



# FactoryArray 7.2

## User's Guide

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FlipFactory has been designed for professionals skilled in the art of digital media transformation and workflow automation, to facilitate the automation of complex media operations and workflow that require a multitude of input and output media formats, delivery to numerous types of media devices and file systems, and notification of media systems including broadcast automation systems and media asset management systems.

The FlipFactory architecture and user interface is designed to provide maximum flexibility in the setup and configuration of these complex media transformations and workflow. In providing this high degree of flexibility, it is possible for media transformation and workflow processes to be configured that are impractical, likely to result in unexpected or unintended results, or beyond the limits of FlipFactory to perform satisfactorily. Additionally, FlipFactory may be executed on a platform that lacks the performance or capacity to perform the media transformations and workflow you've configured, which is your responsibility to specify. Telestream has chosen to implement FlipFactory to provide the greatest flexibility without limiting its functionality to only those transformations and workflow that are known with certainty to be within its performance capabilities, including those limits imposed by the platform upon which you have installed FlipFactory.

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Part Number: 74-0092-08





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# Preface

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## SUPPORT AND INFORMATION

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**Sales and Marketing.** [info@telestream.net](mailto:info@telestream.net)

### USA Telephone

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**Support Services.** (877) 257-6245 from 6 AM to 6 PM Pacific Time, weekdays, excluding holidays. Terms and times of support services vary, based on the terms of your current service contract with Telestream.

### Mail

Telestream, Inc.  
848 Gold Flat Road-Suite 1  
Nevada City, CA. USA 95959

### International

See our Web site for your regional authorized Telestream distributor.



## HOW TO USE THIS GUIDE

This guide helps you install FactoryArray, get up and running quickly, and learn how to implement and use FactoryArray. You may view or print this guide with Adobe Acrobat Reader.

In addition to a list of figures and index, this guide contains the following sections:

### **Chapter 1, Introduction to FactoryArray**

This chapter provides an overview of FactoryArray and its architecture, including the operation of multiple FactoryArrays on a single LAN.

### **Chapter 2, Installing FactoryArray Database Mirroring Service**

This chapter provides platform requirements for FactoryArray servers and describes how to install FactoryArray and obtain a license, and how to test and validate your installation before going into production.

### **Chapter 3, FactoryArray Configuration & Management**

Use this chapter to learn how to use the FactoryArray console, and to configure and manage FactoryArray.

### **Chapter 4, Database Implementations & Operations**

This chapter describes common FlipFactory database implementations, and how to implement them.

### **Appendix A, Troubleshooting**

Use this appendix to identify likely causes for problems you may encounter when using FlipFactory in a FactoryArray.



## NOTATIONAL CONVENTIONS

This guide uses certain conventions used to make it more readable.

### Notes, Tips & Cautions

Note paragraphs are set in italic type to draw your attention to special circumstances or configurations for proper operation of FactoryArray:

---



#### Note

*Notes highlight important information about the topic you're studying. Be sure to read this information before continuing.*

---

Tip paragraphs are also set in italic; they provide helpful information you may not be aware of, or that may make using FactoryArray easier:

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#### Tip

*Tips are bits of information you might not be aware of, or that make using FactoryArray easier.*

---

Caution paragraphs are set in bold type to draw your attention to situations that may modify your operating system or cause data loss.

---



#### Caution

**Cautions identify actions that may cause data loss or other permanent changes to FactoryArray or your media assets.**

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## TYPOGRAPHICAL CONVENTIONS

Certain typographical conventions are used as visual clues in this guide. Sample information, or a specific format to be used when entering information, is shown in italics, or in a courier-style font. For example:

Type your domain (*mydomain.com*) in the domain field.

Type `import FileName` where *FileName* is the fully-qualified path.

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# Introduction to FactoryArray

Telestream's FactoryArray provides scalable load balancing, job and monitor recovery, plus real-time database mirroring, which can be implemented and configured to meet your requirements. A FactoryArray can be implemented to improve performance and durability of any edition of FlipFactory.

When you have created a load balance group by implementing two or more FlipFactory servers that work together to perform transcoding jobs, you can implement FactoryArray Database Mirroring service (FADM) to create a FactoryArray.

A FactoryArray is a load balance group with a central database – two instances; one primary and one standby database, controlled by a FADM service. FADM provides the central database mirroring and recovery functionality that distinguishes a FactoryArray from a load balance group.

Implementing a load balance group is a fundamental and required precursor to implementing a FactoryArray. For details on implementing a load balance group, see Chapter 9, Load Balance Groups, in the FlipFactory User's Guide.

- [FactoryArray Overview \(page 1-2\)](#)
- [FactoryArray Architecture \(page 1-3\)](#)
- [Submitting Jobs via SDK \(page 1-6\)](#)
- [Operating Multiple FactoryArrays \(page 1-7\)](#)



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## Note

*When implemented using Microsoft SQL Server 2005 Express Edition, the default FlipFactory database, Telestream recommends incorporating up to five FlipFactory servers in a FactoryArray. You should not exceed the five FlipFactory limit unless you utilize SQL Server 2005 Workgroup edition or above, or other database management system with adequate performance and capacity. For details, see FlipFactory User's Guide, Chapter 9, Database Implementations & Operations.*

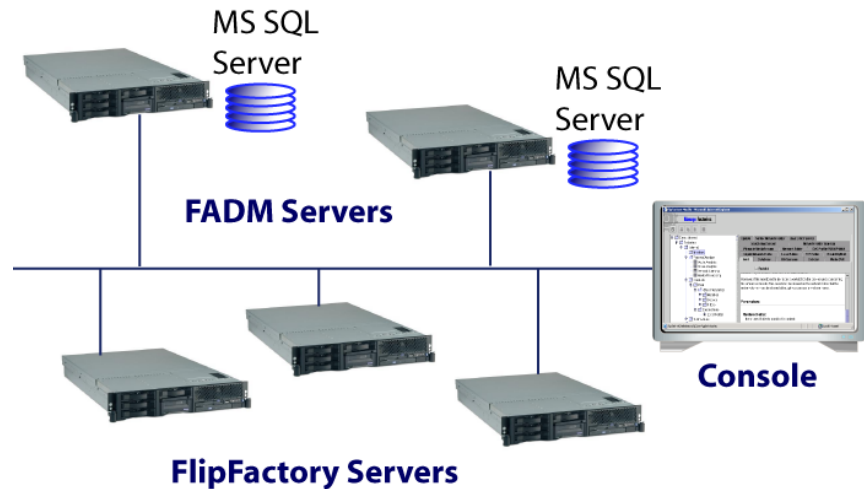
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## FACTORYARRAY OVERVIEW

A FactoryArray is a collection of two or more FlipFactory servers implemented in a load balance group, plus a pair of FactoryArray Database Mirroring (FADM) services each controlling a SQL Server database, all working in a synchronized manner to process jobs efficiently and reliably.

**Figure 1–1. FactoryArray with FlipFactory servers & dual database**



FactoryArray reduces the risk of job failure by controlling and coordinating multiple FlipFactory servers that automatically pick up monitors and recover jobs in the event of a FlipFactory failure.

Database mirroring replicates job specifications on separate database servers to provide automatic recovery for all jobs and FlipFactory servers, so that there is no single point of failure, increasing system durability.

The FactoryArray Database Mirroring service helps safeguard your FlipFactory database against software, hardware, and system failures.

FADM services insure that your database is always mirrored to the secondary FADM server, and automatically use the mirrored version whenever the primary database is unavailable, without interruption of service to any Flip Engines in the array. As a result, your FlipFactory environment always has seamless, fault-tolerant database support.

### Practical Limits

FactoryArrays with 20+ servers is not uncommon, but this volume is the exception rather than the rule. While there is no theoretical limit to the number of servers in an array, there is a practical limit.

As a rule of thumb, Telestream recommends implementing no more FlipFactory servers in an array than the number of cores you have in a typical FlipFactory server. For example, if you use dual quad-core

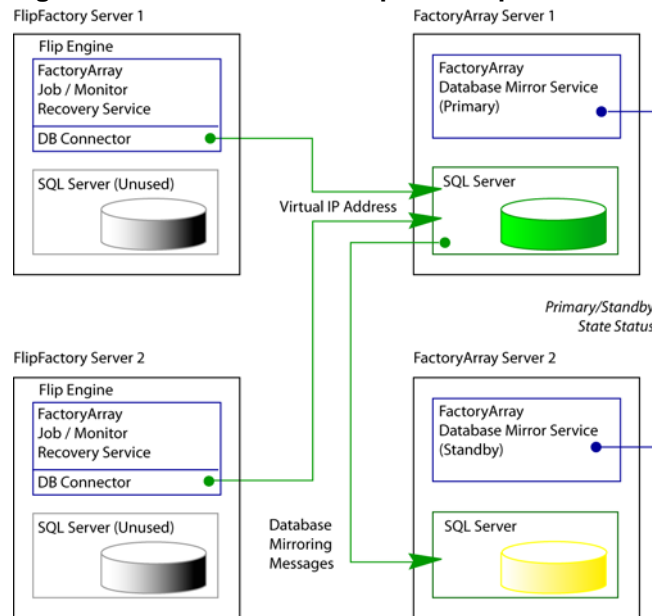


servers, then you should implement no more than 8 FlipFactory servers in the array, as a rule of thumb.

## FACTORYARRAY ARCHITECTURE

Figure 1–1 below depicts a typical FactoryArray implementation, including two FlipFactory servers (left), and two FactoryArray Database Management servers (right).

**Figure 1–2. FADM services operate in pairs**



(In this figure, only major software components are displayed – decoders, monitors, and encoders, for example, are not shown).



### Note

*FADM services may be installed directly on FlipFactory servers or they may be installed on independent FactoryArray servers. Figure 1–2 depicts independent FA servers for clarity.*

Notice that both Flip Engines on FlipFactory Server 1 and 2 are using the SQL Server database on FactoryArray Server 1 under control of FADM, and the SQL Server database installed on each FlipFactory is unused.

Telestream recommends installing FADM Service on servers that are *not* running Flip Engines, for improved risk mitigation. FactoryArray servers must be on the same subnet as all of your FlipFactory servers or your IT



department must have your network configured to operate correctly across multiple subnets.



### Caution

**It is critical to recognize the two fundamentally different implementations of an array: operating FADM services directly on FlipFactory servers or operating FADM services on dedicated servers that are not running FlipFactory.**

**Your implementation affects FlipFactory performance and durability, Windows authentication, and how you submit jobs from third-party systems via the SDK.**

## Job and Monitor Recovery

Job recovery is the process of restarting jobs on a failed FlipFactory. If a FlipFactory fails, other FlipFactory servers in the array re-process the job. Additionally, the failed FlipFactory's monitors are restarted on another FlipFactory and continue to operate.

Job and monitor recovery is a component of FlipFactory and runs directly on each FlipEngine service. The Recovery service is a peer-to-peer service which permits all FlipFactory servers connected to an array database to monitor jobs and monitors for normal operation.

Job and monitor recovery can significantly reduce risk of failure. If a FlipFactory fails, the others can reprocess jobs and continue to monitor all required systems that the failed FlipFactory is responsible for.

For details on how job and monitor recovery works in detail, see [“Job/ Monitor Recovery in FactoryArray”](#) on page 3–8. For details on configuring monitors in FactoryArray systems, see [“Monitor Configuration in FactoryArray”](#) on page 3–9.

## Database Mirroring and Recovery

To enable database mirroring and recovery, you install FactoryArray Database Mirroring service on two servers. Next, you attach each FlipFactory to the array database via a virtual IP address controlled by FADM:



### Tip

*A virtual IP address is an actual address assigned by your network administrator, but it is shared among multiple FlipFactory servers dynamically. By sharing the virtual IP address, FlipFactory database server responsibilities can be moved from one server to another if necessary (by adding the virtual IP address to the primary server's network interface under FADM control) without interrupting FactoryArray operations.*



The two databases are identified dynamically as primary and standby. The server's network interface where the Primary database is running is dynamically assigned the virtual IP address.

If the primary FADM service (or server) fails, the standby FADM service assumes responsibility, re-assigns the virtual IP address to its network interface, and continues without Flip Engine interruption. When the failed server comes back online, it assumes standby responsibility.

Database mirroring and recovery eliminates the single point of failure, ensuring continuous operation if any single FlipFactory or FADM service fails. (Other events can occur in a network external to FlipFactory services that may render some or all of the factories inoperable).

---

**Note**

*If you are already using Microsoft SQL Server 2005, you can move one of the two databases to this server and eliminate the standby FactoryArray server.*

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For details on how database mirroring and recovery works in detail, see [“Database Mirroring and Recovery”](#) on page 3–4. For details on how to use the console, see [“Using the FactoryArray Database Mirroring Console”](#) on page 3–5.



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## SUBMITTING JOBS VIA SDK

If you are submitting jobs via a system implemented with the FlipFactory SDK, you must submit jobs directly to a FlipFactory server - FactoryArray does not have an API.

You can submit jobs directly to a FactoryArray database using direct database submits. Factories must have the database monitor enabled to process these jobs.

However, most API integrations use the HTTP method. This method can only target a single host or ip in an array as a gateway to submitting a job to the database.

Do not use the virtual IP address of the FactoryArray database server for HTTP submits. The ideal HTTP submission into a FactoryArray for redundancy and failover maintains a list of host names or IP addresses of all FlipFactory servers that are part of the array.

The submitting system should submit a message to a specific FlipFactory server in the list and then go on to the next in the list if no reply is received from the previous try or it times out.

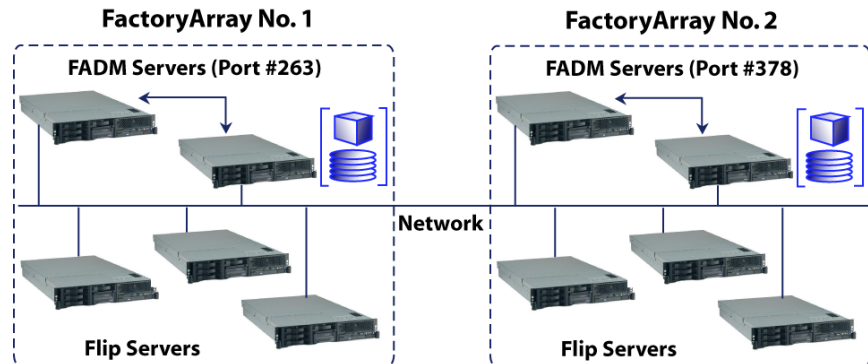
For information on the FlipFactory SDK or development assistance, contact [developer@telestream.net](mailto:developer@telestream.net).



## OPERATING MULTIPLE FACTORYARRAYS

You can implement as many FactoryArrays in your network as necessary to meet workflow requirements. In the figure below, two FactoryArray systems on a single network are portrayed. Each FactoryArray has two FADM services – each installed on an independent server, running the FADM service and SQL Server database (noted in blue).

**Figure 1–3. Multiple FactoryArrays can operate on same network**



Each FactoryArray's FADM servers communicate with each other, to share jobs and recover monitors. The factories in FactoryArray No. 1 are not part of the No. 2 array, and therefore do not communicate with the factories in FactoryArray No. 2.



### Caution

**To implement more than one FactoryArray, you'll install *two* pairs of FADM services. FADM service pairs operate on a specific port number. You *must* change the port number on each of the second pair of FADM services and restart them so that they identify each other correctly. See [Modifying the FADM Service Port Number \(page 3-11\)](#).**

FactoryArray No. 1 operates on the default port number (263); however, you must modify the port number on each FADM server in FactoryArray No. 2 so that they uniquely identify each other and operate as a pair, without erroneously cross-communicating with array No. 1.



### Note

*FADM services may be installed directly on FlipFactory servers or they may be installed on independent FactoryArray servers.*





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# Installing FactoryArray Database Mirroring Service

After completing your installation plan, use this chapter to install, configure and validate your FactoryArray for operational readiness.

This chapter is organized in a step-wise manner, and the numbered headings represent major tasks you should complete in order. Following each major task are numbered steps that describe how to complete each major task or refer you to an explanatory section elsewhere:

## Steps

- Obtain the FactoryArray License (page 2-3)
- Review & Meet FADM Platform Requirements (page 2-4)
- Configure FADM Servers for Proper Permissions (page 2-5)
- Meet FactoryArray System & Network Requirements (page 2-6)
- Install or Upgrade FlipFactory Servers (page 2-7)
- Download the FADM Installer (page 2-8)
- Install FADM on Your 1st FADM Server (page 2-8)
- Install the FactoryArray License (page 2-9)
- Modify FADM Service Ports if Multiple FADM Systems (page 2-10)
- Set the Virtual IP Address and Email Notifications (page 2-10)
- Merge Databases & Configure FlipFactory Servers (page 2-11)
- Modify Services Account and Start 1st FADM Service (page 2-12)
- Validate the 1st FADM with All FlipFactory Servers (page 2-12)
- Install FADM on Your 2nd FADM Server (page 2-14)
- Install the FactoryArray License (page 2-14)
- Modify FADM Ports if Multiple FADM Systems (page 2-15)
- Set the Virtual IP Address and Email Notifications (page 2-15)
- Modify Services Account & Start 2nd FADM Service (page 2-16)
- Validate the 2nd FADM Service (page 2-16)





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## Notes

*Performing steps out of order, or skipping tasks you think are complete or unnecessary but are not, can lead to installation problems. Telestream recommends performing each step in this chapter, in the order listed.*

*Always make sure that FADM service is stopped when performing database operations.*

*FADM includes MS SQL Server 2005 Express Edition, the default DBMS, and installs the FLIPINSTANCE instance for use by FlipFactory. Using Express Edition limits the number of FlipFactory servers to five. If you need more than five FlipFactory servers in your FactoryArray, perform FADM installation completely as described in this chapter. Then, upgrade to MS SQL Server Workgroup Edition or higher, as described in the FlipFactory User's Guide, Chapter 10, Database Implementations and Operations.*

*If you are installing or upgrading a load balance group or FactoryArray, you must install the same version of FlipFactory on all servers using the central database. You should read and understand the information presented in [FactoryArray Overview \(page 3-2\)](#) before proceeding.*

*Telestream recommends using the same license (and registry keys and store shares) for all FlipFactories to simplify management, but you can install different licenses if necessary. If you do not use the same license on all Flip Engines in the group/array, you must configure monitors to only submit jobs to FlipEngines that are licensed to meet the requirements of the specific factory, or the job will fail. You may also have different registry keys and different store shares than Flip Engines with different licences, as well.*

*You can install FADM directly on FlipFactory servers, but Telestream recommends using dedicated DBMS servers to improve performance and enhance system durability.*

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You can not operate your FactoryArray until you have configured your FlipFactory servers and FactoryArray Database Mirroring Service.



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## 1 OBTAIN THE FACTORYARRAY LICENSE

Before you can operate FactoryArray, you must obtain and install a FactoryArray license from Telestream. A FactoryArray license consists of a FactoryArray license.dat file (two files – one for each FactoryArray server) plus FlipFactory license *entries* which you must add to each FlipFactory license.dat file for the FlipFactory to participate in the array.

### Obtain the License

If you are evaluating FactoryArray, your license key enables all of FactoryArray's features, and expires on the date shown in the feature section at the bottom of the email (usually 15 days from its start date).

If you registered with Telestream to download FactoryArray, Telestream verifies your customer information and emails you a no-cost demo license file, usually within one business day of registering.

If you're a current Telestream customer, log on to the Telestream Web site at [dynamic.telestream.net/downloads/login.asp?prodid=flipfactory&message=login](http://dynamic.telestream.net/downloads/login.asp?prodid=flipfactory&message=login) and click Obtain License to request a license file for FactoryArray.

Click Obtain License for each FactoryArray server you plan to install (usually in pairs), supplying the MAC address or hard disk serial number from each server. Your license key is generated based on the server's Ethernet MAC address or hard disk serial number you provided.

You should verify that the FactoryArray Server has the same identifier contained in your license file, a copy of which is included in the FactoryArray License File email. If the host identifier does not match, contact Telestream's licensing department via email or by telephone (see [Support and Information](#) on page About-1).



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## 2 REVIEW & MEET FADM PLATFORM REQUIREMENTS

Review your FADM server operating system and hardware to ensure that they meet the minimum requirements.

### Server OS Requirements

FactoryArray servers require one of the following operating systems:



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#### Note

*To effectively operate FlipFactory with other networked devices or systems, you must disable the Windows Firewall.*

*If you utilize anti-virus software, you should identify FlipFactory as a safe or trusted application. Also, be sure to turn off anti-virus software during FlipFactory installation, or install the anti-virus software after you install FlipFactory.*

- 
- Windows XP Pro SP3
  - Windows Server 2003, preferably with Service Pack 2 or later 32-bit and 64-bit versions.
  - Windows Server 2008 R1 only, 32-bit and 64-bit versions.



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#### Note

*For Windows XP Pro, you must disable the firewall to run FactoryArray.*

### Server Hardware Requirements

The minimum recommended server hardware requirements depend on the amount of media you plan to process and the turn around time you require during transcoding. FlipFactory is optimized for dual quad-core Intel and Intel-compatible processors that support Windows operating systems.

**Processor:** Dual quad-core processors, 2x6MB cache, 2.5GHz, 1333 MHz FSB recommended.

**RAM:** 4 GB 667MHz (4x1MB) fully-buffered DIMMs recommended, depending on number of concurrent translation sessions desired.

**Hard Drive:** 160GB 7.2K RPM Serial ATA 3Gbps 3.5” drive.

**Ethernet:** GB Ethernet. (Dual Ethernet may be needed in some situations).

**Power:** Redundant power supply.

**Numeric Processing Instruction Set:** MMX, SSE, and SSE2 enabled.



**Disk Requirements:** Disk storage requirements depend on the amount of media you plan to transcode. Recommended: Minimum 2 GB, the 2GB limit on the SQL Server 2005 Express Edition databases.

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#### Note

*If you install FADM on your FlipFactory servers, calculate your space requirements based on suggestions in [Disk Space Requirements](#), in *FlipFactory User's Guide*, Chapter 2.*

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- Step 1** Perform any upgrades necessary so that each server platform meets the minimum requirements.

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## 3 CONFIGURE FADM SERVERS FOR PROPER PERMISSIONS

Follow these steps to enable the two FADM services to interoperate by creating/using a specific account as a system account.

Use of a specific account for all FactoryArray and FlipFactory servers, ensures that the interaction between the two FADM services and all FlipFactory servers is enabled. The use of a specific account works in a work group environment and in a Domain environment (as a system account). It also guarantees normal operation even when permitted operating systems are mixed among the various FADM and FlipFactory servers, plus monitor and destination systems and servers.

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#### Note

*You may choose to use local accounts and create shares to obtain the same operational status between servers, but the responsibility is yours to ensure that all FADM and FlipFactory services have proper access to all other servers in the array, including monitor and destination servers.*

---

- Step 1** In a workgroup environment, create a single administrative account with read/write permissions that you'll use on each FADM and FlipFactory servers in the array, plus each monitor and destination system.

–OR–

In a domain environment, create a single administrative account as a system account, with read/write permissions to use on all FADM and array FlipFactory servers, plus each monitor and destination system.

Make sure that you log on with the same account when installing FADM and FlipFactory software, and that each FADM, MS SQL, and Flip Engine service is also set to log on using the specified account (Step 4).



- Step 2** Test for proper FADM and FlipFactory interoperability by logging on with this account and browsing to all other servers. Test privileges – create a directory and copy a file into it, then delete the directory.
- Step 3** Make sure that you log on using this account when you install software.
- Step 4** In a workgroup environment, make sure that you set up each FADM, MS SQL, and Flip Engine service to use this account:
- Open Control Panel > Administrative Tools > Services, select each service (FactoryArray DBM, MSSQL\$FLIPINSTANCE, and Flip Engine) and right-click to display Properties.
- In the Log On tab, click This account and enter the account name and password or click Browse to select the proper account, and click OK. Close all windows.

---

## 4 MEET FACTORYARRAY SYSTEM & NETWORK REQUIREMENTS

To prepare your server for operating FADM, and before installing FADM and configuring your systems, verify and check off the following items:

- Step 1** Make sure that no other network services (mail, Web or FTP servers, or other media processing servers) are operating on any FactoryArray server.
- Step 2** Make sure that each planned FlipFactory and FactoryArray server is on the same subnet.
- Step 3** Make sure that each server has network connectivity (tested with PING).
- Step 4** Verify that each server has a static IP address, and DHCP is disabled.
- Step 5** Make sure that you have a static IP address for use as the virtual IP address assigned by your IT department, for use with the FADM services.
- Step 6** Make sure that you have a domain or work group account with required read/write permissions for Flip Engine service, MS SQL Server, and FADM service on all servers, including monitors and destinations.
- Step 7** Make sure that Windows firewalls and network firewalls are disabled, so that no firewall prevents communication between required servers, including monitor and destination systems and servers.
- Make sure that all systems are operating on the same time zone and time or operational failures regarding job processing and reporting will occur.
- Step 8** Obtain the SMTP server name and email name of the FlipFactory administrator for later entry in the FADM console, during configuration.



## 5 INSTALL OR UPGRADE FLIPFACTORY SERVERS

Use this section to install and/or upgrade FlipFactories to create a load balance group, a necessary step in the process of creating a FactoryArray: a load balance group, with FactoryArray Database Manager providing real-time database mirroring, plus the FactoryArray license.

Refer to the FlipFactory User's Guide, chapter 2, for step-by-step instructions on installing new FlipFactories and upgrading existing FlipFactory servers and chapter 9, for creating load balance groups.

- Step 1** Upgrade existing FlipFactory servers to the current version.
- Step 2** Install any new FlipFactory servers you plan to add to the array.



---

## 6 DOWNLOAD THE FADM INSTALLER

To obtain the FactoryArray installation package from the Telestream Web site, follow these steps:

- Step 1** Use your Web browser to go to <http://www.telestream.net/flipfactory>.
- Step 2** If you are not registered, click to display the Register page. Fill out the form and click Download FactoryArray. You can use your user name and password immediately. Telestream will send you a confirmation email.
- Step 3** Enter your authorized user name and password, then click Log In.
- Step 4** On the Download page, click the FactoryArray version to download.
- Step 5** On the File Download window, click Save.
- Step 6** Select a destination and click Save. The installer name format is *product.setup.version.build.exe*. In FADM.setup.6.1.23502.exe, 6.1 is the version, and 23502 (for example), is the build number.
- Step 7** The Download Progress window displays as the installer is saved on the computer.

---

## 7 INSTALL FADM ON YOUR 1ST FADM SERVER

When you run the FADM installer, the installer performs the following:

- Creates a Telestream directory for FADM and related files
- Installs FADM and related files and the FADM Console.
- Installs or updates SQL Server 2005 and installs the database.

### Installing FADM

With your installation plan in hand, perform these tasks to install FADM on a *single* server:



#### Note

*Telestream recommends installing FADM on a single server first, and validating normal operation, then installing the second FADM server and configuring it for operation.*

*Installing FADM on both servers at the same time significantly increases the likelihood of installation failure due to complexity.*

- 
- Step 1** Locate the installer and copy it to your server.
  - Step 2** Log on to the server using the specific user account specified for use with FlipFactory and run the installer.



- Step 3** Click OK to continue. The installer displays the Welcome window.
- Step 4** **Welcome Window.** In the Welcome window, click Next.
- Step 5** **License Terms.** Click the button labeled I Accept, if you agree to the license terms. Click Next to continue.
- Step 6** **Customer Information.** Enter your user name and organization information. Check Just me to run the service under the user account currently logged on or leave the default Everyone checked to run FactoryArray under any user account. Click Next.
- Step 7** **Choose Destination Folder.** Browse and select an installation folder, or accept the default location. Click Next.
- Step 8** **Setup Complete.** Click Next.
- Step 9** **Installation Wizard Complete.** When installation is done, the Installation Wizard Complete window displays. Click Finish to exit.

---

## 8 INSTALL THE FACTORYARRAY LICENSE

A FactoryArray license consists of a FactoryArray license.dat file (two files – one for each FactoryArray server) plus FlipFactory license *entries* which you must add to each FlipFactory license.dat file for the FlipFactory to participate in the array.

### Install the License

Follow these steps to install a FactoryArray license and update each FlipFactory license:

- Step 1** Save the correct FactoryArray license attachment (license.dat) in the FactoryArray license folder (default: C:\Program Files\Telestream\FactoryArrayDBM\License) on the FactoryArray server.
- Step 2** Update each FlipFactory license by copying the license entries you received into the FlipFactory license.dat file, per email instructions.
- Step 3** Restart each Flip Engine service.



#### Note

*When instructed by Telestream, insert license entries in your FlipFactory license.dat file using NotePad or other text editor.*

- On each FlipFactory server in the array, launch the FlipFactory console and make sure that you can log in as a user.
- Step 4** Open or create a factory and add a Network Folder monitor for this test.



## 9 MODIFY FADM SERVICE PORTS IF MULTIPLE FADM SYSTEMS

If this installation is an additional FADM server *pair*, the port number that both of these additional FADM services communicate on must be changed, so that this new, independent FADM system does not cross-communicate with your previously installed FADM systems. For details, see [Modifying the FADM Service Port Number \(page 3-11\)](#).

Modify the port of the FADM service you just installed. You'll modify the port of the second FADM service later.

## 10 SET THE VIRTUAL IP ADDRESS AND EMAIL NOTIFICATIONS

Before starting the FADM service, follow these steps to set up the FADM virtual IP address and email notifications:

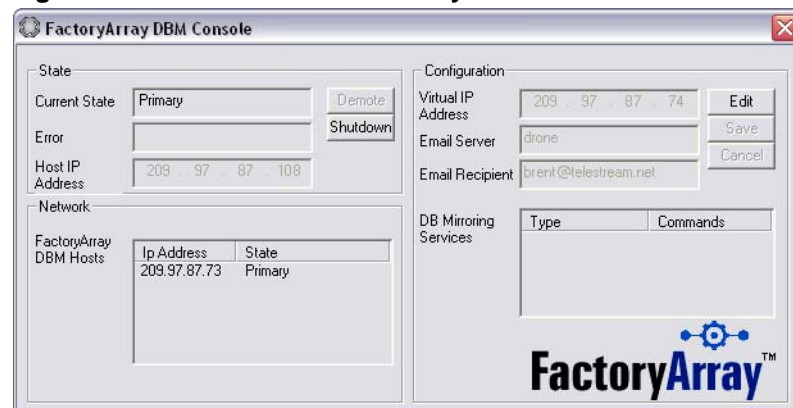
- Step 1** Start the FADM console: start > Programs > Telestream > FactoryArray > FactoryArray DBM Console.



### Note

*If you're running FADM on Windows 2000 and the FADM console does not display, contact Telestream Customer Service to obtain an updated version.*

**Figure 2–1. FADM Console allows you to enter Virtual IP address**



- Step 2** In the console, click Edit in the Configuration group on the right. Enter the virtual IP address that has been assigned to this FADM service by your IT administrator. Click Save.
- Step 3** In the Email Server, enter the name of your network SMTP server, and in Email Recipient, enter the email address of the person who administers FlipFactory and should receive email notifications of problems.



---

## 11 MERGE DATABASES & CONFIGURE FLIPFACTORY SERVERS

Follow these steps to merge multiple, existing FlipFactory databases into a single FactoryArray database, and configure all existing and new FlipFactory monitors to meet your requirements.

- Step 1** Make sure that the FADM service is stopped before performing database operations. Be sure the FADM service *is not running* at this point.
- Step 2** For all existing FlipFactory servers, make sure that ALL accounts are uniquely named across the set, then export all accounts from each FlipFactory server before performing a merge. See FlipFactory User's Guide, Chapter 10, Database Operations, Exporting Accounts, for details.
- Step 3** Import the account XML files into the primary FADM server database. See FlipFactory User's Guide, Chapter 10, Database Operations, Importing Accounts, for details.
- Step 4** Open a FlipFactory console. Make sure all existing factories in FlipFactory servers display, and function properly. Correct as necessary.
- Step 5** For each factory, review new FactoryArray monitor settings to meet your requirements. See [Monitor Configuration in FactoryArray \(page 3-9\)](#).
- Step 6** For each Flip Engine in the array, make a note of all special registry settings (including store shares) that have been made to customize each Flip Engine. Replicate these registry settings across *all* FlipFactory servers so that monitors and jobs can run on any Flip Engine in the array.



---

### Note

*Telestream recommends using the same license (and registry keys and store shares) for all FlipFactories to simplify management, but you can install different licenses if necessary. If you don't use the same license on all Flip Engines in the group/array, be sure to configure monitors to submit jobs to FlipEngines that are licensed to meet the requirements of the specific factory or the job will fail. You may also have different registry keys and different store shares, as well.*

---

Pay special attention to differences in registry settings based on the operating system of the server, and also to stores you may have set up on a FlipFactory server. When implementing your array, you may need to redesign and re-implement your store methodology; replicate the store registry settings *across all FlipFactory* servers as appropriate. See Customizing FlipFactory in the FlipFactory User's Guide for details.

- Step 7** Before proceeding, back up the new central FactoryArray database using Microsoft QSL Server 2005 Management Studio.



## 12 MODIFY SERVICES ACCOUNT AND START 1ST FADM SERVICE

Before starting the FADM service, follow these steps to make sure each service uses the correct account for authentication. Repeat these steps for:

- FADM service (FactoryArray DBM Service)
- MS SQL Server (FLIPINSTANCE by default)
- Flip Engine service *if on FADM server*

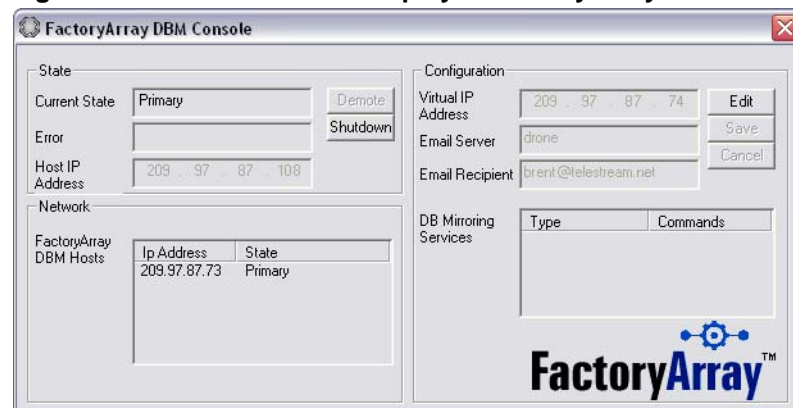
- Step 1** Open the Services control panel.
- Step 2** Select a service (from list above) and select Properties.
- Step 3** In Log On tab, select This Account and enter the account name and password you've been assigned by your IT administrator. Click OK to update and close the dialog.
- Step 4** Restart the FADM server to start FADM service (named FactoryArray DBM Service), MS SQL Server (named SQL Server (FLIPINSTANCE) by default), and optionally, Flip Engine service (if on same server) under the correct account name (FADM service operates on the virtual IP address).

## 13 VALIDATE THE 1ST FADM WITH ALL FLIPFACTORY SERVERS

Follow these steps to validate that the first FADM server you installed is operational.

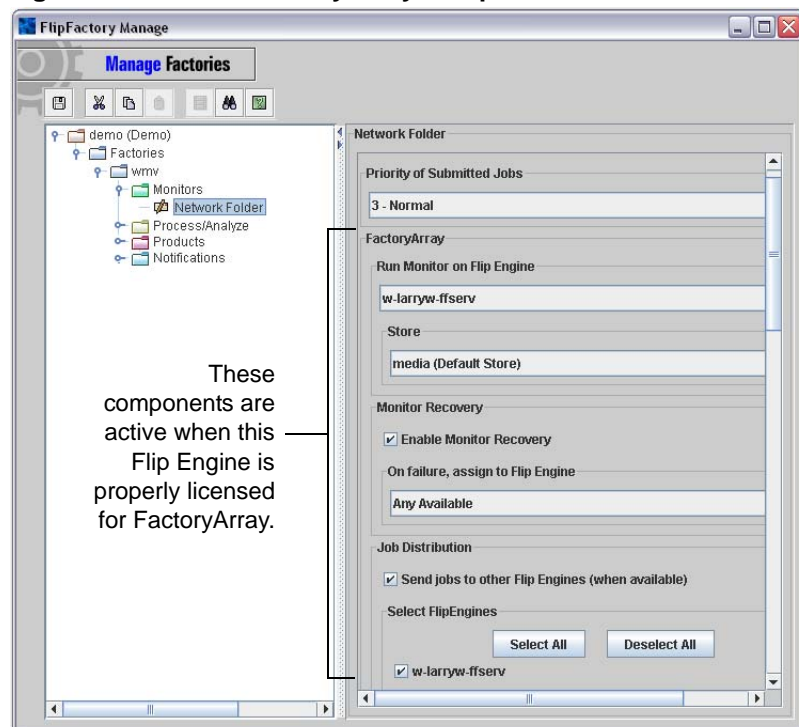
- Step 1** Open the FADM console. To access it, double-click the console icon in the tooltray or right-click and select Details (see [Accessing the Console \(page 3-5\)](#)).

**Figure 2–2. FADM services display in FactoryArray DBM Host**



- Step 2** Make sure that the DBM hosts field displays your first FADM service – showing the static IP address of the server, not the virtual IP address, and it is listed as Primary in Current State.
- Step 3** Repeat steps 5 through 7 for all FlipFactory servers in the array:
- Step 4** Open the FlipFactory console and open System Settings.
- Step 5** Change the database server from *localhost* to the virtual IP Address.
- Step 6** Restart the Flip Engine service from the services window.
- Step 7** Repeat steps 9 through 10 for all FlipFactory servers in the array:
- Step 8** Open the FlipFactory console again, and open System Status.
- Step 9** Verify that there is a tab in the System Status window for each FlipFactory server in the array.
- Step 10** Repeat steps 12 through 14 for all FlipFactory servers in the array:
- Step 11** Log into an account and open Manage Factories.
- Step 12** Open Network Folder monitor and make sure that the FactoryArray controls display in the editor panel, as shown below:

**Figure 2–3. Active FactoryArray components in Network Monitor**



- Step 13** Display the monitor editor panel and validate that the FactoryArray components in the panel are active. This ensures that your FactoryArray license entries in the FlipFactory licenses are correct.



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## 14 INSTALL FADM ON YOUR 2ND FADM SERVER

With your installation plan in hand, perform these tasks to install FADM on the second FADM server in the array:

- Step 1** Locate the installer and copy it to your server.
- Step 2** Log on to the server using the user account specified for use with FlipFactory and run the installer.
- Step 3** Click OK to continue. The installer displays the Welcome window.
- Step 4** **Welcome Window.** In the Welcome window, click Next.
- Step 5** **License Terms.** Click the button labeled I Accept, if you agree to the license terms. Click Next to continue.
- Step 6** **Customer Information.** Enter your user name and organization information. Check Just me to run the service under the user account currently logged on or leave the default Everyone checked to run FactoryArray under any user account. Click Next.
- Step 7** **Choose Destination Folder.** Browse and select an installation folder, or accept the default location. Click Next.
- Step 8** **Setup Complete.** Click Next.
- Step 9** **Installation Wizard Complete.** When installation is done, the Installation Wizard Complete window displays. Click Finish to exit.

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## 15 INSTALL THE FACTORYARRAY LICENSE

Follow these steps to install the FactoryArray license on the second FADM server:

- Step 1** Save the correct FactoryArray license attachment (license.dat) in the FactoryArray license folder (default: C:\Program Files\Telestream\FactoryArrayDBM\License) on the FactoryArray server.
- Step 2** Restart your server after installation or restart the FactoryArray service.



## 16 MODIFY FADM PORTS IF MULTIPLE FADM SYSTEMS

If this second FADM installation is on a second or subsequent FADM server pair, you've already modified the port number of the first FADM server (Task 9).

The port number of the second FADM service must also be updated so that this new FADM system does not cross-talk with your other installed FADM systems.

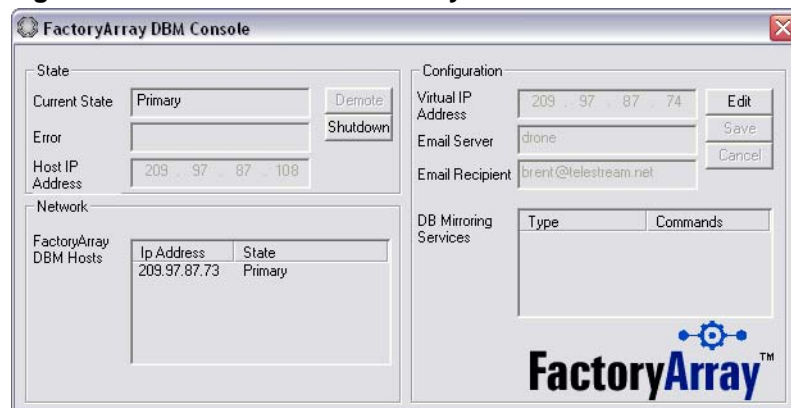
- Step 1** Modify the port of the FADM service you just installed. See [Modifying the FADM Service Port Number \(page 3-11\)](#).

## 17 SET THE VIRTUAL IP ADDRESS AND EMAIL NOTIFICATIONS

Before starting the FADM service, follow these steps to set up the FADM virtual IP address and email notifications on the second FADM server:

- Step 1** Start the FADM console: start > Programs > Telestream > FactoryArray > FactoryArray DBM Console. (You can also open from tooltray.)

**Figure 2–4. FADM Console allows you to enter Virtual IP address**



- Step 2** In the console, click Edit in the Configuration group on the right. Enter the virtual IP address that has been assigned to this FADM service by your IT administrator. Click Save.
- Step 3** In the Email Server, enter the name of your network SMTP server, and in Email Recipient, enter the email address of the person who administers FlipFactory and should receive email notifications of problems.



## 18 MODIFY SERVICES ACCOUNT & START 2ND FADM SERVICE

Before starting the second FADM service, follow these steps so that each service uses the correct account for authentication. Repeat these steps for:

- FADM service (FactoryArray DBM Service)
- MS SQL Server (SQL Server (FLIPINSTANCE) by default)
- Flip Engine service *if on FADM server*

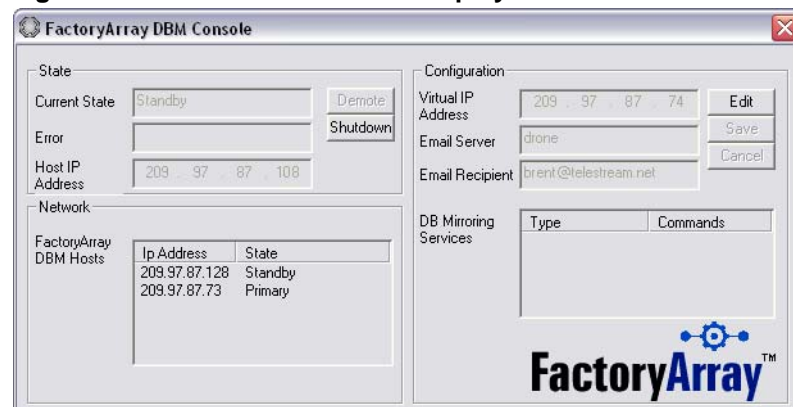
- Step 1** Open the Services control panel.
- Step 2** Select a service (from list above) and select Properties.
- Step 3** In Log On tab, select This Account and enter the account name and password you've been assigned by your IT administrator. Click OK to update and close the dialog.
- Step 4** Restart the FADM server to start FADM service, SQL Server (FLIPINSTANCE), and optionally, the Flip Engine service (if running on the same server) under the correct account name (and virtual IP address for the FADM).

## 19 VALIDATE THE 2ND FADM SERVICE

Follow these steps to validate that the second FADM server you installed is operational and communicates correctly with the first FADM server:

- Step 1** Open the FADM console. To access it, double-click the console icon in the tooltray or right-click and select Details (see [Accessing the Console \(page 3-5\)](#)).

**Figure 2–5. Both FADM service display in the console**



- Step 2** Make sure that the DBM hosts field displays your first FADM service – showing the static IP address of the server, not the virtual IP address, and



the second FADM service (the one you just installed) also displays and it is listed as Standby in Current State.

**Step 3** On the first (Primary) FADM service, click Demote to force the primary and standby FADM services to swap the virtual IP address and change positions – primary changes to standby, and standby changes to primary.

**Step 4** Next, return to the second FADM service and again, click Demote to force the primary and standby FADM services to swap the virtual IP address and change positions – primary changes to standby, and standby changes to primary.





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# FactoryArray Configuration & Management

This chapter describes how to use FactoryArray system settings, the FADM console, and perform initial setup tasks that are required before you can use your FlipFactory servers with FactoryArray, plus other configuration and management tasks.

## Topics

- [Configuring System Settings for FactoryArray \(page 3-1\)](#)
- [Database Mirroring and Recovery \(page 3-4\)](#)
- [Using the FactoryArray Database Mirroring Console \(page 3-5\)](#)
- [Job/Monitor Recovery in FactoryArray \(page 3-8\)](#)
- [Monitor Configuration in FactoryArray \(page 3-9\)](#)
- [Modifying the FADM Service Port Number \(page 3-11\)](#)
- [Renaming Your FlipFactory Server \(page 3-11\)](#)



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### Note

*Topics in this chapter refer to SQL Server in its default implementation. You can implement SQL Server in several ways to meet your operational requirements, and you can upgrade to Microsoft SQL Server Workgroup Edition or higher for additional database capacity. For database implementation options, see the FlipFactory User's Guide, Chapter 10, Database Implementations & Utility Operations.*

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## CONFIGURING SYSTEM SETTINGS FOR FACTORYARRAY

The database setting in system settings affect FlipFactory servers operating in a FactoryArray or load balance group, as noted here.

For a complete, detailed guide to all system settings, see FlipFactory User's Guide, Chapter 4, Configuring System Settings.



Also see the FlipFactory User's Guide, Chapter 7, Advanced Settings (Advanced System Settings (page 7-2) and Tuning Queues|Limits|Flip Limits for High Volume Use (page 7-6) for more details.

To configure FlipFactory's system settings for your environment, click the System Settings button on the FlipFactory console to display the System Settings window:



### Caution

**If you close windows in the FlipFactory console (including Manage Factories, or Administer Accounts) without saving your changes, you will lose your changes. Always click the disk icon to save changes before closing console windows.**

Figure 3–1. System Settings window

The screenshot shows the 'FlipFactory Settings' window with the 'System Settings' tab selected. The window contains the following fields and options:

- Capability File:** C:/Program Files/Telestream/FlipFactory/XML/Capability.xml (with a 'Browse...' button)
- System Administrator Password:** [Empty text box]
- System Administrator Email:** [Empty text box]
- Database Server:** localhost
- Specify Database Port:**  Specify Database Port
- Require subject in Submit Job:**  Require subject in Submit Job
- Flip Engine HTTP Host:** [Empty text box]
- HTTP Port:** 9000 (with a note: 'Enter value between 20 and 65535')
- Incoming SMTP Server Domain Name:** flipfactory.com
- Incoming SMTP Port:** 25 (with a note: 'Enter value between 20 and 65535')
- Outgoing SMTP Host:** [Empty text box]
- Outgoing SMTP Port:** 25 (with a note: 'Enter value between 20 and 65535')
- Outgoing SMTP Host Requires Authentication:**  Outgoing SMTP Host Requires Authentication
- Note:** The Username and Password specified here must pertain to the same email account on your SMTP Server as the System Administrator Email address specified above.
- Flip Server Limit:** 4 (with a note: 'Enter value between 1 and 25')
- Advanced Settings (affects all servers sharing the same database):**
  - Engine: [Dropdown menu]
  - Default All... [Button]
  - (Select an item from one of the categories in the Advanced Settings list)



**FactoryArray System Settings** Make changes and re-start the FlipEngine for changes to take effect.

**Table 3–1. FactoryArray System Settings Fields and Descriptions**

Component	Description
Database Server	<p>When located on same server as the target FlipEngine, identified as <code>localhost</code>. When located on a separate network server, specified by the workgroup or host name, or IP address.</p> <p>When this FlipEngine is part of a FlipFactory group or a FactoryArray, enter the host name or IP address of the server where the group database is located or enter the virtual IP address assigned to the FactoryArray Database Mirroring service, if utilized.</p> <p>You must obtain an IP address (to use as a Virtual IP Address) from your system or network administrator. Enter the Virtual IP address in the Database Server field when installing and implementing the FactoryArray Database Mirroring service.</p>

When you have updated the system settings, click Save to update the settings in the registry.

You can customize a wide variety of options in FlipFactory (and all Flip Engines attached to a load balance group or FactoryArray) by adjusting them in System Settings window > Advanced System Settings.

## Advanced System Settings

You can customize a wide variety of options in FlipFactory (and all Flip Engines attached to a load balance group or FactoryArray) by adjusting them in System Settings > Advanced System Settings.

These settings are stored directly in the FlipFactory database instead of the Windows registry, and they are effective for a single FlipFactory or all Flip Engines in a load balance group or FactoryArray. This significantly simplifies customization.

## Remote Settings

### Take Over on Shutdown

This option should only be used when the FlipEngine is part of a licensed FactoryArray.

Check Take Over on Shutdown when you want other factories in a FactoryArray to pick up and process jobs and monitors when you shut down another FlipFactory in the array. If unchecked, when you shut down the FlipFactory, any jobs unprocessed by this factory are left in the database, and monitors go offline until this FlipFactory returns to service.



---

## DATABASE MIRRORING AND RECOVERY

Mirroring is the continual process of copying database table changes (from FlipFactory server operations) from the primary database to the standby database without loss or interruption of service. You install FADM on two servers to implement database mirroring and recovery. This database mirroring process is transparent to FlipFactory services.

Database mirroring and recovery is enabled with a primary/secondary technique by means of regular and continual network communication between the two FactoryArray Database Mirroring services.

To implement database mirroring and recovery in a manner transparent to each FlipFactory using the central array database, a virtual IP address is employed. You specify a virtual IP address when installing FactoryArray Database Mirroring service, and then you update each FlipFactory with the same virtual IP address in the System Settings window. All FlipFactory communication with the FlipFactory central database uses the virtual IP address and port.

When the FactoryArray Database Mirroring (FADM) services start and establish communications, they determine which service is primary and which is standby. The primary FADM dynamically adds the virtual IP Address to its own Ethernet NIC so that it receives all FlipFactory connections to the Ethernet connection automatically (in addition to the regular IP address).

If the primary FADM fails, the virtual IP address is removed from this server, and the standby FADM becomes primary and repeats the dynamic assignment process. Now, messages from each FlipFactory are routed by the network to the *same* virtual IP address, which is now assigned to the Ethernet NIC on the formerly standby FADM (now in a primary state).

When the failed FADM is back online, it synchronizes its database to the primary database, and resumes its role as the secondary FADM service.



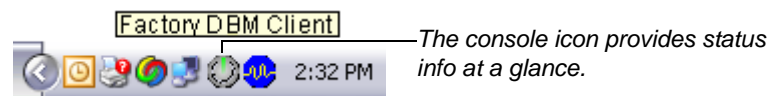
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## USING THE FACTORYARRAY DATABASE MIRRORING CONSOLE

When you install FactoryArray service, a console application (FactoryArray Database Mirroring Console, usually called just *console*) is also installed. You access the console via an icon in the tool tray and use it to configure and monitor FactoryArray Database Mirroring services.

### Accessing the Console

The console displays an icon in the tooltray.



The FADM console icon provides at-a-glance status of FADM service by the color of the central vertical line. When the line is red, a transition or error has occurred that should be investigated and resolved. A green line indicates that this server is currently the primary server, and a yellow line indicates that the server is currently the standby server. The icon flashes regularly during normal operations to indicate that heartbeat signals are being exchanged between the two FADM services.

To display the console, double-click the icon, right-click and select Details. Or, select start > Programs > Telestream > FactoryArray > FactoryArray DBM Console.

### Console Features

The console allows you to view the current operational state of the FADM service on this server, identify each FADM service in this group, and view and update FADM configuration settings.

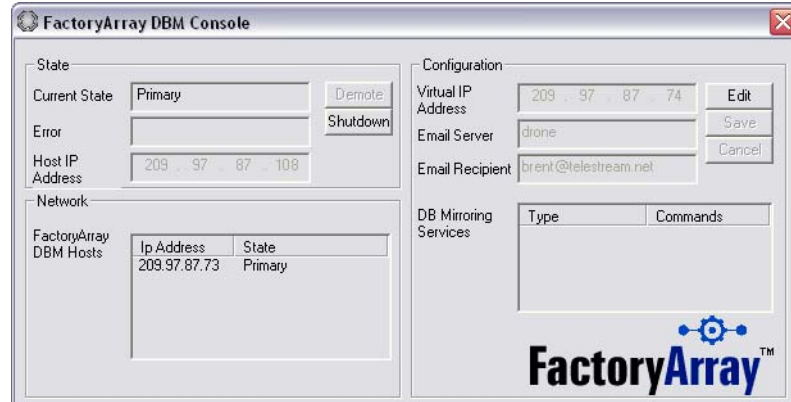


#### Note

*If you're running FADM on Windows 2000 and the FADM console does not display, contact Telestream Customer Service to obtain an updated version.*

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**Figure 3–2. Configure & manage FactoryArray via the console**

## Controls

**Current State** Displays the current state of the FADM service on this server. The two operational states are Primary and Standby. Several other states may display for short periods of time and are normal. Error state occurs when the service is not operational and you should take action.

**Error** Displays details of errors, when current state is *Error*. Common errors include no license file found, or an invalid virtual IP Address. If no license is found, you can place a proper license in the folder and the service will recover. For other errors, you should stop the service, fix the error and restart the service.

**Host IP Address** Displays the NIC Card's IP address for this server.

**Demote** Active when this FADM is primary and there is a secondary FADM in service. Click to force the primary FADM into secondary state and the secondary FADM into primary state.

**Shutdown** Click to shut down the FADM service on this server, and force the paired FADM into primary state if it is secondary. When the FADM service becomes operational again, the database is replicated.



### Caution

**During the time you shut down a FADM service (or it fails), you lose database redundancy and increase your risk of database loss. You should not operate your FactoryArray with only one FADM under normal conditions.**

## Network

**FactoryArray DBM Hosts** Displays the IP address of the NIC card for each FactoryArray Database Mirroring service in this group and its current state. In a typical installation there should be two servers in this list. If you've installed two FADM servers, both should display.



If you have installed more than one pair of FADM servers and you have not yet modified the XML file to change the port number, all FADM servers will display. Modify the XML file on each additional server pair to change the port number ([Modifying the FADM Service Port Number \(page 3-11\)](#)), then restart the service.

## Configuration

**Virtual IP Address** Displays the Virtual IP Address that has been configured for this FADM service. This virtual IP address is a unique IP address in the same subnet as the servers obtained from your network administrator. It *must* match the IP address of the second FADM service operating in tandem to be operational.

You should obtain this virtual IP address from your network administrator and configure this setting when installing and implementing the FactoryArray Database Mirroring service.

This virtual IP address must also be entered in each FlipFactory console's System Settings window in the Database Server field, that you are attaching to the array (and re-started of course).

**Email Server** The name of the Email server.

**Email Recipient** The email address of the person to notify so that the FADM service can send service or failures as an email notification.

**Edit** Click to activate the fields in this group and modify them.

**Save** Click to save your settings and update the FactoryArray Database Mirroring service. *You must restart the service for changes to take effect.* Be sure to update both FADM services in the group with the same settings.

**Cancel** Click to cancel changes you've made.

**Mirroring Components** Displays the database instance being controlled by FADM, and the type of function it performs, plus the number of records that have been mirrored since the console was last displayed.



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## JOB/MONITOR RECOVERY IN FACTORYARRAY

You can implement job and monitor recovery on FlipFactory servers configured as a load balance group with a FactoryArray license entry in the FlipFactory license, without actually installing FactoryArray Database Mirroring service. However, this installation does not eliminate the single point of failure and is not recommended.

You can also install FactoryArray Database Mirroring service on two FlipFactory servers, or you can install on two independent servers for lower risk of failure and higher scalability.

Each FlipFactory in a FactoryArray maintains regular communication with other FlipFactory servers to determine if there is a failure.

Failure is detected in two stages: First, a FlipFactory server attempts to communicate with another server in the array. If it makes the connection, then it makes an operational query. If either of these processes fail, the target FlipFactory is considered inoperative and its responsibilities are assumed by the inquiring FlipFactory.

### Job and Monitor Recovery Steps

When a FlipFactory fails, the following steps are taken by the FlipFactory that detects the failure:

- Flags the failed FlipFactory in the database as non-operational. (When you restart the Flip Engine, it automatically restores its status as operational.)
- Re-start the failed FlipFactory's monitors (if desired) on the FlipFactory server that detected the failure, or on a specific FlipFactory server.

The failed monitors display a Disconnected status until the database connection is restored, at which time the failed monitor is removed if it was recovered by another FlipFactory.

- Re-start any jobs from the failed FlipFactory that are incomplete.
- Send an email to the System Administrator to advise them which FlipFactory failed and which FlipFactory assumed its responsibilities.



### Caution

**When you stop a Flip Engine service, all pending/in-process jobs in this Flip Engine are immediately halted, including transcoding. Job and monitors in the stopped FlipFactory is controlled by Advanced Settings configuration in the System Settings window (see FlipFactory User's Guide for details).**

---

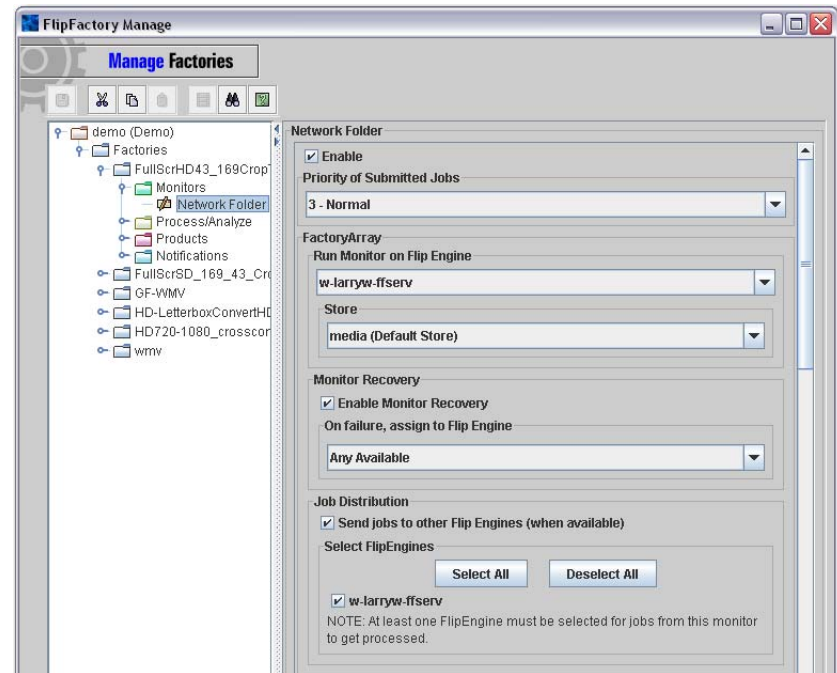


## MONITOR CONFIGURATION IN FACTORYARRAY

When a FactoryArray license key is added to the license on a FlipFactory server, the Monitor Editor panel is modified to display several options not available in standard FlipFactory.

You use these options to configure monitors in your factories to determine how the monitor should operate in a FactoryArray or load balance group.

**Figure 3–3. FactoryArray options in typical monitor editor panel**



The following control items are available only in a FactoryArray. (For details about each monitor provided in FlipFactory, select the Monitors folder in the console and display the tab of the monitor you're configuring to display online help, which describes each control in the panel.)

### FactoryArray

**Run Monitor on Flip Engine** The list displays all FlipFactory servers that are part of the group or array. Select which Flip Engine should run the monitor.

**Store** Select a pre-configured file storage location (store) the monitor should utilize on the specified FlipFactory server. The Media store is the default store.



### **Monitor Recovery**

**Enable Monitor Recovery** Check (by default) so that when the FlipFactory server running the monitor fails, another FlipFactory server will re-start the monitor and run it.

Un-check when you do not want a monitor to be re-started by another FlipFactory. (For example, in circumstances where a monitor will only work on a specific FlipFactory server.)

**On failure, assign to Flip Engine** In the event a FlipFactory server fails, the default (Any Available) allows any FlipFactory to restart the monitor. To use a specific FlipFactory, select it from the list. When some FlipFactory servers are configured in a unique manner, monitor recovery should be assigned to a specific FlipFactory server.

**Job Distribution: Send Jobs to other Flip Engines** Checked (by default) so that, when jobs are submitted from this monitor, they are submitted to other engines, as specified.

**Select Flip Engines.** All engines in the array are checked by default. Check Flip Engines that can process jobs from this monitor. You must select at least one Flip Engine if Send Jobs is checked. If you don't want to select any Flip Engines, you must un-check Send Jobs, or you can't save the factory.



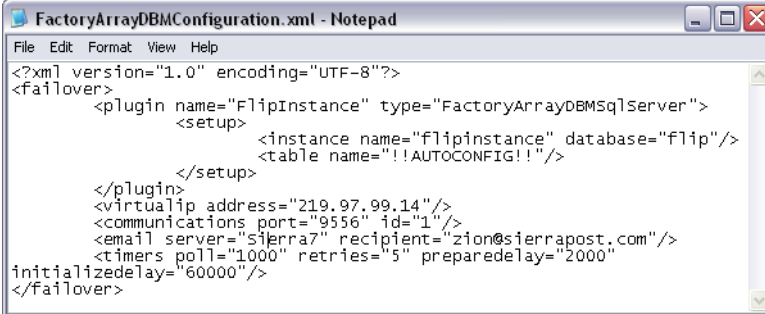
## MODIFYING THE FADM SERVICE PORT NUMBER

If you are implementing more than one pair of FactoryArray Database Mirroring systems, you must modify the port number on each subsequent pair of FADM services so that they can communicate correctly (and only) with each other, without interfering with other FADM service pairs on the same network.

To modify the port number, follow these steps:

- Step 1** Close the FADM console.
- Step 2** Open the XML file at (default) C:\Program Files\Telestream\FactoryArray\FactoryArrayDBMConfiguration.xml in an editor (NotePad, for example).

**Figure 3–4. FADM XML file in NotePad**



```

FactoryArrayDBMConfiguration.xml - Notepad
File Edit Format View Help
<?xml version="1.0" encoding="UTF-8"?>
<failover>
  <plugin name="FlipInstance" type="FactoryArrayDBMSqlServer">
    <setup>
      <instance name="flipinstance" database="Flip"/>
      <table name="!!AUTOCONFIG!!"/>
    </setup>
  </plugin>
  <virtualip address="219.97.99.14"/>
  <communications port="9556" id="1"/>
  <email server="Sierra7" recipient="zion@sierrapost.com"/>
  <timers poll="1000" retries="5" preparedelay="2000"
initializedelay="60000"/>
</failover>

```

- Step 3** Change the communications port number to a unique port for this server in the XML file on both servers in the pair.
- Step 4** Restart the FactoryArray DBM service.

## RENAMING YOUR FLIPFACTORY SERVER

If you rename a FlipFactory server after the initial installation of FlipFactory or rename a FlipFactory or FactoryArray database server after installing the FlipFactory database, FlipFactory will not operate correctly, and it will log errors in the engine0.log file.

After renaming the server, you should use the FlipFactory Rename utility to make the necessary changes to keep FlipFactory operational. The Rename utility reconfigures SQL Server 2005 and FlipFactory to use the new server name.

The Rename utility is located in the utilities folder in the FlipFactory directory on the FlipFactory server. Follow the directions in the readme file.





---

# Database Implementations & Operations

This chapter describes using Microsoft SQL Server 2005 Express Edition, the default database system installed with FlipFactory. Throughout this chapter, the Microsoft SQL Server 2005 Express Edition database is referred to generally as *SQL Server*, unless a specific version is required.

You can also use this chapter to upgrade SQL Server or implement SQL Server on an independent database server.



---

## Note

*On a single FlipFactory, stop the FlipEngine service before performing database operations.*

*In a load balance group, stop all FlipEngine services.*

*In a FactoryArray, you should never perform database operations without first shutting down the FADM service on the target server to avoid changes in the database during operations.*

---

## Topics

- [Microsoft SQL Server 2005 Express Edition \(page 4-2\)](#)
- [Upgrading MS SQL Server 2005 Express Edition \(page 4-3\)](#)
- [Installing a Stand-Alone SQL Server Database \(page 4-4\)](#)
- [Importing and Exporting User Accounts and Factories \(page 4-6\)](#)
- [Renaming Your FlipFactory Server \(page 4-11\)](#)



---

## MICROSOFT SQL SERVER 2005 EXPRESS EDITION

Microsoft SQL Server 2005 Express Edition is installed with FlipFactory. The database management system is installed by default on the same server as the Flip Engine service.

Optionally, you can install SQL Server on a separate server, and connect one or more Flip Engines to it. Whether installed in a single server or multi-server implementation (load balance group or FactoryArray), FlipFactory's database operations are transparent to FlipFactory users.

### Database Capacity Warning

When the data in the Microsoft SQL Server 2005 Express Edition database exceeds 80 percent of the 4 GB maximum size limit set by Microsoft, an email is automatically sent to the FlipFactory system administrator (FlipFactory User's Guide, Configuring System Settings (page 6-20)), and a dialog, warning of the limit, also displays on the FlipFactory console.

You should stop submitting jobs and reduce the job expiration period, by adjusting the job expiration period in FlipFactory User's Guide, Advanced System Settings (page 7-2).

If this action does not result in a reduction of the database size and return to normal operations, contact Telestream Customer Service for assistance.

### Exceeding Database Capacity

When the database reaches the 4GB size limit, jobs you submit are no longer processed because they can't be saved in the database. You should immediately stop submitting jobs and reduce the job expiration period, by adjusting the job expiration period in FlipFactory User's Guide, Advanced System Settings (page 7-2).

If this action does not result in a reduction of the database and return to normal operations, contact Telestream Customer Service for assistance.



---

## UPGRADING MS SQL SERVER 2005 EXPRESS EDITION

Use this section to upgrade the default MS SQL Server 2005 Express Edition database to MS SQL Server 2005 Workgroup Edition or higher, to eliminate the data limit of 4GB and take advantage of performance gains and other features you need.



---

### Note

*You can upgrade SQL Server for use with any edition or configuration of FlipFactory, load balance groups, or FactoryArray systems.*

---

### Implementation Steps

To upgrade SQL Server for your FlipFactory server, follow these steps:

**Step 1** Stop the Flip Engine Service or services (in a group or Array) and back up the database with SQL 2005 Management Studio. If you do not have Management Studio, you can download and install it. Follow the procedures at <http://msdn.microsoft.com/en-us/library/ms187510.aspx>.

If this is a clean FlipFactory install, skip this step.

**Step 2** Download the SQL Server edition you want and use it to upgrade the target database server.

When you upgrade SQL Server, select the *FLIPINSTANCE* instance. In the Services window, the SQL Server instance displays as *FLIPINSTANCE*.

---



### Note

*If you don't name the instance FLIPINSTANCE, you must identify the port number used by SQL Server and change FlipFactory system settings Database Port field accordingly – see FlipFactory User's Guide for details.*

---

**Step 3** Restore the FlipFactory database with Management Studio.

If this is a clean FlipFactory install, skip this step.

**Step 4** Restart the Flip Engine Service. Go to each FlipFactory server (now pointing to the new database server), and restart the service.

**Step 5** Test each FlipFactory for proper operation with the new database.



---

## INSTALLING A STAND-ALONE SQL SERVER DATABASE

Follow the steps in this section when you want to implement SQL Server on an independent server to support a stand-alone, high-performance FlipFactory server, or to support a load balance group. Do not use this section if you're using FactoryArray – instead, see the FactoryArray guide and use the FactoryArray installer.

### Implementation Steps

- Step 1** Perform a FlipFactory installation on the target database server, so that the installer installs SQL Server, and names the instance *FLIPINSTANCE*.
- Step 2** *Do not purchase or install a FlipFactory license on this server.*
- Step 3** With the FLIPINSTANCE of the SQL Server database installed, uninstall FlipFactory. The FlipFactory software and service is uninstalled, but the SQL Server FLIPINSTANCE remains for you to connect other FlipFactory servers to.
- Step 4** Optionally, upgrade your SQL Server to another edition ([Upgrading MS SQL Server 2005 Express Edition \(page 4-3\)](#)).
- Step 5** Note the IP address or host name of the new database server, for use later when you're updating system settings on the FlipFactory servers that you want to connect to this database.
- Step 6** Review your accounts and modify their names to be unique. If you are migrating a single FlipFactory (or a new installation), skip this step.
- For each existing FlipFactory you want to merge into the new database server, identify all of the accounts on each FlipFactory server. Rename any accounts that are duplicated across FlipFactory servers to make sure that all accounts are unique and can be replicated on the new database.
- Step 7** Change system settings to point to the new database server.
- For each FlipFactory server you're connecting to the new database, display the System Settings window and update the Database Server field to the host name or IP address of the new database server. Save the settings, log off and close the console.
- Step 8** Now that the Flip Engine service is pointing to the new database server, stop the service immediately to prevent any factories from failing.
- Step 9** For each FlipFactory server you're connecting to the new database server, display the Services window and stop the Service:
- Right-click SQL Server (FLIPINSTANCE) and display Properties. On the General tab, set Startup type to Disable and click OK to update. This instance is no longer used. When FlipFactory restarts, it will connect to its new database.



- Step 10** Back up your production FlipFactory's database.
- If you do not have Microsoft back up software, you can download and install SQL 2005 Management Studio. Follow the procedures at <http://msdn.microsoft.com/en-us/library/ms187510.aspx>.
- If this is a clean FlipFactory install, skip this step.
- Step 11** Now, for a single FlipFactory, restore the production database using SQL 2005 Management Studio.
- If this is a clean FlipFactory install, skip this step.
- Step 12** For multiple, existing production FlipFactories you plan to merge into the new database server, back up the database on each FlipFactory server.
- For multiple, existing production FlipFactories you want to merge into the new database server, merge the current production databases to the new database server by exporting all accounts ([Exporting Accounts \(page 4-7\)](#)) and then importing them [Importing Accounts \(page 4-9\)](#) into the new central database.
- 



### Caution

**When you export accounts and import them into a clean database (either from one or many), you lose your job history. If you do not want to lose your job history, contact Telestream Customer Service.**

---

- Step 13** Restart the Flip Engine Service. For multiple FlipFactory servers, go to each FlipFactory server (now pointing to the new database server), and restart the service.
- Step 14** Test each FlipFactory for proper operation with the new database.



---

## IMPORTING AND EXPORTING USER ACCOUNTS AND FACTORIES

From time to time, you may want to move (or copy) an account with all of its factories from one FlipFactory database to another FlipFactory database or you may want to archive the account in XML format.

You may also want to provide a back up copy of the database, or copy or move all accounts from one server to another, or to merge 2 or more FlipFactory databases (which contain all accounts and factories) into a single database.

Factory specifications in FlipFactory are stored directly in the FlipFactory database. Factories are organized by account. An XML-based file of the account and its factories is saved when you export it for archive purposes, or to use it for importing into another FlipFactory or combining FlipFactory databases.

An XML file is also created when you perform an automatic upgrade, for archive purposes. This file is not used by FlipFactory for any other reason. Only the factory specifications in the database are used by FlipFactory.



### Note

*Before combining two or more FlipFactory databases by exporting and importing accounts, make sure that each account is named uniquely before exporting them.*

---

If you have accounts in one or more FlipFactories that you are including in a load balance group, you should move the accounts to the new load balance group database. Once a FlipFactory is part of a load balance group, it obtains its User Account list of factories directly from the centralized load balance group database.

Moving an account is a two-step process. First, export the account from the current FlipFactory database into an XML-format account file. You can export all accounts or a single account via the FlipFactory console ([Exporting All Accounts](#) below or [Exporting a Single Account](#) on page 4-7) or using Telnet ([Exporting a Single Account via Telnet](#) on page 4-8).

After exporting accounts, you can import them into the load balance group database. The process of importing accounts is explained in [Auto-importing Accounts](#) on page 4-9 or [Importing an Account via Telnet](#) on page 4-10.

Exporting an account copies all the account's factories and all settings in them to an XML file for storage or transfer to another FlipFactory database.



---

## EXPORTING ACCOUNTS

You can export accounts in several ways, depending on your requirements.

- [Exporting All Accounts](#) (below)
- [Exporting a Single Account](#) (page 4-7)
- [Exporting a Single Account](#) (page 4-7)

### Exporting All Accounts

To export all accounts from a FlipEngine database via the FlipFactory console, follow these steps:

- Step 1** On the FlipFactory console, click System Settings to display the System Settings window.
- Step 2** Click the Email Technical Support button in the toolbar display the Email System Info to Tech Support dialog.
- Step 3** Select Copy Files... and click OK.

When all of the files have been saved in the *C:\Program Files\Telestream\FliFactory\SupportInfo* directory, open this directory to display them. Locate each of your account XML files, and use them to import into another FlipFactory database ([Importing Accounts](#) on page 4-9), save them for later use, or send them to Telestream Customer Service, for example.

### Exporting a Single Account

To export one account at a time from a FlipEngine database via the FlipFactory console, follow these steps:

- Step 1** On the FlipFactory console, click Administer Accounts to display the Administer Accounts window.
- Step 2** Select the account to export.
- Step 3** click the Export icon in the toolbar to display the Export Account dialog.
- Step 4** Select a destination for the XML file (and optionally rename it), then click Export.

When the XML file has been saved, you can import it into another FlipFactory database ([Importing Accounts](#) on page 4-9), save it for later use, or send it to Telestream for support, for example.



## Exporting a Single Account via Telnet

To export one account at a time from a FlipEngine database using Telnet, follow these steps:



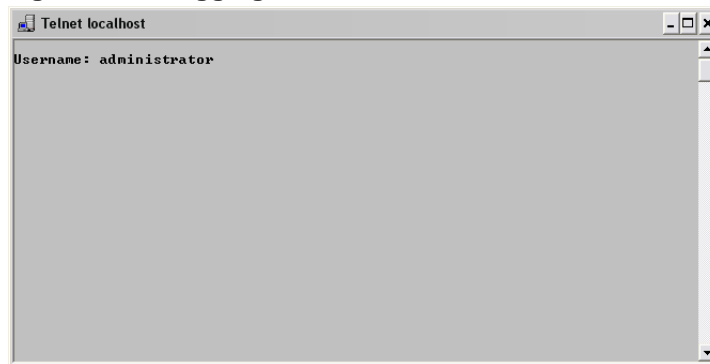
### Note

*When using Telnet with FlipFactory, you must type the command line correctly, or it will not execute. If you make a typing error, press Enter and enter the command again.*

*Make sure that the account name you export does not overlay an account of the same name in the new database. If you have accounts with the same name in different databases, but want to save both, you must rename one of them to a unique name before exporting the account.*

- Step 1** On the FlipFactory server where you are exporting an account, click Start > Run to display the Run window.
- Step 2** Type `cmd` to display the command window.
- Step 3** Type `Telnet localhost` to log on to the target FlipEngine's command line interface.
- Step 4** FlipFactory displays a username prompt.

**Figure 4–1. Logging on to database**



- Step 5** Type `administrator` (default FlipFactory administrator user name) or other administrator user name to log on to the FlipFactory database.
- Step 6** FlipEngine displays the password prompt.
- Step 7** No password is assigned to the default administrator user name. Press Enter to continue, or type the password and press Enter if you have created one for the username you're using to log on.

To export an account, perform the following tasks:

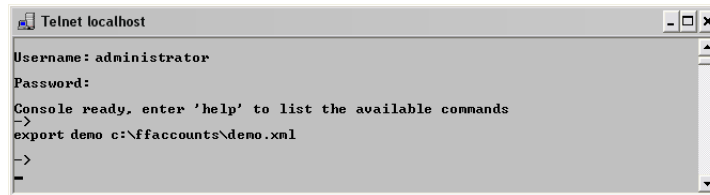
- Step 8** Type `export AccountName FileName`, where `AccountName` is the text string identifying the account as displayed in the console; for example, `demo`. `FileName` is the fully-qualified path and the file where



FlipFactory stores the XML-formatted account information; for example: `C:\accounts\demo.XML`.

Be sure to create a folder for your exported account before you export the XML file into it.

**Figure 4–2. Exporting an account via Telnet**



```

Telnet localhost
Username: administrator
Password:
Console ready, enter 'help' to list the available commands
->
export demo c:\ffaccounts\demo.xml
->
-

```



### Note

*If no path is specified, FlipFactory stores the file in the path %systemroot%\System32 (where %systemroot% is the drive where your operating system is installed).*

- Step 9** Press Enter to execute the command. The FlipEngine creates the file and exports the account definition in XML format.
- Step 10** Type `logout` and press Enter to disconnect from the FlipEngine and terminate Telnet.

## IMPORTING ACCOUNTS

You can import accounts from the console or via Telnet.

- [Auto-importing Accounts](#) (below)
- [Importing an Account via Telnet](#) (page 4-10)



### Note

*When importing an account into another FlipFactory server, be sure to consider there may be different licenses, different stores, variances in access to various input/output systems, shares, etc. that render factories inoperable on another FlipFactory.*

*Factories imported into another FlipFactory are not assured of working correctly, due to configuration and system access differences.*

### Auto-importing Accounts

If you are implementing FlipFactory on a new server, or you are creating a central database for a load balance group or a FactoryArray, you can place all your accounts in a single folder and FlipFactory will import them



automatically when it starts up. However, FlipFactory will not overlay existing accounts. FlipFactory will not overwrite an existing account. Instead, it adds the suffix *alreadyexists* to the file (for example, *demo.xml.alreadyexists*) if the file you are importing is named the same as an account that already exists in the database. To replace an account, you must first delete it from FlipFactory.

To automatically import one or more accounts into a FlipFactory server, follow these steps:

- Step 1** Move the individual account XML file(s) to the local server that is operating as the FlipFactory group database server or to the FlipFactory server you are going to perform the import into, or place them in a network-accessible share and mount the share on the target server.
- Step 2** Move all XML files you want imported (each account must have a unique name) into the directory *C:\Program Files\Telestream\FliFactory\XML\accounts\import* (this is the default installation directory, which may be different on your server).
- Step 3** Restart the FlipEngine service and FlipFactory will automatically import all accounts into its database.  
Successfully imported account files are appended with *imported* (for example, *demo.xml.imported*). Files that could not be processed successfully are suffixed with *invalid* (*demo.xml.invalid*).
- Step 4** Log back onto the console to display the new (or updated) account.

## Importing an Account via Telnet

The Telnet command for importing accounts into FlipFactory is import:

```
import {filename} [-monitor] [-notify] [-mdml [path]]
```

Imports a user account from the XML file specified by the {filename} argument.

If the account exists it is overwritten, otherwise a new account is created.

Monitors that reside in the imported account will be started on the FlipEngine that these accounts were imported into.

Options:

-monitor disables all Monitors

-notify removes all Notifications

-mdml adds MDML Notification to each factory. If specified, 'path' sets the Destination Path. If not specified, it will be set to *C:\Program Files\Telestream\FliFactory\Debug*.

To import an account into a FlipFactory server using Telnet, follow these steps:

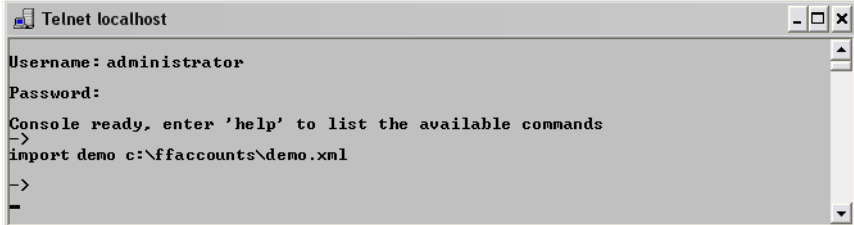
- Step 1** Move the account folder or the individual account XML file(s) to the local server that is operating as the FlipFactory group database server or



to the FlipFactory server you are going to perform the import into, or place them in a network-accessible share and mount the share on the target server.

- Step 2** Log on to the FlipEngine server to execute FlipFactory commands via the command line: Open a command window (start > Run) and type `cmd`.
- Step 3** In the command window, type `Telnet localhost`. When prompted, type the default account user name `administrator` (or other username if modified) and press Enter. Next, type the password if you configured the FlipEngine with one. By default there is no password on the administrator account, so just press Enter to log in to the FlipEngine.
- Step 4** If you provided the proper credentials, the FlipEngine displays the text “Console ready...”.
- Step 5** Now, type `import FileName` where `FileName` is the fully-qualified path and the file that contains the XML-formatted account information; for example: `c:\accounts\demo.xml`.

**Figure 4–3. Importing an account via Telnet**



```
Telnet localhost
Username: administrator
Password:
Console ready, enter 'help' to list the available commands
->
import demo c:\ffaccounts\demo.xml
->
-
```

- Step 6** Type `logout` and press Enter to disconnect from FlipFactory and terminate Telnet.
- Step 7** Restart the FlipEngine service and log back onto the FlipFactory console to display the new (or updated) account.

---

## RENAMING YOUR FLIPFACTORY SERVER

If you rename a FlipFactory server after the initial installation of FlipFactory or rename a FlipFactory or FactoryArray database server after installing the FlipFactory database, FlipFactory will not operate correctly, and it will log errors in the `engine0.log` file.

After renaming the server, you should use the FlipFactory Rename utility to make the necessary changes to keep FlipFactory operational. The Rename utility reconfigures SQL Server 2005 and FlipFactory to use the new server name.

The Rename utility is located in the utilities folder in the FlipFactory directory on the FlipFactory server. Follow the directions in the readme file.





---

# Troubleshooting

Use this appendix to identify the symptom you're experiencing with FactoryArray. Follow the suggestions in the right column to identify the potential problem.

---

## TROUBLESHOOTING SYMPTOMS AND PROBABLE CAUSES

Table A-1, [Troubleshooting Symptoms and Probable Causes](#), below provides a list of common symptoms and probable causes to assist you in troubleshooting FactoryArray.

If you are not able to solve the problem with this troubleshooting chart, or require other assistance with FlipFactory, please contact Telestream Technical Support ([Support and Information](#), in About This Guide).



**Table A-1. Troubleshooting Symptoms and Probable Causes**

Symptom	Probable Causes
<p>FADM continually reports that it is in Synchronizing mode and will not move in to Primary or Standby operational mode.</p>	<p><b>A. The account that the FADM's SQL service is logged in with, does not have write permissions.</b></p> <p>When an FADM service is started second (or the primary FADM is demoted to standby), it identifies its partner FADM service (in primary mode). As standby FADM, it must synchronize with the primary FADM. To synchronize, the standby FADM service sends a database export message to the primary FADM's MS SQL Server. The SQL Server attempts to export the database as a dat file on the standby FADM server in a specified directory.</p> <p>If the account it is logged in with does not have write permission, access is denied. Therefore, the standby FADM service cannot ever complete the database replication. So, it stays in sync mode and FADM is not operational.</p> <p>Errors are logged in the primary SQL Server log on the primary FADM server, and standby FADM service remains in sync mode indefinitely.</p> <p>To solve this problem:</p> <ol style="list-style-type: none"> <li>1. Ensure that you have a specific administrative account in a workgroup or domain (system account).</li> <li>2. Use the Microsoft SQL Server 2005 Management to back up the primary database.</li> <li>3. Stop all FlipFactory servers in the array.</li> <li>4. On each FADM Server:</li> <li>5. Stop FactoryArray DBM service &amp; SQL Server (FLIPINSTANCE).</li> <li>6. Open Control Panel &gt; Administrative Tools &gt; Services. Locate SQL Server (FLIPINSTANCE) (or other instance name you specified) and right-click to select Properties.</li> <li>7. In Properties &gt; Logon, select This account and provide the proper account and password.</li> <li>8. &gt; Restart the SQL Server (FLIPINSTANCE) service, and then restart FactoryArray DBM service on each server and retry. If successful, restart all FlipFactory servers.</li> </ol>



**Table A-1. Troubleshooting Symptoms and Probable Causes**

<b>Symptom</b>	<b>Probable Causes</b>
<p>FADM continually reports that it is in Synchronizing mode and will not move in to Primary or Standby operational mode (continued).</p>	<p><b>B. A Windows firewall or network problem may prevent access.</b>            You may have a Windows firewall enabled on one of the FADM servers, or there may be a network problem preventing access.            To solve this problem:</p> <ol style="list-style-type: none"> <li>1. Stop all FlipFactory servers in the array.</li> <li>2. Stop FADM and MS SQL Server (FLIPINSTANCE) on both servers.</li> <li>3. Make sure you can ping each FADM server from the other FADM server, no Windows firewalls are enabled, and the network is operating properly.</li> <li>4. &gt; Restart the original primary FADM and SQL Server (FLIPINSTANCE) service, then the secondary FADM and SQL Server (FLIPINSTANCE) service and retry. If successful, restart all FlipFactory servers.</li> </ol> <p><b>C. The secondary FADM's database may be corrupted.</b>            During troubleshooting synchronization problems, you may have stopped the SQL service, killed the service, or restarted the computer, causing the database to get corrupted.            To solve this problem:</p> <ol style="list-style-type: none"> <li>1. Stop all FlipFactory servers in the array.</li> <li>2. Stop FactoryArray DBM service and SQL Server (FLIPINSTANCE) on both servers.</li> <li>3. Use Microsoft SQL Server 2005 Management Studio to restore the backed-up primary database to the standby FADM server.</li> <li>4. &gt; Restart the SQL Server (FLIPINSTANCE) service and original primary FactoryArray DBM service and then the SQL Server (FLIPINSTANCE) service and secondary FactoryArray DBM service and retry. If successful, restart all FlipFactory servers.</li> </ol>
<p>FADM Console won't display.</p>	<p><b>A. You need an updated version of the FADM Console.</b>            When you install certain versions of FADM on Windows 2000, the FactoryArray Database Manager console does not display correctly. Contact Telestream Customer Service for an updated version.</p>





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