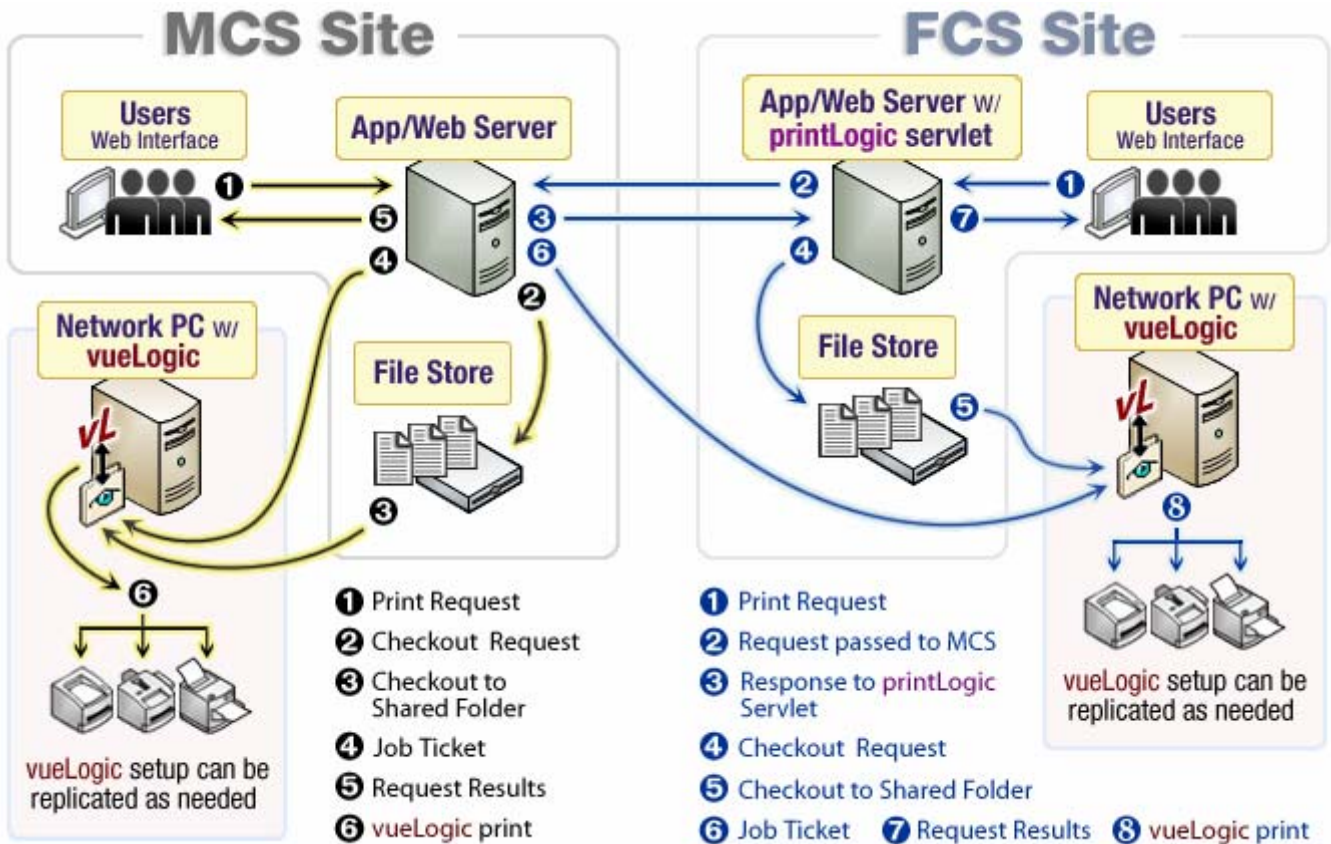
Server/Network Structure

Sites in Matrix are used by **printLogic** to resolve which print server will be used. Typically, users within Matrix are assigned to a "Site" that normally coincides with a distinct geographic location on the customer WAN. The Site usually has its own Matrix Store containing the CAD files or documentation that will be printed.

printLogic can take advantage of this distinction among Users and Sites to support different customer configurations.

When more than one **printLogic** server is deployed, the use of Matrix Sites will ensure the conversion requests are handled by the appropriate **printLogic** server. Pertinent information about the Matrix file server is automatically added to the appropriate **printLogic** Server Object. This object manages the administrative print parameters after the print request is initiated.

The diagram below shows the basic structure and process flow for **printLogic**:

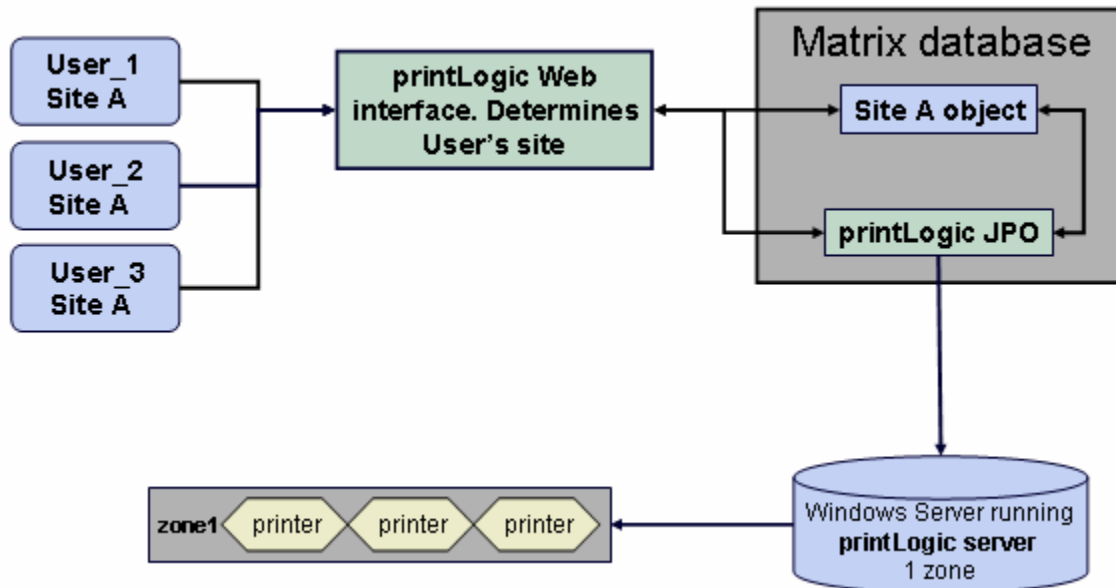


SAMPLE CONFIGURATION SCENARIOS

Single Site / Single Server / Single Zone Scenario

Under this scenario, an enterprise designates that all users belong to a single defined Site. Within that Site, there exists one server license of **printLogic** (and the print spooling application).

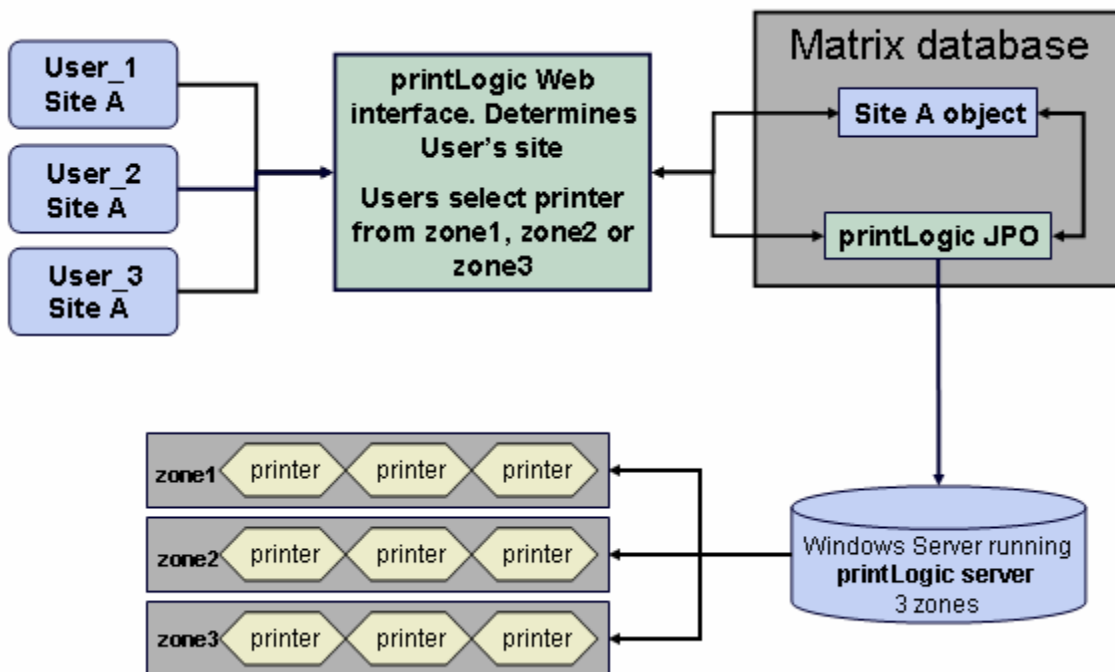
For example, assume Corporation A has defined 1 Site within Matrix, and has assigned every user to this Site. Corp. A is using a single license of **printLogic** installed at their Corporate Headquarters. The server installation of the print spooling application (and the PC on which it is installed) attaches to every printer required (all printers are contained within a single Zone). The **printLogic** web interface determines the user's Site (as defined within Matrix) and processes the file information to the associated Site Object. When User1 requests a print, they must also choose a printer contained within the Zone.



Single Site / Single Server / Multiple Zones Scenario

Under this scenario, an enterprise designates that all users belong to a single defined Site. Within that Site, there exists one server license of **printLogic** (and the print spooling application). Due to the flexibility of **printLogic**, the multiple printers connected to the single instance of the print spooling application can be broken into more than one print zone.

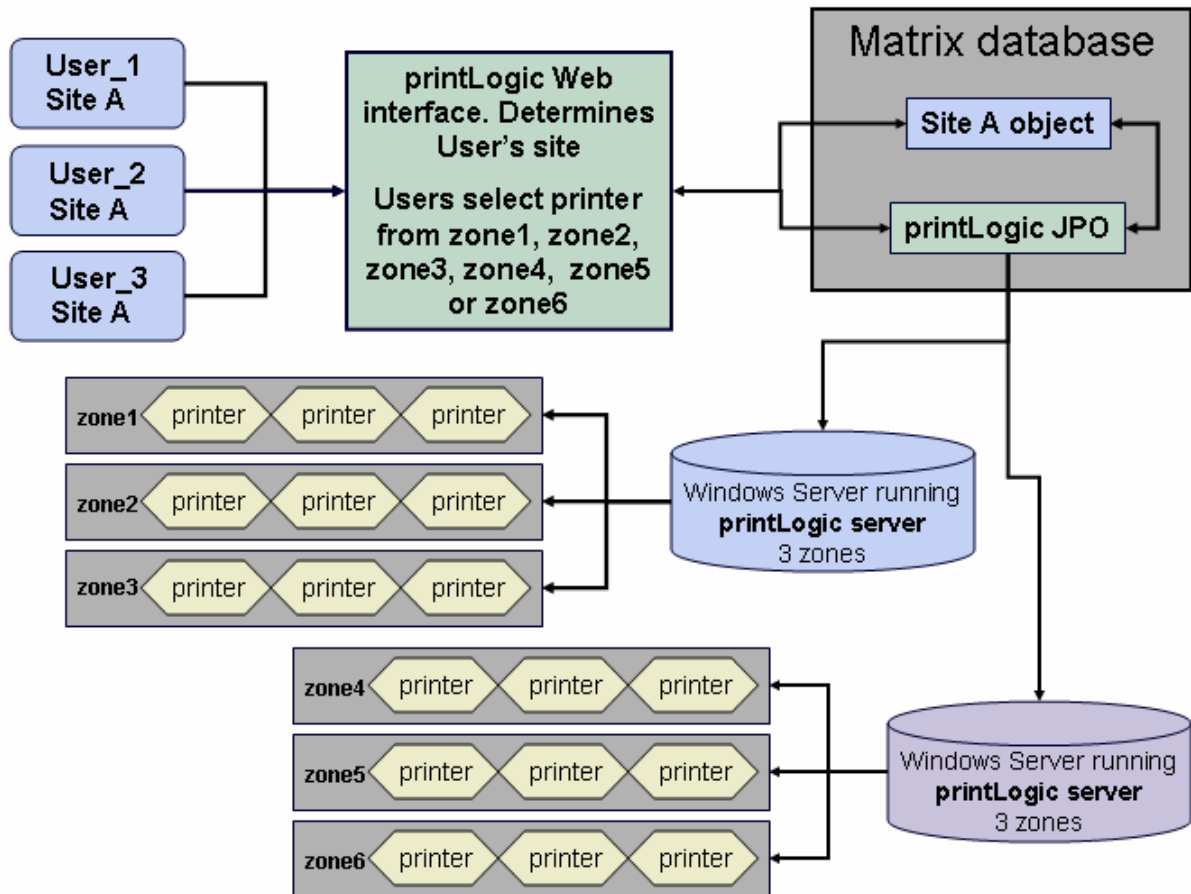
For example, assume Corporation B has defined 1 Site within Matrix, and has assigned every user to this Site. Corp. B is using a single license of **printLogic** installed at their Corporate Headquarters. The server installation of the print spooling application (and the PC on which it is installed) attaches to every printer required. However, the configuration control for the print spooling application can be separated into distinct 'zones' merely by editing the print spooling application configuration file. Perhaps each floor of a 3 story building would become a zone (zone1, zone2, and zone3). The **printLogic** web interface determines the user's Site (as defined within Matrix) and processes the file information to the associated Site Object. When User1 requests a print, they must first select from the available 3 zones, then select a printer referenced within that zone.



Single Site / Multiple Server / Multiple Zones Scenario

Under this scenario, an enterprise designates that all users belong to a single defined Site. Within that Site, there exists 2 server licenses of **printLogic** (and the print spooling application). Because of the flexibility of **printLogic**, the multiple printers connected to the single instance of the print spooling application can be broken into more than one print zone. As well, multiple installations of the print spooling application can be used, provided each PC connects to a separate group of printers.

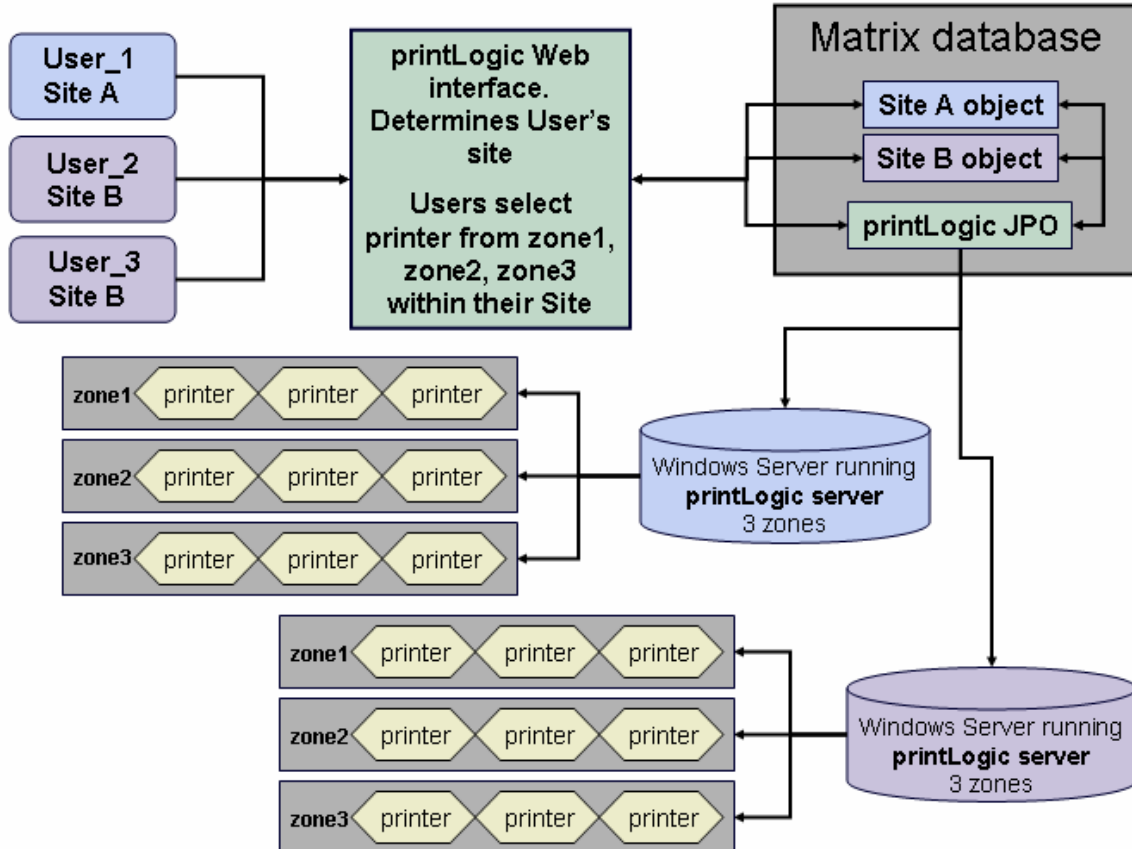
For example, assume Corporation C has defined 1 Site within Matrix, and has assigned every user to this Site. Corp. C is using multiple licenses of **printLogic** installed at their Corporate Headquarters, each on a separate PC connected to different groups of printers. The configuration control for each of the print spooling application installations can be separated into distinct 'zones' merely by editing the print spooling application configuration files. Assume there are 2 buildings, each with it's own installation of the print spooling application. Within each building, each floor would become a zone (bldg1zone1, bldg1zone2, bldg1zone3 plus bldg2zone1, bldg2zone2, bldg2zone3). The **printLogic** web interface determines the user's Site (as defined within Matrix) and processes the file information to the associated Site Object. When User1 requests a print, they must first select from the available 6 zones, then select a printer referenced within that zone.



Multiple Site / Multiple Server / Multiple Zones Scenario

Under this scenario, an enterprise designates that all users belong to one of 2 defined Sites. Within each Site, there exists one server license of **printLogic** (and the print spooling application). Due to **printLogic's** flexibility, the multiple printers connected to the single instance of the print spooling application can be broken into more than one print zone. As well, multiple installations of the print spooling application can be used, provided each PC connects to a separate group of printers.

For example, assume Corporation D has defined 2 Sites within Matrix, and has assigned every user to these Sites. Corp. D is using multiple licenses of **printLogic**, each on a separate PC connected to different groups of printers and each group at a different physical Site. The configuration control for each of the print spooling application installations can be separated into distinct 'zones' merely by editing the print spooling application configuration files. Assume there are 2 buildings at each Site, each with it's own installation of the print spooling application. Within each building, each floor would become a zone (bldg1zone1, bldg1zone2, bldg1zone3 plus bldg2zone1, bldg2zone2, bldg2zone3). The **printLogic** web interface determines the user's Site (as defined within Matrix) and processes the file information to the associated Site Object. When User1 requests a print, they will be limited to printing to the servers designated for their particular Site. Then, they must first select from the available 3 zones (each Site has zones, and each user can only see the zones defined for their Site), then select a printer referenced within that zone.



printLogic Functionality

Note: Functionality is subject to change with each new version of **printLogic**.

- ❑ Entirely server-based
- ❑ Multi-Site capable
- ❑ FCS (Enhanced File Collaboration Server) capable
- ❑ Multi-print server capable
- ❑ Extensive Role / Group based permission structure
- ❑ Single-page User web interface
 - Checkout access restricted (based on Matrix settings)
 - Optional "Packetization"
 - Optional "Summary Page"
 - Optional "Highest Released" State determination
 - Optional "AutoSize" paper selection printing
 - Optional redirect to Zip archive (no stamping)
 - "Default" printer settings per user
 - Eliminates user access to stamps
 - Immediate error notifications
- ❑ Point-n-click Administrator module – no programming required
 - Matrix login and privilege secure
 - Automatic multiple stamp usage based on Type, Format or State
 - Automatic determination of allowable Types, Formats and States
 - Automatic schema installation
 - Non-invasive, AEF compatible schema
 - Self diagnostics and repair
 - Modifiable web interface parameters
 - Format preference – eliminate duplicate printing of native and converted documents
- ❑ Point-n-click metadata stamping layout interface
 - 12 banner zones – multiple lines each plus 1 watermark zone
 - Font Style and size
 - Watermark color and transparency
 - Stamp layout preview windows – portrait and landscape
 - 12 Standard metadata types
 - 4 Specialty metadata types, including Image and Program
 - Program execution for custom metadata –stored in the Matrix database
 - Stores stamps in Matrix database to prevent user alteration
- ❑ "Packetization" of simultaneous print requests into a single print job
- ❑ Summary page of metadata and print job information created in real-time
- ❑ Schema Traversal for handling supporting files necessary for accurate prints
- ❑ Print allowed files by Object, File, List or CSV methods
- ❑ Print allowed files from "highest released" Objects
- ❑ Reorder batch lists of Objects and/or Files prior to printing
- ❑ Add Objects to batch via Search Results, Collections, Context and more
- ❑ Add Objects to batch via Toolbars/Menus as designed by your Administrator
- ❑ Supports over 450 file formats
- ❑ Import/Export functions for **printLogic** Schema and Business Objects