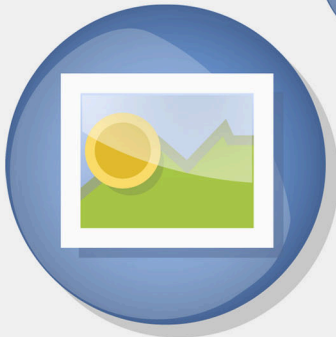


FatWire | Content Server 7

Version 7.0.1

Installing Satellite Server

Document Revision Date: Jul. 12, 2007



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Installing Satellite Server

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FatWire Technical Support

www.fatwire.com/Support

FatWire Headquarters

FatWire Corporation
330 Old Country Road
Suite 207
Mineola, NY 11501
www.fatwire.com

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Chapter 1

Satellite Server Configurations

Satellite Server is a product that works with your Content Server content management system to provide three things:

- An additional layer of caching, supplementing the layer of caching that is provided by the Content Server cache.
- The ability to quickly and economically scale your Content Server system by adding remote installations of Satellite Server.
- The ability to improve your website's performance and reduce the load on Content Server by moving content closer to the web site visitors who will view it.

This chapter introduces you to the configurations that you implement in order to receive these benefits.

You can configure Satellite Server in the following ways:

- [Co-Resident \(Development and Management\)](#), which provides a second layer of caching and allows to simulate live delivery of content on development and management systems.
- [Remote \(Delivery\)](#), which improves performance and scalability on delivery systems.

The following sections describe these configurations and what they are used for in greater detail.

Co-Resident (Development and Management)

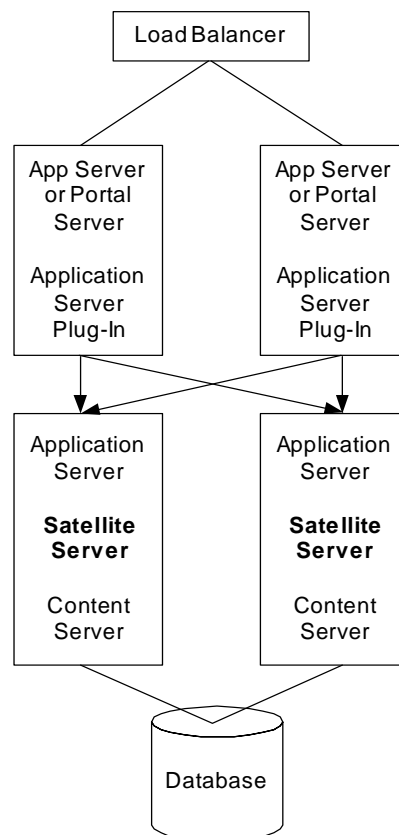
Content Server ships with a copy of Satellite Server that is automatically installed and enabled on the same machine as your Content Server software. This is your **co-resident** Satellite Server. The purpose of the co-resident Satellite Server is to provide development and management systems with the ability to simulate page delivery as it occurs on the live site (delivery system).

Note

Co-resident Satellite Server is not intended for delivery systems. For delivery purposes, disable the co-resident Satellite Server on the delivery system and set up one or more remote satellite server instances (described in “[Remote \(Delivery\)](#),” [on page 7](#)). If you use a co-resident Satellite Server instance on a delivery system, delivery performance will be lower than expected.

The co-resident Satellite Server provides a layer of caching in addition to that provided by Content Server’s cache. Satellite Server and the Content Server cache work in tandem to provide **double-buffered caching**, where copies of cached pages are stored in both the Satellite Server and the Content Server caches. For more information about double-buffered caching, see the caching chapter of the *Content Server Developer’s Guide*.

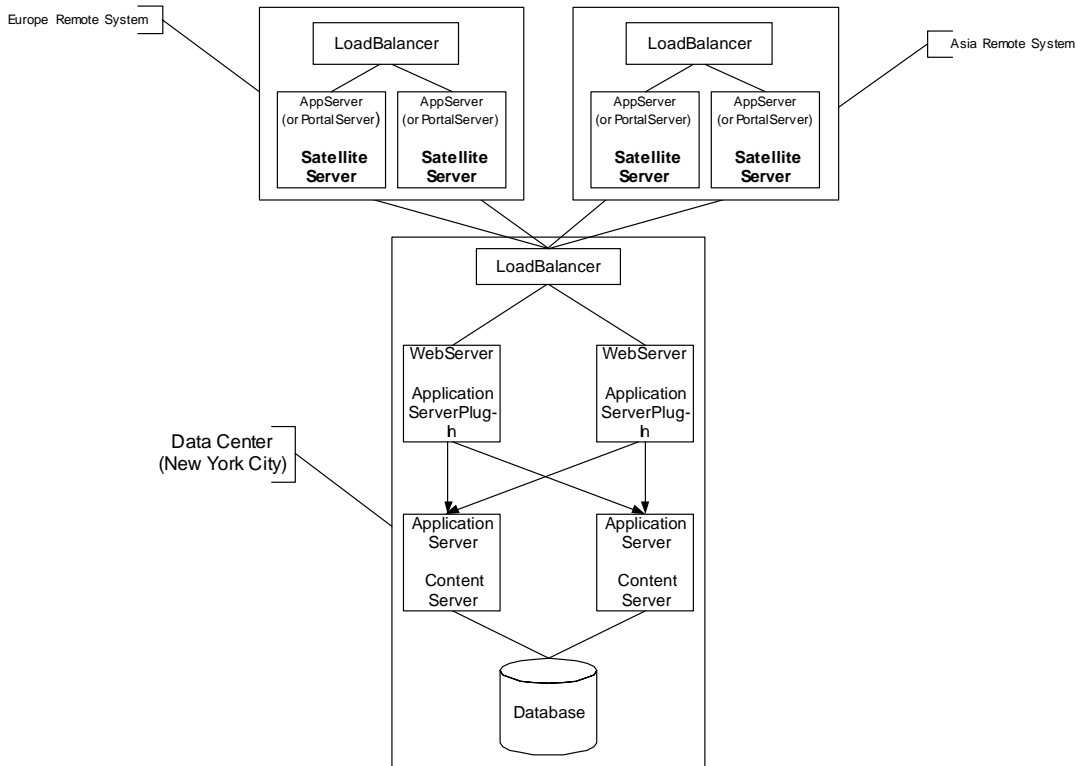
The following diagram illustrates a co-resident installation of Satellite Server:



FatWire recommends that you tune your co-resident Satellite Server host to optimize your Content Server system’s performance, as described in [Chapter 3, “Tuning Satellite Server.”](#)

Remote (Delivery)

For delivery systems, you should disable the co-resident Satellite Server and set up one or more remote Satellite Server instances. The remote Satellite Server systems should be on hardware that is close to the web site's audience, as shown in the following diagram:



Note

While using a co-resident Satellite Server on a delivery system is allowed, it is not recommended, as delivery performance may not be as expected.

Remote installations of Satellite Server provide several benefits in addition to allowing double-buffered caching:

- They improve the performance of the web site by moving the content closer to its audience. In the preceding diagram, for instance, the main data center is located in New York City, while the secondary data centers are located in Europe and Asia.
- They remove load from Content Server. Because remote Satellite Servers do not require the same sort of hardware that a full installation of Content Server does, adding them to your Content Server system is a simple and economical way to make Content Server scalable.

For information on how to install and configure remote instances of Satellite Server, see [Chapter 2, “Installing Remote Satellite Servers.”](#) For instructions on how to disable your co-resident Satellite Server on the delivery system, and how to tune for this configuration, see [Chapter 3, “Tuning Satellite Server.”](#)

Chapter 2

Installing Remote Satellite Servers

When you install remote instances of Satellite Server, you can install them on any FatWire-supported application server or portal server. If you plan to install a web server, you will need to configure it by referring to the application server documentation.

Note that installing and configuring remote instances of Satellite Server is an iterative process. You must initially install, configure, and test one remote Satellite Server, then install, configure, and test your other remote Satellite Server installations.

After you have completed the installation and initial configuration of your Satellite Server software, tune each Satellite host to achieve optimum performance. For more information about tuning Satellite Server, see [Chapter 3, “Tuning Satellite Server.”](#)

To install and configure remote instances of Satellite Server, you must complete the following steps:

- [Step 1. Install Required Hardware and Software](#)
- [Step 2. Expand the Installation File](#)
- [Step 3. Run the Installer](#)
- [Step 4. Register Satellite Server with Content Server](#)
- [Step 5. Configure the Web Server](#)
- [Step 6. Start Satellite Server](#)
- [Step 7. Test the Configuration](#)
- [Step 8. Install Satellite Server on Additional Remote Machines](#)

Step 1. Install Required Hardware and Software

Before you install Satellite Server, be sure that you have the required hardware and software.

FatWire frequently revises the specific software and hardware configurations that are supported by Content Server and Satellite Server. For the latest information, go to:

<http://e-docs.fatwire.com/CS>

Locate the product version of interest, and click the **Supported Platform Document (SPD)** link.

Networking Requirements

The connection between the Satellite Server hosts and the Content Server host is the primary limiting factor for performance of serving uncached data. The following table describes the minimum networking requirements:

Connection Between Satellite Server Hosts and Content Server Hosts	100Mbps
Connection Between Load Balancer and Satellite Server Hosts	100Mbps

Faster connection speed and low latency result in improved performance.

Load Balancer Requirements

You must have a load balancer. FatWire does not require a particular brand of load balancer, but we do recommend that you use a load balancer that supports session affinity, and the session affinity features should be enabled.

Configuration Requirements

Your Satellite Server hosts must meet or exceed the following requirements:

Table 1: Solaris Requirements

Operating System	Solaris 2.8
CPU	UltraSPARC II (dual, each running at 400MHz)
Physical Memory	1GB (2GB or more recommended)
Disk Space	5GB

Table 2: Windows Requirements

Operating System	Windows
CPU	Pentium III Xeon (running at 1GHz)

Table 2: Windows Requirements

Physical Memory	1GB (2GB or more recommended)
Disk Space	5GB

FatWire recommends using a homogeneous set of Satellite Server hosts. A heterogeneous set of Satellite Server hosts is acceptable, but having one complicates performance tuning. If you decide to use a heterogeneous set of Satellite Server hosts, FatWire strongly recommends configuring your load balancer to distribute the load based on the relative strength of each machine.

Satellite Server Contents

1. Satellite Server needs a full-featured servlet container, a servlet engine, and a Java Runtime Environment. If you want to install a full-featured web server for your servlet container or application server, refer to the application server documentation.
2. Create a domain in which to install Satellite Server. Do one of the following:
 - For WebLogic and Sun JES configurations that are not portal based, create an application server domain. The application itself is automatically created by the WAR file. For instructions on creating an application server domain, refer to the Content Server installation guide corresponding to your configuration.
 - For portal-based WebLogic configurations, create a portal domain and a portal web application before running the Satellite Server installer. Use WebLogic to create the portal web application, before running the Satellite Server installer (the portal web application must exist before deployment of the WAR file can take place). For instructions on creating a portal domain and portal web application, refer to the Content Server installation guide corresponding to your configuration.

Step 2. Expand the Installation File

The installation file is named `SatelliteServer701.tar.gz` for Solaris installations and `SatelliteServer701.zip` for Windows installations. Extract this file to a host machine as indicated in the sections below.

Windows

The installation file for Windows is named `SatelliteServer701.zip`. When you extract it, make sure that you retain the archived directory structure; otherwise the installer will fail.

Solaris

You can untar the installation file into any target directory. However, for performance reasons, it is better to untar it into a directory on a local partition rather than an NFS-mounted directory on another host. Assuming the `SatelliteServer701.tar.gz` file is in the current directory, the following commands unzip and then untar the archive:

```
$ gzip -d SatelliteServer701.tar.gz
$ tar -xvf SatelliteServer701.tar
```

Extracting `SatelliteServer701.tar.gz` creates a subdirectory named `SatelliteServer`. Do *not* change the name of this directory or the names of any of its subdirectories.

Step 3. Run the Installer

To install remote `SatelliteServer`

1. Run the installer script:
 - In Windows: `ssInstall.bat`
 - In *NIX: `ssInstall.sh`
2. In the “Welcome” screen, click **Next**.
3. In the “Installation Directory” screen, enter the target installation path for `Satellite Server`. Make sure you have the required permissions. If the directory you specify does not exist, the installer will ask for permission to create it.



4. In the “Select Products to Install” screen, select **SatelliteServer 7.0.1** and click **Next**.



5. In the “Platform Type” screen, select the desired platform type and click **Next**.



6. Select the desired application or portal server, enter the Satellite Server context root, and click **Next**.

Note

For WebLogic portal installations, set the context root to the name of the portal web application that you have created using WebLogic Workshop. For all other configurations, set the context root to the name of the web application that you want to be created for Satellite Server.

The CS installer will generate a WAR file named `cs.war`. For all portal installations other than WebLogic, you will rename the `cs.war` file (in [step 10 on page 17](#)) by giving it the name of the web application.



The screenshot shows the 'Installer' window for 'FatWire | Content Server 7'. The main title is 'Application Server'. Below this, there is a label 'Select the application server you are using:' followed by a dropdown menu with 'JBoss 4.0.x' selected. Below that is a label 'Enter the Context root:' followed by a text input field containing '/ss/'. At the bottom of the window, there are three buttons: 'Exit', 'Previous', and 'Next'.

7. In the “Provide Content Server Information” screen, enter the following:
- Host name or IP address of the machine running Content Server
 - Port number on which Content Server is listening for connections
 - Application context root to which SatelliteServer will be connecting.



The screenshot shows the 'Provide Content Server Information' screen of the FatWire Content Server 7 installer. The title bar reads 'Installer' and 'FatWire | Content Server 7'. On the left is a graphic of two overlapping CD/DVD discs. The main area contains three input fields with labels: 'Enter the Content Server Host:' with the value 'realsun01.fatwire.com', 'Enter the Content Server Port:' with the value '7001', and 'Enter the Content Server Application Context:' with the value '/cs/'. At the bottom are three buttons: 'Exit', 'Previous', and 'Next'.

8. In the next screens, enter information specific to your application server.
- For example:** If you are installing on WebLogic, complete steps a and b, below:
- a. Enter the path to your WebLogic directory.



The screenshot shows the 'WebLogic Directory' screen of the FatWire Content Server 7 installer. The title bar reads 'Installer' and 'FatWire | Content Server 7'. On the left is a graphic of two overlapping CD/DVD discs. The main area contains a label 'Path to your WebLogic Server Directory: (This folder will contain the samples folder)' and a text input field with the value '/bea/weblogic'. To the right of the input field is a 'Choose...' button. At the bottom are three buttons: 'Exit', 'Previous', and 'Next'.

b. Enter the following parameters:

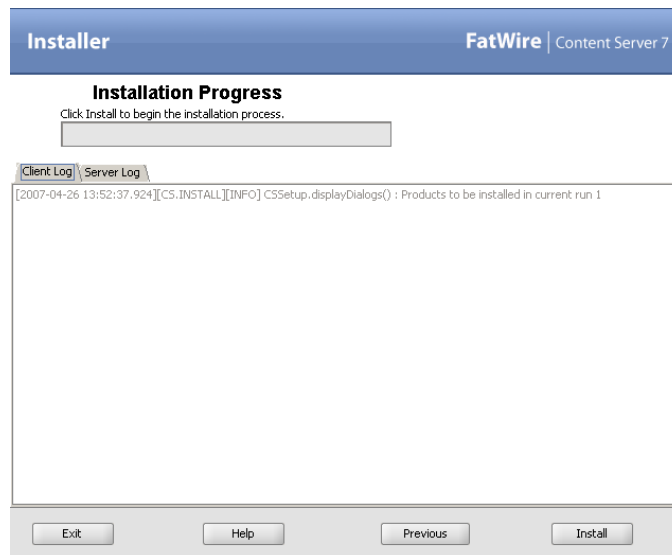
- For web installations:
 - Name of the WebLogic admin domain
 - Path to the WebLogic domain
 - Name of the WebLogic web application

The screenshot shows the 'WebLogic Parameters' window of the FatWire Content Server 7 installer. The window has a blue header with 'Installer' on the left and 'FatWire | Content Server 7' on the right. On the left side of the window is a large, semi-transparent image of a CD. The main area contains three text input fields with labels: 'WebLogic Admin Domain Name:' with the value 'mydomain', 'Path to your WebLogic Domain:' with the value 'c:/bea/domains/mydomain', and 'WebLogic Web Application Name:' with the value 'CS'. A 'Choose...' button is located to the right of the path field. At the bottom of the window are three buttons: 'Exit', 'Previous', and 'Next'.

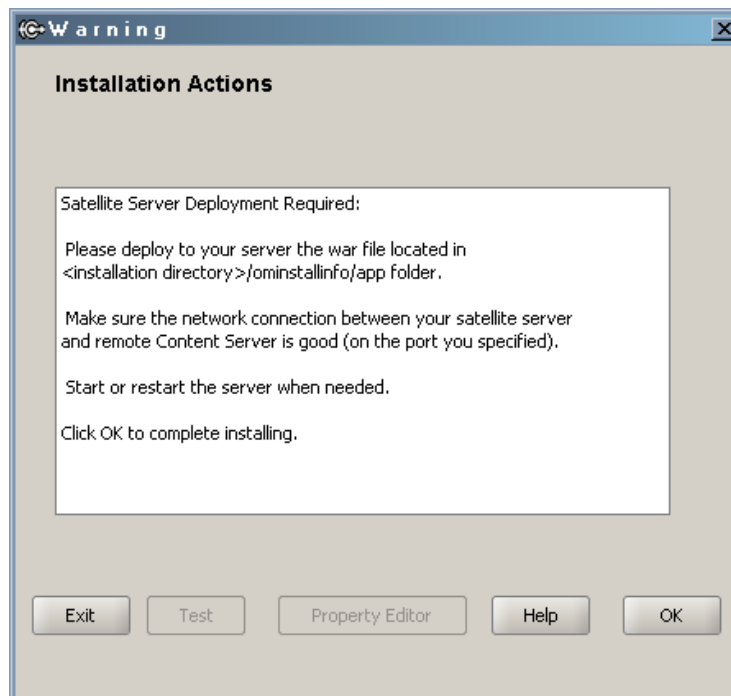
- For portal installations:
 - Name of the WebLogic portal domain
 - Path to the WebLogic portal application
 - Name of the WebLogic portal web module

The screenshot shows the 'WebLogic Parameters' window of the FatWire Content Server 7 installer, configured for portal installations. The window has a blue header with 'Installer' on the left and 'FatWire | Content Server 7' on the right. On the left side of the window is a large, semi-transparent image of a CD. The main area contains three text input fields with labels: 'WebLogic Portal Domain Name:' with the value 'portal', 'Path to your Portal Application:' with the value '/bea/weblogic/samples/portal/portalApp', and 'Portal WebModule:' with the value 'sampleportal'. A 'Choose...' button is located to the right of the path field. At the bottom of the window are three buttons: 'Exit', 'Previous', and 'Next'.

9. Click **Install** to start the installation process.



10. If necessary, rename the `cs.war` file (as instructed in [step 6 on page 14](#)). Deploy the WAR file to the server, then start (or restart) the server, and click **OK** to complete the installation.



11. If server deployment was successful, you will be presented with a confirmation dialog box. Click **OK** to review the installation log.



12. Click **Exit** to quit the installer.

Step 4. Register Satellite Server with Content Server

You must now register Satellite Server with Content Server so that Content Server can properly manage the Satellite Server cache. Automatic cache management is a built-in feature of Content Server. If you are sure you do not want Content Server to manage the Satellite Server cache, you can skip this step. FatWire recommends that all Satellite Server installations be registered with their respective Content Server installations.

1. From a Windows system, open Content Server Explorer and log into Content Server as a user that has SiteGod privileges.
2. Click on the **System Satellite** tab. A table will appear. This table must be populated with specific values, and each row represents a unique Satellite Server system. Consult the table below for suggested values:

Column	Value
id	A numerical (positive integer) value that identifies this Satellite Server. It must not be the same as any other value in the same column in any other row of the table.
description	A text description identifying this Satellite Server to users. It is used for reference purposes only.
protocol	The protocol on which Satellite Server is accepting requests. This is usually <code>http</code> .
host	The host name or IP address of the Satellite Server. This must be a host of the actual Satellite Server engine, not the load balancer.
port	The port on which Satellite Server is listening for requests.

Column	Value
satelliteservletpath	The part of the URL from the port number up to, and including, the name of the Satellite servlet. This is usually /servlet/Satellite.
flushservletpath	The part of the URL from the port number up to, and including, the name of the FlushServer servlet. This is usually /servlet/FlushServer.
inventoryservletpath	The part of the URL from the port number up to, and including, the name of the inventory servlet. This is usually /servlet/Inventory.
username	The username assigned to this Satellite Server.
password	The password assigned to this Satellite Server. The password will be automatically encrypted by Content Server Explorer after you enter it.

3. From the **File** menu, select **Save** to save the changes.
4. Exit Content Server Explorer.

Step 5. Configure the Web Server

For configuration instructions, refer to the product documentation of the web server you have chosen to install.

Step 6. Start Satellite Server

Restart the application server using your application server admin tool.

Step 7. Test the Configuration

Before you install Satellite Server on other machines, test the first Satellite Server machine to make sure that it is communicating properly with Content Server.

To test your configuration

1. Configure your load balancer to send all Content Server requests to the first Satellite Server machine.
2. Using a browser, go to a Satellite Server URL. For example:
`http://<server>:<port>/<URI>/Satellite?pagename=<MyPage>`
 where <MyPage> is any page on your Content Server system.
3. If you configured everything properly, your browser displays the selected page.
 If your browser did not display the selected page, review the following:

- *Did you set up the load balancer properly?* Remember, for this test, every request for Content Server has to go to the Satellite Server machine. (The other machines haven't been set up yet, so they will not know how to handle these requests.)
- *Did you set the Satellite Server properties properly?* In particular, make sure that you set the host and port to the proper values.
- *Did you request an invalid page from Content Server?*

Step 8. Install Satellite Server on Additional Remote Machines

After you have installed and tested Satellite Server on your first remote machine, you must install and configure Satellite Server on your other remote machines by repeating the steps in this chapter.

Chapter 3

Tuning Satellite Server

After you have installed your Satellite Server hosts (or, in the case of the co-resident Satellite Server host, the host has been installed along with Content Server), you need to tune them in order to achieve the best performance on your Content Server system.

This chapter explains how to tune your Satellite Server hosts. It contains the following sections:

- [Tuning the Co-Resident Satellite Server Host](#)
- [Tuning Remote Satellite Server Hosts](#)
- [satellite.properties Properties](#)
- [Log Configuration](#)

Tuning the Co-Resident Satellite Server Host

Satellite Server stores pages both in memory and on disk. In the case of the co-resident Satellite Server host, this means that the Satellite Server shares memory with your Content Server installation.

To achieve optimum performance on a system with co-resident Satellite Server, you should adjust the `file_size` property, located in the `satellite.properties` file on the Content Server host.

The `file_size` property separates disk-cached pagelets and blobs from memory-cached pagelets and blobs. To set the `file_size` property, specify a size in kilobytes. (The default value is 250.) Satellite Server caches any pagelet or blob larger than this size to disk, and caches any pagelet or blob smaller than this size to memory.

Setting `file_size` to 0 instructs Satellite Server to cache all pagelets and blobs to disk. Setting `file_size` to a large number (for example, 1,000,000) instructs Satellite Server to cache all pagelets and blobs to memory. The appropriate setting for your system will be somewhere in between these two extremes.

To determine the proper setting for your system, experiment with values for this property, watching the memory usage on both Content Server and Satellite Server with each alteration. Your goal is to adjust the property so that Satellite Server stores as many items as possible in memory, while still allowing Content Server enough memory to run quickly.

Tuning Remote Satellite Server Hosts

Because they do not share hardware or memory with your installation of Content Server, you tune your remote Satellite Server hosts differently than you would the co-resident host.

The following sections provide some tuning guidelines.

Tuning Homogeneous Satellite Server Hosts

If every Satellite Server host has the same CPU, the same amount of physical memory, and the same amount of disk space, then each Satellite Server should have the same set of properties. In order to determine the appropriate settings for your system, run performance tests while you experiment with various property values, noting which changes improve performance.

The following properties have an especially large impact on performance and should be tuned carefully:

- `file_size`
- `expiration`
- `cache_max`

For more information about these properties, see “[satellite.properties Properties](#),” on [page 23](#).

For a complete listing of all of the Satellite Server properties, see the *Content Server Property Files Reference*.

After you have found the best settings for your system, you can copy the modified `satellite.properties` file to your other homogeneous remote Satellite Server hosts.

Tuning Heterogeneous Satellite Server Hosts

If your remote Satellite Server hosts have different strengths, consider adjusting the various caching parameters and your hardware configuration.

For example, if one host has significantly more physical memory than the others, then you might consider increasing the value of the `file_size` property to increase the number of pagelets that get cached in memory.

Evaluate each of the properties listed in “[Tuning Homogeneous Satellite Server Hosts](#),” on [page 22](#), as their optimum values will differ with the differing hardware of each host.

You can also improve performance by tuning your hardware to take advantage of machines with more memory and processing power. To do this, configure your load balancer to send more requests to “stronger” hosts, and fewer requests to the hosts with less power and less memory.

satellite.properties Properties

The properties described in this section are those that have the greatest impact on performance, and are the ones that you are most likely to tune. For a complete list of Satellite Server properties, see the *Content Server Property Files Reference*.

cache_folder

Use this property to specify the directory into which Satellite Server caches pagelets to disk. By default, this value is empty, and Satellite Server will use the servlet context’s temporary directory. To use your own value, specify an absolute path to a directory of your choice:

You can specify only one directory. The directory that you specify is not required to be on the same drive as `/SatelliteServer`. FatWire recommends that it is the same drive to improve performance.

file_size

Use this property to separate disk-cached pagelets and blobs from memory-cached pagelets and blobs. You specify a size in kilobytes (kB). The default value is 250.

Satellite Server caches to disk any pagelet or blob larger than this size and caches to memory any pagelet or blob smaller than this size. For example, you set `file_size` to 4. Satellite Server caches to memory any pagelets smaller than 4kB and caches to disk any pagelets 4kB or larger.

To optimize Satellite Server performance, FatWire recommends that you experiment with this property.

Setting `file_size` to 0 instructs Satellite Server to cache all pagelets and blobs to disk. Setting `file_size` to a large number (for example, 1,000,000) instructs Satellite Server to cache all pagelets and blobs to memory. If you have a large amount of memory or a relatively small web site, FatWire recommends caching everything to memory.

The `file_size` property can significantly influence performance. To optimize performance, maximize the amount of memory caching. Be careful not to exceed the host’s memory capacity.

expiration

The `expiration` property sets the default expiration time from for blobs when a cache expiration value is not specifically set for that item with the `satellite.blob` or `RENDER.SATELLITEBLOB` tag that generated the item.

Setting `expiration` as follows tells Satellite Server that blobs should never expire for time reasons:

```
never
```

Such objects are not guaranteed to stay in the cache indefinitely. For example, if the cache is full, Satellite Server still removes objects from cache based on an LRU (least recently used) algorithm.

Setting `expiration` as follows tells Satellite Server not to cache pages, pagelets, or blobs at all:

```
immediate
```

To set a specific set of expiration dates and times, assign a string that uses the following format for the `expiration` property:

```
hh:mm:ss W/DD/MM
```

The value of this property follows the syntax of a `TimePattern` object. The syntax definition is reproduced here for convenience.

Table 3: TimePattern Syntax

Parameter	Legal Values	Description
hh	0–23	The hour. For example, 0 means midnight, 12 means noon, 15 means three in the afternoon, and so on.
mm	0–59	The number of minutes past the hour.
ss	0–59	The number of seconds past the minute.
W	0–6	The day of the week. For example, 0 means Sunday, 1 means Monday, and so on.
DD	1–31	The day of the month.
MM	1–12	The month of the year. For example, 1 means January, 2 means February, and so on.

For example, the following expiration value means “3:30 in the afternoon every Monday and on the 15th of April”:

```
15:30:00 1/15/4
```

If you specify a value for both `W` and `DD`, both values apply. Thus, pages expire on Monday (the `W` field) and on the 15th (the `DD` field). To indicate a day-of-week expiration only, place an asterisk in the `DD` field. For example, to indicate expiration at 3:30 in the afternoon every Monday in April, set the expiration value to:

```
15:30:00 1/*/4
```

To indicate a day-of-month expiration only, place an asterisk in the `W` field. For example, to indicate expiration at 3:30 in the afternoon on April 15, set the expiration value to:

```
15:30:00 */15/4
```

Setting the *hh*, *mm*, *ss*, or *MM* fields to an asterisk means all legal values. For example, to indicate expiration at 3:30 in the afternoon on Mondays and the 15th of **every** month, set the expiration value to:

```
15:30:00 1/15/*
```

You can also place multiple values for any of the six fields by separating the values with commas. To represent a range of values, use a minus sign. For example, the following expiration value represents 6:00 (morning), 1:00 (afternoon), and 5:00 (afternoon), Monday through Friday in June.

```
6,13,17:00:00 1-5/*/6
```

To indicate that pages must expire every 15 minutes, set the expiration value to the following:

```
*:15,30,45:0 */**/*
```

The default value is:

```
5:0:0 */**/*
```

This means that everything in the Satellite Server cache expires every day at 5:00 a.m.

cache_check_interval

When a disk-cached page expires, Satellite Server does not immediately delete the page from the disk. Instead, Satellite Server removes this page from its list of active pages. Satellite Server does, however, contain a cache-pruning thread that runs periodically and deletes expired objects from the cache. Use the `cache_check_interval` property to define the period (in minutes) at which the cache-pruning program should run. The default value is 3600, meaning that the cache-pruning program runs every 60 hours.

Do not set the `cache_check_interval` value too low; the cache-pruning program consumes a significant amount of resources. However, do not set `cache_check_interval` so high that your disk drive or memory fills up with expired pages.

Note

Satellite Server never serves expired pages. If a page is expired but is still in the cache, Satellite Server does not serve it.

cache_max

Use this property to specify the maximum number of objects (pagelets and blobs) that can be cached (memory cache and disk cache combined) at a time. The default value is 10000, meaning that Satellite Server caches up to 10000 objects at a time.

Satellite Server uses an LRU (Least Recently Used) algorithm to determine which objects must be removed from cache when the cache maximum is exceeded. For example, set the `cache_max` to 1000. When Satellite Server receives a request to cache the 1001st object, Satellite Server removes the object that has not been used in the longest time.

Although you should set `cache_max` to a high level, note that each entry in Satellite Server's cache consumes memory. Also, note that setting `cache_max` to a very high value causes the cache-pruning program to take a longer time to run.

Log Configuration

Satellite Server uses Apache's Jakarta Commons Logging to record all log messages. By default, no specific JCL configuration information is specified. As a result, JCL will record INFO, WARN and ERROR messages to the console. Users can specify detailed configuration information by placing an empty file called `commons-logging.properties` in the following directory:

```
<$SatelliteServerRoot>/WEB-INF/classes
```

and then editing the file using the Property Editor. The Property Editor provides detailed log configuration information about each property.

To open the Property Editor, run the `settings.bat` batch file (Windows) or the `settings.sh` script (Solaris). Open the `commons-logging.properties` file; it will open with several tabs. Under the Loggers tab, among other entries, you will see:

```
com.fatwire.logging.cs.satellite
com.fatwire.logging.cs.satellite.cache
com.fatwire.logging.cs.satellite.host
com.fatwire.logging.cs.satellite.request
```

These are the loggers that Satellite Server uses. Consult the property descriptions in the Property Editor for information about each logger, as well as the possible values. Under the Factory tab, you can choose the type of logger you want Satellite Server to use. By default, the Property Editor sets this to:

```
COM.fatwire.cs.core.logging.TraditionalLog
```

This allows you to write log messages to a log file that is configured under the **TraditionalLog** tab. (Note that the `logging.file` property is required.)

To send messages to the console, set the `org.apache.commons.logging.Log` property to either blank or `COM.FutureTense.Logging.StandardLog`. When you are done, save the changes, exit the Property Editor, and restart Satellite Server by restarting Resin. Consult the JCL website at <http://jakarta.apache.org/commons/logging/> for more information about JCL.

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