

## dsagent(1M)

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### NAME

dsagent – directory synchronization agent

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### NOTE

Unless otherwise indicated, the information contained in this manual pertains to both UNIX and Windows systems. The processes (also known as daemons) in this manual use a forward slash (/) as a separator in the synopsis, file names, and so forth. When using Windows, you must replace this with a backward slash (\).

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### SYNOPSIS

```
/usr/sbin/osi/dsagent [-C configurationfile] [-d level] [-f] [-h] [-L  
logfile] [-M] -n segment_name
```

### AVAILABILITY

dsagent is available with eMail Sentinel product.

### DESCRIPTION

dsagent is a process that reduces load on the Global Directory Server (GDServer) and improves performance of outbound directory synchronization. It does this by providing information on user entries in the X.500 Directory in the form of a file and eliminating the need of reading entries by individual X500togatewayname scripts directly from GDServer.

dsagent obtains user entries from the X.500 Directory in the form of GDServer replicates, converts each replicate into equivalent LDIFF file, spools each converted LDIFF file for processing by configured X500togatewayname script, and runs configured X500togatewayname scripts to update post office directories. dsagent provides the same functionality as the existing Change Notification System (CNS). An X500togateway script can be configured to be run by both dsagent and CNS, but only one of them should be used at any time.

dsagent executes the following phases:

- Configuration Information Processing
- Obtaining Replicates from GDServer
- Processing Replicates Spooled in the File System Directory
- Replicate Conversion and Spooling
- Invocation of X500togateway Scripts

Each phase is described in detail in the following sections; a description of signal handling is also included.

## Configuration Information Processing

dsagent uses the Common Configuration File DirSync.cf to obtain information on the GDServer, Common Directory user agent (ComDUA), various X500togateway scripts, file system directories, and other parameters like intervals between two GDServer polls. It also obtains information on replication agreements configured for directory synchronization by reading the DSA entry.

Configuration parameters are obtained from three different types of segments: *common segment*, which contains parameters that are common to all X500togateway scripts and dsagent, *dsagent segment*, which contains parameters specific to dsagent, and *gateway\_specific segment*, which contains parameters specific to each instance of X500togateway script. Common segment provides the following parameters:

- TOadmin

Specifies the Directory Synchronization Administrator's mail address. The user specified at this address receives directory synchronization success/failure notifications that are generated by X500togateway scripts. The user also receives Normal/Abnormal termination notifications that are generated by dsagent before termination.

This parameter is optional. The default value for this parameter is *postmaster* on the local host.

- DUAHost

Specifies the address of ComDUA that X500togateway scripts and dsagent use to access the X.500 Directory. This address can be either the pathname of a pipe or an Internet address in the form hostname+port number. If the protected ComDUA's address is specified in this parameter, X500Manager and X500password parameters are not required.

This parameter is required.

- X500Manager

Specifies the distinguished name of the DSA manager entry that X500togateway scripts and dsagent use to authenticate to the X.500

Directory. If the address of protected ComDUA is specified in DUAHost parameter, this parameter is not required.

This parameter is optional.

- X500Password

Specifies the password for the DSA manager entry specified in X500Manager parameter. The password specified in this parameter is used by X500togateway scripts and dsagent while authenticating to the X.500 Directory. If the address of protected ComDUA is specified in DUAHost parameter, this parameter is not required.

This parameter is optional.

- LocalGDServerName

Specifies the distinguished name of the DSA entry of the GDServer providing replicates to dsagent. This parameter is also used by all gatewaytoX500 scripts if the MasterDSAName parameter is omitted. dsagent reads this entry to find the replication agreements configured for directory synchronization.

This parameter is required.

- Oidtable

Specifies the pathname for oidtable for X500togateway and dsagent. dsagent uses these oidtables for generating the LDIF equivalent of the GDServer replicate file. X500togateway scripts use this parameter to run /usr/sbin/osi/tools/cd\_listattrs binary. The oidtables specified in this parameter should be the same as those specified for GDServer providing replicates.

This parameter is optional. If omitted, the value for this parameter defaults to /usr/var/osi/oidtable.

- MailerInitFile

Specifies the name of the file that contains the names of those post offices that need initialization. When an X500togateway script is run with initialization option, it creates the file specified in this parameter with its post office name as the only content.

On UNIX, dsagent issues an initialization request (SIGUSR1) to dsagent. More than one post office name can be specified and all the post offices could be initialized. But X500togateway scripts create this file with only the name of their post office. Upon receiving an initialization request (SIGUSR1) dsagent reads this file and initializes the specified post offices. This parameter is optional. The default value for this parameter is /usr/var/spool/dsagent/dsinit.

On Windows, dsagent continually looks to determine if this file exists. If it does exist, dsagent reads this file and initializes the specified post offices. The default value for this parameter is \usr\var\spool\dsagent\dsinit. If

you do not want to set up the X500togateway script within the configuration file with the Initialization option, you can create the `\usr\var\spool\dsagent\dsinit` and have it contain the post office name(s) that need to be initialized.

- AgentLockFile

Specifies the name of the file that is used to prevent the existence of multiple instances of dsagent. This file contains the processes ID of the instance of dsagent that is currently running. When a X500togateway script is run with initialization option, it reads this file to get the process ID of dsagent.

This parameter is optional. The default value for this parameter is `/usr/var/spool/dsagent/dslock`.

- SpoolDir

Specifies the name of the directory that is used in the preparation of pathnames of various directories used by X500togateway scripts. dsagent uses this parameter to generate the X500ChangesDir and X500toLockFile parameter values for configured X500togateway scripts.

This parameter is optional. If this parameter is omitted, both X500ChangesDir and X500toLockFile parameters are required in each post office-specific segment.

- X500toBase

Specifies the distinguished name of the X.500 Directory Information Tree (DIT) branch whose entries should be considered for inclusion while preparing post office-specific import file. Both X500togateway script and dsagent use this parameter. There can be more than one such parameter in the configuration file.

This parameter can appear in both *common segment* and also in *gateway specific segment*. dsagent prepares a list of branches specified for each configured post office and checks the DSA entry for presence of replication agreements that are defined only for directory synchronization. Such agreements allow GDServer to generate replicates containing entries under these branches. At least one such parameter must be defined for each configured post office.

dsagent segment provides the following parameters:

- GDServerSharedDir

Specifies the pathname of the file system directory where dsagent would find replicates generated by GDServer. dsagent issues requests to GDServer for generating replicates. The pathname specified for this parameter should be the same as the `directory_name` parameter of the `cpreplicate` command.

This parameter is optional. The default value for this parameter is `/usr/var/spool/dsagent/in`.

- TempDir

Specifies the pathname of the file system directory where dsagent creates temporary files.

This parameter is optional. The default value for this parameter is /usr/var/spool/dsagent/tmp.

- IgnoredDir

Specifies the pathname of the file system directory where dsagent spools invalid or ignored replicates.

This parameter is optional. The default value for this parameter is /usr/var/spool/dsagent/ignored.

- ArchiveDir

Specifies the pathname of the file system directory where dsagent spools replicates that were processed successfully.

This parameter is optional. The default value for this parameter is /usr/var/spool/dsagent/archive.

- GDServerPollInterval

Specifies the interval in minutes after which dsagent issues requests to GDServer to get replicates containing information on entries required for updating post office directories.

This parameter is optional. The default value for this parameter is 60 minutes. Minimum possible value is 5 minutes. The maximum possible value is 1440 minutes.

- GDServerPollWaitTime

Specifies the duration in minutes that dsagent waits for successful completion of requests issued to GDServer for generation of replicates.

This parameter is optional. The default value for this parameter is 5 minutes. Minimum possible value is 1 minute. Maximum possible value is 1440 minutes.

- PollInterval

Specifies the interval in minutes after which dsagent checks the file system directory specified in the GDServerSharedDir parameter for the presence of replicates. This parameter is optional. The default value is 5 minutes. The minimum value is 1 minute. The maximum possible value is 1440 minutes.

- LoggingLevel

Controls the amount of log messages generated in the dsagent log file. Possible values are 1 and 2. When a value of 1 is specified, then only major events or exceptions are logged. When a value of 2 is specified,

debug information is also logged. Debug level specified for command line parameter `-d` takes precedence.

- **LogSize**

Specifies the size of log file in kilobytes. Once the log file grows to the size specified in this parameter, it is recreated. This parameter is optional. Default value is 500K bytes. A value of 0 causes the file to grow without limits.

- **ArchiveReplicate**

Specifies if dsagent should archive successfully processed replicates. The possible values are *yes* and *no*. A value of *yes* enables archiving and a value of *no* disables archiving. This parameter is optional. The default value is *no*.

- **SaveIgnoredFile**

Specifies if dsagent should archive replicates that are not processed. The possible values are *yes* and *no*. A value of *yes* enables archiving and a value of *no* disables archiving. This parameter is optional. The default value is *yes*.

- **OutputFileFormat**

Specifies the format of dsagent output file. Currently, the only possible value for this parameter is `LDIFF` and is internally hard coded.

- **OperationalAttributes**

Specifies if dsagent should include operational attributes in the output `LDIFF` file entries. The possible values for this parameter are *yes* and *no*. A value of *yes* enables the appearance of operational attributes and a value of *no* disables the same. This parameter is optional. The default value is *no*.

- **SpecialEntries**

Specifies if dsagent should include special entries (subentries and administrative entries) in the output `LDIFF` file. The possible values are *yes* and *no*. A value of *yes* enables the appearance of special entries and a value of *no* disables the same. This parameter is optional. The default value is *no*.

- **MailerCommand**

Specifies the details for post offices that should be serviced by dsagent. For each configured post office, one such parameter is required. The value for this parameter has the following format.

`<name>:<status>:<interval>:<command>`

`<name>` Specifies the segment name specific for an X500togateway script. dsagent uses this parameter to

locate post office-specific segment in the configuration file and obtain values for the X500toLockFile and X500ChangesDir parameters.

- <status> Specifies how dsagent should run an X500togateway script for a mailer. The possible values are *inactive*, *immediate*, and *periodic*. If a value of *inactive* is specified, then dsagent spools only the converted replicates for this post office but does not run its X500togateway script. If a value of *immediate* is specified, dsagent runs X500togateway script as soon as it spools a converted replicate for a post office. If a value of *periodic* is specified, dsagent spools converted replicates for a post office as soon as one arrives, but runs its X500togateway script at fixed intervals. One of these values must be specified.
- <interval> Specifies the interval in minutes between two invocations of an X500togateway script for a post office. The parameter is effective only when a value of *periodic* is specified for the <status> field.
- <command> Specifies the X500togateway command and its parameters for updating a post office. dsagent runs the specified command with all the specified parameters.

gateway\_specific segment provides the following parameters:

- X500ChangesDir

Specifies the pathname of the file system directory where an X500togateway script should look for X.500 changes file (spooled by log\_receiver) or converted replicates (LDIFF files spooled by dsagent). An X500togateway script processes the files accordingly. dsagent uses this parameter to determine where it should spool a copy of converted replicate for a configured post office. This parameter is optional. If this parameter is omitted, SpoolDir parameter must be specified and the pathname generated is spoolDir/POName/changes.

- X500toLockFile

Specifies the file name that is used to prevent existence of more than one instance of X500togateway script for a post office. An X500togateway script checks for the presence of this file. If this file is absent, it creates one and continues execution. dsagent checks for the presence of this file before running an X500togateway script. If this file exists, it does not run an X500togateway script. This parameter is optional. If omitted, the SpoolDir parameter must be specified and the filename generated is spoolDir/POName/import.lck.

## **Replication Agreements Defined for Directory Synchronization**

dsagent reads replication agreements defined for directory synchronization from the DSA entry specified in the LocalGDServerName parameter. The supplier replication agreements defined for directory synchronization have the following characteristics:

See *shadowingAgreement* syntax for details in *Appendix A of Global Directory Server Administrator's Guide*..

- The <ID> field must have a unique identifier.
- The <area> field of the agreement should be defined in such a way that the agreement provides entries for at least one X.500 branch defined by a X500toBase parameter. If the agreement does not provide entries for all the branches defined by all X500toBase parameters, other similar supplier agreements must be defined. A supplier agreement is considered to provide entries for an X.500 branch specified by an X500toBase parameter if the root of the replicated area is at the same level or above that branch. Such an agreement is expected to provide entries in the *entire subtree* below the root of the replicated area (that is, no chop specification should be defined).
- The <with> field must be empty. There is no corresponding consumer DSA is defined.
- The <mode> field should have a value of *supplier initiated*.
- The <when> field can have any valid value.
- The <attrs> field should have a value of *allAttributes*.
- The <knowledge> should be left to the default value of *both*.
- The <state> field should have a value of *inactive*.
- The <command> field should have the cprepolate command specified. For details on cprepolate, see [cprepolate\(1M\)](#).

dsagent looks for a null value in the <with> field and binary cprepolate in the <command> field to conclude that a supplier agreement is defined for directory synchronization. Based on X500toBase parameters for each post office, dsagent prepares a list of supplier agreements required for each post office. If no replication agreement is defined to provide entries under a branch specified by X500toBase parameter, then the dsagent configuration fails. After successfully processing the configuration file and obtaining all the information on the supplier agreements defined for directory synchronization from the DSA entry, dsagent starts running.

## Obtaining Replicates from GDServer

dsagent issues requests to the GDServer configured to generate replicates. The requests are issued for supplier agreements defined for directory synchronization. Requests equivalent to the following dish commands are issued for each required supplier agreement:

- dsagent -getupdatestatus



This request is issued before and after a `dsacontrol -generateextupdate` and a `dsacontrol -generatefullextupdate` request. One request is issued to check if GDServer is in a state to accept a `dsacontrol -generateextupdate` or `dsacontrol -generatefullextupdate` request. After a `dsacontrol -generateextupdate` or `dsacontrol -generatefullextupdate` request has been issued, `dsagent` issues `dsacontrol -getupdatestatus` requests until the previously issued `dsacontrol -generateextupdate` or `dsacontrol -generatefullextupdate` succeeds or the wait interval specified in `GDServerPollWaitTime` configuration parameter expires.

- `dsacontrol -generateextupdate`

This request is issued for generating a replicate containing an incremental update. An incremental update for an agreement contains changes to entries covered under the subtree specification for that agreement since the last `dsacontrol -generateextupdate` or `dsacontrol -generatefullextupdate` request. `dsagent` issues this request for each agreement periodically. For an agreement, the interval between two such requests is determined by the `GDServerPollInterval` configuration file parameter.

- `dsacontrol -generatefullextupdate`

This request is issued for generating a replicate containing a full update for an agreement. A full update for an agreement contains all the entries covered under the subtree specification for that agreement. `dsagent` issues this request either to initialize a post office or to recover from an error encountered during conversion of a replicate.

After a `dsacontrol -generateextupdate` or `dsacontrol -forcefullupdate` request completes successfully for an agreement, a replicate would be spooled in the directory specified as `directory_name` parameter for `cpreplicate` command in that agreement.

## **Processing Replicates Spooled in the File System Directory**

GDServer creates a replicate in response to a request issued by `dsagent`. `dsagent` expects the replicates to be spooled in the directory specified by the `GDServerSharedDir` configuration file parameter. See [cpreplicate\(1M\)](#) for details on replicate naming convention. The replicates are grouped based on replication agreement identifier and version. Within a group of replicates having the same agreement identifier and version, replicates are sorted from least recently generated to most recently generated, based on the system's file modification timestamp.

All replicates generated prior to most recent replicate containing a full update are discarded. Replicates containing no changes are also discarded. These discarded replicates are saved in the directory specified by the `IgnoredDir` parameter if saving of ignored files is enabled by the `SaveIgnoredFile` configuration parameter. All remaining replicates for each agreement are processed further.

## **Replicate Conversion and Spooling**

dsagent attempts to convert each remaining replicate to the equivalent LDIFF format file. An LDIFF file generated from a full update contains all attributes and values for each entry in the X.500 Directory. An LDIFF file generated from an incremental update contains change records corresponding to changes to X.500 Directory entries. If a value of *multiple* is specified for the ExecutionMode directive, then each replicate is converted in a separate child process. The main thread of dsagent (parent process) waits until all child processes terminate. If a value of *single* is specified for the ExecutionMode directive, then dsagent converts each replicate one at a time.

Based on replication agreement identifier and version, dsagent spools a copy of converted replicate only for those post offices that need it. dsagent determines the relationship between a supplier replication agreement and a configured post office at the time of configuration information processing. X500togateway scripts configured for each post office process the spooled LDIFF files and generate an import file for updating that post office directory.

### **Invocation of X500togateway Script**

dsagent also runs the X500togateway script for updating the directory of each post office. The status field of the MailerCommand directive determines when dsagent runs a X500togateway script. This field can have values of *inactive*, *immediate*, or *periodic*. If a value of *inactive* is specified, the X500togateway script is not run but LDIFF files are spooled. If a value of *immediate* is specified, the X500togateway script is run as soon an LDIFF file is spooled. If a value of *periodic* is specified, then the X500togateway script is run at regular intervals.

An X500togateway script is run with all the parameters specified in the MailerCommand directive. dsagent runs an X500togateway script only after it determines that there is no other instance currently running. It does this by checking for the presence of script's lock file (as specified in the X500toLockFile configuration parameter).

If ExecutionMode directive has a value of *multiple*, a child process is created and the script is executed in that child process and the main execution thread of dsagent continues to run. If the ExecutionMode directive has a value of *single*, a child process is created and the script is executed in that child process but the main execution thread of dsagent is blocked until the child process terminates. In either case, when a child process terminates, dsagent checks the status code returned by the X500togateway script.

If an X500togateway script returns a non-zero value, that script is marked inactive and is not run in the future. The administrator should intervene and determine the problem from the X500togateway script log file and correct it. A SIGHUP signal should be sent to dsagent to activate all inactivated mailers.

### **Signal Handling**

dsagent catches the following signals:

- SIGTERM

The SIGTERM signal causes dsagent to terminate. If no post office

directory initialization request is being processed when this signal is received, dsagent terminates immediately. Otherwise, it waits until it spools full updates for all agreements required by the post office and it runs the X500togateway script for the post office. If it is required that the dsagent be terminated while it is waiting to initialize a post office directory, then one more SIGTERM signal should be sent.

To send a SIGTERM to dsagent using the Rialto Messaging Administrator and viewing the Processes, highlight the dsagent process and send the "Terminate Process" option.

- **SIGHUP**

The SIGHUP signal causes dsagent to reload its configuration file and read the DSA entry. Any change to a configuration parameter takes effect immediately. The only exception is the Oidtable parameter. If any change is done to this parameter, then dsagent must be restarted for the change to be effective. X500togateway scripts for all post offices that are not configured as inactive in the MailerCommand parameter are also run.

To send a SIGHUP to dsagent using the Rialto Messaging Administrator and viewing the Processes, highlight the dsagent process and send the "Purge Process" option.

- **SIGUSR2**

The SIGUSR2 signal tells dsagent to print configuration information in its log file.

## **OPTIONS**

- C** *configurationfile*

Specifies the file containing configuration directives. If this option is not specified, the default directory synchronization configuration file /usr/var/Dirsync/DirSync.cf is used. A sample configuration section is provided with segment identifier dsagent in the sample configuration file.

- d** *level*

Specifies the number of log messages generated in the dsagent log file. Possible values are 1 and 2. When a value of 1 is specified, only major events or exceptions are logged. When a value of 2 is specified, debug information is also logged. The debug level specified for this option overrides the level specified in the LoggingLevel configuration file parameter.

- f**

Forces one-time execution of X500togateway scripts for all configured post offices during dsagent startup.

- h**

Specifies that the command usage be printed.

**-L** *logfile*

Specifies the name of the file in which messages should be logged. If this option is not specified, the default log file /var/adm/MHS.log is used.

**-M**

**-n** *segment\_name*

Specifies the name of the segment in the configuration file that contains directives specific to dsagent. This option is required.

## FILES

/var/adm/MHS.log  
/usr/var/dirsync/sample.cf/DirSync.cf

## SEE ALSO

[\*cpreplicate\*\(1M\)](#)

**Next topic:** [DSReceiver\(1M\)](#) **Go to:** [Book view](#)