



Operational Whitepaper

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INTRODUCTION

printLogic is a batch printing and metadata stamping integration for Matrix which does not require opening or the viewing the documents. One of the most important aspects of **printLogic** is the ability to metadata stamp documents based on Administrative parameters and control, completely 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 5 years of MatrixOne field implementation experience and seeing the need for such a process at virtually 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 three 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) for printing into a scrollable list. The Object Type can be entered directly or selected from the standard 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 would use this option, for example.

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 currently integrated 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 within Matrix Business. (Note that this refers to Matrix v10.5 or greater. Earlier versions may require additional steps.)

2) printLogicAdmin

The 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**” (for Matrix v10.5+, **spoolLogic** for prior versions) is used for applying metadata stamps and spooling files for print. This application typically resides on any Server that is connected to the desired printers. Both **printLogic** and the print spooling application are UNC compatible, and can reside on separate networked machines/servers.

METADATA STAMPING

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
Time	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 allows the Administrator 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 1")

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+, TCL in prior versions).

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 "tl"), 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.

PACKETIZATION

When a user requests the printing of several files (independently or from within Objects), they are given the option treating each file as an individual print, or combining all files within the request as a single "packet". The benefits of packetization are: 1) 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 and 2) Page numbering which includes the "totalpages" metadata request is handled as though all files were one. For example, with packetization, 3 files of 4 pages each would print as a single job, and would be numbered "1 of 12", "2 of 12", etc. whereas without packetization their would be 3 spooled jobs, each numbered "1 of 4", "2 of 4", etc.

EFCS FILE HANDLING

printLogic uses proprietary methodology to handle print requests that originate from users based on EFCS servers. Since the core printLogic code is a JPO running on the RMI server, file checkout requests all appear to originate from the RMI server. Within the Matrix ADK, there is no means to allow a checkout request to originate from the RMI, yet pull the file from a local EFCS store. We have developed proprietary technology which allows **printLogic** checkout requests to originate from the RMI server, yet actually checkout the files as though the request was originated from an

EFCS server. This eliminates the overhead of passing files back and forth between App servers (RMI and EFCS) at checkout, and assures that the file(s) checked out will come from the EFCS local Store.

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.

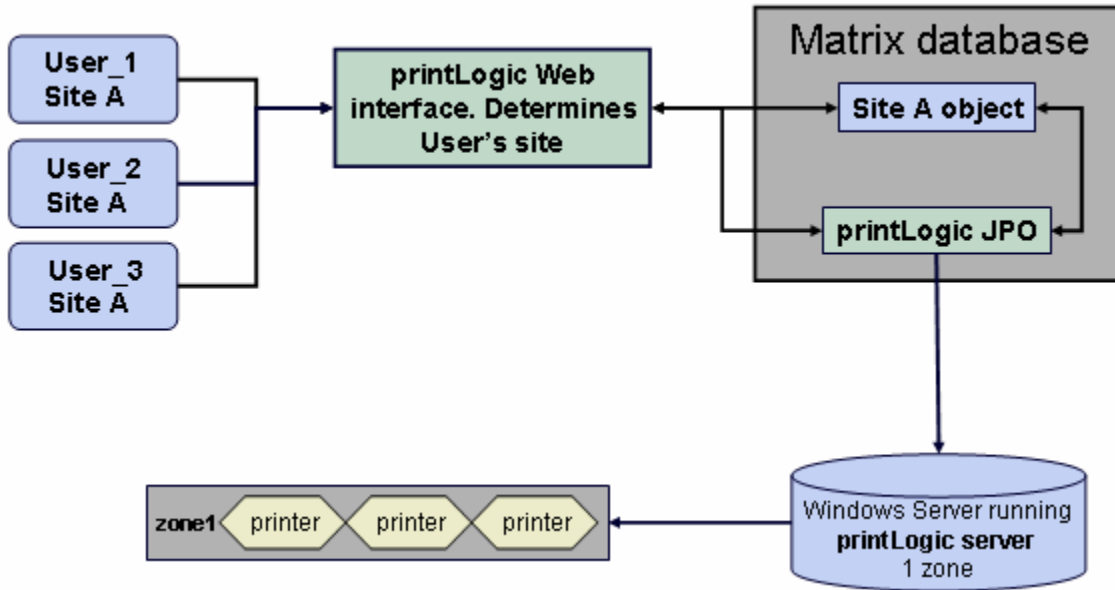
Within this discussion, a few of the basic possibilities will be shown, starting on the next page.

SAMPLE USAGE 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).

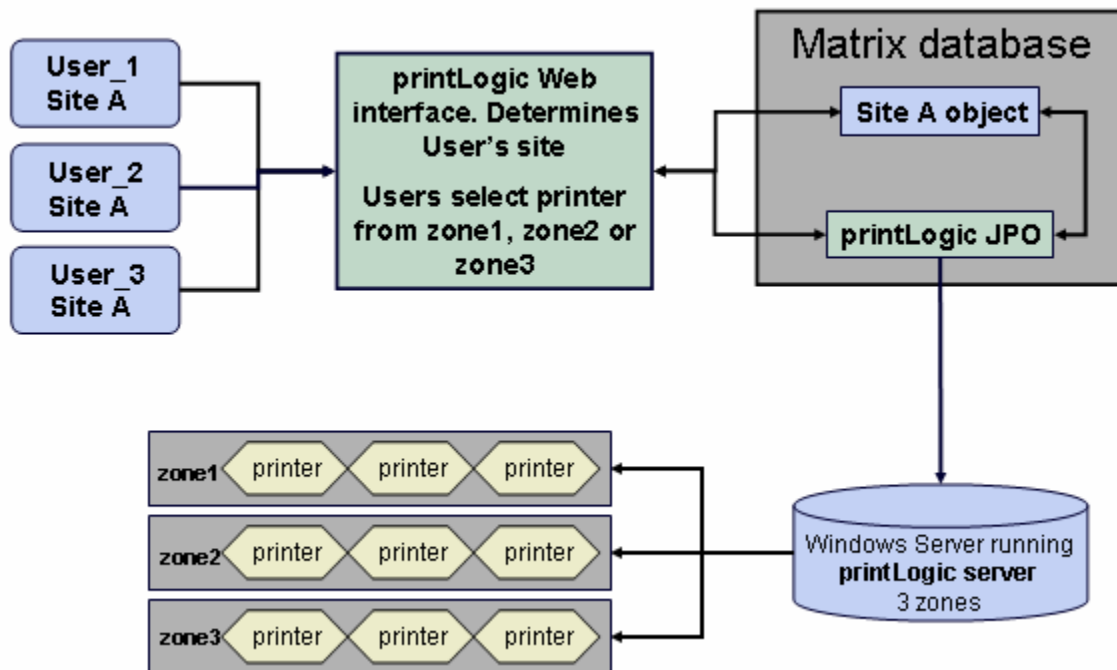
For example, assume Corporation A has defined 1 Site within Matrix, and has assigned every user to this site. Corp. A is using a single license of **printLogic** installed at their Corporate Headquarters. The server installation of the print spooling application (and the PC on which it is installed) 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.

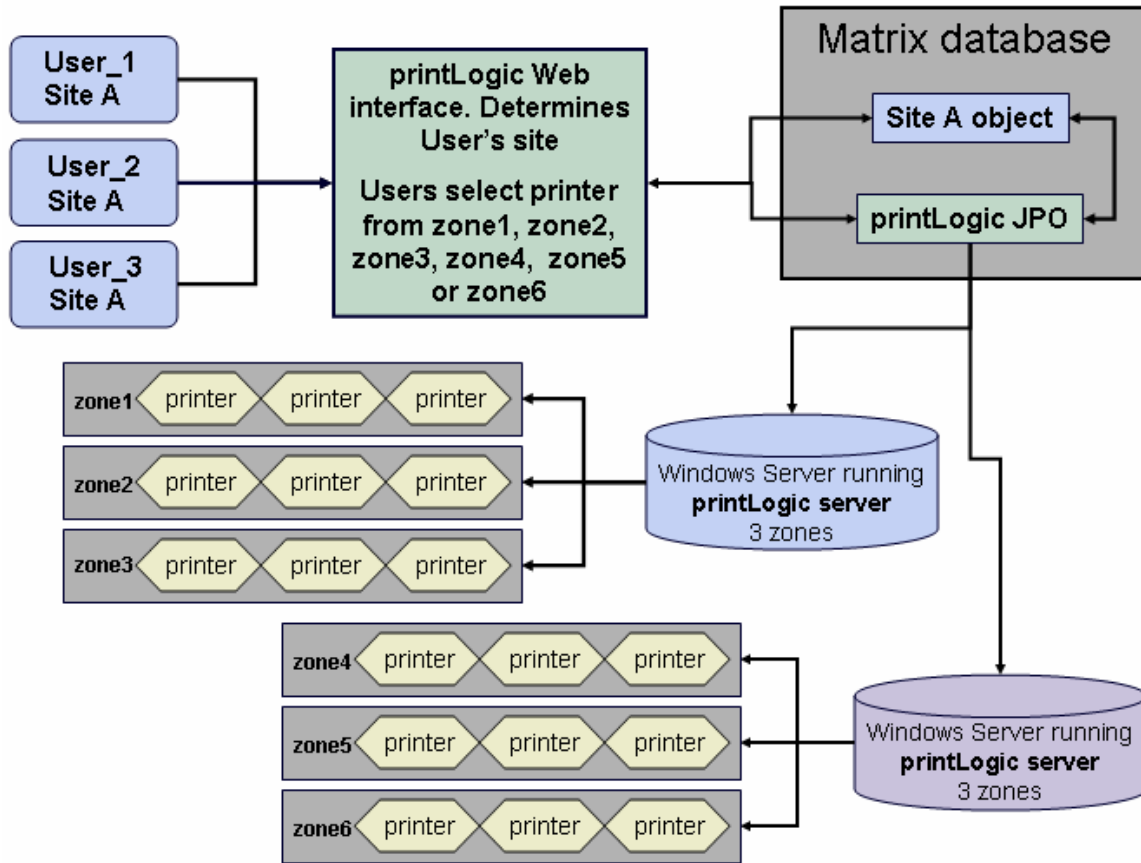
For example, assume Corporation B has defined 1 Site within Matrix, and has assigned every user to this site. Corp. B is using a single license of **printLogic** installed at their Corporate Headquarters. The server installation of the print spooling application (and the PC on which it is installed) 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). 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. As well, multiple installations of the print spooling application can be used, provided each PC connects to a separate group of printers.

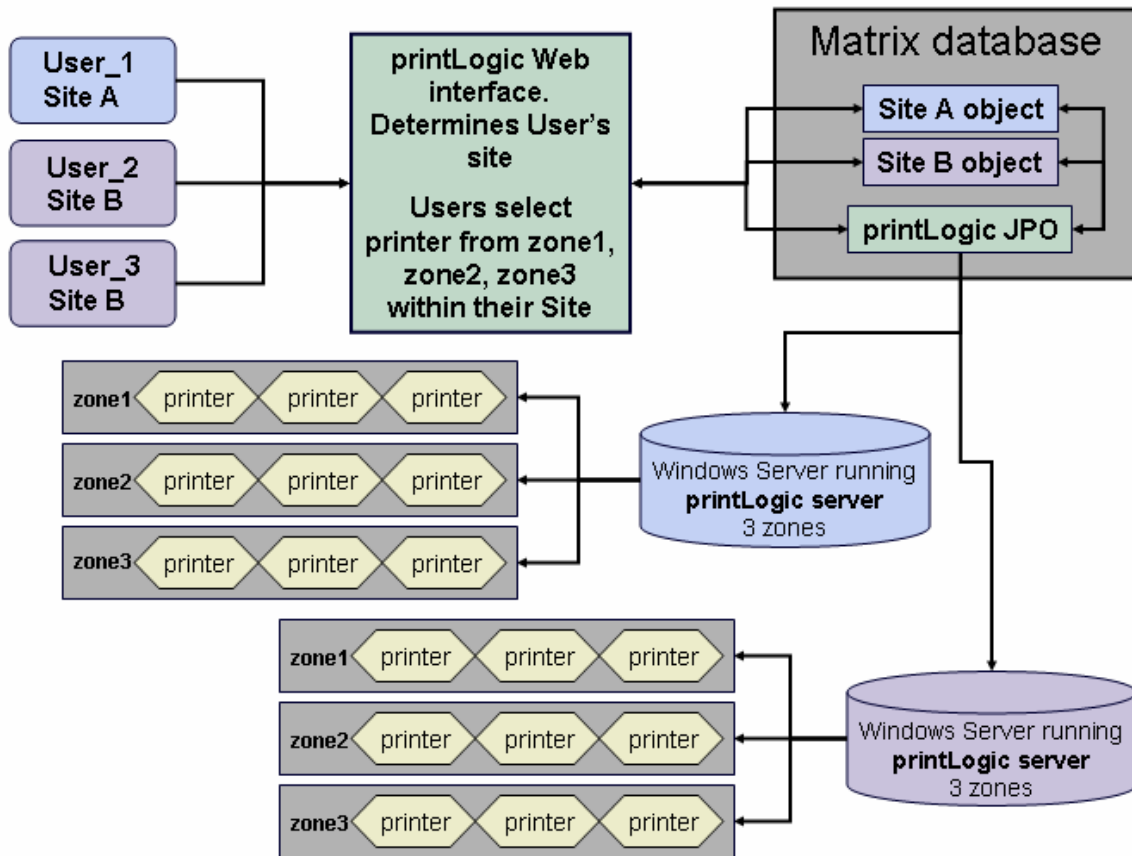
For example, assume Corporation C has defined 1 Site within Matrix, and has assigned every user to this site. Corp. C is using multiple licenses of **printLogic** installed at their Corporate Headquarters, each on a separate PC connected to different groups of printers. The configuration control for 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 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 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

- ❑ Multi-site capable
- ❑ EFCS (Enhanced File Collaboration Server) capable
- ❑ Multi-print server capable
- ❑ Entirely server-based
- ❑ Single page User web interface
 - Checkout access restricted (based on Matrix settings)
 - Optional “Highest Released” State determination
 - “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
 - Site Mapping/Syncing
 - 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
 - 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
- ❑ Print all allowed files within selected Object(s)
- ❑ Print selected file(s) within selected Object
- ❑ Print all allowed files within a List of Objects
- ❑ Print allowed files from “highest released” Objects
- ❑ Add Objects to batch via Search Results
- ❑ Add Objects to batch via Collections
- ❑ Add Objects to batch via Context
- ❑ Add Objects via Toolbars/Menus as designed by the Administrator