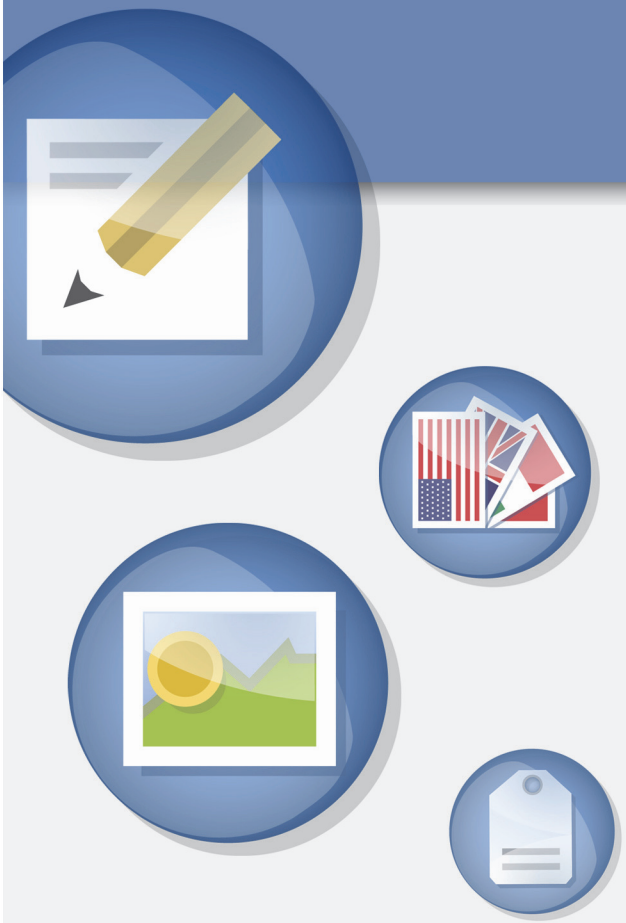
FatWire | Content Server 7

Version 7.5 Patch 3



Installing Satellite Server

Document Revision Date: Jun. 15, 2011

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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 the following benefits:

- 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.
- The ability to cache REST calls.

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)

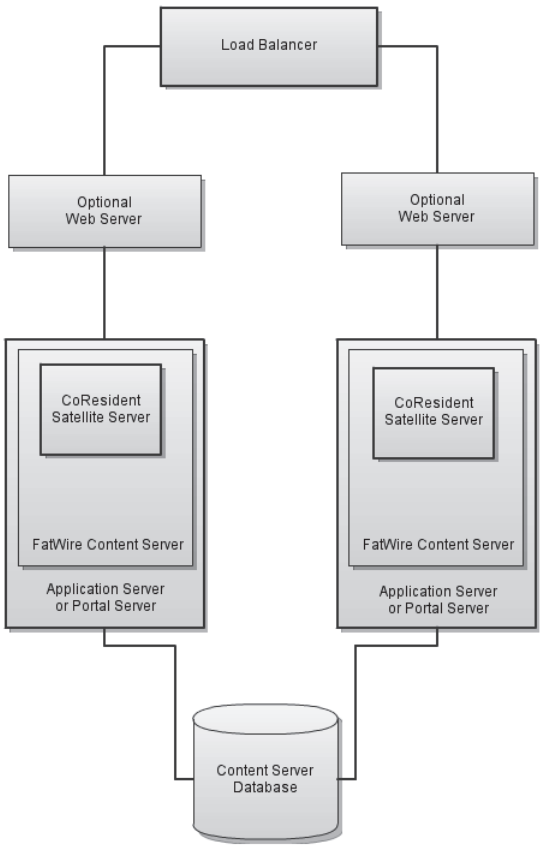
Content Server ships with a copy of Satellite Server that is automatically installed and enabled on the same machine as your Content Server software. This is your **co-resident** Satellite Server. The purpose of the co-resident Satellite Server is to provide development and management systems with the 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 (see "Remote (Delivery)," on page 7). Using co-resident Satellite Server on a delivery system degrades the system's performance.

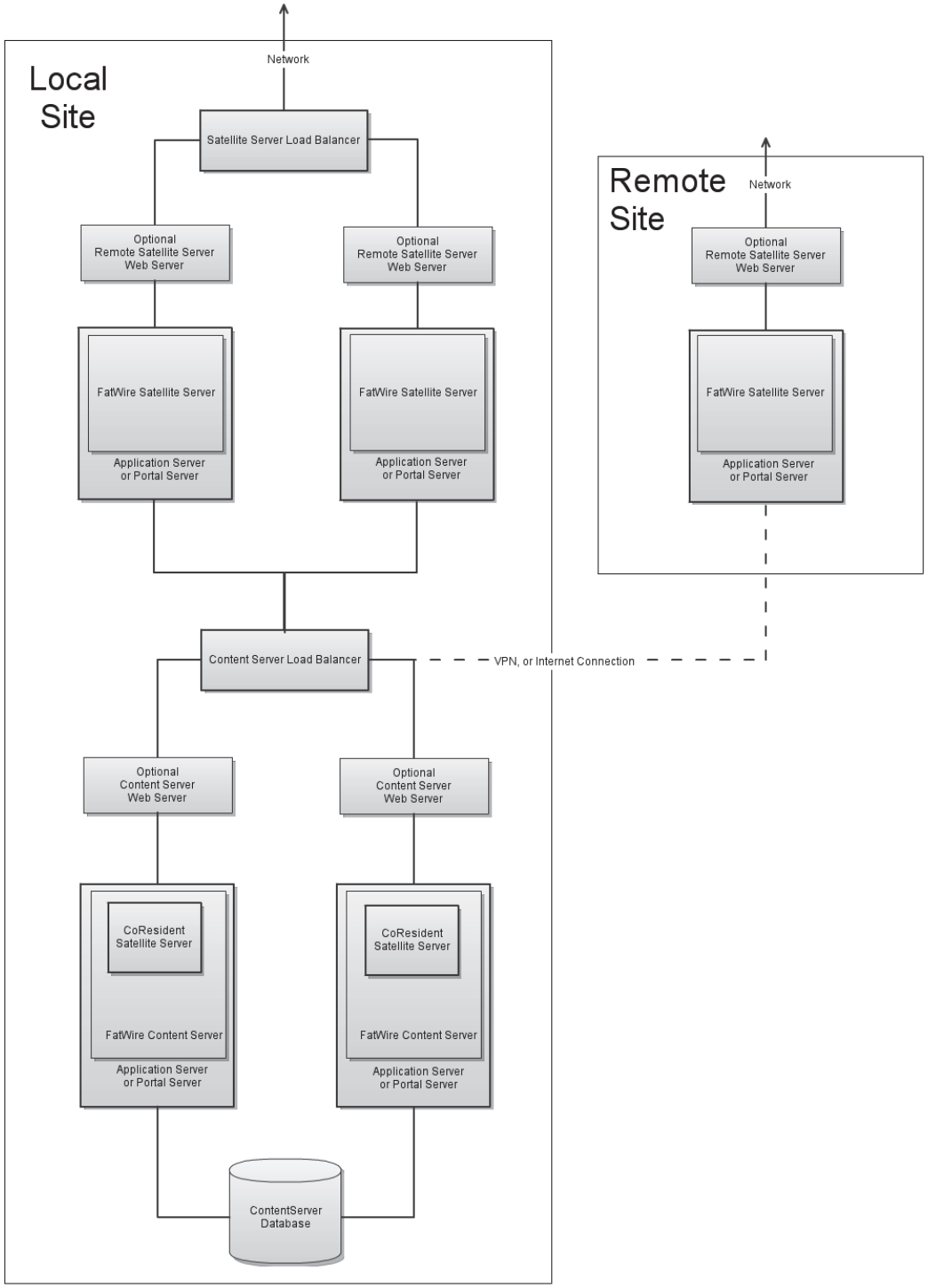
Co-resident Satellite Server provides a layer of caching in addition to that provided by FatWire Content Server's cache. Satellite Server and the Content Server cache work in tandem to provide **double-buffered caching**, where copies of cached pages are stored in both the Satellite Server and the Content 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:

We recommend tuning your co-resident Satellite Server host to optimize your Content Server system's performance, as described in Chapter 3, "Tuning Satellite Server."



Remote (Delivery)

On delivery systems, you should disable the co-resident Satellite Server and set up one or more Remote Satellite Server instances. At a minimum a Remote Satellite Server should be installed at the same geographic location as Content Server. For additional performance at remote geographic locations, additional Remote Satellite Servers can be configured.



Remote Satellite Server systems should run on hardware that closely resembles the site visitors' hardware.

Note

Using co-resident Satellite Server on a delivery system can degrade the system's performance and is therefore not recommended.

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 allow for improved scaling, as cached pages do not make requests to Content Server and therefore free its resource to handle other tasks.

For information on installing and configuring remote instances of Satellite Server, see Chapter 2, "Installing Remote Satellite Servers." For instructions on disabling your co-resident Satellite Server on the delivery system, and tuning 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. 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. Start Satellite Server
- Step 6. Test the Configuration
- Step 7. Install Satellite Server on Additional Remote Servers

Note

Graphics in This Guide. Many steps in this guide include screen captures of dialog boxes and similar features that you interact with in order to complete the steps. The screen captures are presented to help you follow the installation process. They are not intended to be sources of specific information, such as parameter values, options to select, or product version number.

Step 1. Install Required Hardware and Software

Before you install Satellite Server, ensure 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://support.fatwire.com
```

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

Networking Requirements

The connection between the Satellite Server hosts and the Content Server host is a limiting factor for performance of serving uncached data. All local connections should be set up using gigabit LAN connections to alleviate this issue. Remote connections will suffer a performance penalty related to the bandwidth and latency when accessing data not present in the Satellite Server cache.

Load Balancer Requirements

You must have a load balancer (hardware or software based) if using more than one Remote Satellite Server. FatWire does not require a particular brand of load balancer, but we do ***strongly*** recommend that you use a load balancer that supports session affinity and the session affinity features are enabled.

Configuration Requirements

Your Satellite Server hosts must meet the following minimum requirements:

Operating System	See the *Supported Platform Document*
Application Server	See the *Supported Platform Document*
CPU	Dual Core System (recommended: Quad Core System)
Physical Memory	2GB (4GB or more recommended)
Disk Space	5GB

Satellite Server Contents

Satellite Server needs a full-featured servlet container, a servlet engine, and a Java Runtime Environment. See the SPD for supported environments and the corresponding installation guides for instructions.

Step 2. Expand the Installation File

The installation file is named `SatelliteServer.zip`. Extract this file to a host machine.

- UNIX: Unzip `SatelliteServer.zip`
- Windows: Double click on `SatelliteServer.zip` in Windows Explorer

Extracting the zip file creates a subdirectory named `SatelliteServer`. Do not change the name of this subdirectory or any of its subdirectories, and make sure that you retain the archived directory structure; otherwise the installer will fail.

Step 3. Run the Installer

To install remote SatelliteServer

1. Run the installer script:
   - In Windows: `ssInstall.bat`
   - In UNIX based systems: `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. Select the product(s) you wish to install.

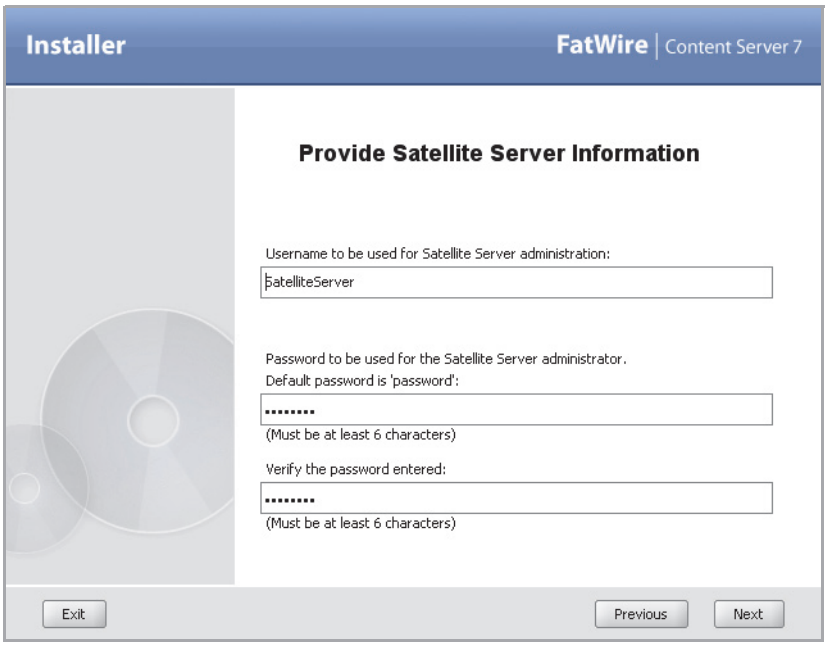
5. Select the desired platform type.

6. Select the desired application or portal server and enter the Satellite Server context root.

7. Enter the following information:
   - 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.
   - Whether Content Server was installed over a secure connection.

8. If you installed WEM with Content Server, select the **WEM** option.

9. Provide Satellite Server administrative account information.



10. If you installed WEM with Content Server, enter the host name and port number of the server where CAS is deployed.

11. 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:

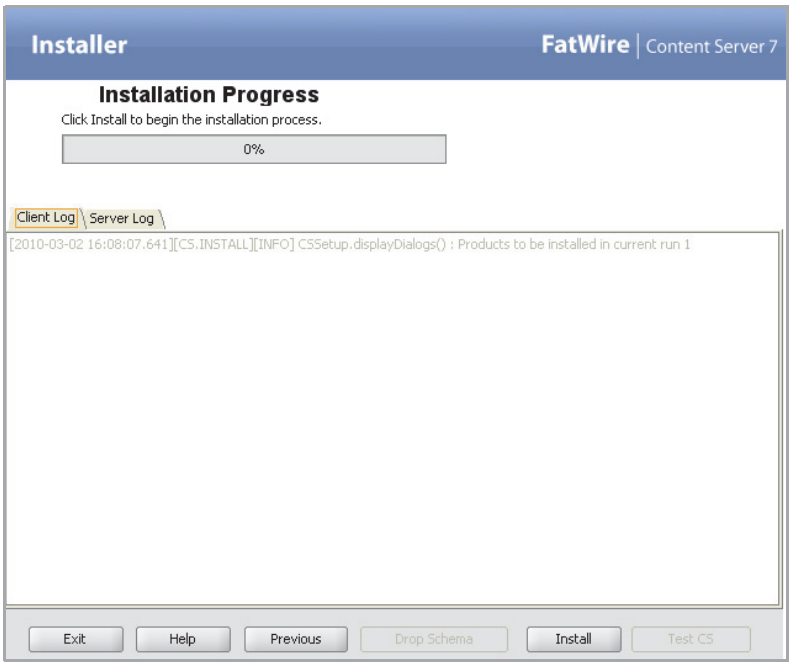
a. Enter the path to your WebLogic directory.

b. Enter the following parameters:

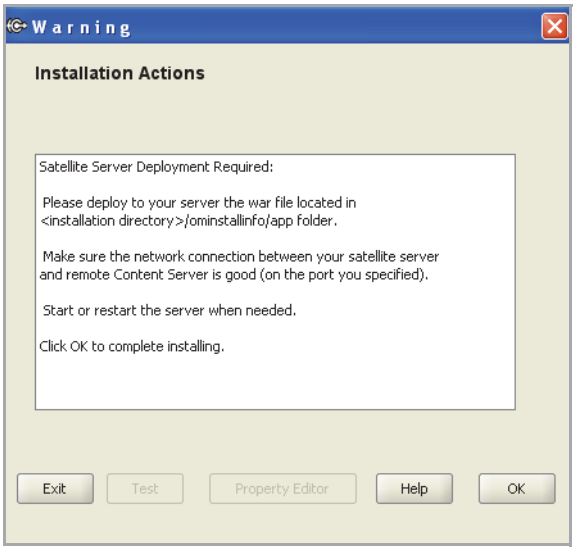
- For web installations:
  - Name of the WebLogic admin domain
  - Path to the WebLogic domain
  - Name of the WebLogic web application

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

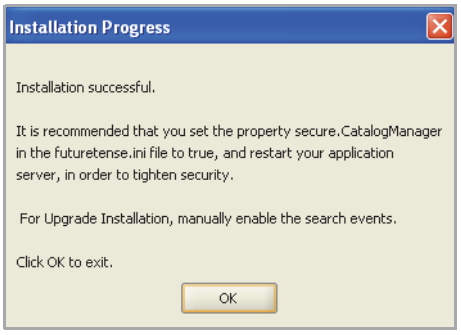
12. Click **Install** to start the installation process.



13. If necessary, rename the `cs.war` file (as instructed in step 6 on page 13). Deploy the `WAR` file to the server, then start (or restart) the server, and click **OK** to complete the installation.



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



15. Click **Exit** to quit the installer.
16. Deploy Satellite Server. Satellite Server's `war` file (`cs.war`) can be found in `ominstallinfo/app/` under the Satellite Server installation directory.

Step 4. Register Satellite Server with Content Server

You must now register Remote Satellite Server with Content Server so that Content Server can properly manage the Remote Satellite Server cache. FatWire requires that all Satellite Server installations be registered with their respective Content Server installation.

Note

Each Remote Satellite Server can be associated only with a single Content Server installation. This means that the same remote satellite Server cannot be used for two independent Content Server installations (such as management and production).

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 `http`.
`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.
`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`.

Column	Value
pastramiservletpath	The part of the URL from the port number up to, and including, the name of the inventory servlet. This is typically: /servlet/Pastrami
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. Start Satellite Server

Restart the application server, if necessary. See the application server's installation guide for information on how to restart (or deploy) your application server.

Step 6. 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 7. Install Satellite Server on Additional Remote Servers

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 25.

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 24, 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 1: 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 that page.

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 1,000,000 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 `1000000`. When Satellite Server receives a request to cache the 1000001th 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 the application server. Consult the JCL website at `http://jakarta.apache.org/commons/logging/` for more information about JCL.

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