

MERLIN

A ColdFusion Management System

Getting Started Documentation

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Introduction

Thank you for installing Merlin. Merlin is a desktop application system for managing ColdFusion application servers. It is based on the Adobe Integrated Runtime (AIR) and is a licensed service from FusionLink, Inc. (<http://www.fusionlink.com>). For support and sales questions:

<http://www.merlinmanager.com>

support@merlinmanager.com

Phone: 770-337-8363

Support Hours: TBD

Security

Merlin does use a local and encrypted Sqlite database for saving server settings and configurations. Licensing and software encryption is provided by the Nitro-LM (<http://www.nitrolm.com>) service.

Merlin remotely manages ColdFusion servers with a desktop application based on the Adobe Integrated Runtime (AIR). You, as the user, need to be made aware that unless you take certain steps, this communication could be unencrypted. If you need the data communication to be secure, you have two options. First, you can use a VPN connection to your servers and simply run Merlin communication through it. Second, you can use an SSL certificate. If you want to use the SSL option, you will first need to install an SSL certificate to the server and also define a secure Flex remoting destination for Merlin to use (refer to addendum). Once that is in place, you can safely communicate to the remote server with Merlin.

Getting Started

When you first open Merlin, you will be prompted for a login. The product licensing and encryption are run through Nitro-LM (<http://www.nitrolm.com>) which is a cloud-based license management system. If you have not use a product which uses Nitro-LM, you will first need to register as a new user.



The screenshot shows a window titled "MERLIN - ColdFusion Manager 0.8.0". Inside the window is a "Merlin Manager Login" form. The form includes the text "Licensing and Encryption powered by Nitro-LM". There are two input fields: "E-Mail *" and "Password *". Below these fields is a checkbox labeled "I forgot my password". At the bottom of the form are five buttons: "Register" (with a user icon), "Change Password", "Demo" (with a dropdown arrow), "Cancel" (with a red X icon), and "Submit" (with a checkmark icon).

Registering and logging in is fairly simple. It may take a few moments for Nitro-LM to load up Merlin.

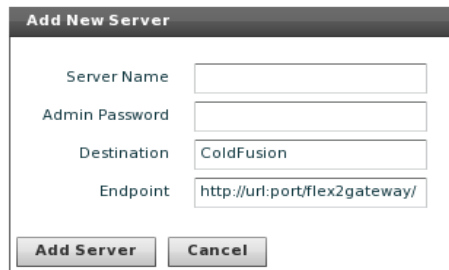
Once logged in, you will enter the main Merlin module which should look like this:



When you you first begin, no servers or repositories will be listed. This document will walk you through the steps to add servers and repositories to Merlin and to start using the various tools available.

Adding a New Server

First, you need to place the 'merlin' package with its CFCs on your server's CFIDE directory. When this is done, you should have a folder in your CFIDE directory called 'merlin' which will contain several



The screenshot shows a dialog box titled "Add New Server". It has four input fields: "Server Name", "Admin Password", "Destination" (with "ColdFusion" selected), and "Endpoint" (with "http://url.port/flex2gateway/" selected). At the bottom are "Add Server" and "Cancel" buttons.

CFCs and one cfm page. These CFCs are the point of contact for the Merlin Manager to communicate to your server. You may also want to modify your Flex remoting configuration to take advantage of SSL encryption (refer to the addendum).

Go to 'File' in the menu area and select 'New Server'. An 'Add New Server' window will pop up. The server name can be any descriptive name you prefer to give the server. The admin password is the default 'admin' user password that you use to access the standard web-based CFIDE/administrator portal that comes with ColdFusion. The destination is the Flex remoting destination as defined in your configuration. 'ColdFusion' is a default destination that is usually active, but you may want to alter this (refer to the addendum). The endpoint is also defined in your server's Flex remoting configuration. Typically using 'http://ip_address_of_the_server/flex2gateway/' will work.

Once you've added a new server, Merlin will randomly ping the ColdFusion instance. If it can connect and can properly talk to the server, you should see the server icon turn blue and provide some basic information regarding the server.



You may see three small circles with the letters R,A and D. These icons indicate whether Robust Exception handling "R", AJAX Error handling "A" or Debugging "D" are on and running. This is a handy way to see which servers may be outputting critical debug information. Typically, production level servers should not have these services running.

The server icon will also list the name you gave it when added into Merlin, its current ColdFusion version and the total time it's been running since the last service restart.

The time listed will indicate days, hours and minutes.

If you right click on the server icon, you will have a variety of options. You can also double click the icon to view its settings.

ColdFusion Updates and Patches



The server icon may also show special square icons which relate to updates or patches that need to be installed. The “M” icon is for Merlin CFC updates. If you see this icon, you can right click on the server icon and choose “Merlin Update” to have the Merlin CFCs attempt to update themselves. The “U” icon is for ColdFusion updates, hot fixes or cumulative hot fixes, and finally the “S” is for ColdFusion security patches. If you see either of these notifications, you can right click on the server icon and choose “Update or Patch Server”. If it's a simple JAR based update, then Merlin should be able to install the update or patch for you. Merlin can also be set to automatically update

itself based on a special ColdFusion scheduled task called “Merlin Auto Updater”. More on that in the next section. If Merlin runs through an update, it may indicate that a restart of ColdFusion services are needed for the update or patch to take effect. This is will be indicated by a black square icon with the letter “B”.



Settings in the Config.ini.cfm file

There is a special configuration file with the Merlin CFC files which you will need to configure. The `<cfabort/>` on top of the page can be ignored. It just prevents unauthorized viewing of the file. The version setting is for your reference. Merlin will update this value when it updates itself. The ColdFusion updates and security patches are read by Merlin from a series of RSS feeds (refer to the addendum). If you wish, you can direct Merlin to look elsewhere for those feeds by modifying the “updatefeedurl” setting. The “updateurl” setting tells Merlin where the needed updated CFCs are located. Once again you can direct this elsewhere if needed. Merlin will set up a schedule task to run every 4 hours to check for updates. The URL address for the CFAdmin to reach the Merlin CFC's is set in “internalmerlinurl”. This setting will be specific to your CF installation. Usually, pointing to <http://localhost/CFIDE/merlin> will work. You can specify which items you wish the schedule task to attempt to update with the next three settings: automerlinupdate, autoupdate and autosecuritypatch. The final setting tells Merlin where it can find to the restart template scripts and also where the restart scripts themselves should be written too.

Restart Services Scripts

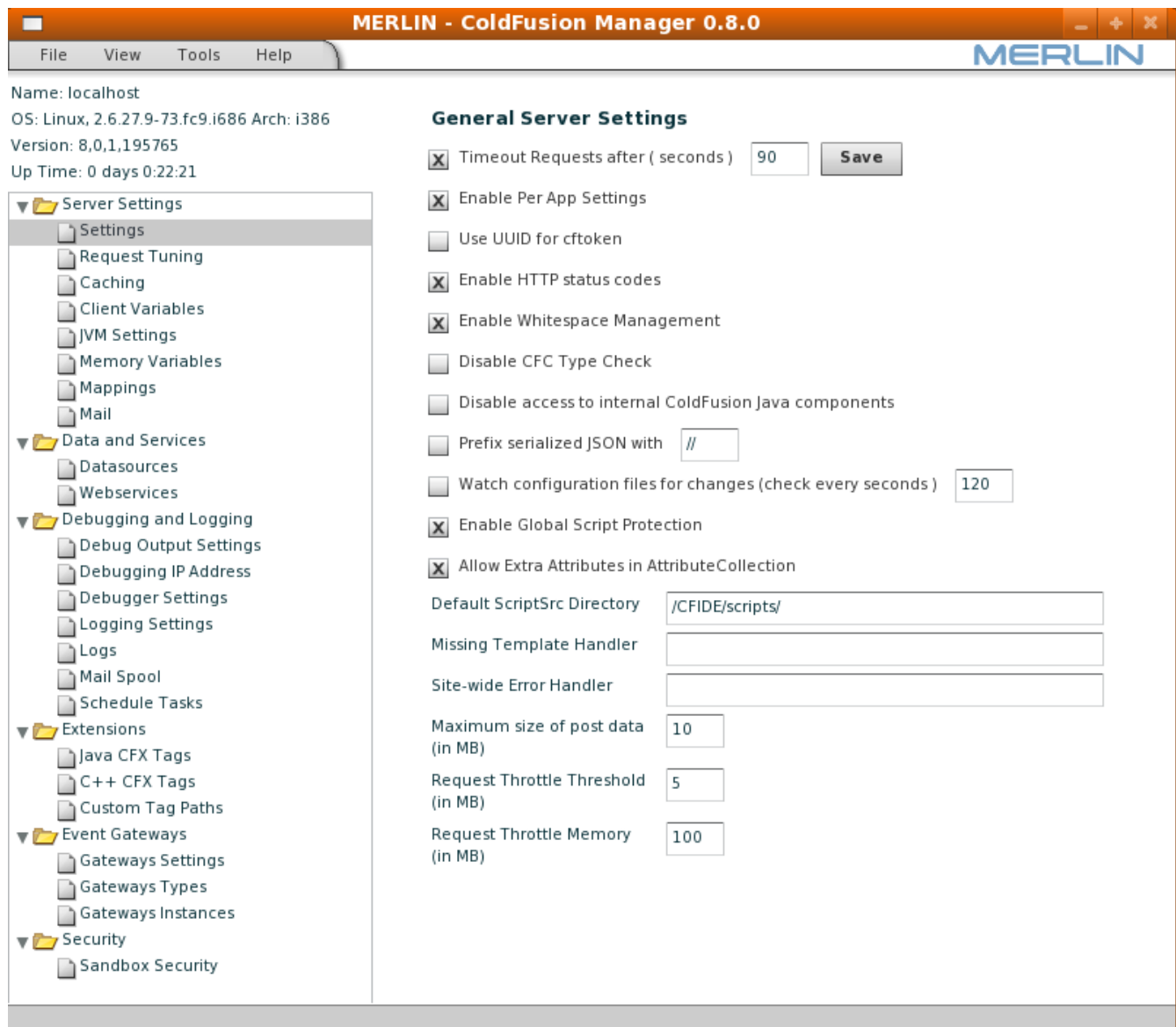
Requirements for these scripts to work properly is to have a schedule job/task manager like cron for Linux to run these restart scripts. Windows also has a number of job schedulers you can use. For a number of security reasons, it's best not to have ColdFusion to be given the permissions to run these scripts directly.

Contained with the Merlin CFCs are two special restart template scripts. One is Linux-based shell script and the other is a batch file for Windows. It is encouraged to move those two scripts to a special area on your system that is not web accessible. That directory location needs to be noted in the Config.ini.cfm file under the “restartscriptdirectory” setting. You can modify those scripts however you like. The base scripts simply restarts the ColdFusion application service. When Merlin gets a request to restart services, it will read in the proper template file and save it out as either restart.sh (for Linux environments) or restart.bat (for Windows environments). You can either use cron in Linux or any number of schedule task managers for Windows to run those restart scripts. Once the script runs, it will clear itself out (remember to keep that special final command on those template scripts).

Once this has been set up, you can restart services with the Merlin client. Keep in mind, it may take a few minutes for the ColdFusion instance to come back online and be detected by the client.

Managing Server Settings

When viewing the server settings, the interface should appear very similar to the web based CF Administrator. Below is an example of a common settings page:

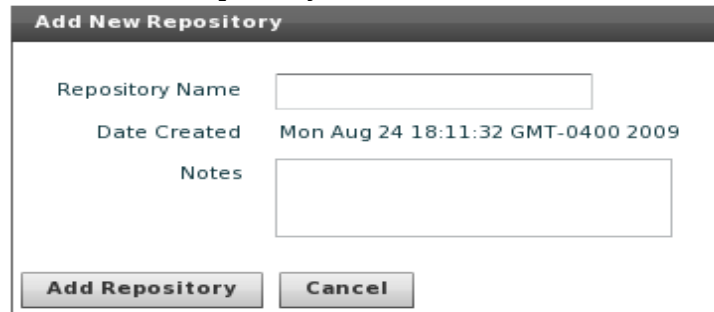


You can modify the various ColdFusion instance settings from this interface. In some cases, you have a 'Save' button to upload changes. In other cases, the change is uploaded automatically. If there is an error or the change couldn't be made, the screen will simply refresh back to the previous setting. In the future release, a popup will explain the reason.

You can go to the 'Servers' listing page by clicking on the 'View' item on the menu and selecting 'Servers'.

Adding a New Repository

With Merlin you can take snapshots of the configurations. These snapshots are organized and stored in special folders located on the right side called 'repositories'. To create or add a repository, simply click on 'File' in the menu and select 'New Repository'.



The screenshot shows a dialog box titled "Add New Repository". It contains the following fields and controls:

- Repository Name:** An empty text input field.
- Date Created:** A text field containing the value "Mon Aug 24 18:11:32 GMT-0400 2009".
- Notes:** An empty text area.
- Buttons:** Two buttons at the bottom: "Add Repository" and "Cancel".

Provide the repository with a name and any notes or descriptions. You actually have several ways to organize your repositories. You can name them by server, by development/production, by CF version or by settings like databases. Currently, snapshots can't be moved between repositories.

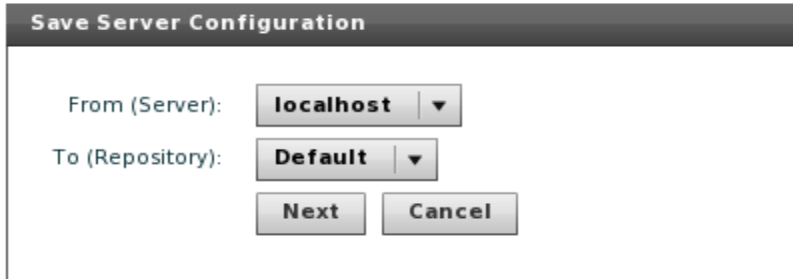


Default

Once a repository is created, you should see its folder icon to the right with its assigned name. You can now start saving server configuration snapshots.

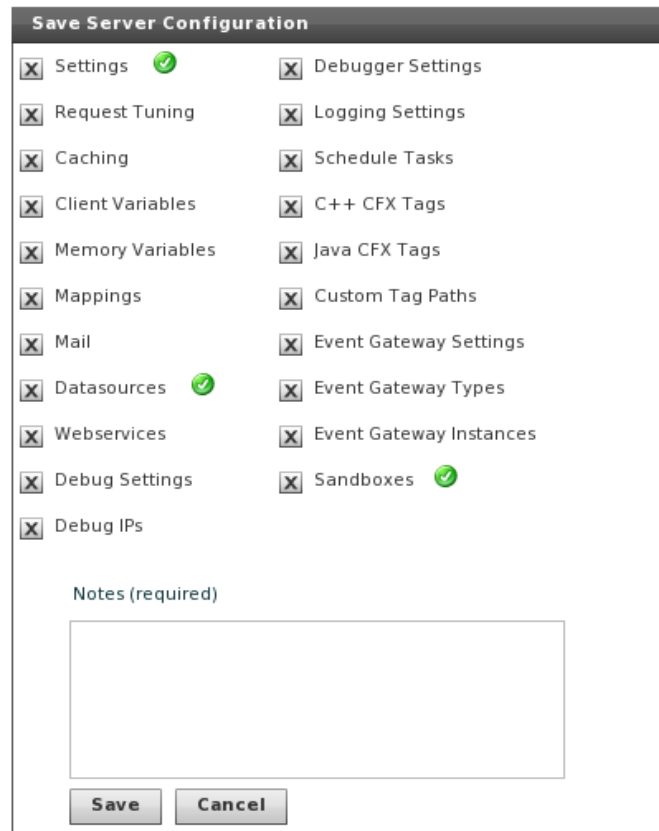
Saving a Snapshot

You can use Merlin to take snapshots of a server's configuration. These snapshots can help in setting up new servers, restoring or general server management. To take a server snapshot, go to the 'Tools' area of the menu and select 'Save Snapshot'. This will bring up a 'Save Server Configuration' popup.



The dialog box titled "Save Server Configuration" has a dark header. It contains two dropdown menus: "From (Server):" with "localhost" selected and "To (Repository):" with "Default" selected. Below these are two buttons: "Next" and "Cancel".

You will first be asked to select a server and then a repository to save to. Click 'Next' and the next window will start downloading current server configuration.



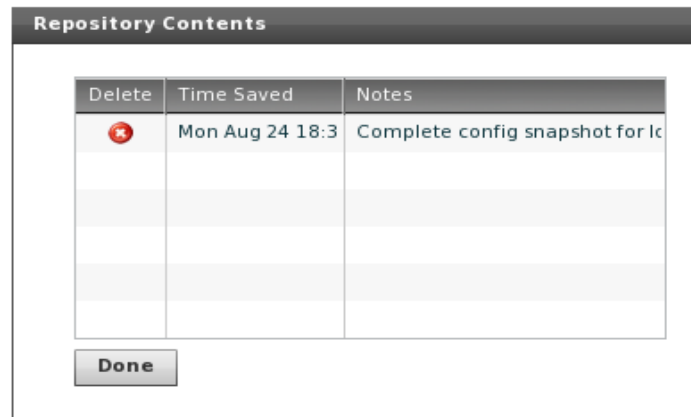
The dialog box titled "Save Server Configuration" shows a list of configuration items, each with a checkbox and a green checkmark indicating it has been downloaded. The items are:

- Settings ✓
- Request Tuning
- Caching
- Client Variables
- Memory Variables
- Mappings
- Mail
- Datasources ✓
- Webservices
- Debug Settings
- Debug IPs
- Debugger Settings
- Logging Settings
- Schedule Tasks
- C++ CFX Tags
- Java CFX Tags
- Custom Tag Paths
- Event Gateway Settings
- Event Gateway Types
- Event Gateway Instances
- Sandboxes ✓

Below the list is a section labeled "Notes (required)" with a text input field. At the bottom are "Save" and "Cancel" buttons.


Green checks mark the settings that have been downloaded. It may take Merlin a few moments to download the complete configuration. Once all the settings have been downloaded, you can select which items you wish to save in the snapshot and then provide a simple note regarding the snapshot for future reference. Click 'Save' and Merlin will save the configuration in its encrypted Sqlite database on your local workstation.

You can manage snapshots by double clicking on a repository folder. From this pop up, you can remove old snapshots.



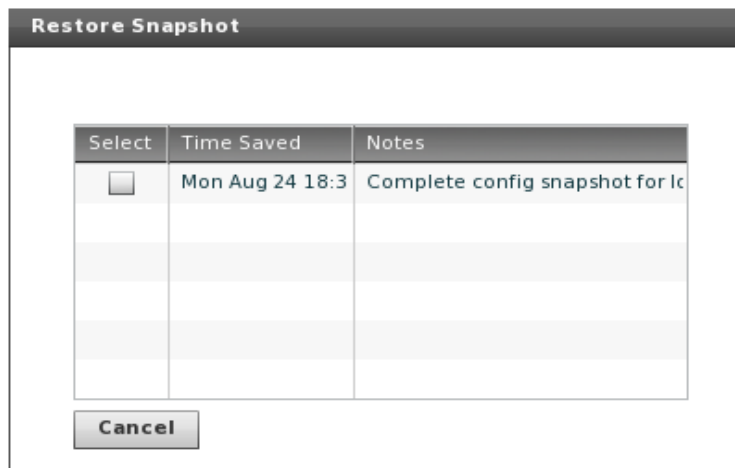
Restoring a Snapshot

You can restore a snapshot by going to 'Tools' in the menu and selecting 'Restore Snapshot'. You will first be asked for a repository.



The dialog box titled "Restore Snapshot" contains a "Repository:" label followed by a dropdown menu currently set to "Default". Below the dropdown are two buttons: "Next" and "Cancel".

Click 'Next' and then select the specific snapshot you wish to restore.

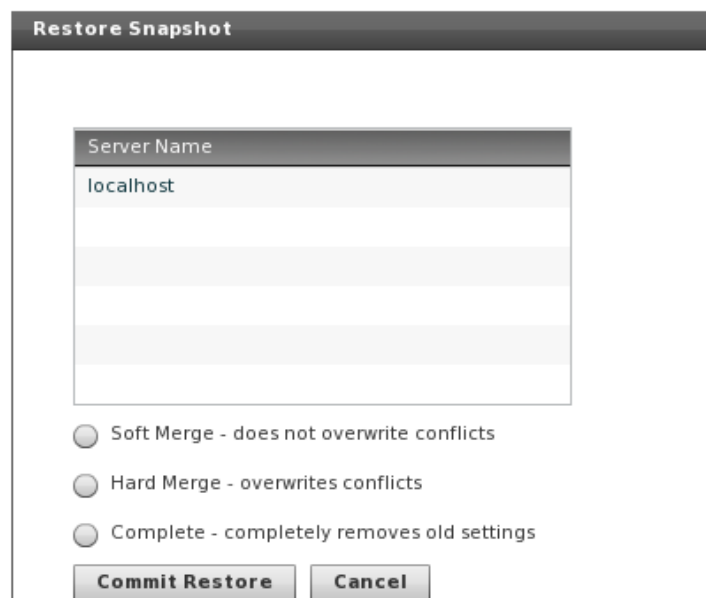


The dialog box titled "Restore Snapshot" displays a table with three columns: "Select", "Time Saved", and "Notes".

Select	Time Saved	Notes
<input type="checkbox"/>	Mon Aug 24 18:3	Complete config snapshot for lc

Below the table is a "Cancel" button.

The next window will then allow you to select the servers you wish to restore the snapshot to. You can choose more than one. Merlin will restore servers one at a time and provide the status of each as it goes through the restore process.



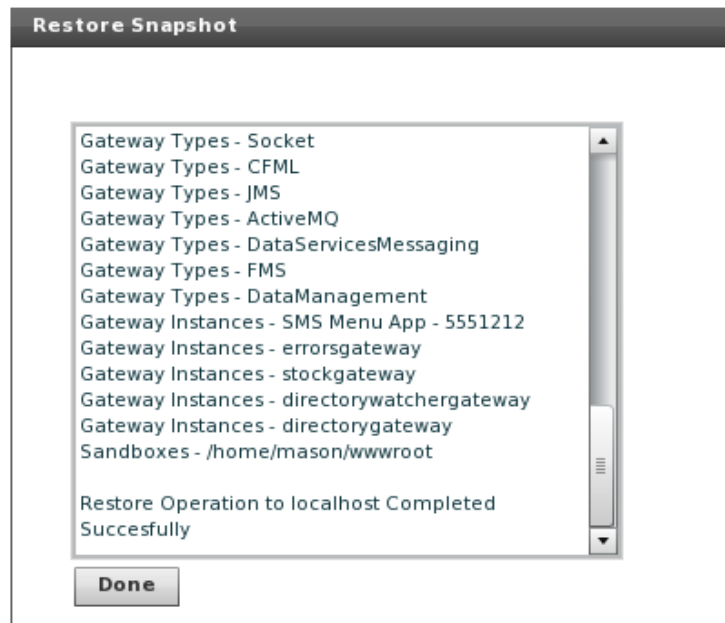
The dialog box titled "Restore Snapshot" features a list box labeled "Server Name" containing the entry "localhost". Below the list box are three radio button options for merge behavior:

- Soft Merge - does not overwrite conflicts
- Hard Merge - overwrites conflicts
- Complete - completely removes old settings

At the bottom are two buttons: "Commit Restore" and "Cancel".

You will also have options on how you want the restore process to run. The 'Soft Merge' option will simply restore items missing on the current server configuration. So if the snapshot has a datasource listing called 'blogCFC' but the server doesn't, then this change will be applied. If, however, the server already had this entry, then the restore will not overwrite it. The 'Hard Merge' option will overwrite conflicts such as these, but it will not remove any settings pre-existing on the server. So if the server had a datasource entry called 'mangoBlog', but the snapshot did not, the hard merge option will not remove it. The 'Complete' restore option does remove all pre-existing settings and then saves the settings contain in the snapshot.

When you click the 'Commit Restore' button, Merlin will proceed to run the restores. As each server is restored, Merlin will provide a listing of settings that were applied and show if the restore was successful.



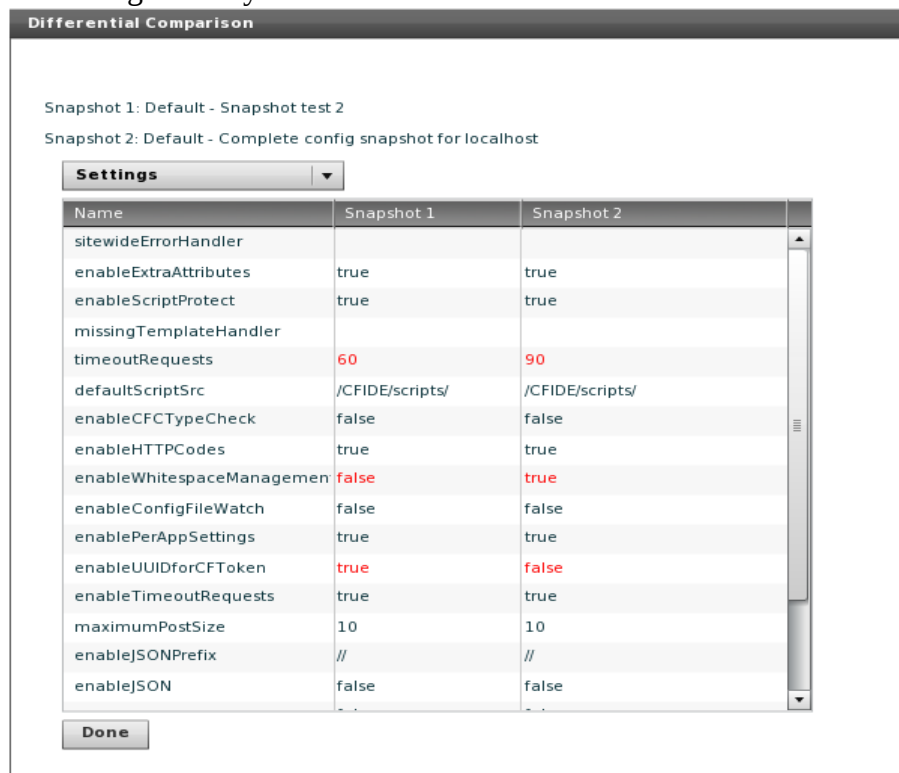
Compare Snapshots (Differential Comparison)

You can also compare snapshots with Merlin by going to the 'Tools' option on the menu and selecting 'Differential Comparison'.



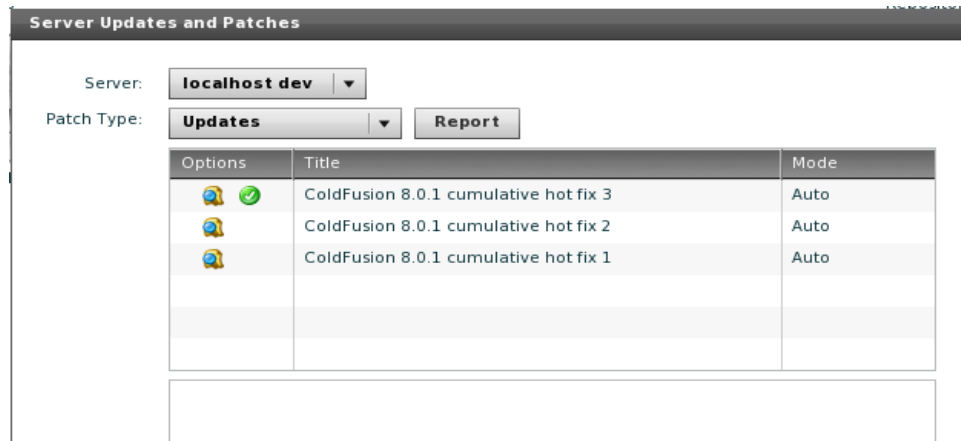
You will first be asked where the two snapshots you wish to compare are located. This could be the same repository or not.

You will then be asked to select the individual snapshots you wish to compare. Click 'Next' and you will be able to compare the various settings saved in the two snapshots. You can also select the areas you wish to view. Differences between the settings will be highlighted in red text. At present, there isn't a way to change the settings or to synchronize them with this tool.



Apply Server Updates or Security Patches

Go to 'Tools' and select 'Server Updates and Patches', you will be asked to specify the server and the type of updates you are inquiring about. Merlin will report back what applies to your version of ColdFusion and if anything is missing. If an item needs to be applied, it will be indicated with a green checkbox. If its mode is 'Auto', then Merlin should be able to apply the patch for you. If it states the patch is 'Manual', then you will have to manually apply the patch. Once that is done, you can let Merlin know that has been applied by clicking on the green arrow.



Apply Server Patch (older method)

With Merlin, you can also easily apply most types of server patching or updates across multiple servers. This older tool is designed to work with simple JAR file updates or zip files which contains a JAR. Keep in mind, there are patches that involve more manual processes and are not simple JAR file uploads. To apply a server patch simply go to 'Tools' and select 'Apply Server Patch'.



Provide the URL address to the ZIP or JAR file. In many cases, you can use the direct url from Adobe to run the patch. Please note, that zip files and unzipping operations will not be supported on CF 7 servers since it lacks the cfzip tag. Next, select which servers you wish to apply the patch to. Finally, click 'Apply Patch'. Merlin will run through the servers and attempt to apply the patch. If it's a zip file, Merlin will unzip the JAR and apply it. If it's a JAR file, then Merlin will simply apply the patch. You will need to restart the CF instance for the patch to take effect.

Merlin will report back to you if the patch was already installed on the server or not, or if it ran into any problems during the operation.

Removing Merlin

If for any reason, you wish to remove Merlin, simply rerun the AIR installer package and choose 'Remove' from the options. You can also manually remove the merlinClient.db file which is the Sqlite database that Merlin used to saved server configuration snapshots. Also, remember to remove the 'merlin' CFCs from the various servers.

Addendum

Flex Remoting Configuration

In many cases you can simply use the default 'ColdFusion' destination to run Merlin. There are, however, many reasons to configure a separate 'Merlin' destination for added security with SSL support and performance. You can also simply modify the default 'ColdFusion' destination, but having a unique destination for Merlin is preferred. For example, it helps debug any problems you may be having with the remoting since the Merlin destination will be label in the runtime logs.

Configuring the Flex Remoting is fairly simple. In your ColdFusion instance you will have a folder called 'flex'. You may find it in either of these two places:

```
{your cf directory}/wwwroot/WEB-INF/flex
```

or

```
{your jrun directory}/servers/{your server name}/cfusion.ear/cfusion.war/WEB-INF/flex
```

Now depending on your installation, you may have several files in this directory or just one. Before doing anything, make a point to zip up a backup of this directory.

Defining a 'Merlin' destination

If you have a remoting-config.xml file, this code should be placed within the destinations tags there. If not, then in the services-config.xml file.

```
<destination id="Merlin">
  <channels>
    <channel ref="my-cfamf-secure"/>
    <channel ref="my-cfamf"/>
  </channels>
  <properties>
    <source>CFIDE.merlin.clientFacade</source>
    <!-- define the resolution rules and access level of the cfc being invoked -->
    <access>
      <use-mappings>true</use-mappings>
      <method-access-level>remote</method-access-level>
    </access>

    <property-case>
      <!-- cfc property names -->
      <force-cfc-lowercase>>false</force-cfc-lowercase>
      <!-- Query column names -->
      <force-query-lowercase>>false</force-query-lowercase>
      <!-- struct keys -->
      <force-struct-lowercase>>false</force-struct-lowercase>
    </property-case>
  </properties>
</destination>
```

Here is some explanation of this configuration. First, set a new destination called 'Merlin'. On the

manager, use this destination instead of calling 'ColdFusion'. Next, set the channels; attempt a secure SSL channel first. If that doesn't work, then it will fall back to an unsecure channel. Feel free to list just the secure option and force SSL communication. Next, you specify the source to be the clientFacade.cfc, which means that this remoting destination can only talk to that CFC and nothing else. The remaining settings should be simple enough to understand. This example has 'use-mappings' turn on for speed in calling the clientFacade.cfc. In some cases you may need to turn off this option.

Next you need to verify that the 'my-cfamf' and 'my-cfamf-secure' have been defined. These will normally be located at services-config.xml file under the 'channels' tags.

```
<channel-definition id="my-cfamf" class="mx.messaging.channels.AMFChannel">
  <endpoint uri="http://{server.name}:{server.port}/{context.root}/flex2gateway/"
class="flex.messaging.endpoints.AMFEndpoint"/>
  <properties>
    <polling-enabled>>false</polling-enabled>
    <serialization>
      <instantiate-types>>false</instantiate-types>
    </serialization>
  </properties>
</channel-definition>

<channel-definition id="my-cfamf-secure" class="mx.messaging.channels.SecureAMFChannel">
  <endpoint uri="https://{server.name}:{server.port}/{context.root}/flex2gateway/cfamfsecure"
class="flex.messaging.endpoints.SecureAMFEndpoint"/>
  <properties>
    <polling-enabled>>false</polling-enabled>
    <serialization>
      <instantiate-types>>false</instantiate-types>
    </serialization>
  </properties>
</channel-definition>
```

You can read the Adobe documentation to understand what is happening here. The only critical thing to take from this are the endpoints which you need to know for Merlin to make contact. Typically, your endpoint settings on the Manager when you add a server will reflect these settings:

http://{ip or dns to server}/flex2gateway/

or

https://{ip or dns to server}/flex2gateway/cfamfsecure

Restart ColdFusion services and check the runtime logs to make certain that the 'MessageBroker' (called the FlashGateway in CF7) servlet loaded up without any errors. The 'MessageBroker' is in essence the Flex remoting java servlet.

Communication problems between Merlin and the ColdFusion Server

Merlin is using Flex-based remote object calls to communicate with ColdFusion. There are several ways in which this communication can be disrupted. Here is a simple checklist of items to look at with debugging any communication problems:

- Is the ColdFusion instance even running? This sounds elementary, but you would be surprised how often this can be the cause.
- Is the MessageBroker inside ColdFusion running properly? This service is also called the FlexGateway in CF7. To determine if it's running and is accessible, check your flex configuration to see what the endpoint is for the basic cf-amf calls (usually it's `http://{ip or dns to server}/flex2gateway/`). In a browser, try to hit this URL. If you get a blank page with no errors, that usually indicates the service is running properly. You can also check the runtime logs to see if the MessageBroker servlet loaded in without errors when ColdFusion first started up.
- Is the Merlin `clientFacade.cfc` being called correctly? Check your ColdFusion server's runtime logs and the exception logs. Any problems running or finding the Merlin `clientFacade.cfc` will be noted there along with an explanation.
 - Some common reasons Merlin can't find the `clientFacade.cfc`
 - The 'merlin' cfc package has not been installed yet on the server under the CFIDE folder.
 - If not using mappings, the CFIDE directory and merlin directory are not accessible from a web address.
 - Mappings are being used, but are pointing in the wrong area.

ColdFusion Update and Security Patch RSS Feeds

Merlin determines ColdFusion updates and security patches through FusionLink managed RSS feeds that run through Google's Feedburner. If you direct these lookups else where by modifying the Config.ini.cfm file. Below is the list of RSS feeds that Merlin is looking for by default.

ColdFusion Updaters, Hotfixes and Culiminative Hotfixes

<http://feeds.feedburner.com/Coldfusion7Updates>

<http://feeds.feedburner.com/Coldfusion8Updates>

<http://feeds.feedburner.com/Coldfusion9Updates>

ColdFusion Security Patches

<http://feeds.feedburner.com/Coldfusion7SecurityPatches>

<http://feeds.feedburner.com/Coldfusion8SecurityPatches>

<http://feeds.feedburner.com/Coldfusion9SecurityPatches>