# convertLogic

## Operational White Paper

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# Introduction

**convertLogic** is an integration to MatrixOne designed to transparently automate the conversion of files into PDF or TIFF format. Since **convertLogic** is fully integrated with Matrix and works exclusively in the background (as a Service), there is no user interface. Files are queued for conversion and can be metadata stamped based on administrative determined parameters and internal Matrix triggers. Converted, stamped files are automatically checked into an administrator specified Format within the object from which they originated. Users are not required to perform any tasks outside of their normal operations to initiate a conversion. As well, users cannot override or interfere with the process in any way. With these constraints in place, **convertLogic** helps organizations comply with virtually all Regulatory Agencies.

The concept for **convertLogic** originated from the recognition of the functionality gap between the core features of Matrix and the demands of the users over the past several years. PDF is rapidly becoming the standard viewable file format. The expense of providing viewing capabilities to an entire enterprise either with a third party viewer or the native applications can be prohibitive. By converting files to PDF, organizations can implement a world-wide standardized format and utilize a free viewing application (Adobe Reader or compatible), thereby decreasing costs.

In addition to conversion, **convertLogic** provides the ability to stamp metadata onto converted PDFs or TIFFs adding an additional level of security and compliance to the Matrix implementation.

**convertLogic** provides a cost-effective solution to PDF/TIFF generation and maintenance:

1) Flexible and rapid configuration
2) Simple installation process (typically under 30 minutes)
3) Point-and-click administrator module ensures simple, accurate configuration
4) Low maintenance costs
5) Automatic cleanup of old or unmatched PDF/TIFFs
6) Notification of errors or server problems
7) Investment protection
8) Upwardly compatible with the latest generation of Matrix
9) Compatible with all versions of Matrix and all Matrix interfaces
   (Note: v10.7x is the highest version as of this writing)
10) User friendly
11) Conversion remains transparent to the user
12) User can be notified on conversion success, failure, both, or neither depending on a simple administrative setting

# Component Structure of convertLogic

**convertLogic** is comprised of 2 main components plus a Matrix trigger. These are all described below:

**1) convertLogic Triggers**
**convertLogic** uses the standard Matrix method of event based triggers to build a queue for conversion and metadata stamping. By using this method, user's sessions are never tied up beyond the normal trigger execution time. A users ability to continue working within Matrix is never impeded upon by **convertLogic**. Files are not moved, copied, checked out or otherwise touched until the queue is processed.

There are 6 Matrix standard triggers which can be used to queue files and are set up from within the **convertLogicAdmin** utility (discussed below) – <u>Checkin</u>, <u>Revision</u>, <u>ChangeOwner</u>, <u>ChangeVault</u>, <u>Promote</u>, and <u>Demote</u>. When executed, the trigger determines the user's Site which is then used for queuing the files. Multiple servers can be used for processing the files allowing "localized" conversions (eFCS compatible) and thereby minimizing network traffic. In this manner, **convertLogic** can be configured with a minimal amount of effort to provide conversion capabilities throughout an entire enterprise.

**2) convertLogicAdmin Utility**
The **convertLogicAdmin** utility is a powerful application that allows an administrator to use a point-n-click interface to configure the parameters used for conversion, queuing, and management. This module also provides the ability to administer any **convertLogic** Server Object defined within the Matrix database. Users of **convertLogicAdmin** are required to have Matrix Business Admin privileges. **convertLogicAdmin** runs on a Windows PC (Win 2000, XP, Server 2003). The Matrix MQL Client must also be installed and operational on the same desktop as the **convertLogicAdmin Module**.

**3) convertLogic Service**
The **convertLogic** Service component queries the Matrix database (frequency set by the admin) and extracts the queue information from the Server Object (as described in the "trigger" section above). Working from both the queue and the parameter information stored in the Server Object, the **convertLogic** Service performs the tasks of checking out files, monitoring the conversion process and checking the resulting PDF/TIFF file into the originating object.

In addition to these tasks, supplementary capabilities include:
   a. Matrix IconMail or standard email sent to the user who originated the event to notify success and/or failure of the conversion.

   b. Matrix IconMail or standard email sent to Matrix Administrators for critical errors.

   c. Status logging of all processes.

**4) Companion Components**

    a. In addition to the 3 **convertLogic** components, Adlib Express Server is also required. This application must reside on the same server as the **convertLogic** Service component to allow for **convertLogic** control.

    b. Although Adlib Express Server supports over 250 file formats, some formats are better handled by a commercial view/markup engine. AutoVue, developed by Cimmetry Systems, Inc. and Myriad, developed by Informative Graphics Corporation, have been successfully incorporated into **convertLogic** installations to convert native CAD formats such as SolidWorks and AutoCAD. The conversions still occur transparently to the user; however, AutoVue or Myriad ensure that all CAD elements (symbols, fonts, etc.) are recognized and processed correctly.

    c. MS Word and MS Excel are also popular formats to convert from their native format to PDF/TIFF. If the customer has a site/enterprise license (or licenses available) of the native application(s) used to create the source file, it is recommended (but not required) that these applications be installed on the same server as **convertLogic**.

# Matrix Schema Structure

**convertLogic** uses its own contained schema constructs and is not reliant upon the AEF schema implemented within Matrix. It is completely non-invasive to existing schemas, and fully compatible with the MatrixOne AEF schema.

Within the **convertLogic** schema components, one Type is created and used for storing the parameters associated with the conversion process. This Type is used to instantiate the Site Objects each of which also store the queue information for conversion. Matrix Sites are "echoed" as the **convertLogic** Site Objects within the Matrix database. The Site Objects contain all parameters required for conversion including location of the **convertLogic** server, batch processing intervals, and page-size characteristics.

# Site Structure

**convertLogic** 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, **convertLogic** can take advantage of this distinction among users.

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

# Metadata Stamping Capabilities

**convertLogic** provides the capability to stamp metadata onto documents at the time of their conversion to PDF/TIFF. This feature is not limited to "new" conversions

and can be used to apply metadata to existing PDFs which are re-processed via a trigger such as "promote".

The determination of whether or not to stamp a document is related to the type of trigger which caused the queuing of the specific file. The system administrator can make this determination using the **convertLogicAdmin** utility, turning on stamping for any or all of the available triggers.

The stamp is designed within **convertLogicAdmin** in a point-n-click interface. The layout tools provide the ability to determine fonts, font sizes, colors, margins and specific location of the watermark text. Included within the layout tools are 11 standard metadata types which are evaluated at the time of conversion:

| | |
|---|---|
| Type | Date |
| Name | Time |
| Revision | User (Matrix user id) |
| Policy | File name |
| State | Pages (total) |
| Page (current) | |

One additional type of metadata is provided – "Program". This is a special indicator used within the metadata stamp layout. Provided with **convertLogic** is a shell program within which an administrator can create a Matrix program of any complexity.

When this program is called via **convertLogic** (Service), 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") and Event (indicating the triggering event, such as "checkin" or "promote"). 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.

# 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
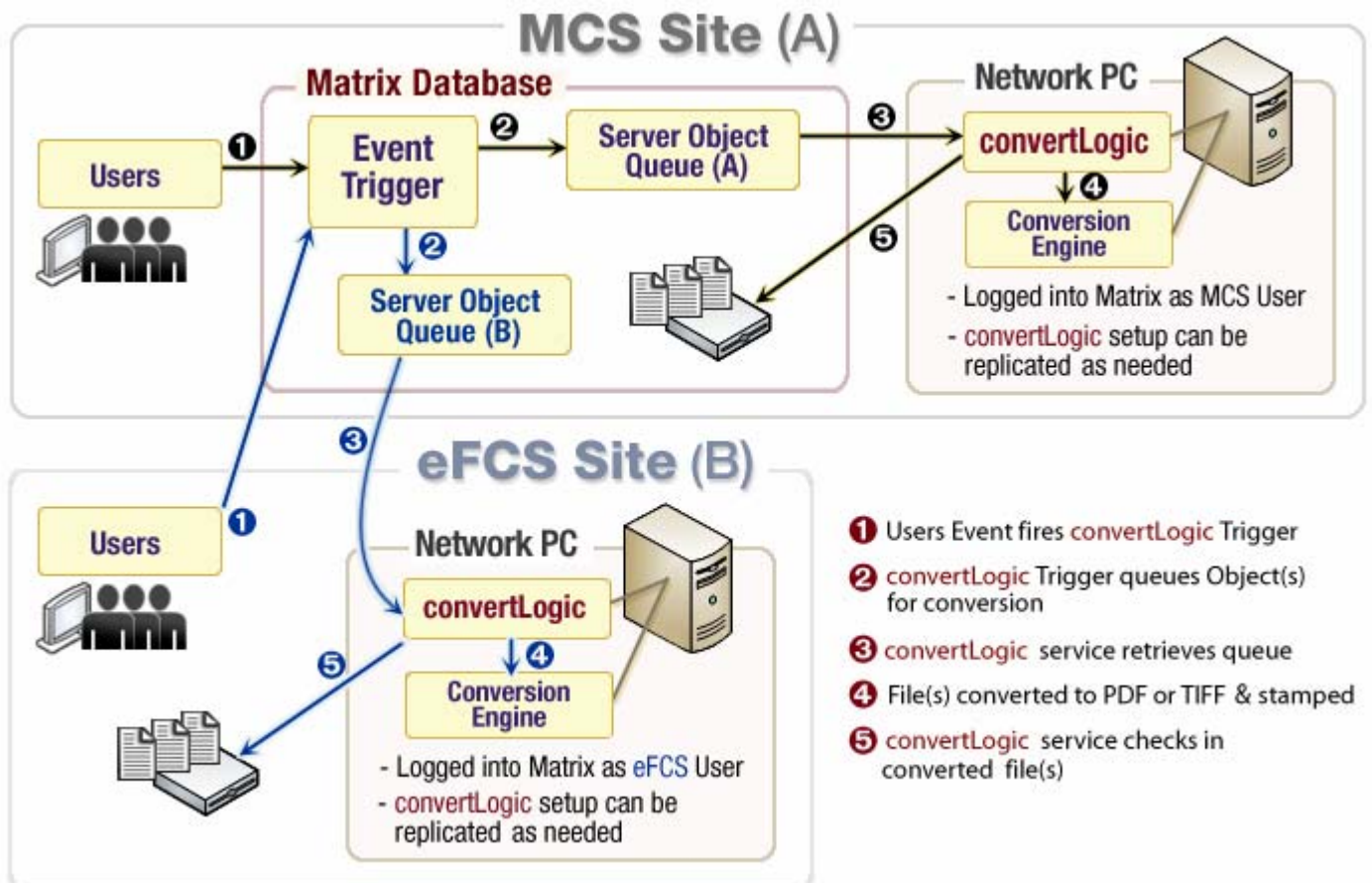  **CPU:** Pentium 4, 1ghz or greater
  **Matrix:** Thick client with MQL database connection

# Server/Network Structure

Sites in Matrix are used by **convertLogic** to resolve which conversion 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 requires conversion. **convertLogic** can take advantage of this distinction among Users and Sites to support different customer configurations.

When more than one **convertLogic** server is deployed, the use of Matrix Sites will ensure the conversion requests are handled by the "closest" **convertLogic** server. Pertinent information about the Matrix file server is automatically added to the appropriate **convertLogic** Server Object. This object manages the conversion queue after the PDF/TIFF conversion request is initiated.
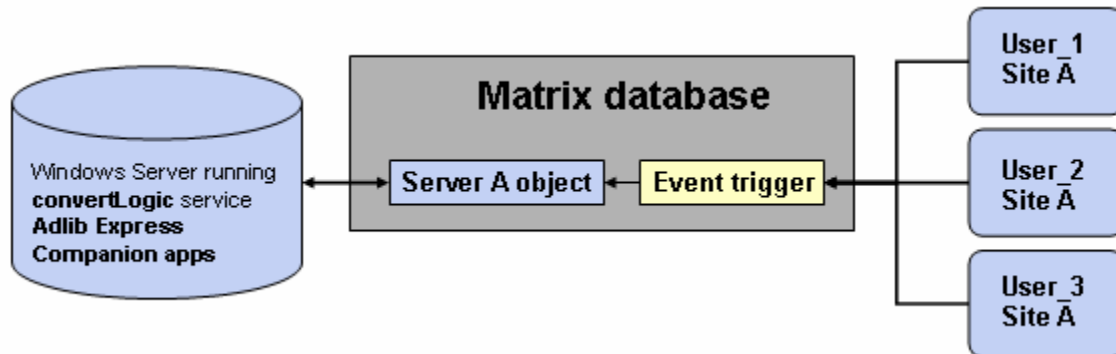
The diagram below shows the basic structure and process flow for **convertLogic**:

# SAMPLE CONFIGURATION SCENARIOS

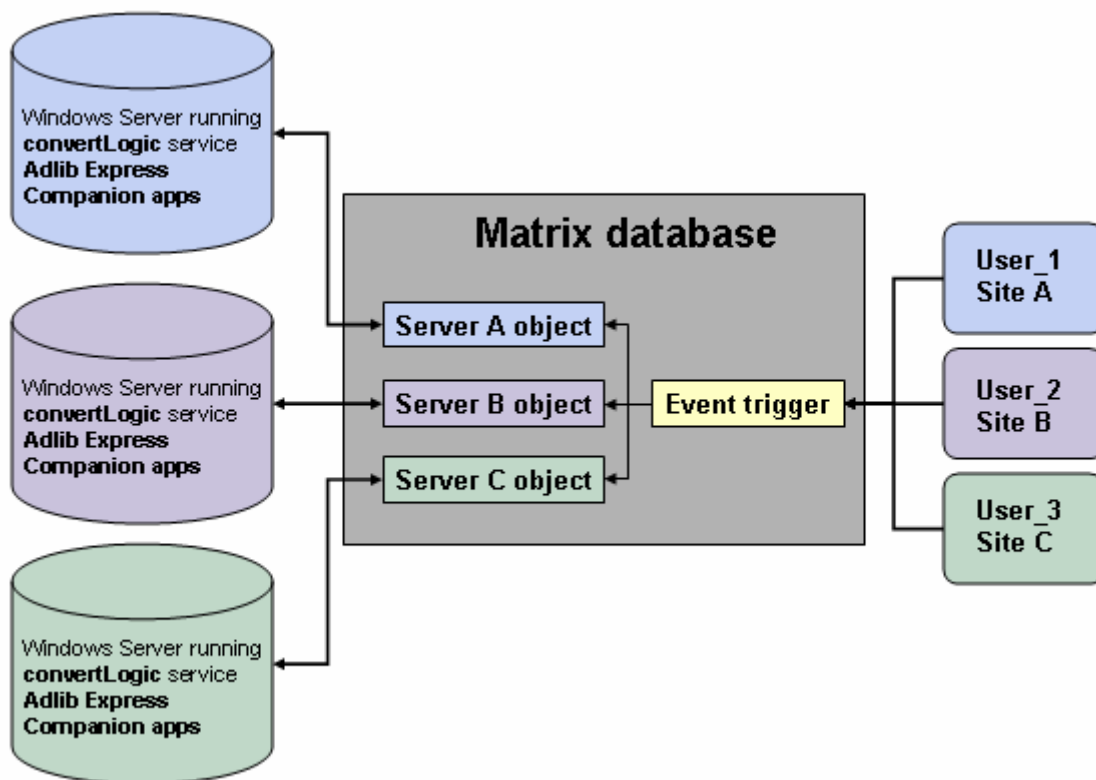## Single Site / Single License Scenario

Under this scenario, an enterprise designates that all users belong to a single defined Site. For example, Corp A has defined one Site within Matrix, and has assigned every user to this Site. Corp A is using a single license of **convertLogic** installed at their Corporate Headquarters. When any user initiates an appropriate event, the **convertLogic** trigger determines the User's Site (as defined within Matrix) and queues the file information to the associated Server Object. The Site resolution is identical for each user, since they all belong to the same Site. The **convertLogic** Service is attached to the single Server Object for the purpose of retrieving parameter and queue information and Matrix database interaction.

# Multi-Site / Multi-License Scenario

Under this scenario, Corp B owns 3 **convertLogic** licenses and designates that each user belongs to one of three Sites. Using **convertLogicAdmin**, each Site (A, B, C) is easily mapped to one of the three **convertLogic** licenses.
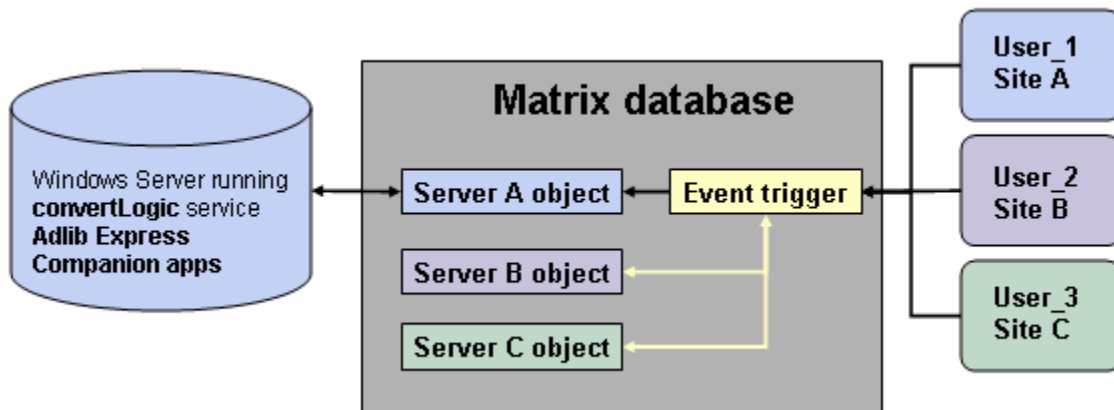
The three licenses could be installed at entirely different locations on the WAN; however, they normally reside near the key design or manufacturing centers (data creation locations). **convertLogic** would create and manage 3 Server Objects, each potentially containing distinct conversion parameters and file queues. When a user (assigned to Site A) initiates an appropriate event, the **convertLogic** trigger determines their Site (as defined within Matrix) and queues the file information to the associated Server A object. When a second user (assigned to Site B) initiates an appropriate event, their conversion is directed to a different **convertLogic** license. The **convertLogic** trigger determines their Site, and queues the file metrics to the Server B queue object, and so on.

# Multi-Site / Single License Scenario

Under this scenario, Corp C owns one license of **convertLogic**, but has three separate Sites on their corporate WAN. The convertLogic administrator designates that each user belongs to one of three defined Sites. However, only a single **convertLogic** license is available to service all Sites. **convertLogicAdmin** can create and manage Server Objects by using Server Syncing features.

With this scenario, each Site still has a related Server Object, but the parameter information contained within the object and the queue information is ignored. Instead, the **convertLogic** trigger determines the Parent Server Object, and sends file information to that queue. The **convertLogic** Service is attached to the single Server Object for the purpose of retrieving parameter and queue information and Matrix database interaction.

# convertLogic Functionality

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

- No user interface
- No user wait time – session is immediately released to user
- Entirely server based
- Multi-site capable
- eFCS (Enhanced File Collaboration Server) capable
- Mulit-conversion server capable
- Compatible with all versions of Matrix
- Completely automatic process
- Runs as a Service – requires no admin interaction
- Non-invasive, self-installing, AEF compatible schema
- Self diagnostics and repair of schema components
- Complete metadata stamping capabilities based from 6 triggers
    - 6 distinct banner zones
    - 1 watermark zone
    - font name, size and color specifications
    - 11 standard types of metadata
    - Program execution metadata
- Point-n-click administrator interface
    - Matrix login and privilege secure
    - Server mapping/syncing
    - Point-n-click Stamp layout
    - Admin IconMail notifications for severe errors
    - User IconMail notifications for success/failure of conversions
    - Detailed process logging
        - Continuous or daily
        - Direct viewing of log files across network
    - US and Metric page sizes (A through F, A5 through A0)
    - Actual Size
- Multiple conversion parameters
    - Six trigger types
    - Multiple or Compound trigger application
    - Conversion Formats
    - Converted file check-in format
    - Timeout control
    - Batch process timing
    - IconMail/Email notifications
- File Prep – ensures native and PDF/TIFF matching (configurable)
- Service automatic pause on critical errors
- File merging of multiple files into a single PDF
- Bulk conversion via file input
- Emergency admin Email and multiple Login attempts
- Removal of duplicate queue entries (configurable)
- Queue rebuild on critical errors – maintains FIFO order
- Supports over 300 file formats
- Import/Export functions for **convertLogic** Schema and Business Objects