



MirrorMaster Help

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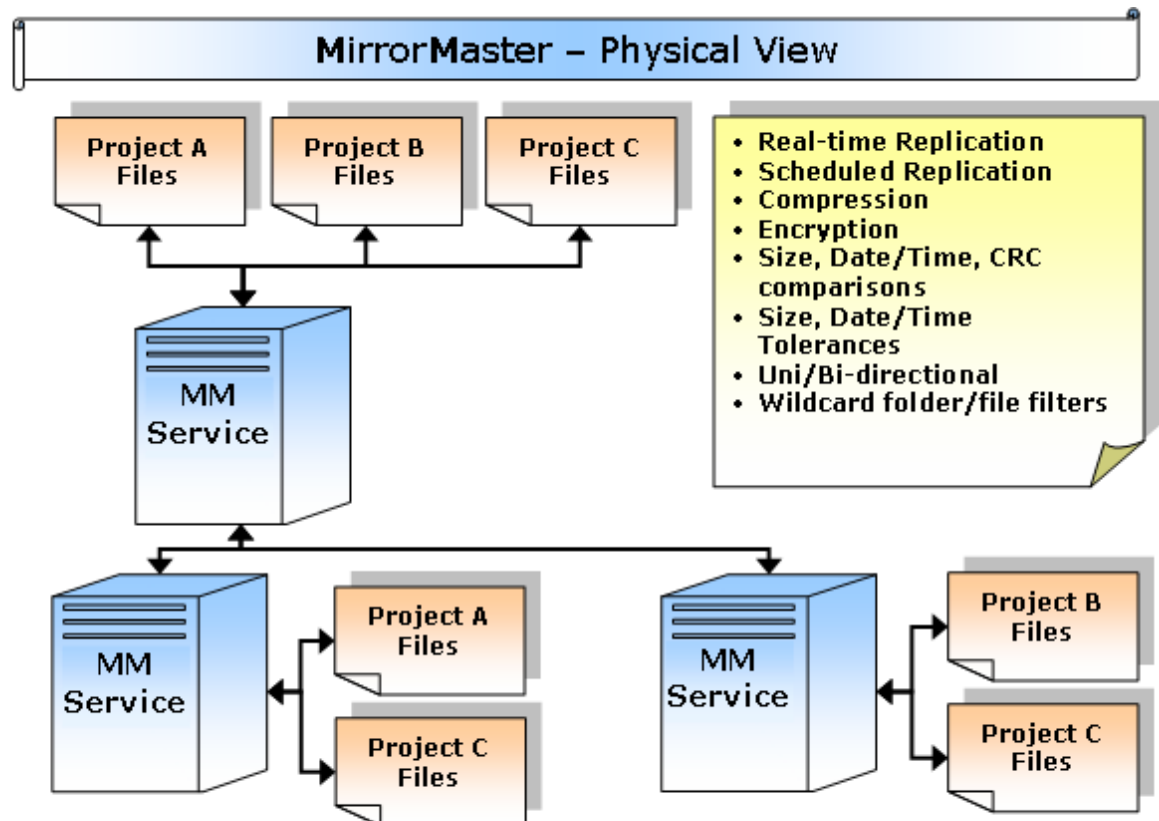
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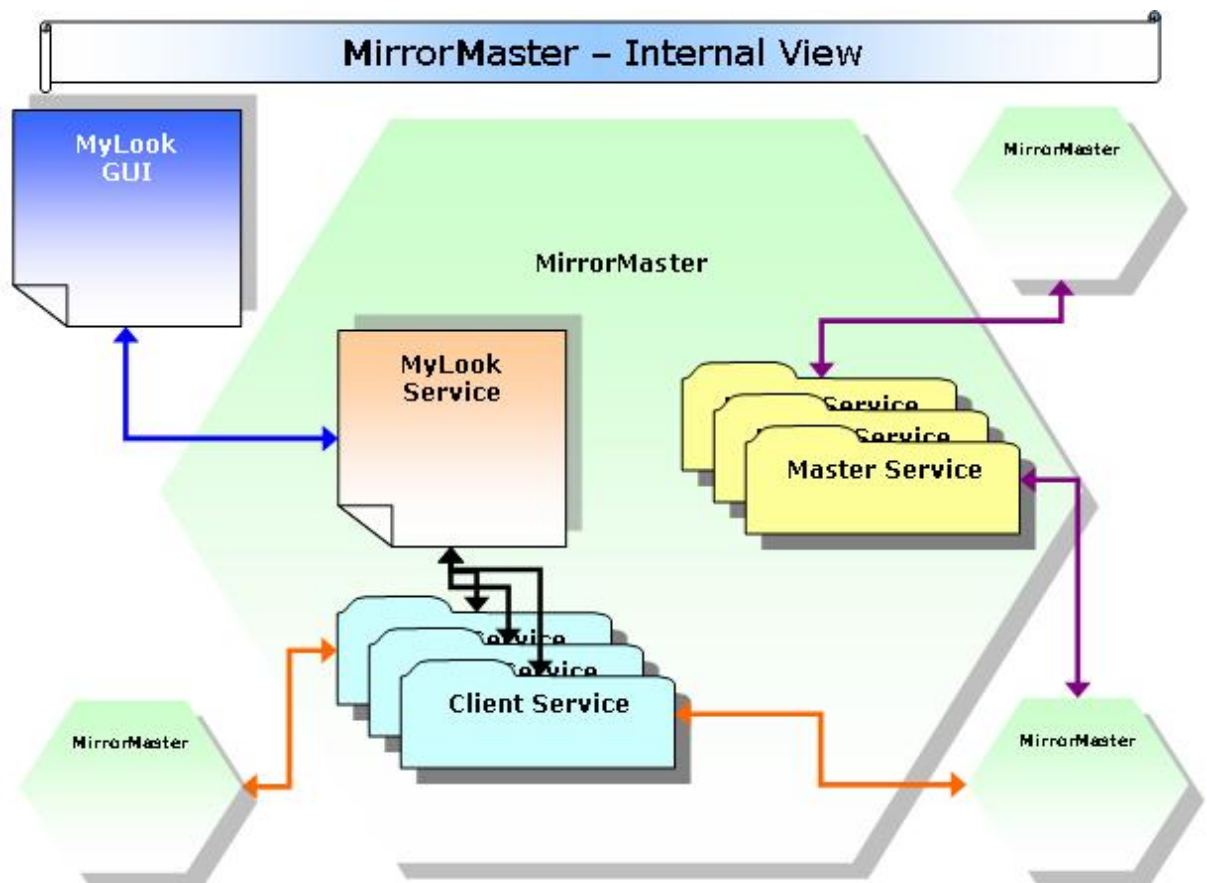
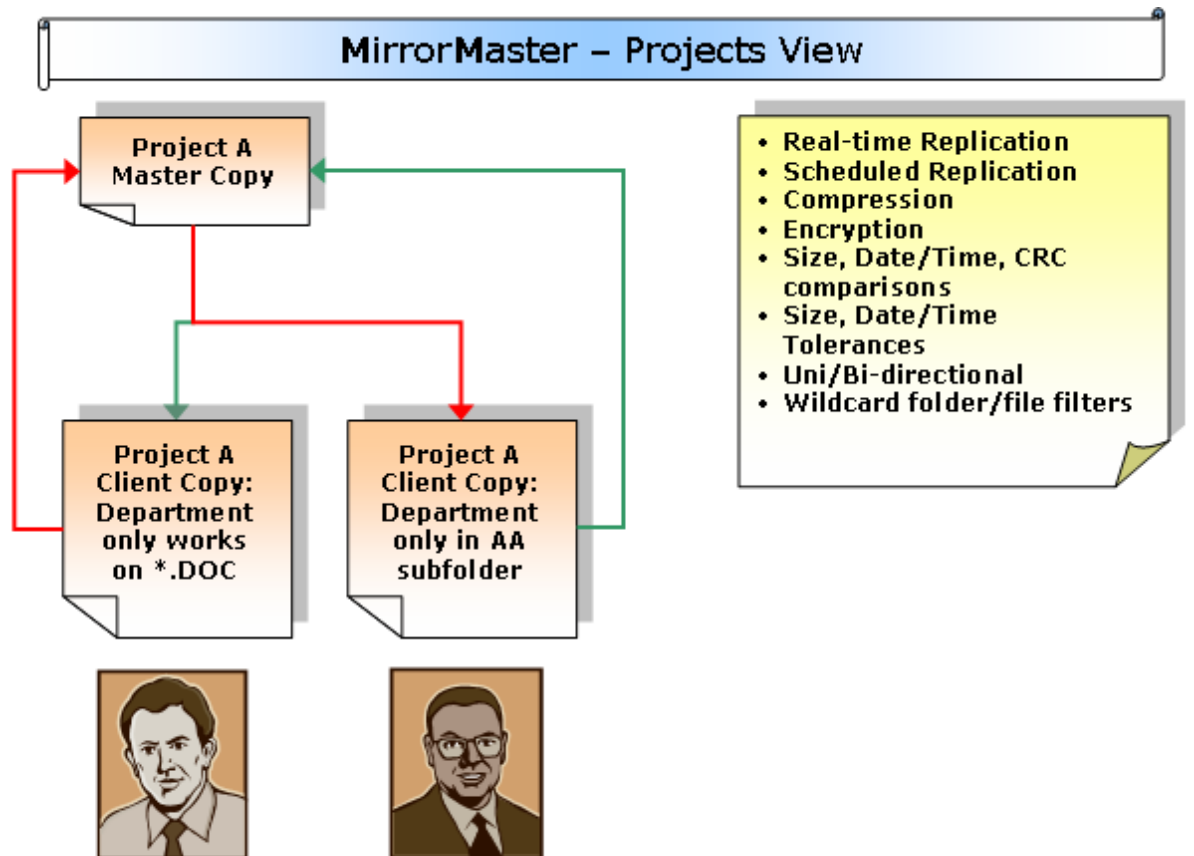


1 Introduction

Welcome to the MirrorMaster Replication System.

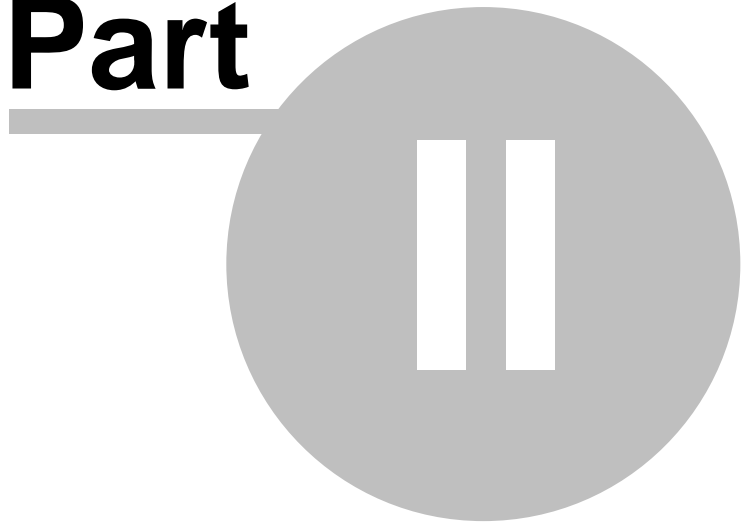
MirrorMaster is used to replicate/copy data and files in a bidirectional and secure manner between different networks on a project basis.





To learn more about this manual's organization and acronyms, see [General](#)

Part



2 General

The General section described:

- Manual Organization
- Acronyms

2.1 Organization

This manual is organized into the following sections:

- General
- Acronyms

The installation procedure

- Prerequisites
- Installation
- Post Installation
- Quick Setup Guide

How to configure and use:

- MirrorMaster
- Mirrors
- Projects
- Flows
- Replicating
- Schedule
- Reports

Obtaining support:

- Frequently Asked Questions

2.2 Acronyms

Acronyms & Abbreviations used in this manual includes:

- MM - MirrorMaster
- IIS - Internet Information Server
- IP - Intellectual Property
- WAN - Wide Area Network

Part



3 Installation

The Installation section includes:

- Prerequisites
- Installation
 - IIS CGI Configuration
 - IIS ISAPI Configuration
- Post Installation
- Quick Setup Guide

3.1 Prerequisites

Following are the prerequisite resources for an MirrorMaster installation:

- **Human**

- This manual assumes a high skill level associated with an IT manager well versed and experienced in Microsoft Windows NT, 2000, XP or 2003 operating systems and related technologies.
- The installation operator is assumed to have Administrator privileges on the target environment and is logged in as such.

- **Hardware**

- MirrorMaster has the same hardware requirements than those of the Operating Systems mentioned
- NOTE: Depending on the exact MirrorMaster configuration as well as sizes of files to be mirrored, the RAM requirements of the machine may differ.

- **Software**

- Optional: IIS 5.1 or 6
- Optional: MS Internet Explorer 6 or later, or Firefox 1.5 or later.

Assumptions:

For detailed instructions purposes are the following assumed to be installed using a default configuration and functional at the time of MirrorMaster Installation:

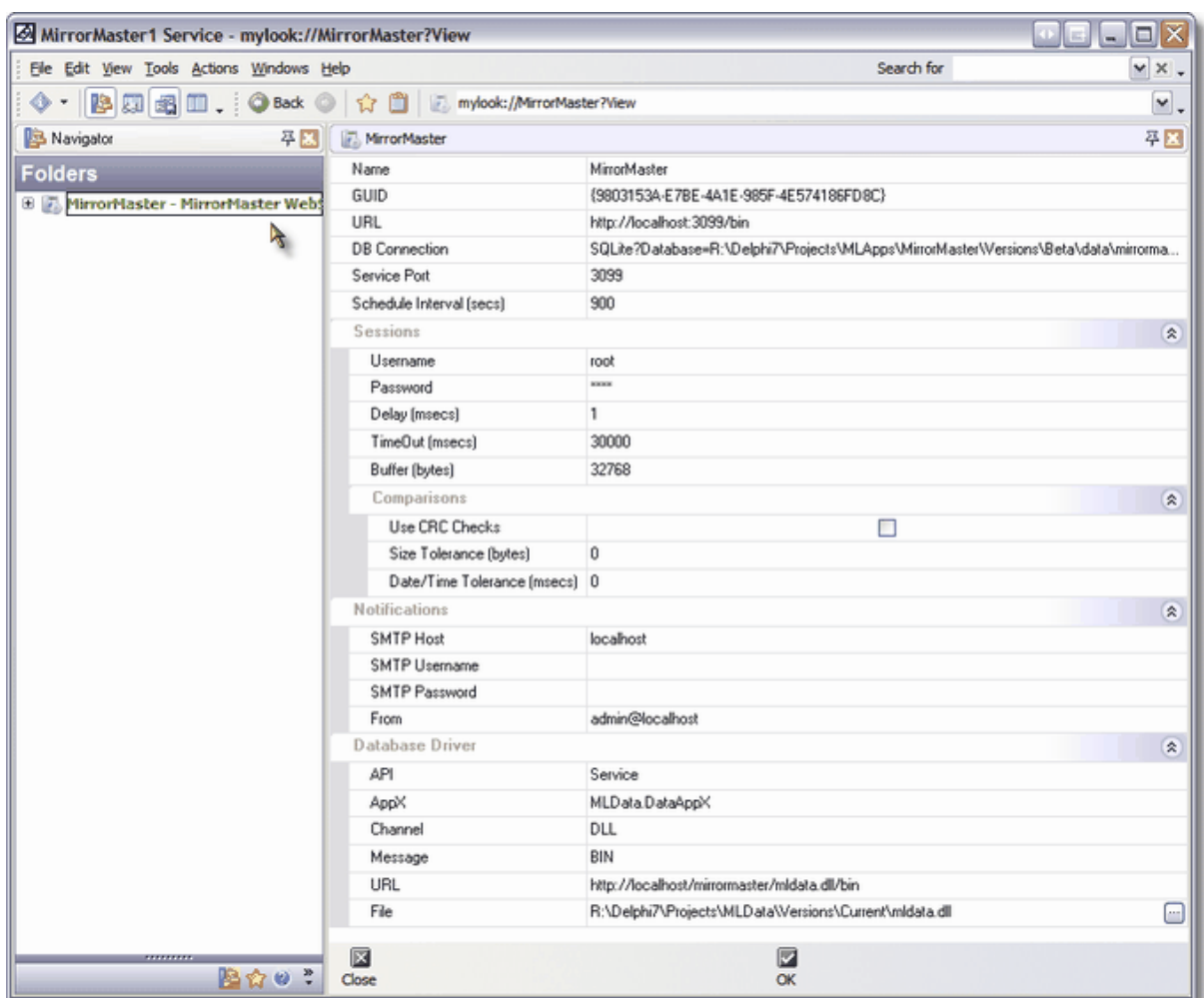
- MS Windows 2003 Standard Edition Server
- IIS 5.1 or 6.0

It is also assumed that you have downloaded and are in possession of the **latest** version of MirrorMaster which are distributed as a single InstallShield package usually called, "sbmm.exe" or just "mm.exe". The package includes the setups of both MyLook (the client) and MirrorMaster (the service) and is digitally signed. For the purposes of this guide, it assumed you have MirrorMaster [2006.]2.5.x

3.2 Install

MirrorMaster:

1. If you have an older version of MirrorMaster and/or MyLook installed on your system is it wise to uninstall them first before continuing. This is simply to ensure that all files are replaced and up to date and in sync.
2. Install your MirrorMaster and with it the prepackaged MyLook using the installation's default configuration.
3. After installation MyLook will be started and opened on the property page of the root MM folder:



4. MirrorMaster is now installed as a service and fully functional. However, in order to accept connections and replicate you must still configure MirrorMaster using the instructions in the Post Installation and Quick Setup Guide.

NOTE: By default MM is installed as a HTTP webservice on port 3099 accessible by an URL like `http://localhost:3099/bin`, but you may also be forced by your environment to setup MM using an existing webserver like Microsoft's IIS. You may do so using either the CGI or ISAPI proxy utilities provided in the MM installation directory, see [IIS CGI Configuration](#) or [IIS ISAPI Configuration](#)

3.2.1 IIS CGI Configuration

IIS 5.1 or 6:

1. Open your IIS Manager console
2. Create a virtual directory below your default website and call the alias "mirrormaster"
 - 2.1. Pick your MirrorMaster installation directory, ex. by default "C:\Program Files\SciBit\MirrorMaster"
 - 2.2. Ensure that you check "Read" and "Execute"
3. Open an internet browser and use the new virtual directory to test if the MirrorMaster is functional, ex. "http://machine.name/mirrormaster/mlroproxy.exe/bin", If all was setup correctly, you should see XML output of the MirrorMaster interface.

NOTE: mlroproxy uses the provided mlroproxy.xml file to know to which URL to connect to. By default this is setup for the URL <http://localhost:3099/bin> and should be functional, but if you changed your MM port, you should update the ServiceURL property in this file to point to the correct URL.

3.2.2 IIS ISAPI Configuration

IIS 5.1 or 6:

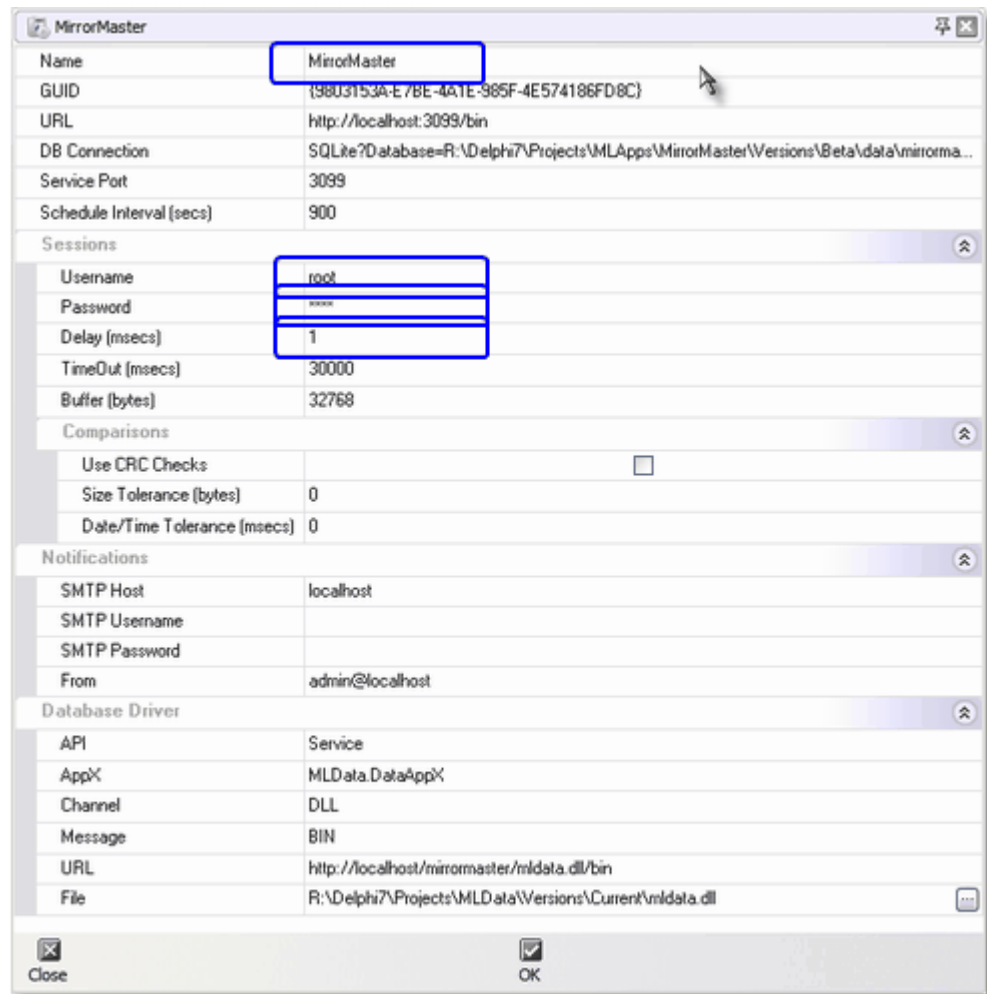
1. Open your IIS Manager console
2. Create a virtual directory below your default website and call the alias "mirrormaster"
 - 2.1. Pick your MirrorMaster installation directory, ex. by default "C:\Program Files\SciBit\MirrorMaster"
 - 2.2. Ensure that you check "Read" and "Execute"
3. Open an internet browser and use the new virtual directory to test if the MirrorMaster is functional, ex. "http://machine.name/mirrormaster/mlroproxy.dll/bin", If all was setup correctly, you should see XML output of the MirrorMaster interface.

NOTE: mlroproxy uses the provided mlroproxy.xml file to know to which URL to connect to. By default this is setup for the URL `http://localhost:3099/bin` and should be functional, but if you changed your MM port, you should update the ServiceURL property in this file to point to the correct URL.

3.3 Post Installation

By default the MirrorMaster will give your MirrorMaster a globally unique ID called a GUID. You should do the following in order to further customize and configure your MirrorMaster before connecting to other MirrorMasters:

1. Double click the root folder and setup the following properties:



1.1.Name - Give your MM an unique name within your MM hierarchy such that it can be distinguished.

1.2.URL - The URL other MirrorMasters should use to connect to your MirrorMaster, typically this should be accessible from remote machines, i.e. you can not use a "http://localhost/...." URL, it should instead read something like `http://your.machine.name.or.IP:3099/bin`

1.3. Username, Password - The authentication details for your MirrorMaster used by other MirrorMasters

1.4. Delay - Initially you may want to set the delay to 1000 (1000 milliseconds = 1 second) between client steps during a replication so that the process is human-track able.

2. Click OK

NOTE: To enable MirrorMaster help file viewing within MyLook, you may need to add "help://mirrormaster" to your Trusted or Local Intranet sites on your Security tab of the Control Panel-Internet Options. This depends on the browser version you use and the security levels you have set.

3.4 Quick Setup Guide

After Installation your MirrorMaster should be functional and working.

As a Master:

If your MirrorMaster will service other MirrorMasters, it is considered a Master and it's master service will be used and be available to others to connect to. You should:

1. Create a new Project and set the root directory of it.
2. You can then commence with adding some In and Out flows to it and assign the flows' responsibility to client MirrorMasters.

NOTES:

- Flows can only be assigned to MirrorMaster clients which already connected to you at least once.
- Remote client MirrorMasters will only see Projects and physically replicate files of projects which contains at least one flow which is assigned to them.
- Client MirrorMasters will require 4 things of you before they will be able to connect and subsequently replicate any of your projects (all of which can be obtained from your root folder's properties):
 - GUID
 - Username
 - Password
 - URL

This is really all there is to it. The clients will connect, and start replicating files conforming to the project flows' various criteria.

As a Client:

This means your MirrorMaster will initiate connections to remote MirrorMasters and automatically add projects and flows assigned to you to your folder structure and then commence with the actual comparison and replication of files. You should:

1. Add a new MirrorMaster to your Mirrors folder
2. Setup it's properties with the authentication details of the remote MirrorMaster
3. Replicate once
4. Set the received projects' root directories
5. Replicate again

NOTES:

- You will receive no flows or be able to replicate any files until you have specified a root directory for the newly added projects.
- To slowdown your Mirror client's session, increase the Delay property of the root folder of your MirrorMaster

WARNING:

Do not point a project root directory to a pre-existing directory containing files which has nothing to do with the project. Your MirrorMaster will see these files as superfluous and delete all of the files which has no matching file at the Master MirrorMaster. Likewise, if the project directory does not contain any files and the remote MirrorMaster has In Flows assigned to you, your MirrorMaster will effectively tell the remote MirrorMaster to delete the files adhering to the In Flow's definition.

Part

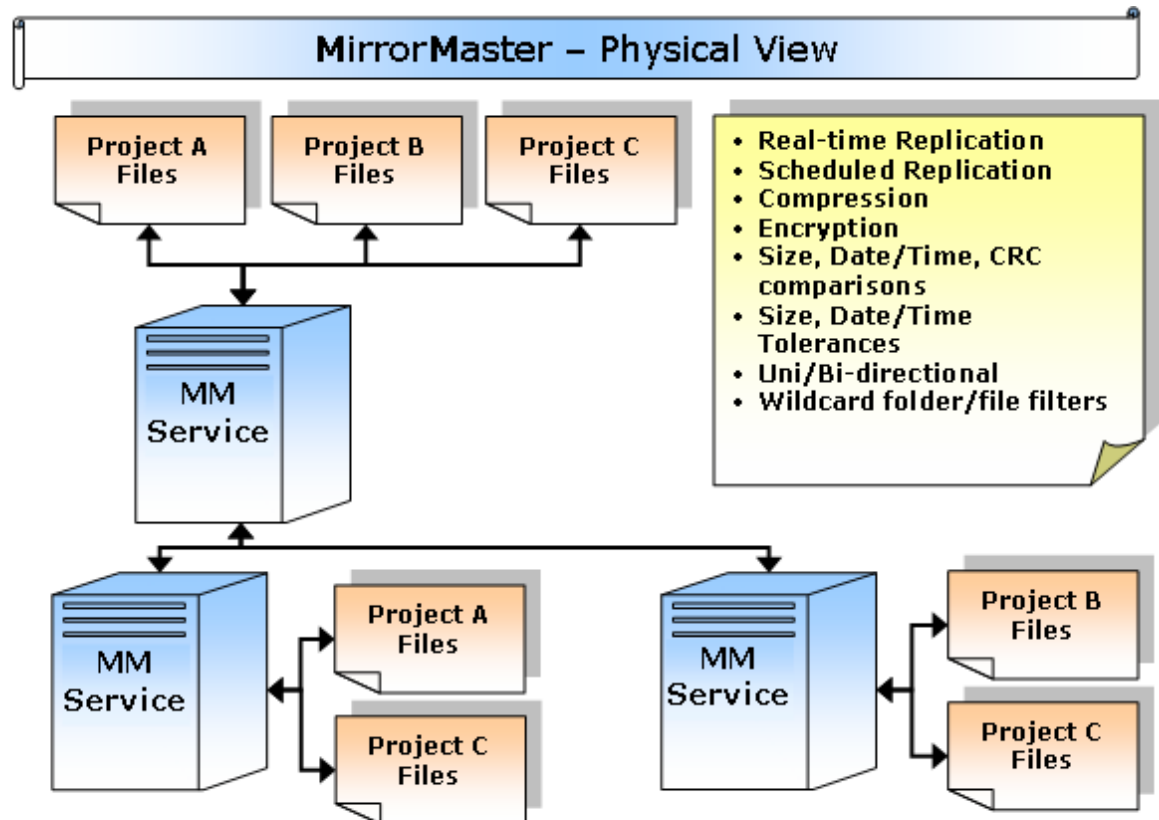


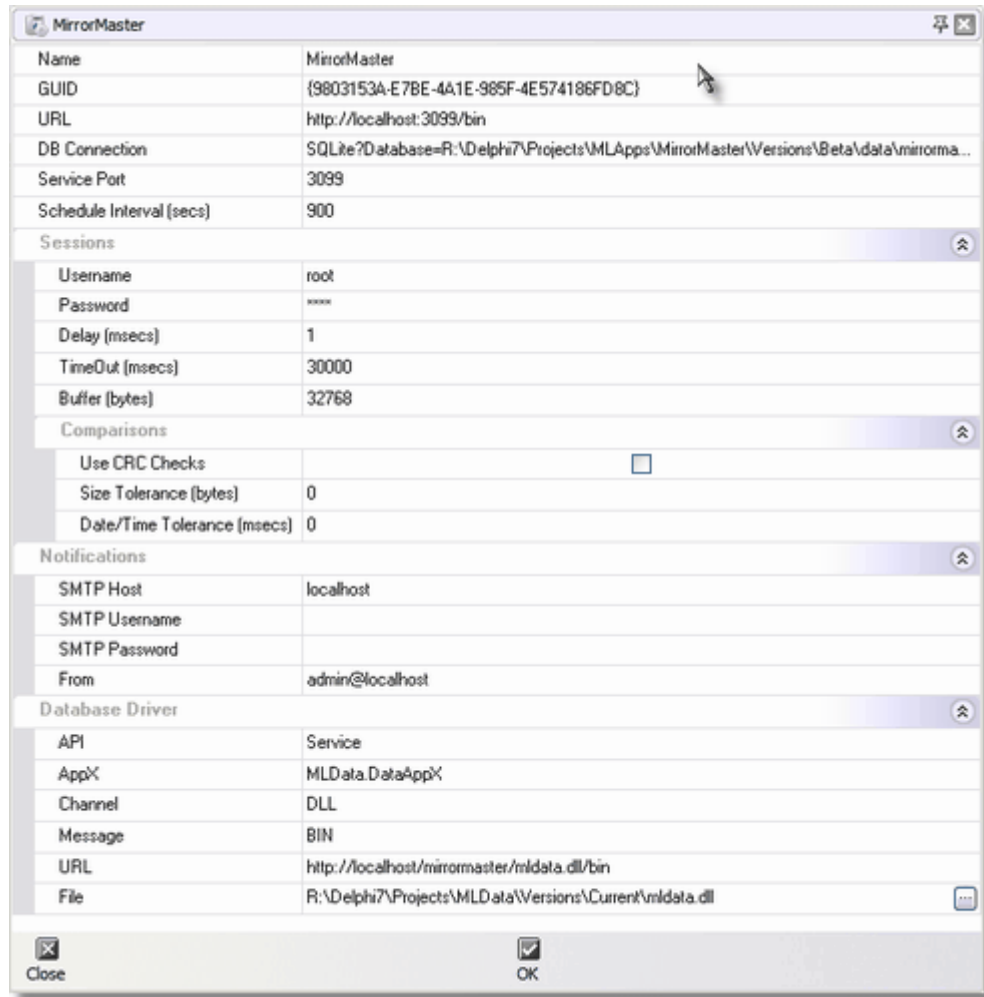
4 Understanding and Configuring MirrorMaster

The Configuration section includes:

- MirrorMaster
- Mirrors
- Projects
- Flows
- Files
- Notifications

4.1 MirrorMaster





Summary of Properties:

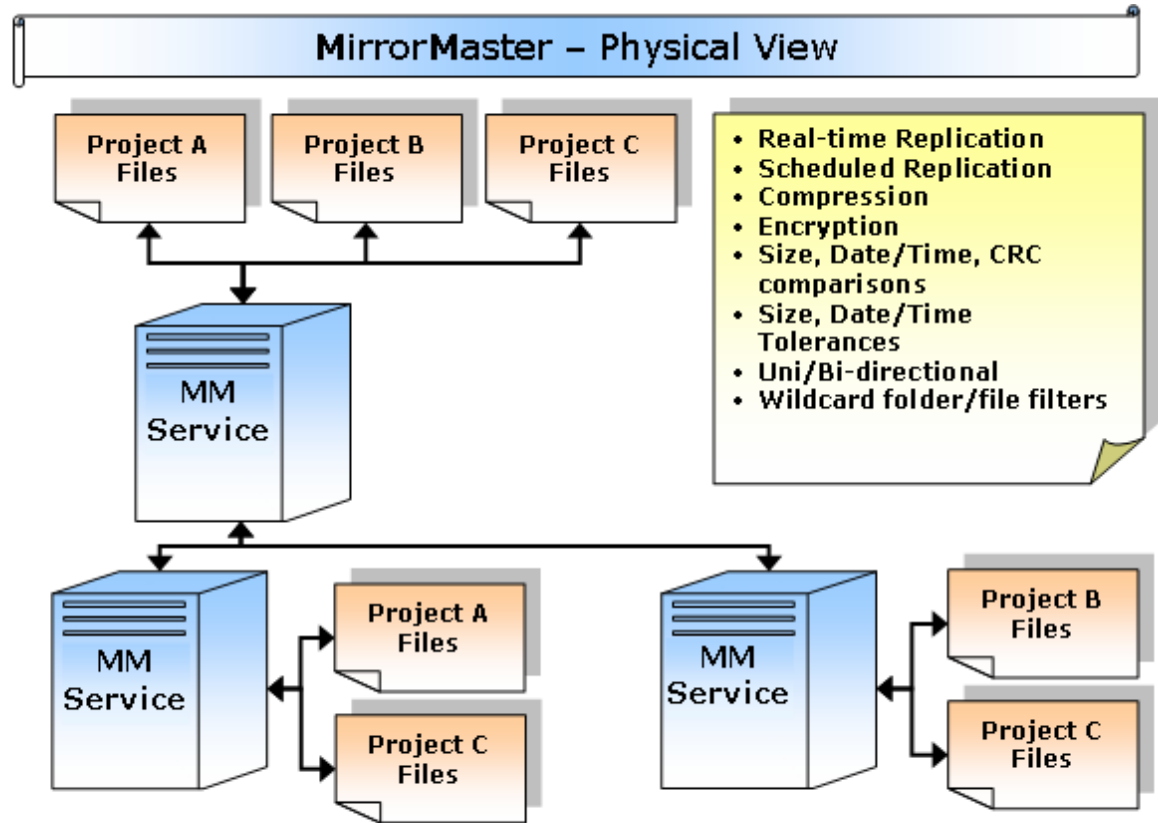
Property	Comments
Name	This is your MirrorMaster's unique name within your replication hierarchy. It will automatically reflect this name at any remote MirrorMaster you connect to as a client. The name is only important for humans to distinguish between MMs, as your MM uniquely identifies other MMs by GUID.
GUID	Your MM's globally unique number. This property is read-only and will not be updated even if it is changed. The editor for it is enabled purely so that you can easily copy and paste the number to setup remote MMs to connect to this one.

Property	Comments
URL	The URL remote MMs should use the next time they connect to your MM. Default is: http://localhost:3099/bin, but you should change that to http://your.machine.name:3099/bin as remote MMs can't use the default to connect to you.
DB Connection	This is the connection string used by your MM to connect to it's database. By default MM uses an open source embedded SQL server called SQLite.
Service Port	The port used by your MM to listen for incoming requests from remote MMs. Default is 3099, which implies your MM's URL is http://your.machine.name:3099/bin . NOTE: After you change this property, you should close MyLook, restart your MirrorMaster service and then open MyLook again. Ensure that you then update your URL property to reflect the new port setting.
Schedule Interval	This is the number of seconds which pass before your MM will check it's local schedule and start a replication to remote MMs if an event is setup. NOTE: After you change this property, you should close MyLook, restart your MirrorMaster service and then open MyLook again.
Username/Password	The username and password remote MMs should use to successfully connect and replicate with your MM.
Delay	The number of milliseconds your MM will wait between each replication step. Default is 1, but for human/live tracking purposes, you may set this to 1000+ so that you can monitor the MM
TimeOut	The time in milliseconds to wait for a remote MM to respond to a request.
Buffer	The file size in bytes before a file will be split in parts and transferred a part at a time instead of all at once
Use CRC Checks	If CRC checks should be used in the decision process to ensure that file contents are identical
Size Tolerance	The difference in bytes between two files before the files are deemed to differ

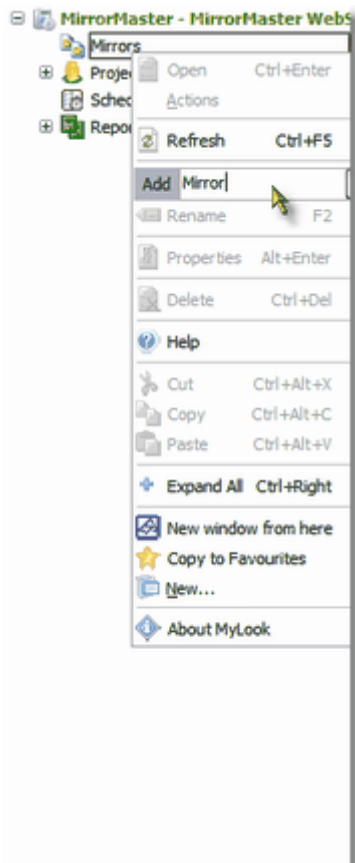
Property	Comments
Date/Time Tolerance	The difference in milliseconds between file Modified Date/Times before they will be deemed to differ
SMTP Host	Email server to use for notifications
SMTP Username/ Password	Username and password to use to connect to the email server
From	A valid From email address to use in the sending of email notifications
Database Driver	These settings should not be changed from the defaults unless explicitly instructed to do so by qualified personnel.

4.2 Mirrors

The Mirrors folder lists all known remote client MirrorMasters, ie. MirrorMasters which have previously connected to you and/or those you have added manually.

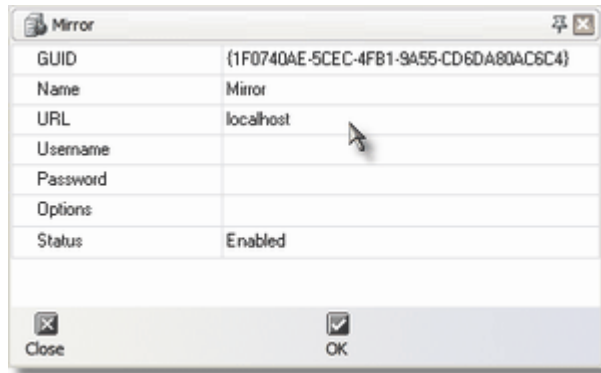


To add a new MirrorMaster:



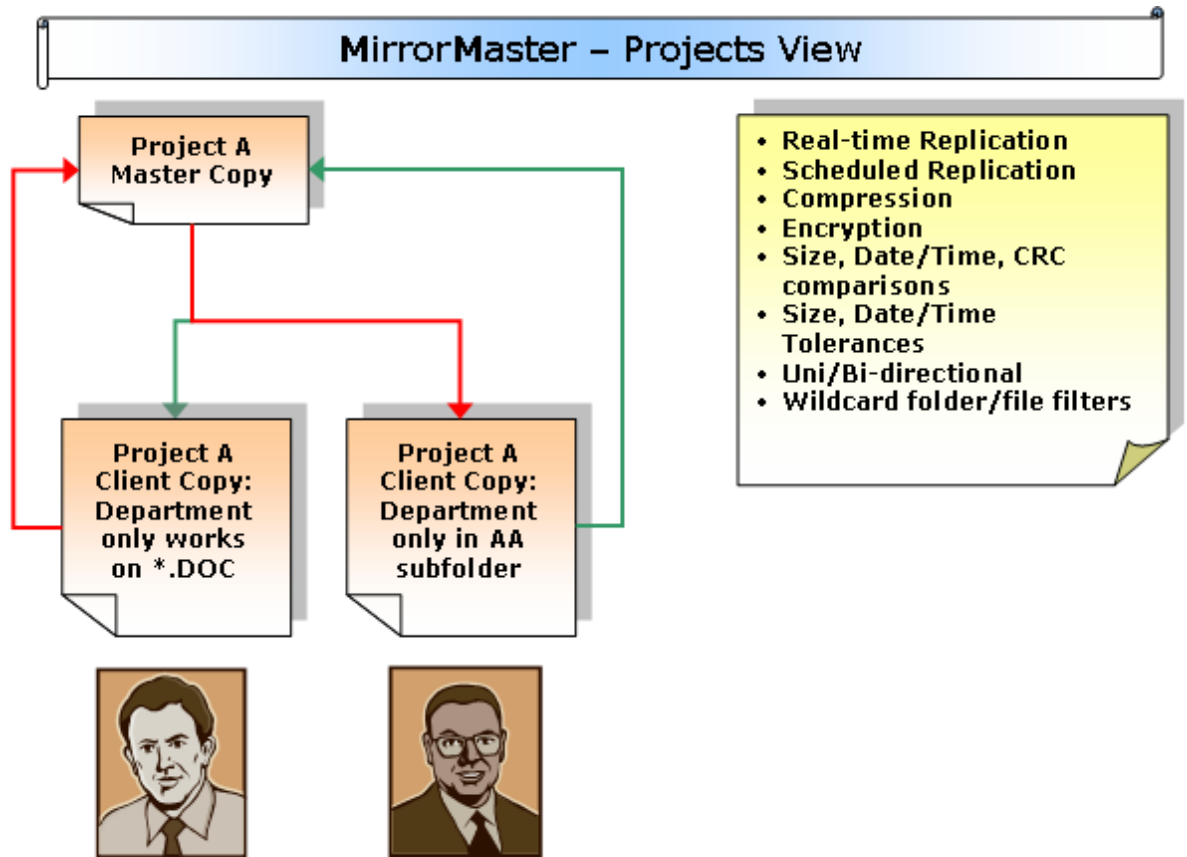
1. Right-click the Mirrors folder
2. Type in a new name for your remote MirrorMaster and press Enter

3. Double click the newly added Mirror folder and setup the Mirror's properties.



Property	Comments
GUID	The remote MM's globally unique number.
Name	This is an unique MirrorMaster's name within your replication hierarchy. It will automatically reflect this name at any remote MirrorMaster you connect to as a client. The name is only important for humans to distinguish between MMs, as your MM uniquely identifies other MMs by GUID.
URL	The URL that should be used the next time your MM connects to the remote MM. Default is: localhost which is invalid. You should change that to <code>http://remote.machine.name:3099/bin</code> .
Username/Password	The remote MM's username and password authentication details.
Options	You can check if all data should be compressed when your MM communicates with this remote MM.
Status	You can disable this MM so that your MM will not include it, or any related projects and flows, in it's replication sessions.

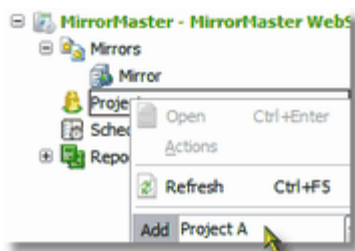
4.3 Projects



All replication takes place on a per project basis. Your MM can either be:

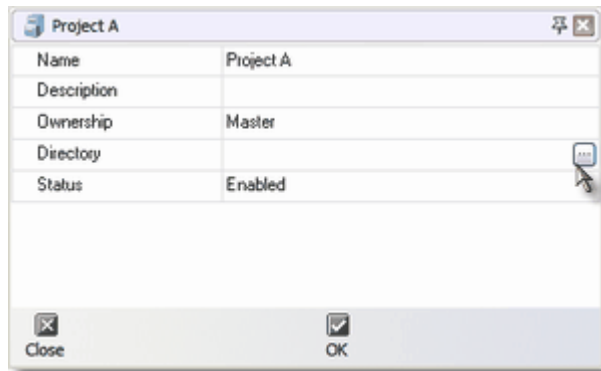
- the master of a project, i.e. the project was first defined on your MM and only your MM can change the properties, flows and assignments of the project. Remote MMs connect to your MM to replicate the project based on their flow assignments and responsibilities to the project
- or a client of a project, i.e. the project was defined on a remote MM and your MM is merely responsible for all or part of the project's files.

You can add a new project (making your MM the Master of the project) by:



1. Right-clicking the Projects folder and typing in a new name for the project

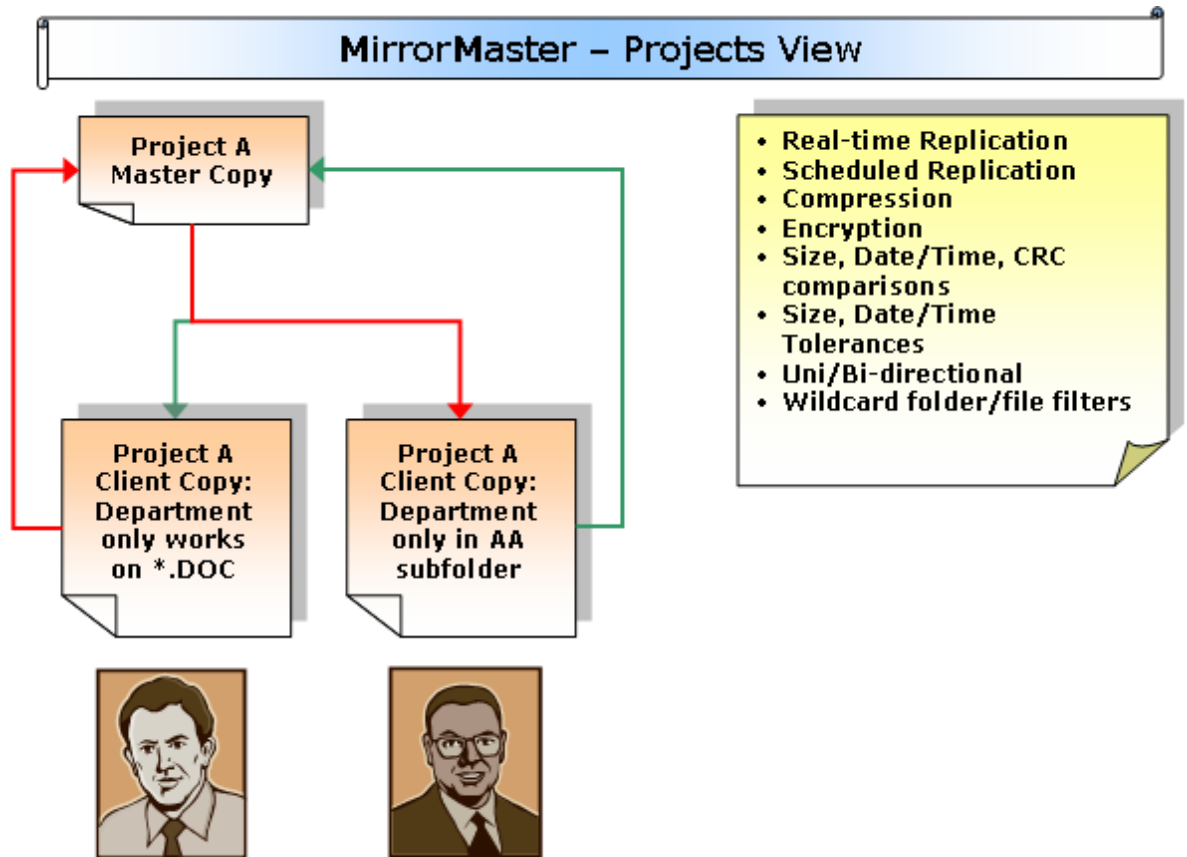
2. The click OK and double click the project to configure it's properties.



Property	Comments
Name	This is an unique Project name within your replication hierarchy. It will automatically reflect this name at any remote MirrorMaster which connect to you as a client for the project. The name is only important for humans to distinguish between projects, as your MM uniquely identifies projects by an unique project GUID.
Description	Any description you which to add to the project.
Ownership	The project's context to your MM, i.e. are you the Master or a Client for the project. This property is Read-Only
Directory	You must set this property to a dedicated project root directory. All subdirectories and files below this root directory will be deemed to form part of the project's files set.
Status	You can disable this project so that your MM will not include it, or any related flows, in it's replication sessions.

4.4 Flows

All project files are replicated/transferred between MMs using a project flow definition.

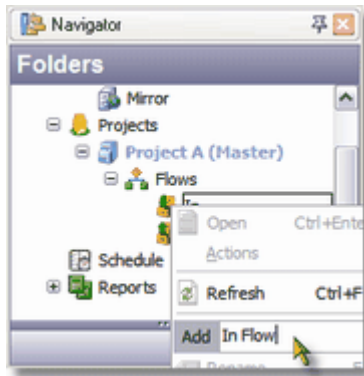


A flow can either be:

- An In Flow, i.e. files are transferred from a remote MM to your MM via an In Flow. This particularly true of the Master MM of a project. On a client MM the project In Flow will reflect the same settings, but as the remote MM is indeed a client of the project an In Flow assigned to it actually means files will transfer away from the client MM and to the master MM.
- An Out Flow, i.e. files are transferred from the local MM to the remote client MM assigned to the flow. Once again, a client MM will also see the Out Flow assigned to it, but will actually be transferring files to the itself from the remote master MM.

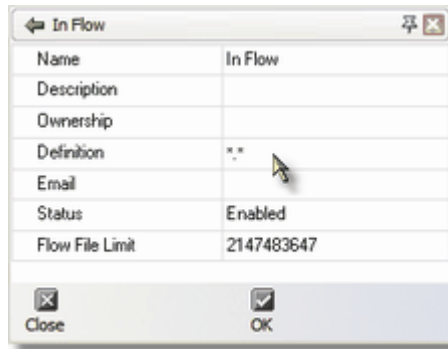
NOTE: You can only assign flows to client MMs which have connected to you at least once.

You can add a new flow by:



1. Right-clicking the Flows folder and typing a name for the flow in the Add edit box and pressing Enter

2. Now double click the new flow and setup it's properties



Property	Comments
Name	This is an unique Flow name within your project. It will automatically reflect this name at any remote MirrorMaster which connect to you as a client for the project and to which the flow has been assigned. The name is only important for humans to distinguish between flows, as your MM uniquely identifies flows by an unique flow GUID.
Description	Any description you which to add to the flow.
Ownership	The flow's ownership, i.e. for an In Flow this will mean who is responsible for the files of the flow's files (from where are files copied to your MM). For an Out Flow this means the remote MM that will be receiving part or all of the project's files. NOTE: You can only pick and set MirrorMasters that have connected to your MM at least once.
Definition	Here you can setup a filtering conditions for the specific flow. One condition per line is allowed and the filter criteria is applied to relative directory and filenames of all files in the project. See Understanding Flow Criteria below.
Email	If the flow's file limit is reached during a replication session, then this email address(es) will be notified of the fact. More than one email address is allowed and should be comma-delimited.
Status	You can disable this flow so that your MM will not include it, or any related files, in it's replication session to the responsible MM.

Property	Comments
Flow File Limit	This is the flow's file limit, i.e. the maximum number of files transferred during a single session. By default it has a limit of 2 billion files, but can be set to any number, even 0. If 0, this implies that no files will ever be transferred and the email notifications will be send if any files differs between master and client MMs.

Understanding Flow Criteria:

Each flow is defined as an in or out flow, meaning, files adhering to the flow criteria will either be downloaded from the Master MirrorMaster or be uploaded to it during replication. Each flow can contain multiple flow criteria, each on it's own line in the Definition property of a flow. A flow criteria follows the same searching format as for any files in Windows (since MS-DOS in the 1980s), i.e.:

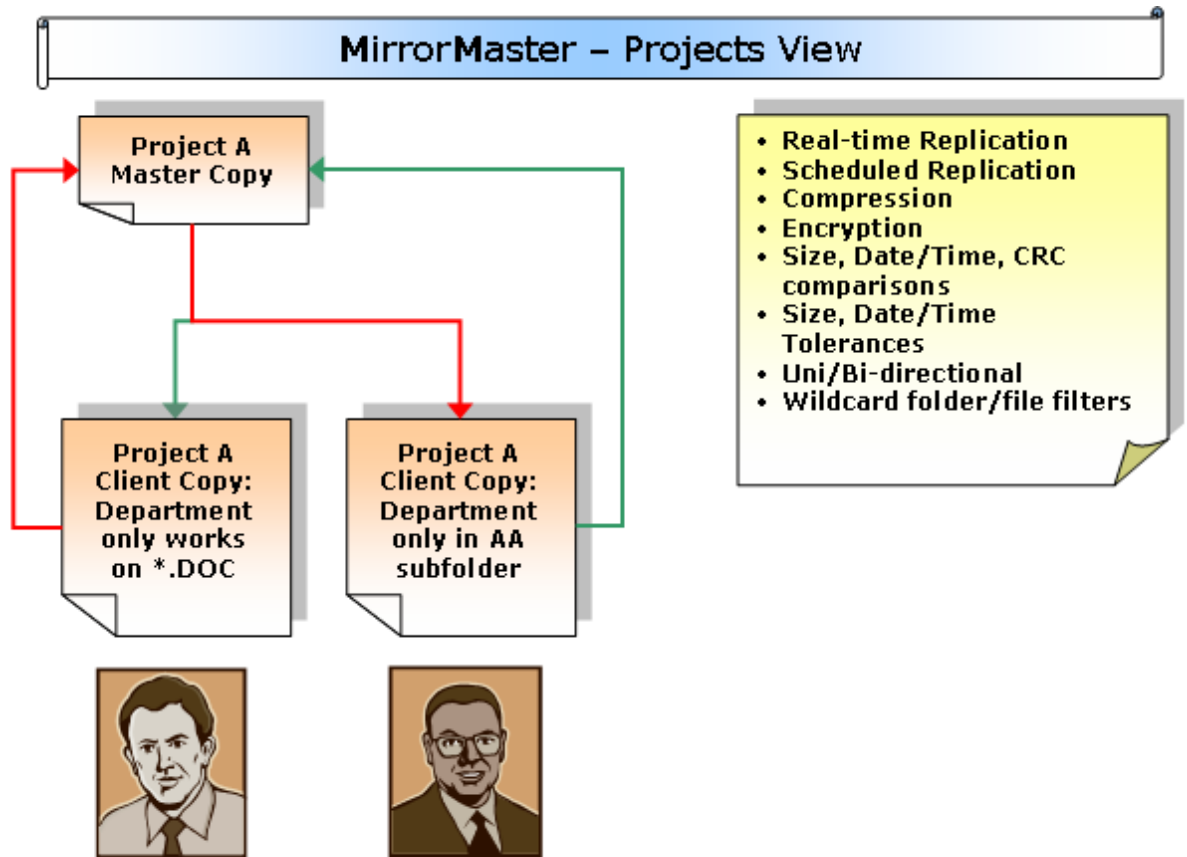
- Literal characters must match exactly (but is case-insensitive)
- "*" -character matches zero or more of any characters
- "?" -character matches exactly one of any character

Criteria are applied only to relative directory and file names, ex. If your project root directory, is: "c:\myproject" and it contains a folder and file called "c:\myproject\mydir1\myfile.txt", then only "\mydir1\myfile.txt" is used to match against the criteria.

Some criteria examples:

- "*.*" - Is the default criteria for a flow and matches all files in the project root folder and below.
- "*.txt" - Matches all text files in the project root folder and below.
- "\mydir1*.txt" - Matches all text files in the project's "mydir1" subfolder only.
- "*\mydir1\?* .txt" - Matches all text files with at least a 1 character name length in all folders in the project which is named "mydir1".
- "*mydir1\?* .txt" - Matches all text files with at least a 1 character name length in all folders in the project of which the foldername ends with "mydir1".
- "\mydir1\myfile.txt" - Matches exactly 1 file

4.5 Files



Understanding the MirrorMaster File transfer:

When a MirrorMaster needs to send or receive a file, it first takes a snapshot of the existing file and names the snapshot the same as the existing file and in the same directory, except that it will have a ~ extension, for ex. "file.txt" becomes "file.~txt". This file is then used until the complete transfer is done and then renamed to the existing file.

Understanding MirrorMaster File comparisons:

A MirrorMaster client first gets a list of flow files from the master MirrorMaster which it then uses to compare against it's flow's local filelist. Each file is compared in:

- File Name, i.e. does the file exist or not?
- File Size, i.e. does the remote and local file sizes differ?
- File Stamp, i.e. does the remote and local file modified date-times differ?

- File CRC, i.e. does the actual file contents differ?

If any one of these criteria is true, then the file will be transferred. After a file is completely transferred and renamed to the correct file, the newly transferred file is re-timestamped to the exact same modified date-time of the remote MirrorMaster such that the two files will no longer differ with the next replication (unless, of course, someone again updated the file)

Understanding MirrorMaster RAM requirements:

In order for your MirrorMaster to send or receive a file, the file will be loaded into memory during the transfer process. Therefore, if 10 MirrorMaster clients connect to you at the same time and each is transferring a 50MB file, then you will temporarily need 500MB of RAM. For this reason each MirrorMaster has defined a Buffer property which can be set as low as 1 byte (default is 32768 bytes). If a file is larger than this limit, it will be transferred in chunks no larger than this value and therefore you will need only $32768 \times 10 = 300\text{KB}$ of RAM for our previous example.

4.6 Notifications

Understanding MirrorMaster Email Notifications:

Your MirrorMaster's root folder provides for specifying an SMTP server to use for notifications. By default a flow will transfer 2 billion and less files without trying to notify anyone. However, the flow's file limit can be reduced to as little as 0. This limit is the number of files actually transferred in a single session without notifying anyone. For example, if you have 10 flow files of which 3 differ and have set a limit of 2, then 2 files will be transferred and then an email notification will be sent out. With the next replication 1 differing file remains and it will be transferred without notification. A 0 limit means no files will ever be transferred and notifications will always be generated for the flow if there are files which differs between the remote to the local MirrorMaster.

4.7 Reports

The Reports section includes:

- Using Reports
- Custom Reports
- Live Reports

4.7.1 Using Reports

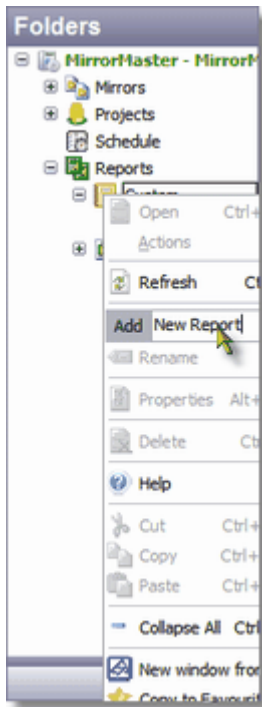
MirrorMaster have two reporting facilities:

- Custom Reports
- Live Reports

4.7.2 Custom Reports

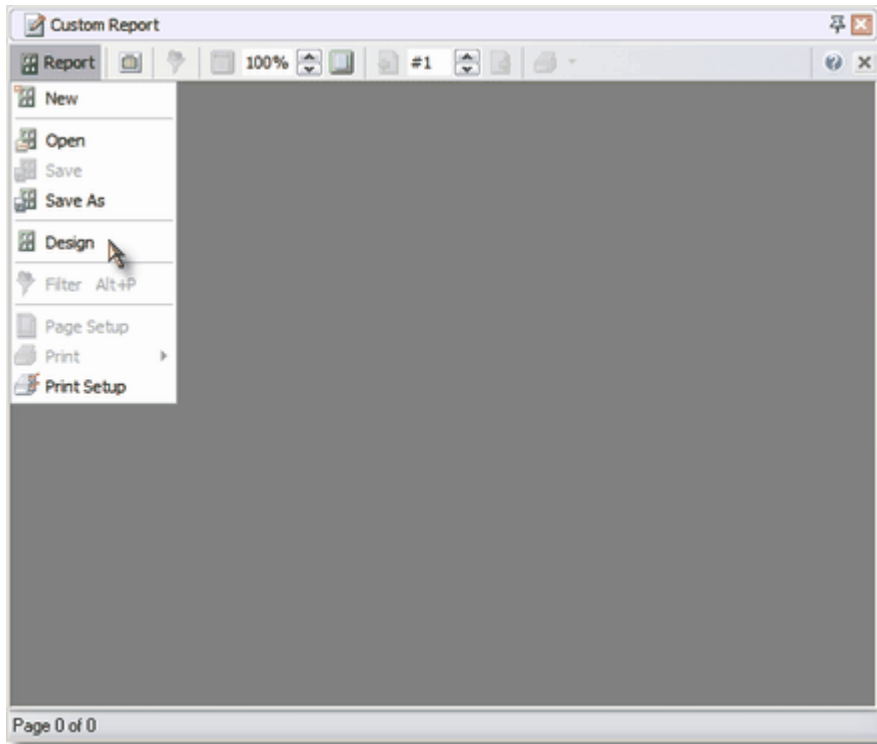
Custom reports are used to setup and design a custom report template which can consequently be run again, printed and/or exported in various formats.

You can add a new custom report by:

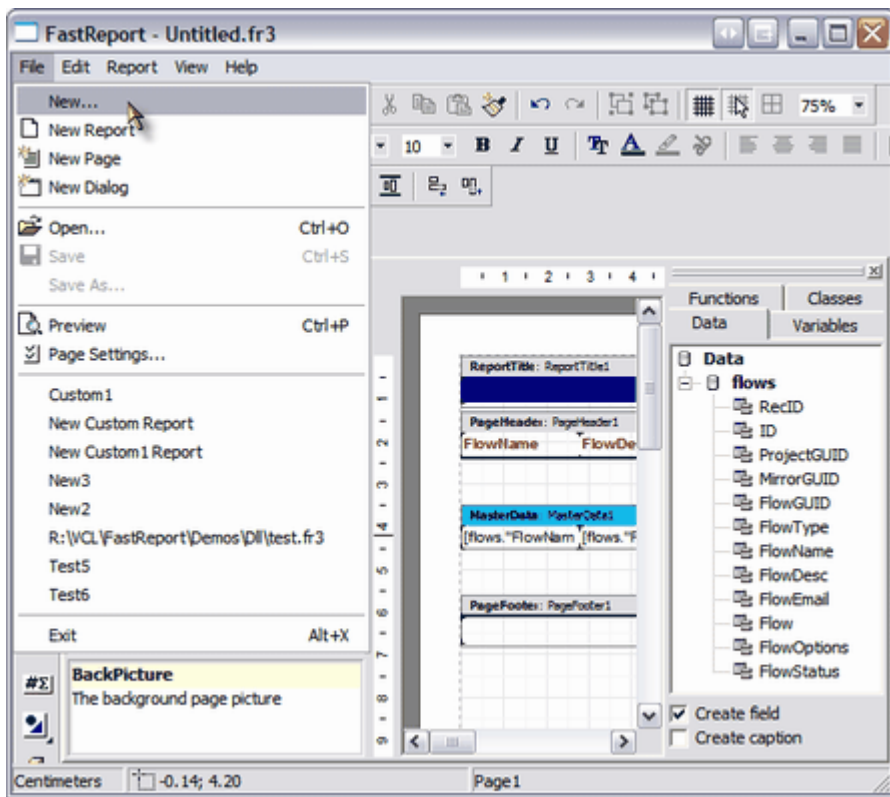


1. Right-clicking the Custom folder and typing in a new name for your report. Then double click the new report.

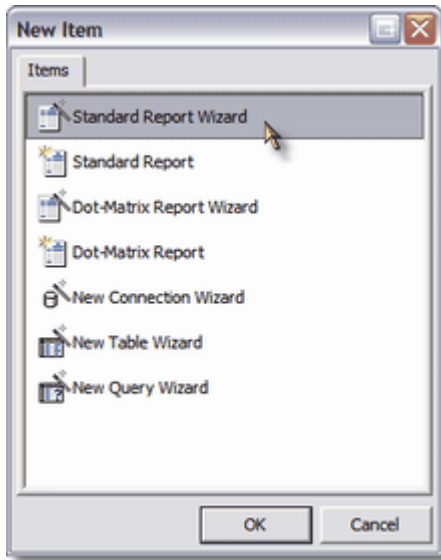
2. Now click Report menu and then Design



3. Pick File-New in the designer, then chose Standard Report Wizard

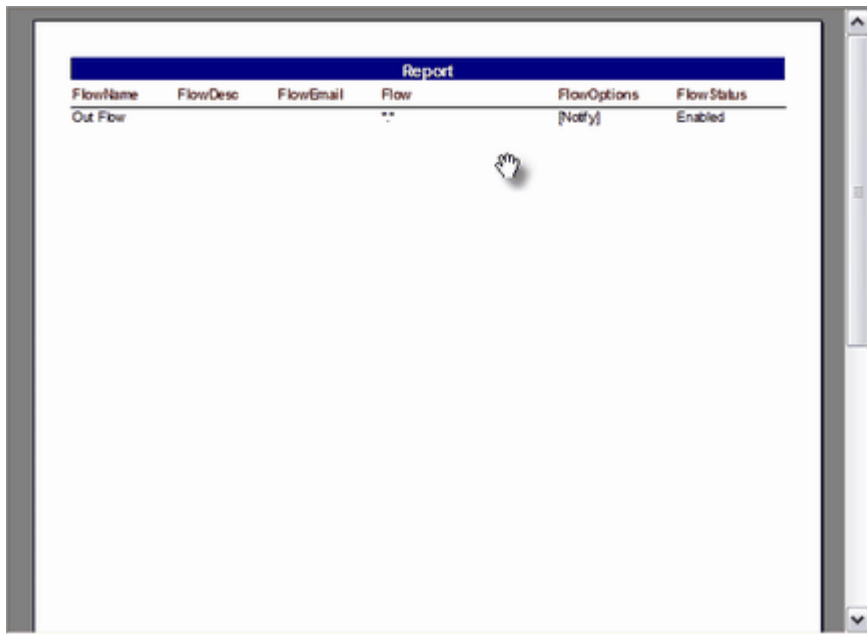


4. Complete the wizard and click Finished



5. Make any necessary further enhancements to the template, then click File-Exit

6. Click the Report menu again and then click Save

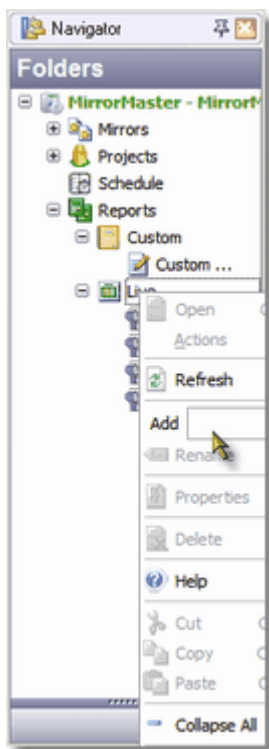


You now have a template which you can use and run any time in the future to produce the newest and most up to date information and export it to Excel, PDF and various other formats using the toolbar menu provided.

4.7.3 Live Reports

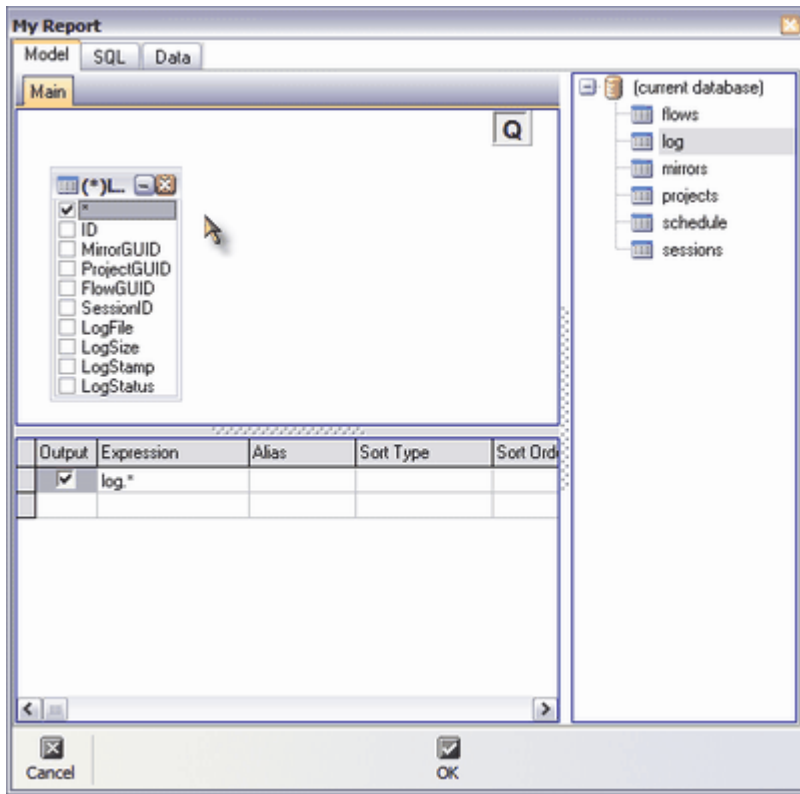
Live reports are used to setup and design a live report SQL template which can consequently be run again, producing a grid containing your requested data, and which can then be printed and/or exported in various formats.

You can add a new live report by:

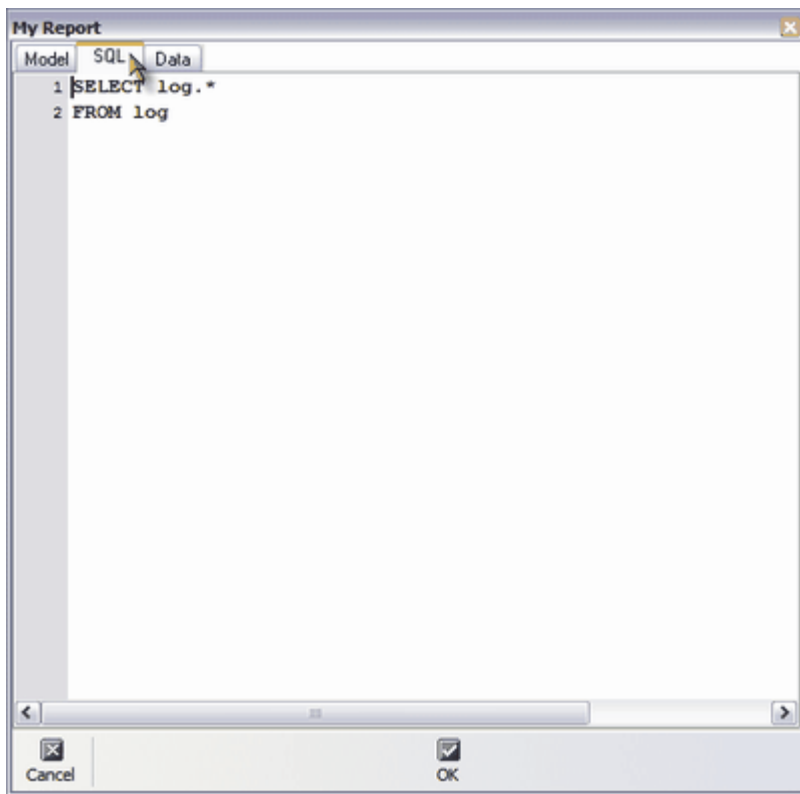


1. Right-clicking the Live folder and typing in a new name for your report. Then double click the new report.

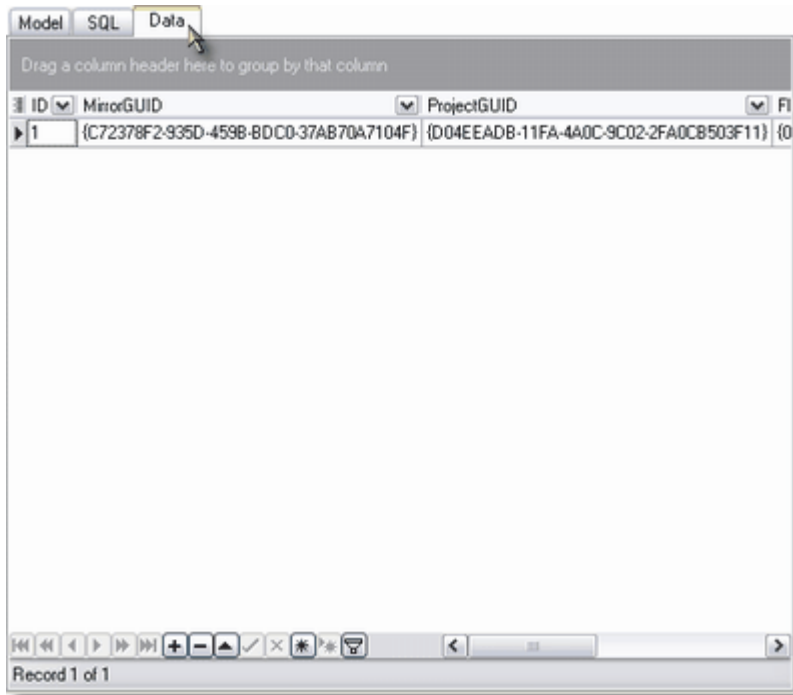
2. In the Active Query Designer you can define your SQL template by dragging and dropping in tables, linking them together, etc.



3. You can then inspect your SQL

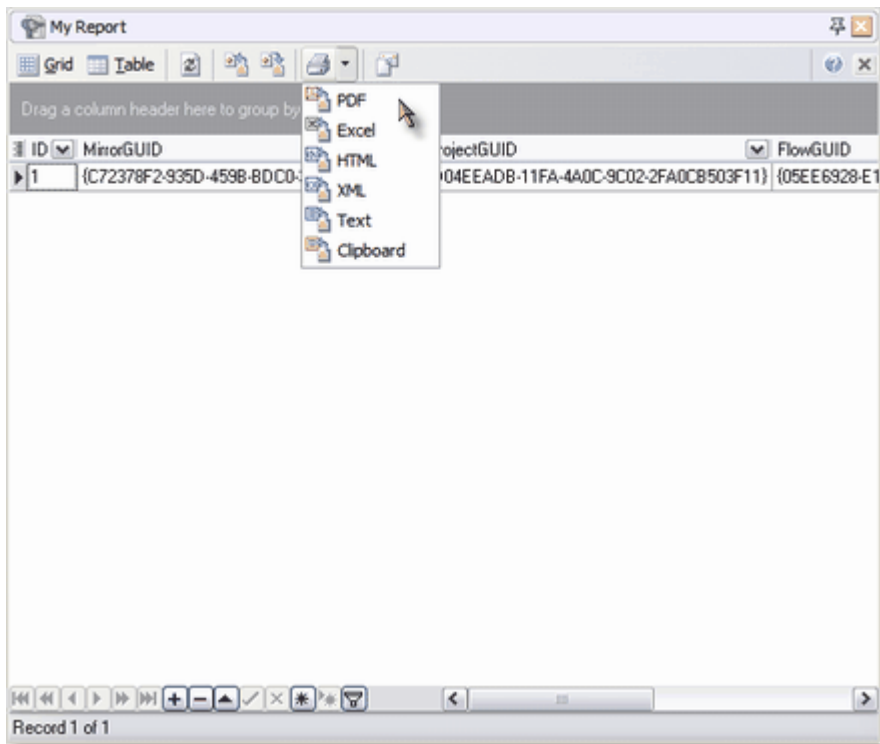


4. And get a preview of your data

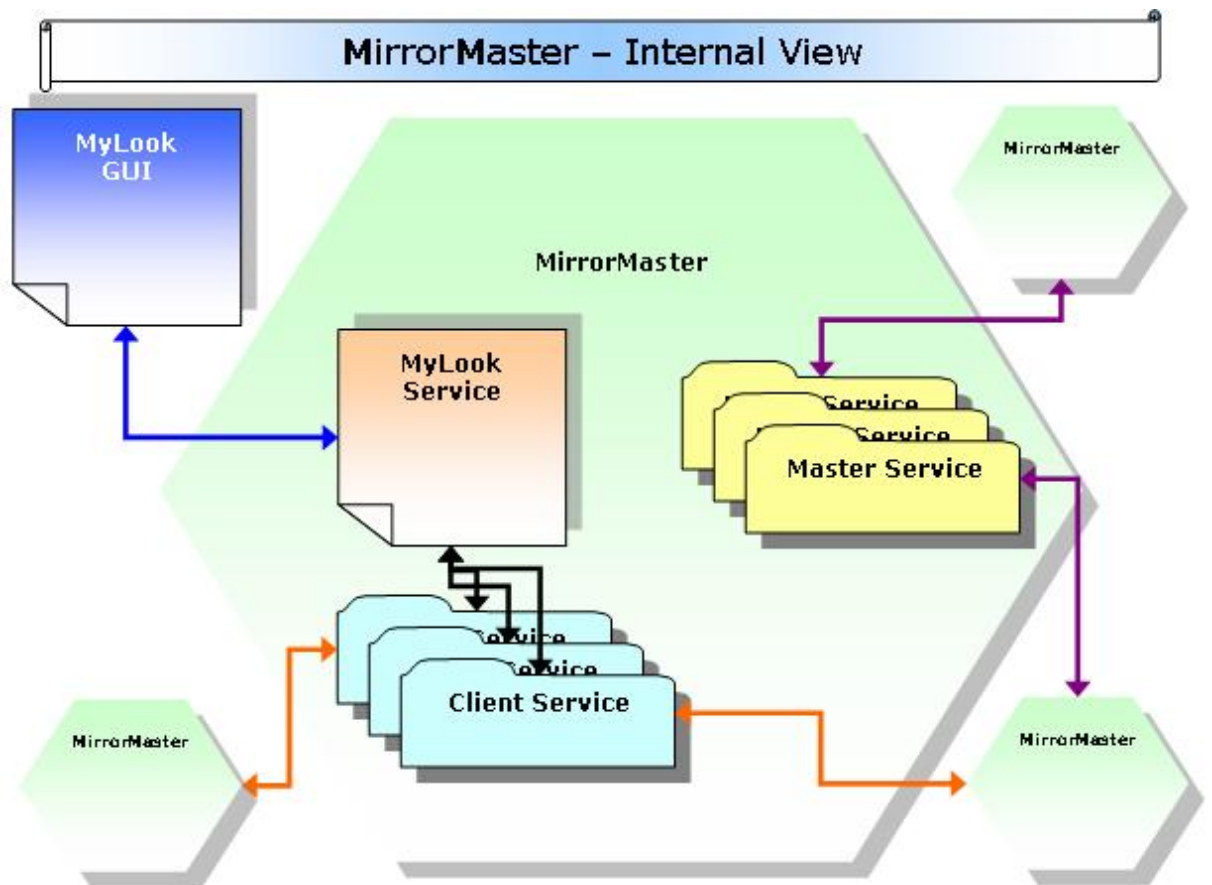


5. Refine your SQL further and then click OK

6. Double click the report again to get your final and live data grid which you can now export and print in various formats.



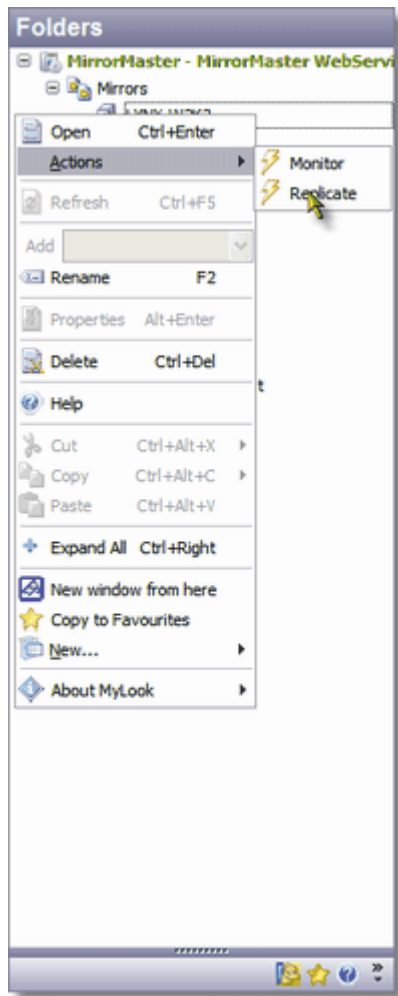
4.8 Replicating



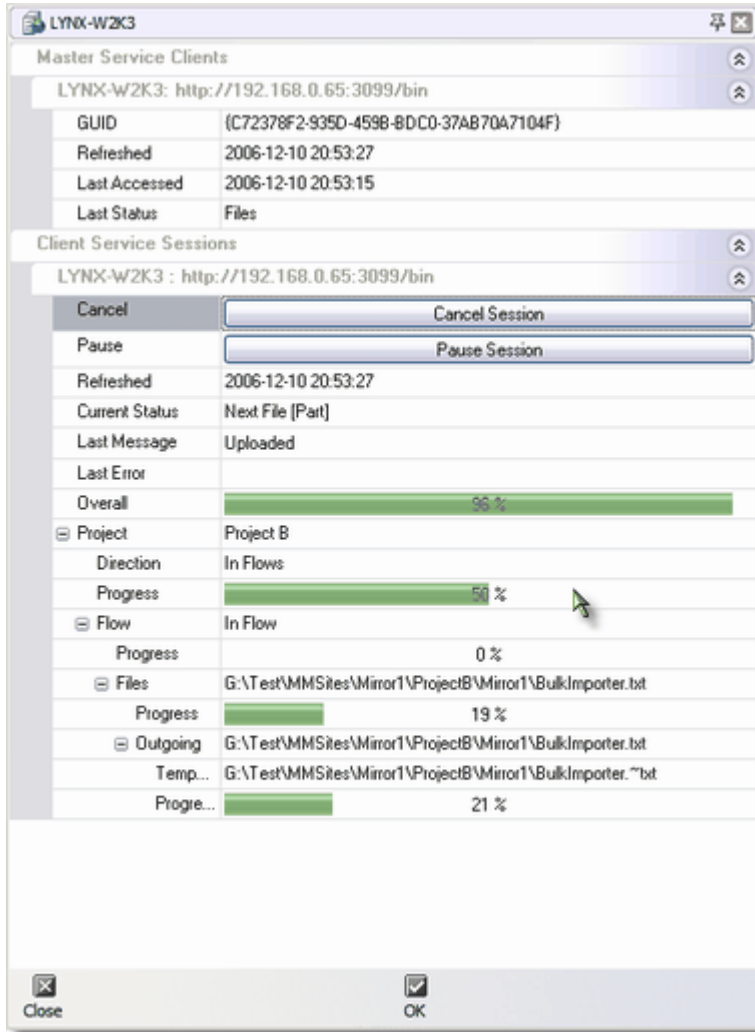
When you replicate you are in fact putting your MM in "client" mode, i.e. it will connect to all the known MMs, fetch any new projects which has flows assigned to your MM and consequently transfer any files according to the flows and criteria of those flows.

You can replicate on a:

- Global basis, i.e. replicate to all the known MMs, by right-clicking the root MM folder and then click Actions-Replicate
- Per Mirror basis, i.e. replicate only to a selected MM, by right-clicking the specific Mirror folder and then click Actions-Replicate
- Per Project basis, i.e. replicate only to a specific MM and only a specific Project, by right-clicking the specific Project folder and then click Actions-Replicate
- Per Flow basis, i.e. replicate only to a specific MM and only a specific Project's one Flow, by right-clicking the specific Flow folder and then click Actions-Replicate



The subsequent Monitor screen will show you a live view of the replication process.

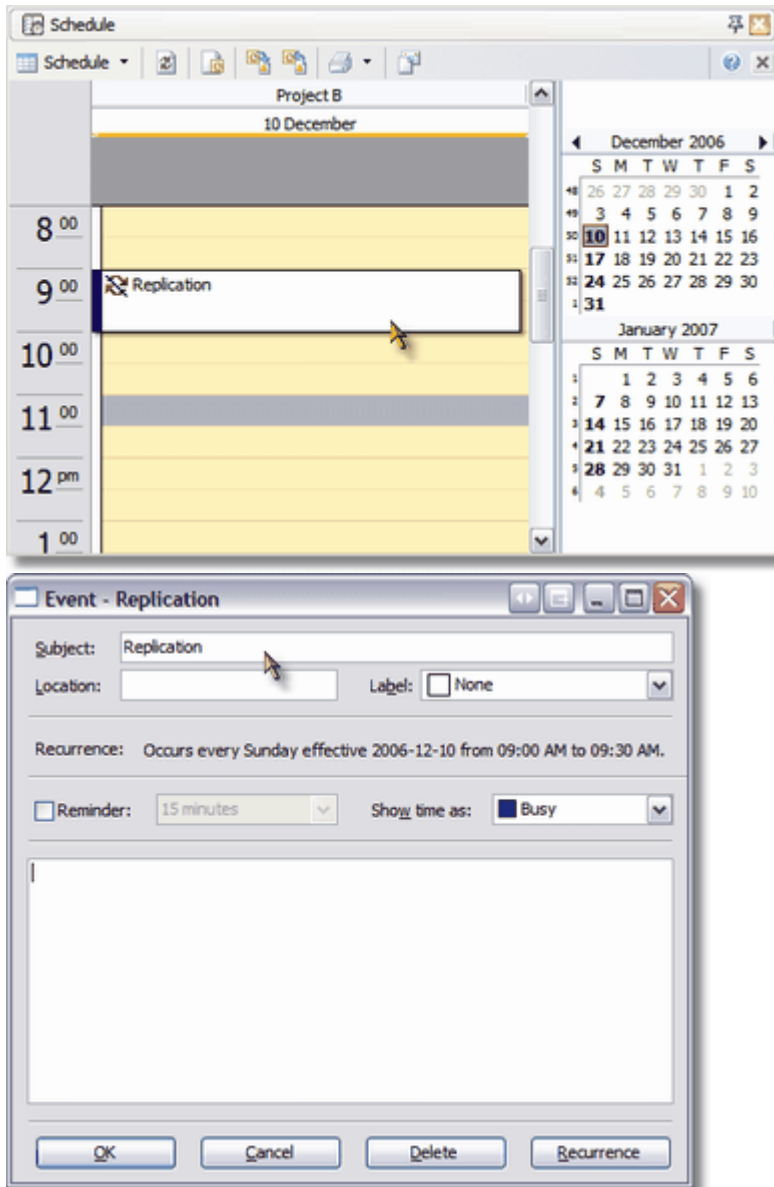


- Master Service Clients - Displays a list of master services serving client MMs connecting to your MirrorMaster
- Client Service Sessions - Displays a list of MirrorMasters to which you are connecting and replicating with as a client.

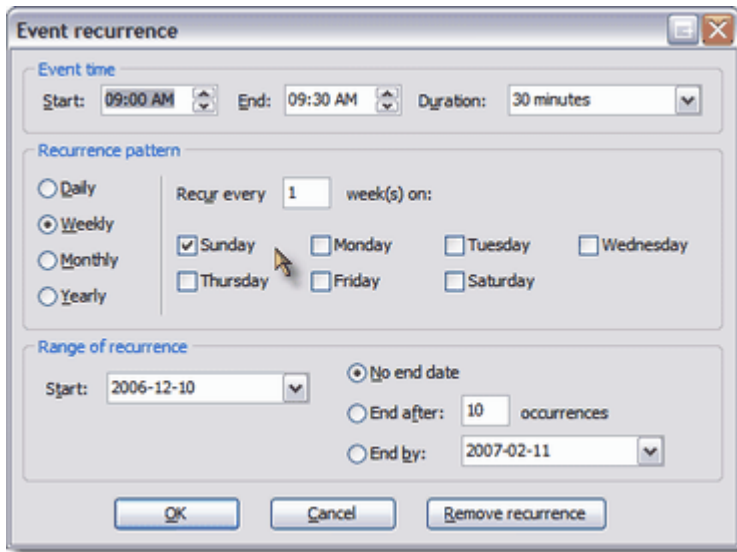
NOTE: At any point you can Cancel a replication session with another MM by using the provided cancel button and/or Pause and Resume a live client session. The Monitor screen is refreshed every second and if your MM is not slowed down using the Delay property, then you may not see all the steps of a replication process. At any point you can also close the Monitor screen using Close or OK buttons, and subsequently again open it in the same way you started the replication but instead of clicking Replicate, simply click Monitor.

4.9 Schedule

The Schedule screen is used to setup schedule events for any project of which you are a client MM, i. e. projects for which you need to periodically connect to remote MMs in order to replicate. Simply double click the Schedule folder and then double click a suitable time to open the event definition dialog.



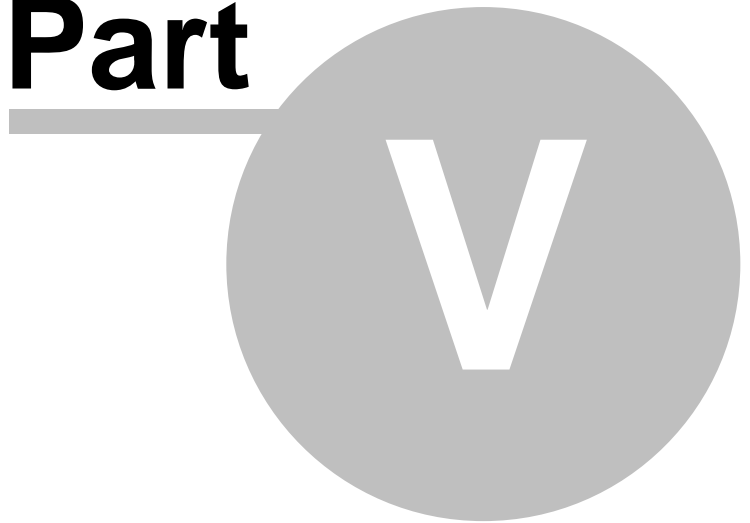
You can also define the event as recurring so that your replication will run forever or for any predetermined time.



4.10 Maintenance

The only maintenance your MirrorMaster requires is that you periodically open MyLook, right-click your root folder and clicking Actions-Clear Sessions & Logs.

Part



5 Support

The Support section includes:

- Frequently Asked Questions
- Common Errors

5.1 Frequently Asked Questions

No FAQs yet, but you may have a look at [Common Errors](#)

5.2 Common Errors

List of common errors in MirrorMaster:

- A replication session stays on "Connect" - This means that your MirrorMaster is unable to connect to the remote MirrorMaster using the supplied URL. RESOLUTION: Use the same URL from a webbrowser and ensure that the remote MirrorMaster is available and normal HTTP port (80) is open through firewalls if you are using "mlroproxy", or port 3099 is open if you connect directly to the remote MM service. NOTE: Some internet browsers will automatically authenticate you on the remote webserver if the webserver requires authentication, this is not the case for MirrorMaster which sends no authentication and can also trust sites by default. You should ensure that the remote webserver accepts anonymous connections and that your local internet browser is setup such that it can browse to the remote URL without any security pop ups intervening.
- Project does not contain any flows (does not receive or send any files) - Most likely you have not yet setup a root directory for the project. RESOLUTION: Double click the project's folder and pick the root directory to use. Click OK. Replicate the project again.
- New MirrorMaster settings are not being honored - Because MirrorMaster client and master service instances might be running using their own previous snapshot of the configuration file which you subsequently changed some settings in. RESOLUTION: Close MyLook, Restart MirrorMaster Service, Start MyLook again.

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