

Sync Center v1.30 User's Manual

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DOCUMENTATION

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Documentation

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Sync Center manual

Introduction

Sync Center is an easy-to-use piece of software that allow copying files, directories or even whole volumes among NetWare servers. Its operation is based on a schedule; it basically requires only a one-time setting and then it will automatically maintain the synchronized status: it copies the newly created or modified files and deletes the removed files on the target server. It consists of two main parts: the NLM application running on the server performs the actual synchronization and a user interface running on the workstation provides means for the easy configuration.

Document conventions

We used the following conventions in the document:

`(option1 | option2)`

An optional selection, either option1 or option2. Both cannot be specified at the same time but at least one of them must be given.

`[option]`

An optional selection, either option1 or nothing.

`<hh:mm>`

Unlike the previous examples, here not the name of the parameter must be specified but the current value of the parameter current (in this case, for example, the time in hh:mm format).

`"path"`

The parameter is a character string, with the delimiting double quotes as well!

Functions of the program

Copying and synchronizing files and subdirectories among NetWare servers

The main purpose of the program is to synchronize files or full subdirectories after a one-time setting and then to keep checking regularly – and if differences are found, then restoring – the status of the synchronization.

Copying and synchronizing files and subdirectories among the DOS and NetWare partitions of NetWare servers

Using the SyncDos utility, the DOS partition of a NetWare server can be kept in sync with any chosen directory on a NetWare partition.

Copying long file names

The program can transfer the long names of the files and subdirectories. The only restriction is that the servers must use the same code page.

Copying file system attributes and IRM

Besides the contents of the file the standard and NetWare-specific attributes and the inherited rights mask (IRM) is transferred.

Copying file system rights

The improved version of Sync Center can copy the file system rights. Now no other programs are required to run for this purpose.

Grouping capabilities, copying the same content to several servers

Same/similar settings need to be defined only once. This reduces the risk of human error and makes it easy to add new servers. A few key parameters (e.g. volume name) can be set for each server, so it is possible to handle configurations where not all servers are exactly the same.

Scheduling by groups and by servers

Synchronization starts at the same time every day, on given or if needed, every days of the week. The starting time may be set by servers and groups, in order to best utilize the available bandwidth and the possibly user-free timeslots.

Priority settings

Priority may be set for groups and within groups for target servers, directories and files to be copied. Thus, even with limited resources the really important synchronization tasks can be performed.

Scheduling by groups and by servers

Synchronization is performed every day at the same time, on certain designated days or all days of the week. The starting time can be set by servers and by groups in order to utilize best the available bandwidth and the off-work hours.

Filtering by subdirectories and applications

It is possible to set certain directories or files (applications) to be copied to designated servers instead of the whole group.

Notifying users about applications to be copied

The program prepares the list of the applications to be updated using the given applications and the difference between the source and target server files. Thus, users may be notified which applications they have to shut for the time of the update.

Notifying users about the results of the synchronization

Various messages can be defined that users logged in to the target server get at the start of the update and at the successful or unsuccessful end of the update. Users thus may be instantly notified whether they should use the updated application or they need help from the Help Desk.

Only modified files are transferred

Files are compared by size and last time of modification. The copy is only performed if there is a difference, thus the required bandwidth can be decreased significantly.

Synchronization for any changes or copying only newer files

It is possible to set either that the file is copied if there is any change or only if the file to be copied is newer than the copy on the target server. Thus it is possible to avoid distributing an older version of a file (something that may be fatal in case of a program file).

Deleting files/subdirectories on the target server that were erased from the source

Files that were erased from the source server may be set to be deleted from the target server as well (or quite the opposite, to keep them). This latter case may be useful for creating e.g. archives.

Updating constantly open files

The program can work in an environment where certain files or applications are used around the clock. Notification of users, deleting the connections that keep the files open and a temporary disabling of logins to the server are all performed automatically.

Stopping applications for the time of the copy

It is possible to run scripts at the beginning or end of the synchronization process. Thus a wide range of possibilities are available for customization; e.g. a PURGE command can be issued to purge the deleted files or any applications (database server, GroupWise, etc.) can be stopped for the time of the copy.

Bandwidth limitations

For each target server a maximum bandwidth can be set the program will not exceed during the copy. Thus it can be avoided that Sync Center congests a slow WAN link.

Logging

The program can log its activities. The level of the details and the scope of the data logged can be set. A maximum size can also be set for the log files.

Easy-to-use user interface (Win32) to create the settings

It is not necessary to learn the commands of the configuration file: the bundled user interface makes it very easy to define the settings.

NetWare 4.x, 5.x, 6.x compatible

The program runs on all NetWare servers that uses NDS (eDirectory) as the directory service and that has all the current updates, patches (support packs) installed.

Installation

Installation of the program is done manually, no special setup program is needed nor created. Please create a directory on the server where you want to run the NLM and copy the files from the installation CD to this directory.

Operation of the NLM

The 'heart' of Sync Center that performs the actual synchronization tasks is an NLM program running on a NetWare 4.x or newer server. At startup, the program reads its operation parameters from a configuration file and will operate according to these settings. The current state of the program, the activities of the running program threads and the „synchronized” or „under processing” states of the target servers can be observed on the server screen.

Starting the program

To run the program only one NLM needs to be loaded. Suppose you installed Sync Center to the SYNCENT directory in volume SYS and the settings are kept at the same place in the SYNC.CFG file, then you need to type the following command:

```
LOAD SYS:SYNCCENT\SYNC SYNC.CFG
```

When the configuration file is stored in a different directory, you need to enter the full path, not just the filename:

```
LOAD SYS:SYNCCENT\SYNC SYS:SYNCCENT\CONFIG\SYNC.CFG
```

This NLM is an application, not an agent. In most circumstances it only needs to be loaded on a single server for an entire NDS/eDirectory tree. Do not load it on every server involved in the sync process!

The program and the configuration file can be at any place on the server, practically in a directory that only the system administrator can access. However, the log file produced should NOT be created on volume SYS because overloading the system volume can affect the operation of a NetWare server very negatively.

How the configuration file is managed

Upon startup, the NLM loads the configuration file into memory and keeps using it. In order to automatically follow the changed settings, the NLM checks the time of the last modification of the file and if it finds the file was changed, reloads the file again to memory. Because of data integrity issues the settings can only be reloaded when there is no active synchronization performed, the frequency of the configuration file timestamp check may be different from the 1 hour default.

On the Sync Center screen of the server console pressing F10 results in re-reading the configuration file, independently from the previous hourly check. Re-reading happens only in no synchronization process is active.

Function and shortcut keys

The following keys may be used at the Sync Center program server screen:

- **F1 - Help**
Shows a help screen with a short explanation on the server screen.
- **F5 - Run all**
Perform all the synchronization tasks (considering the MAXTHREADS limit) immediately. It might be useful for the first start or if the modifications on the source server must be synchronized to the target immediately.
- **F6 - Stop all**
Stops all synchronization tasks, the status of the relevant threads will be *Aborted*. It might be useful to use this command instead of unloading the NLM if you want to preserve the display of the current state. Tasks stopped will restart according to the settings in the configuration file.
- **F10 - Read cfg**
Settings are reloaded at once, independently from the automatic modification check. The command will have no effect if synchronization is active (the Active jobs display is different from 0) or if the configuration file has not changed since the last load.
- **PgDn - Next**
PgUp - Previous
The screen can show only 6 synchronization threads or 8 target servers (depending on the display mode). If more is needed, then the PageUp and PageDown keys can be used to scroll through the screen pages.

Server screen

The activities of Sync Center can be monitored in a separate window on the server. Besides a few global values it shows information on the status of the synchronization tasks. A spinning character in the top right corner shows that the program is actually running.

The screen shows the following values:

- **Active jobs**
The number of the currently running synchronization tasks or the maximum number of tasks that can be run concurrently. This latter is controlled by the MAXTHREADS parameter in the configuration file.
- **Total completed**
The total number of synchronization tasks since starting the NLM.

Display on the lower part of the screen depends on the display mode. For both display modes it is true that if the information to be showed is too much, then the Page Up and Page Down keys can be used to scroll through the pages.

DISPLAY SERVER



Figure 1: Display by target servers

The displayed information is grouped by target servers. This display mode shows the most information about the target servers as it can be seen at once which servers are in sync and which one needs to be repeated, furthermore where the synchronization processes are at the moment.

Beside the source and target server name the status is displayed that can be one of the following values:

- Initial
State right after starting the program - synchronization was not run even once.
- Scanning
The program is identifying the number and size of the files to be copied. Besides the 'Scanning' status a counter is also shown.
- Waiting
Users have been notified, the program is waiting for the time specified in the OFHANDLER parameter.
- Processing
Files are being copied. The name of the file being currently copied is shown one line below.
- Retrying
There was a problem during synchronization. The system waits for the time specified in the RETRYINTERVAL parameter and then will try it again.
- Aborted
The synchronization process was stopped by pressing F5.
- Suspended
The synchronization process could not be finished in the allowed timeframe, so it was suspended.
- Failed
The synchronization process was not able to finish successfully even after several attempts were made (as defined in the RETRYCOUNT parameter).
- In Sync
The synchronization finished successfully.

Beside the status display a counter is displayed that shows the number of copied and total files. The initial number of the counter is 0 / 0, then it can be seen as first the second number (total number of files to be copied) grows in the Scanning phase and then the first number (number of copied files) grows in the second phase. The Scanning phase is omitted when the PRESTAT parameter is set to NO, and the counter will be displayed as 0 / NA, as the total number of files to be copied is not available.

The end of the line shows the time of the last synchronization step. In case of In Sync status it shows the time of the synchronized state.

DISPLAY THREAD

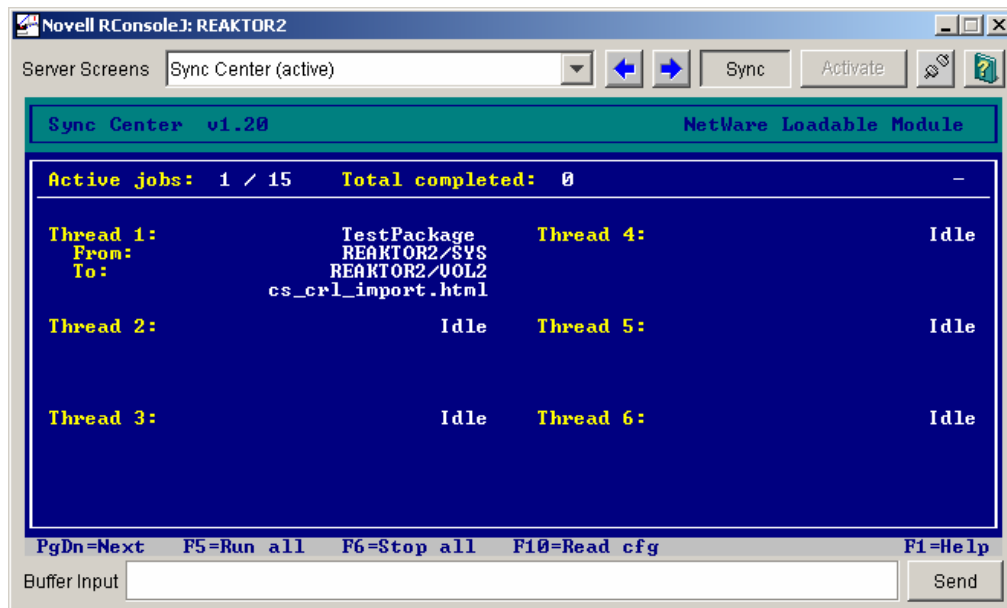


Figure 2: Display by program threads

The displayed information is grouped by program threads performing the synchronization. This mode gives information rather on the current processing status of Sync Center and the current synchronization processes. The current status of the target servers cannot be seen on this screen, only in the log files.

Beside the number of the current program thread the name of the synchronization group is displayed, below this the name of the source server and the volume, then the name of the target server and the volume. The bottom line shows the currently copied file.

How open files are handled

During the synchronization, when copying files it is imperative that the program can erase and rewrite files (that are of different size or date) on the target server. By scheduling execution at night it can usually be done without any problems; however, there are cases where applications run 7 days a week, 24 hours a day, so a different approach must be found.

Sync Center gives various solutions to this challenge. In the simplest case (OFHANDLER ALERT) it notifies users, then waits for a short time before it starts the actual copying procedure. This allows users to save their current work and quit the application. The program skips the files that are left open and shows a synchronization error at the end.

The next level (OFHANDLER CLEAR) is only different from the previous case that if there are still files being open after waiting for the specified period, then the program clears the connection of the user, similarly, as if he/she was erased from the connection list of MONITOR.NLM. As NetWare closes open files upon connection clearing, synchronization becomes possible.

The third option is not only to clear the user connection but also temporarily disable logins on the target server and allow it again after the file update. This protects again newer clients that try to reconnect automatically if the connection fails. This level is the same as if the DISABLE LOGIN and ENABLE LOGIN commands were typed at the server console. In order to make this period the shortest possible, the SYNCMODE REPLACE setting is recommended. In this case the file is copied to a temporary file and disables login only for the short period while it clears the old file and renames the temporary file to the new name.

Most certainly, it is possible to disable the special treatment of the open files (OFHANDLER SKIP, OFHANDLER OFF). In this case open files are not copied and the program throws an error.

Files on the source server are only open for reading. If this is not possible, the program skips the file and will display a synchronization error. The program supposes that the files on the source server are not used by anyone, or if used, then read-only access is still possible.

Packages and applications

Sync Center uses these keywords when talking about flexible yet powerful settings. The concept of packages were introduced to provide a grouping capability for target servers, while applications allow control over individual files on a per-server or per-package base.

Packages are basically just server groups, with a collection of settings effective for that package only. Scheduling, target volume name and the bandwidth limit can be set differently for every server, while other settings are the same within the entire package.

Applications hold the associated file name together with a descriptive name and a list of allowed packages and servers. They provide an easy way to restrict synchronization to specific servers and/or packages, without the need to define additional packages just for that reason. Can also be used to provide the logged-in user with a list of updates waiting to be performed as a preprocess notification (see the description of the PREMSG command for details).

Using the user interface

The Sync Center program package includes a graphical user interface to make it easy to define the settings without having to remember the reference information in the following chapter.

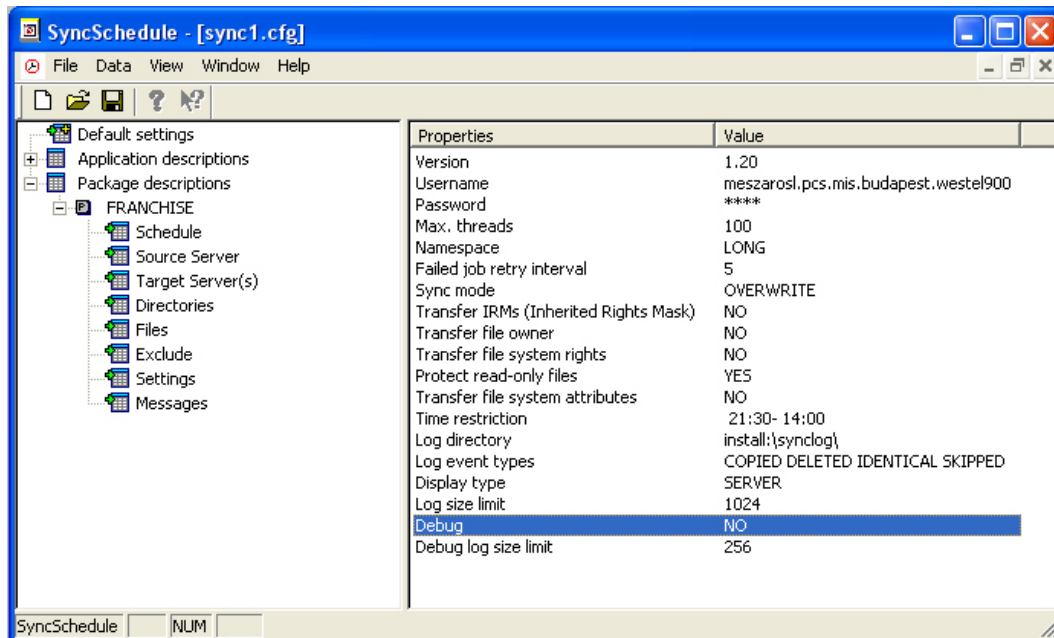


Figure 3: The user interface of Sync Center

The user interface can be used on Windows 98, NT, 2000 or newer operating system. The program is only one EXE file, no special settings are needed to run it. Having minimal Windows operation skills and using this manual, it should be no problem to operate the program. As this interface is mostly used by administrators and they generally know English, the program was created in English language as well.

The program shows the setting of a configuration file in a multi-frame window. The left part shows the hierarchical structure of the categories, the right side the actual settings. To change a settings, double-click on it and then the relevant setting window appears. The only thing that cannot be changed is the version number of the program (a constant value for a given version).

This document describes the functions of the user interface in general. If there are any concrete problems, we suggest consulting the online help.

Creating and loading files

The usual Windows commands menu and the toolbar can both be used. It is possible to open more than one file: it makes life easier if a certain part of an existing file needs to be copied. Automatic conversion will take place when an old version of the configuration file is detected.

When creating a new file, the Default settings correspond to the defaults, the synchronization groups (Package descriptions) and the applications (Application descriptions) sections are empty. It is recommended to create the groups before the applications because the groups are needed to define the latter ones.

Creating and managing groups

The menu command to create a new group can be accessed by right-clicking on *Package descriptions*.

It is recommended to set the default schedule (Schedule) first, because when adding the target servers, this time will be shown as *Start* (starting time).

The order of the group names can be changed by “drag and drop” operations. It also changes the priorities. As the number of concurrently running program threads is limited, a group in the beginning of the list will be more likely executed at the scheduled time.

Creating and managing applications

The menu command to create a new application can be accessed by right-clicking on *Application descriptions*. When defining the path (Path) for the application, it is usually easier to browse for the files than typing the name manually.

When specifying the allowed targets, take care to type the server name (Destination servers) using space as a separator. The program will convert the name to all uppercase. When specifying the groups, the dialog shows all existing groups so you only have to mark which groups is the copy allowed for.

Saving files

When done with the settings, the file can be saved from both the menu and the toolbox (Save or Save as commands). Although previous versions can be opened, they can only be saved in the latest version format. The program gives a warning if you try to exit without saving the file.

Settings

Settings are stored in a text file with a CFG extension, so if needed, any text editor program can be used to modify its content. Nevertheless, the easiest way to create and later modify the settings is to use the graphical user interface.

The settings file can be at any place on the server that runs the NLM. The settings file is loaded by the NLM at startup, then rechecks the last modification time every hour. If the file is changed, the NLM reloads it. If there is some modification that needs to be realized quickly (before the one-hour automatic update period), press F10 on the server console screen. However, if at the time of pressing F10 synchronization is active (the "Active jobs" shows a value different from 0) then the file is not loaded but a warning sound will be heard.

The structure of the configuration file

The settings file has five main parts:

- **Version check**
Its main purpose is to reduce inconsistencies between the NLM and the user interface.
- **Login name and password**
Login name and password of the eDirectory user who has adequate rights for the source and target servers as well.
- **Global settings**
Defaults that have effect on each package. Most certainly, these defaults can be overridden within the package.
- **Synchronization groups (PACKAGE)**
The files, volumes and servers to be synchronized are defined in this part. This is also the place to define times, messages, possible exceptions and the method of handling open files.
- **Applications (APPLICATION)**
List of the applications that are allowed to copy only among certain servers or groups. Using this list it is possible to send a message that includes the name of the applications to be updated.

The command that can be used in the configuration file are described in detail in the following part.

Configuration file commands

APP_PATH

Full path of the application file. The APP_SERVER and the APP_PATH commands together identify the application.

The command can only be used within an application description block (APPLICATION).

Example:

```
APP_PATH "data:internal\apps\hr.exe"
```

APP_SERVER

Name of the server that holds the application. The APP_SERVER and the APP_PATH commands together identify the application.

The command can only be used within an application description block (APPLICATION).

Example:

```
APP_SERVER CENTRAL
```

APPLICATION

Used to define an application description block. It is always used in pairs. Its purpose is twofold: first, it gives a name for the application that can be used e.g. at the beginning of the synchronization in a message sent to users; second, it can be used to narrow the scope of the synchronization when copying is restricted to certain servers or groups (PACKAGE). It effects the SYNC DIR and the SYNC FILE commands as well.

The APPLICATION blocks cannot be embedded into each other. In other words, no new block can be opened until the previous one is closed. An APPLICATION block can include only the following commands: APP_PATH, APP_SERVER, DST_PACKAGE, DST_SERVER.

APPLICATION appname

The beginning of an application description block. The application will be identified as *appname* in e.g. the message sent to users.

APPLICATION END

End of an application description block

Example:

```
APPLICATION MyBestApp
...
APPLICATION END
```

DBGLOGSIZE

The maximum size of the trace log file can be set to anything between 32 KB and 32 MB. When the limit is reached, logging continues at the beginning of the file (overwriting existing entries).

DBGLOGSIZE x

The maximum size of the trace log file will be x KBytes (32 ... 32768).

Default setting:

```
DBGLOGSIZE 256
```

DEBUG

The command invokes the tracing functions of the program. A log file will be created with detailed information on the synchronization steps. It may help the software developers during troubleshooting. Use this function only upon request of the technical support!

DEST

Designates the target server name and the parameters that can be set individually for the servers. It can be used more than once within one group (PACKAGE): when the program runs, the synchronization will run on separate threads for each server (depending on the schedule, even in parallel).

DEST server volume MSGON | MSGOFF maxrate [protocol] [hh:mm | hr]

Server is the name of the target server, *volume* is the name of the target volume. The *volume* parameter practically overrides the volume name given in the SYNC DIR and SYNC FILE commands, so it is possible to handle servers with different configuration. The MSGON parameter allows, the MSGOFF disables sending messages regarding the target server (see also the PREMSG command). The *maxrate* parameter allows a bandwidth limit to be set in kB units (0 means unlimited). The optional *protocol* parameter (TCP, UDP or IPX) can be used to explicitly select the transport protocol for this target server, overriding any previous PROTOCOL commands. The last, optional parameter can override the schedule defined in the SCHEDULE command, if different schedules are required for the servers.

The command can only be used within a group description block (PACKAGE).

Example:

```
DEST CHICAGO DATA MSGON 64 TCP 23:40
DEST DENVER APPS MSGOFF 0 8
```

DISPLAY

The server shows a separate screen to monitor the activities of the program. The display mode can be set to group information by the synchronization program threads or by target servers.

DISPLAY SERVER

Display by target servers.

DISPLAY THREAD

Display by program threads.

Default setting:

`DISPLAY THREAD`

DST_PACKAGE

Allows copying the given application to all the target servers defined in the synchronization group (PACKAGE).

The command can only be used within an application description block (APPLICATION).

Example:

`DST_PACKAGE MainOffices`

DST_SERVER

Allows copying the given application to a given target server.

The command can only be used within an application description block (APPLICATION).

Example:

`DST_SERVER NEWYORK`

ENDJOB

Using the STARTJOB and ENDJOB commands a time period can be specified for the synchronization process - normally at night or at least outside working hours. The Sync Center NLM checks the current time at the beginning of each PACKAGE, SYNCFILE and SYNC DIR and executes the operation only if the current time falls within the specified time interval.

Default setting:

```
ENDJOB 00:00
```

ERRORMSG

A message sent if the synchronization failed (e.g. there was an unreadable file or a broken connection). In certain cases the message is not sent even if there was an error during the synchronization (further information can be found at the PREMSG command). The system is self-healing, it will retry the task after waiting for the time interval specified in the RETRYINTERVAL command.

ERRORMSG "text"

The designated text will be sent to all users logged in to the target server. Filenames including accented characters may be crippled if the code pages are different on the server and the workstation so it is recommended to use strings without accented characters.

The command can only be used within a group description block (PACKAGE).

Example:

```
ERRORMSG "Error during update... please call the Help Desk!"
```

EXCLUDE

The program will exclude the given directory and the whole directory structure below from the synchronization process.

The command can only be used within a group description block (PACKAGE) and it effects all the SYNC DIR commands of the group. The SYNCFILE command - because it affects only one file - ignores the EXCLUDE settings. By combining the SYNC DIR, SYNCFILE and EXCLUDE commands files and directories can easily be copied selectively.

EXCLUDE "dirpath"

The designated directory, all the files in it and all the subdirectories under will not be copied. The *dirpath* parameter is considered to be relative to the source server specified in the SOURCE command.

Example:

```
EXCLUDE "sys:\public\win95"
```

LOGDIR

Full path of the directory that will hold the log files. As logging can only be performed on the server where the NLM runs, the path should *not* include the name of the server. The specified directory must exist, the program will not create it. The log file produced should NOT be created on volume SYS because it is difficult to foresee the sizes of the files and overloading the system volume can affect the operation of a NetWare server very negatively.

LOGDIR "path"

path the directory for the log files

Example:

```
LOGDIR "data:Sync Center\logs\"
```

LOGEVENT

Using this command the logging of the various synchronization events can be set selectively so that extra entries do not make the log file illegible. Errors are recorded in all cases, the logging of these cannot be disabled.

LOGEVENT event_list

The name of the command must be followed by the events to be logged (separated by spaces).

- **COPIED**
The files was copied successfully.
- **IDENTICAL**
The file already exists on the target server.
- **SKIPPED**
The file must be copied but for some reason (e.g. read-only, open file) it failed.
- **DELETED**
The file cannot be found on the source server therefore it was erased from the target server as well.

The command can be placed at the beginning of the settings file or within a group (PACKAGE). If it is within a group, then it affects only that group.

Example:

```
LOGEVENT COPIED SKIPPED DELETED
```

Default setting:

```
LOGEVENT COPIED DELETED
```

LOGMETHOD

Sets the logging method: by program threads or by target servers. In this latter case the results of all the synchronization tasks concerning a given server can be seen at one place, in historical order.

LOGMETHOD SERVER

Logging is by target servers.

LOGMETHOD THREAD

Logging is by program threads to separate files.

Default setting:

```
LOGMETHOD THREAD
```

LOGSIZE

The maximum size of the log file can be set to anything between 32 KB and 32 MB. When the limit is reached, logging continues at the beginning of the file (overwriting existing entries).

LOGSIZE x

The maximum size of the log file will be x KBytes (32 ... 32768).

Default setting:

```
LOGSIZE 256
```

MAXTHREADS

Maximum number of program threads running in parallel - in practice the number of target servers (PACKAGE) that can be updated simultaneously. It is recommended to figure out this number by experience because it depends heavily on the performance and the load of the server, furthermore the bandwidth between the source and target servers.

MAXTHREADS x

x (3 ... 100) number of the program threads that can run in parallel

Example:

```
MAXTHREADS 15
```

Default setting:

```
MAXTHREADS 12
```


NAMESPACE

The default namespace the program uses during synchronization. If the source and a target volumes both support long file names then it is recommended to set the default namespace to LONG so that the name of the directories and files will be copied in its original format. If any of the volumes do not support this then set the value to DOS. In this case only the 8.3 short names will be transferred.

NAMESPACE LONG

The parameters of the SYNC DIR and SYNC FILE commands are treated as long file names (the long file names are copied as well). It is a problem if the source or target volume do not support long file names.

NAMESPACE DOS

The parameters of the SYNC DIR and SYNC FILE commands are treated as short (8.3) filenames. The files are copied using their short names.

Default setting:

NAMESPACE DOS

OFHANDLER

The method of handling open files. The program can update the files even if there is a different version on the target server and it is being opened by someone.

OFHANDLER OFF
OFHANDLER SKIP

Open files are skipped, will not get copied.

OFHANDLER ALERT x

At the beginning of the synchronization the program sends the message specified with the PREMSG command and waits x seconds so that users can finish their work and quit the program. Files that are still open after x seconds are skipped, not copied.

OFHANDLER CLEAR x

At the beginning of the synchronization the program sends the message specified with the PREMSG command and waits x seconds so that users can finish their work and quit the program. If there are files still open after x seconds, then the program clears the connection of the affected user(s).

OFHANDLER DISABLECLEAR x

In effect similar to the previous one but before clearing the connections, it disables login to the server and enables it again only after copying the file so that the client cannot automatically rebuild the broken connection.

The command can only be used within a group (PACKAGE).

Example:

```
OFHANDLER DISABLECLEAR 180
```

PACKAGE

This command marks the synchronization group description blocks. It is always used in pairs, the end of the block is marked by the PACKAGE END command. If the same source directories need to be synchronized to more than one server, it may be useful to create a group so that the common settings need to be defined only once. Differences within the group can be handled by creating applications (and define a selective update for them). Applications are described in detail at the APPLICATION command.

PACKAGE blocks cannot be embedded into each other. In other words, no new block can be opened until the previous one is closed. A PACKAGE block can include only the following commands: DEST, ERRORMSG, EXCLUDE, LOGEVENT, LOGMETHOD, NAMESPACE, OFHANDLER, PREMSG, PRENCF, PRESTAT, POSTMSG, POSTNCF, SUSPENDMSG, SUSPENDNCF, SCHEDULE, SKIPREADONLY, SOURCE, SYNC DIR, SYNCFILE, SYNCMODE, TRANSFERATTRS, TRANSFERIRM, TRANSFEROWNER, TRANSFERTRUSTEE.

PACKAGE *package_name*

Beginning of the synchronization group description block. The group can be referred to as *package_name* (e.g. when defining applications).

PACKAGE END

End of the synchronization group description block.

POSTMSG

A message sent if the synchronization was successful. In certain cases the message is not sent even if the synchronization was successful further information can be found at the PREMSG command.

POSTMSG "text"

The designated text will be sent to all users logged in to the target server. Filenames including accented characters may be crippled if the code pages are different on the server and the workstation so it is recommended to use strings without accented characters.

The command can only be used within a group description block (PACKAGE).

Example:

```
POSTMSG "Update successful."
```

POSTNCF

Name of the script file to be executed at the end of the synchronization, with a full path. Typically, it is used for restarting the application (database server, GroupWise, etc.) that would hinder the data copy, after it was stopped before the synchronization with the PRENCF command.

POSTNCF SRC | DST "path"

The given script file is executed on the source (SRC) or target (DST) server after the package copying tasks.

The command can only be used within a group description block (PACKAGE).

Example:

```
POSTNCF DST "sys:system\postsync.ncf"
```

PREMSG

A message sent at the beginning of the synchronization to the users logged in to the target server. It can be used in practice to notify them about the current operations and/or to ask them to refrain using the affected data and/or applications. Filenames including accented characters may be crippled if the code pages are different on the server and the workstation so it is recommended to use strings without accented characters.

PREMSG "text"

The given text will be shown on the screen of the logged in user.

PREMSG "%s text"

In the above string %s will be substituted by the name of the application to be updated, separated by commas. If there are no applications to be updated, Sync Center will stay silent, i.e. none of the PREMSG, POSTMSG, ERRORMSG or SUSPENDMSG messages. The definition of applications can be found at the APPLICATION command.

If PRESTAT is set to NO the scope of the applications to be upgraded is not defined, thus using the latter form sending messages will not work.

After sending the message the synchronization start can be delayed so that the user can save his/her work and close the files. More information can be found at the OFHANDLER command.

One parameter of the DEST command can also be used to disable sending messages; please see the command for details.

The command can only be used within a group description block (PACKAGE).

Example:

```
PREMSG "Update started"
PREMSG "The following applications will be updated: %s"
```

PRENCF

Name of the script file to be executed at the beginning of the synchronization, with a full path. Typically, it is used to stop an application (database server, GroupWise, etc.) that would hinder the data copy.

PRENCF SRC | DST "path"

The given script file is executed on the source (SRC) or target (DST) server before the package copying tasks.

The command can only be used within a group description block (PACKAGE).

Example:

```
PRENCF DST "sys:system\presync.ncf"
```

PRESTAT

At the beginning of the synchronization the program performs a preliminary check during which it identifies the scope of the applications to be upgraded (APPLICATION), the number of files to be copied and their aggregated size. If the bandwidth or the timeframe available is limited, this step should be omitted. In this case the synchronization will be of course performed as well, except that missing data will not be displayed, logged or sent in a message (see PREMSG).

PRESTAT YES | NO

If set to YES, the preliminary statistics are created. If set to NO, this step is omitted.

The command can only be used within a group description block (PACKAGE).

Default setting:

```
PRESTAT NO
```

PROTOCOL

Selects the transport protocol explicitly, rather than allowing the core OS to decide on its own.

PROTOCOL TCP | UDP | IPX

The specified protocol will be used for this package. Subsequent DEST commands can override it for individual target servers. Remove the command entirely to get the OS default again.

The command can only be used within a group description block (PACKAGE).

Default setting:

```
(none)
```

PWD

The NDS eDirectory password of the user specified with the USER command, encrypted to provide a basic level of protection.

Because of security reasons it is recommended to store the settings file at a place (e.g. sys:\system) that unauthorized people cannot access.

Example:

```
PWD secret
```

RETRYCOUNT

The number of times a sync process can be retried before considering it a permanent failure. Higher values will represent an improved self-healing capability, while causing an unnecessary load when the error persists for a long time.

Example:

```
RETRYCOUNT 10
```

Default setting:

```
RETRYCOUNT 3
```

RETRYINTERVAL

The synchronization processes are scheduled by taking the results of the previous execution into account. Sync Center tries to work in a 'self-healing' way: that is, if there is an error, it will not wait a whole day but after some period it will retry the process. As the matching files are skipped, the synchronization will basically be continued where left off.

RETRYINTERVAL x

The failed synchronization process is retried after waiting for x seconds.

Default setting:

```
RETRYINTERVAL 300
```

SCHEDULE

The SCHEDULE command is used to schedule the synchronization group. The synchronization process can be scheduled on a daily (the same time every day) or a hourly (every x hours) rate. Optionally, it is possible to restrict the update only to specified days of the week.

The command can only be used within a group description block (PACKAGE). The time specified can be overridden by using the DEST command for each target server.

SCHEDULE hh:mm | hr [MON] [TUE] [WED] [THU] [FRI] [SAT] [SUN]

The update starts at the time specified in *hh:mm*, or every *hr* hours, starting at the next hour. The value of *hr* is limited to 1, 2, 3, 4, 6, 8, 12. If days of the week are specified, the update will be executed only on those days.

Example:

```
SCHEDULE 23:00
SCHEDULE 23:30 MON TUE WED THU FRI
SCHEDULE 4 SUN SAT
```

SKIPREADONLY

Controls the processing of the read-only files and directories. If it is set to YES, it skips them without giving any error messages, thus the given files or directories will be left out of the synchronization process. If it is set to NO, it erases the read-only attribute and allows full-scale processing.

SKIPREADONLY YES | NO

If set to YES, it skips, if set to NO, processes the files and directories marked as read-only.

The command may appear at the beginning of the settings file or within a group (PACKAGE). If it appears within a group, then its scope is valid only for that group.

Default setting:

```
SKIPREADONLY YES
```

SOURCE

Specifies the name of the source server. The parameters of a few other commands (e.g. EXCLUDE) are to be given relative to this parameter.

The command can only be used within a group description block (PACKAGE).

Example:

```
SOURCE CENTRAL
```

STARTJOB

Using the STARTJOB and ENDJOB commands a time period can be specified for the synchronization process - normally at night or at least outside working hours. The Sync Center NLM checks the current time at the beginning of each PACKAGE, SYNCFILE and SYNC DIR and executes the operation only if the current time falls within the specified time interval.

Default setting:

```
STARTJOB 00:00
```

SUSPENDMSG

A message sent when the synchronization got suspended because of a time overflow. In certain cases, the message will not be sent even if the synchronization was otherwise successful. More information about this can be found at the description of the PREMSG command.

SUSPENDMSG "text"

The specified text will be sent to all users logged in to the target server. The accented characters may be crippled if the code pages are different on the server and the workstation so it is recommended to use strings without accented characters.

The command can only be used within a group description block (PACKAGE).

Example:

```
SUSPENDMSG "Time overflow - please call the Help Desk!"
```

SUSPENDNCF

The name of a script file (with full path) that should be executed when the synchronization got suspended because of a time overflow. Typically, this script file is used to restart the application (e.g. database server, GroupWise, etc.) that hinders the copying process - as long as it can be done even if the copying process was interrupted.

SUSPENDNCF SRC | DST "path"

This script file gets executed on the source (SRC) or target (DST) server when the synchronization got suspended because of a time overflow.

The command can only be used within a group description block (PACKAGE).

Example:

```
SUSPENDNCF SRC "sys:system\suspend.ncf"
```

SYNCDIR

The SYNCDIR and SYNCFILE commands are the 'heart' of the settings file. These commands specify what to copy and where. Several of these commands can be used, execution will be performed in the order in the configuration file.

Regarding troubleshooting, the SYNCDIR command behaves as one unit: if there is a critical error, it stops the execution of the running command and continues with the next one. The self-healing algorithm ensures that the program keeps repeating the synchronization process until it finishes correctly.

SYNCDIR (ALL | NEW) (DEL | NODEL) "source_path" "dest_path"

The command copies the whole content of *source_path* (including the subdirectories and their content) copies to *dest_path* path. The first parameter is used if the file may already exist on the target volume but its size or date may be different: *ALL* copies over the file anyway, *NEW* copies only if the source file is newer than the one on the target. If the second parameter is *DEL*, then the deleted files from the source are also deleted from the target volume, if it is *NODEL* then Sync Center will not synchronize the deletion. *Source_path* is the source, *dest_path* is the target path, including the volume name but not the server name. The name of the source server should be specified at the SOURCE command and the name of the target server in the DEST command.

The command can only be used within a group description block (PACKAGE).

Example:

```
SYNCDIR ALL DEL "sys:public" "data:CopyTo\public"
```


SYNCFILE

The SYNC DIR and SYNCFILE commands are the 'heart' of the settings file. These commands specify what to copy and where. Several of these commands can be used, execution will be performed in the order in the configuration file.

Regarding troubleshooting, the SYNCFILE command behaves as one unit: if there is a critical error, it stops the execution of the running command and continues with the next one. The self-healing algorithm ensures that the program keeps repeating the synchronization process until it finishes correctly.

SYNCFILE (ALL | NEW) (DEL | NODEL) "source_path" "dest_path"

The command copies one file between *source_path* and *dest_path*. The first parameter is used if the file may already exist on the target volume but its size or date may be different: *ALL* copies over the file anyway, *NEW* copies only if the source file is newer than the one on the target. If the second parameter is *DEL*, then the deleted files from the source are also deleted from the target volume, if it is *NODEL* then Sync Center will not synchronize the deletion. *Source_path* is the source, *dest_path* is the target path, including the volume name but not the server name. The name of the source server should be specified at the SOURCE command and the name of the target server at the DEST command.

The command can only be used within a group description block (PACKAGE).

Example:

```
SYNCFILE ALL DEL "sys:etc\java.cfg" "data:saved\java.cfg"
```

SYNCMODE

The SYNCMODE command selects the synchronization method: whether an already existing file should be copied over by using a temporary file or directly, using the final filename. Both methods have advantages and disadvantages:

SYNCMODE OVERWRITE

If the file already exists on the target server, it will be copied over. The disadvantage is that the file is unavailable during the copy (and if there is a problem, even after, until correction). The advantage is that the rights set for the file or subdirectory will be preserved.

SYNCMODE REPLACE

If the file already exists on the target server, it is copied first to a temporary file, an upon successful transfer the old file is erased and the temporary file is renamed. The advantage is that the file is available during the copy. The disadvantage is that the rights set for the file or subdirectory will be lost. The method can only be used if the target volume supports long file names.

The command can be placed at the beginning of the settings file or within a group (PACKAGE). If it is within a group, then it affects only that group.

Default setting:

```
SYNCMODE OVERWRITE
```

TRANSFERATTRS

Enables or disables copying the file or directory attributes. If it is enabled, the traditional, DOS attributes (e.g. Hidden, Read-only) and the NetWare-specific attributes (e.g. Purge Immediate) are both transferred. The attributes synchronization is performed regardless the content of the file.

TRANSFERATTRS YES | NO

YES allows, NO disables the synchronization of the attributes.

The command can be placed at the beginning of the settings file or within a group (PACKAGE). If it is within a group, then it affects only that group.

Default setting:

TRANSFERATTRS NO

TRANSFERIRM

Enables or disables copying the IRM (Inherited Rights Mask) of the directory entries. The IRM is part of the access control system; it controls the inheritance of the rights from the parent directory.

TRANSFERIRM YES | NO

YES allows, NO disables the synchronization of the IRM.

The command can be placed at the beginning of the settings file or within a group (PACKAGE). If it is within a group, then it affects only that group.

Default setting:

TRANSFERIRM NO

TRANSFEROWNER

Allows the copying of the owners of the files and directory entries. The owner will be synchronized regardless of the content of the file.

TRANSFEROWNER YES | NO

YES allows, NO disables the synchronization of the owners of the files and directories.

The command can be placed at the beginning of the settings file or within a group (PACKAGE). If it is within a group, then it affects only that group.

Default setting:

TRANSFEROWNER NO

TRANSFERTRUSTEE

Allows or disables the copying of the file system rights. Rights will be synchronized regardless of the content of the file.

TRANSFERTRUSTEE YES | NO

YES allows, NO disables the copying of the file system rights.

The command can be placed at the beginning of the settings file or within a group (PACKAGE). If it is within a group, then it affects only that group.

Default setting:

```
TRANSFERTRUSTEE NO
```

USER

When Sync Center starts, it uses this username (and the password specified at the PWD command) to authenticate to NDS eDirectory. The specified user must have the following rights:

- Read right to the affected directories of the source server(s),
- Write right to the affected directories of the target server(s),
- Console operator rights to the source and target server(s).

The command expects the full name of the user without the starting period. It is recommended to create a separate user for this purpose: it is easier to monitor the operation of Sync Center this way.

Example:

```
USER SyncCenter.inf.bp
```

VERSION

Provides version control between the NLM and the user interface so that a command not known by the NLM could cause any problems. The current version is 1.30 that will be increased if a program change affects the structure of the configuration file.

Example:

```
VERSION 1.30
```

Sample configuration file

```
# Sync.cfg file
# (Lines starting with # or ; are comments)

VERSION 1.30

# Login username/password
# Must have enough rights to source and destination
# directories, and must have console operator rights
# for the target servers
#
# All servers must belong to a single NDS tree
USER admin.company
PWD secret

# Maximum number of threads that can be allocated
MAXTHREADS 15

# Namespace to operate on
NAMESPACE LONG

# Seconds to wait before retrying failed jobs
RETRYINTERVAL 600

# Number of times a failed job can be retried
RETRYCOUNT 5

# Transfer Inherited Rights Mask or not
TRANSFERIRM NO

# Transfer file system attributes or not
TRANSFERATTRS NO

# Transfer file owner or not
TRANSFEROWNER YES

# Transfer file/dir trustee rights or not
TRANSFERTRUSTEE YES

# Skip read-only files, or reset their attribute
# and proceed as otherwise
SKIPREADONLY YES

# Sync method to be used
SYNCMODE REPLACE

# Interval to execute packages/jobs within
STARTJOB 08:30
ENDJOB 19:30

# Directory where log files should be created
LOGDIR "data:Sync Center\logs\"

# Event types to be logged
LOGEVENT COPIED DELETED

# Max. size of an individual log file in KBytes
```

```
# (reaching the limit will cause truncation)
# Valid range: 32 ... 32768 (32k - 32M)
# Default: 256k
LOGSIZE 1024

# Max. size of an individual debug log file in KBytes
# (reaching the limit will cause truncation)
# Valid range: 32 ... 32768 (32k - 32M)
# Default: 256k
DBGLOGSIZE 1024

# Console display format
DISPLAY SERVER

# Sample package
PACKAGE TestPackage

# Main schedule for the whole package
# override possible in DEST
SCHEDULE 10:00 MON TUE WED THU FRI

# Special settings for this package only
TRANSFERIRM YES
TRANSFERATTRS YES
TRANSFEROWNER YES
TRANSFERTRUSTEE YES
SKIPREADONLY YES
SYNCMODE REPLACE
LOGEVENT COPIED SKIPPED DELETED

# Log method
LOGMETHOD SERVER

# Open file handling methods:
OFHANDLER DISABLECLEAR 30

# Collect statistics in advance or not
PRESTAT NO

# Broadcast messages to send
PREMSG "%s program(s) will be copied..."
POSTMSG "Update successful."
ERRORMSG "Error - please call the Help Desk!"
SUSPENDMSG "Time overflow - please call the Help Desk "

# Name/path of an NCF file to be executed before jobs
PRENCF DST "sys:system\pre.ncf"

# Name/path of an NCF file to be executed after jobs
POSTNCF DST "sys:system\post.ncf"

# Name/path of an NCF file to be executed when job reaches
# time limit
SUSPENDNCF DST "sys:system\suspend.ncf"

# Source server
SOURCE SBSRVR
```

```
# Destination server, volume, msg on/off, maxrate
# and schedule
DEST SBSRVR DATA MSGON 128 TCP 13:40

# Paths to exclude
EXCLUDE "sys:public\win95"
EXCLUDE "sys:public\win32"

# Actual directories and files to copy
SYNCDIR ALL DEL "sys:public" "data:CopyTo\public"
SYNCFILE ALL DEL "sys:etc\java.cfg" "data:saved\java.cfg"

PACKAGE END

APPLICATION Flag

# Application's server and path
APP_SERVER SBSRVR
APP_PATH "sys:public\flag.exe"

# Packages and servers allowed as destination
DST_PACKAGE TestPackage
DST_SERVER MOAB

APPLICATION END
```

SyncDOS

Overview

SyncDOS is a companion of Sync Center that allows using the DOS volumes for the synchronization among NetWare servers. The NLM running on the server can be set with the familiar user interface of Sync Center.

The program makes it possible to synchronize the DOS volumes to any local directory. As at least one of the synchronized paths is a DOS path, the program works only in the DOS name space, i.e. only 8+3 character file names can be used.

Operation

The NLM can be run from any directory and it requires only one parameter, the path of the configuration file (should have an .ini extension), e.g.: „LOAD SYS:SYNCCENT\SYNCDOS SYS:SYNCCENT\SYNCDOS.INI”).

The program can be stopped by the „unload syncdos” console command.

Configuration file

The easiest way to configure the program is to use the graphical user interface. The A NLM re-reads the configuration file at the beginning of each scheduled running cycle so it can be modified without always reloading the program. During running, the program informs about the tasks performed on the screen and optionally, a log file can be created.

The configuration file can include the following parameters:

LOGFILE <path of the log file>

Place of the log file. It is an optional parameter. The path must be in the DOS name space.

LOGSEVERITY (0 | 1)

Verbosity of the messages appearing on the screen or written to the log file. If it is 0, then the program prints only error messages and minimum information about the synchronization. If it is set to 1, then it logs also the copy and erase operations.

LOGSIZE <size of the log file in bytes >

Specifies the maximum size of the log file in bytes. If the log file is larger than the amount specified, then the program prints a warning message on the screen, renames the log file (truncates the last character of the extension) and starts writing a new file. If the maximum size was already overflowed before, the program overwrites the renamed file created then!

POLLINTERVAL <time between cycles in seconds >

Specifies the waiting time between synchronization cycles in seconds. On synchronization cycle means all the operations specified by the configuration file (see the `TASK` parameter). After performing all these operations, the program waits, then re-reads the configuration file and performs the tasks and starts waiting again.

TASK <source path> <end path> (0 | 1) (0 | 1) (0 | 1)

Specifies one given operation. This command can appear several times. If the source path is a directory, then the target must be a directory as well. Similarly, if the source is a file, then the target must be a file as well. One of the paths must be on a DOS volume, otherwise the program stops with an error message. It also means that both paths have to be specified in the DOS name space. If the third parameter is 1, then the target files will be erased or overwritten. If the fourth parameter is 1, then the read-only files on the target path will be erased or overwritten. If the fifth parameter is 1, then only the files and subdirectories in the target directory will be erased.

Log file entries

Every line of the log file includes on date, the severity of the entry and a short description. The severity of entries are the following:

- **FATAL:** Fatal error, the program cannot run any longer.
- **ERROR:** An error occurred during the task so the program stops this operation and starts the next one.
- **REPORT:** Totals regarding one task. (Task start, task end, number of copies, deletes and errors during the task.)
- **INFO:** Detailed information regarding one task. (Number of copies, deletes, new files and modifications of read-only files.) This latter one gets printed only in case of LOGSEVERITY 1.

Sample configuration file

```
# SyncDOS config file
# Everything after a '#' or ';' is treated as comment.

# Path of the logfile.
logfile sys:\etc\syncdos.log

# Polling interval (in secs) of the config file and tasks.
pollinterval 300

# Logging severity: 0 - report only, 1 - be more verbose
# (copy, deletion, etc.)
logseverity 1

# Maximum log file size in bytes.
logsize 10000

# Task to do. Multiple tasks can be defined. They are executed
# in sequence, so the order of them is significant!
# Syntax: TASK <source path> <destination path> <overwrite newer>
# <overwrite readonly> <remove stale>
# <source path>, <destination path>: One of them must be on a
# DOS drive.
# If one of them is a file, then the other should be file as well.
# If they are directories, then the destination directory must
# already exist!
# <overwrite newer>: 0 - do not touch newer files in dest.,
# 1 - overwrite newer files in dest.
# <overwrite readonly>: 0 - do not touch readonly files in dest.,
# 1 - overwrite readonly files in dest.
# <remove stale>: 0 - do not remove files existing only in dest.,
# 1 - remove these files
task C:\NWSERVER SYS:\A 1 1 1
task C:\AUTOEXEC.BAT SYS:\B\AUTOEXEC.BAT 1 1 1
```

Typical settings

Sync Center is a high-performance, customizable application that can be used for a very wide range synchronization tasks with its various settings. The following scenarios are far from all the possible uses but we hope we can give a few good ideas to create the necessary settings for the unique and custom needs and requirements.

Data collection from multiple servers

A frequent use of the program is to collect various data from multiple servers, multiple sites, typically via WAN connections to a central server where this data can be accessed and backed up at one point, in one step.

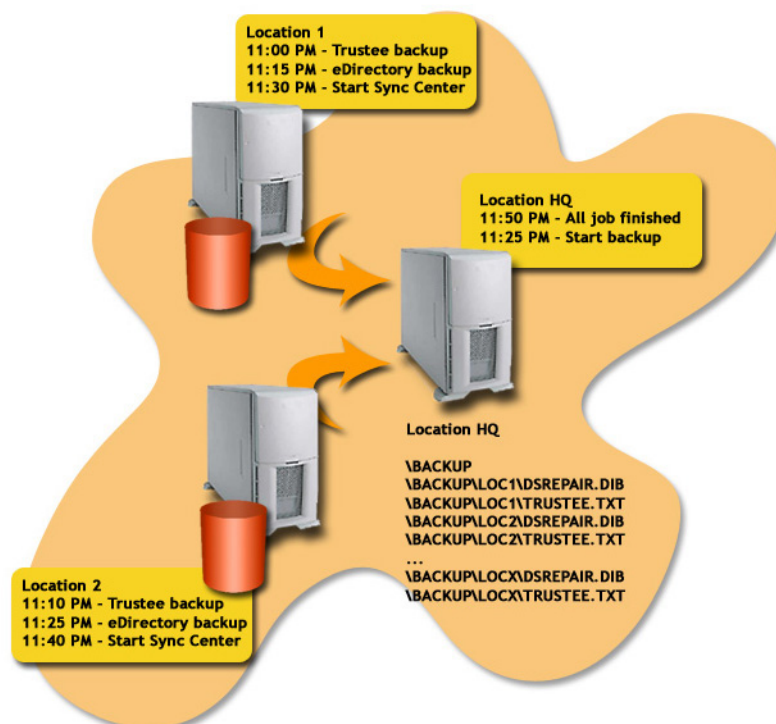


Figure 4: Data collection from multiple servers

In this scenario both remote servers run the Sync Center application that keep copying the backup file of file system trustee rights and the eDirectory database to the central (HQ) server. The necessary settings are listed in the following two configuration files:

SYNC_L1.CFG:

```
VERSION 1.30

USER admin.company
PWD secret

NAMESPACE LONG
DISPLAY SERVER
LOGDIR "data:Sync Center\logs\"

PACKAGE TestPackage

    SCHEDULE 23:30

    SOURCE LOC1

    DEST HQ BACKUP MSGOFF 0

    SYNCFILE ALL DEL "sys:system\trustee.txt"
    "backup:backup\loc1\trustee.txt"
    SYNCFILE ALL DEL "sys:system\dsrepair.dib"
    "backup:backup\loc1\dsrepair.dib"

PACKAGE END
```

SYNC_L2.CFG:

```
VERSION 1.30

USER admin.company
PWD secret

NAMESPACE LONG
DISPLAY SERVER
LOGDIR "data:Sync Center\logs\"

PACKAGE TestPackage

    SCHEDULE 23:40

    SOURCE LOC2

    DEST HQ BACKUP MSGOFF 0

    SYNCFILE ALL DEL "sys:system\trustee.txt"
    "backup:backup\loc2\trustee.txt"
    SYNCFILE ALL DEL "sys:system\dsrepair.dib"
    "backup:backup\loc2\dsrepair.dib"

PACKAGE END
```

The files to be copied are collected on the BACKUP volume of the HQ server. No software need to be run on the central server to perform the synchronization, because the sync.nlm copies running on the remote servers perform this.

Remote access of a DOS partition

The files on the DOS partition (system startup files, hardware device drivers, SERVER.EXE, various custom patches) play an important role in the operation of a NetWare server. Using the SyncDOS application it is possible to keep a constantly synchronized copy of a DOS partition to any chosen volume, so its contents can be viewed/edited remotely, or, using Sync.nlm it can be synchronized to another server (e.g. the central backup server).

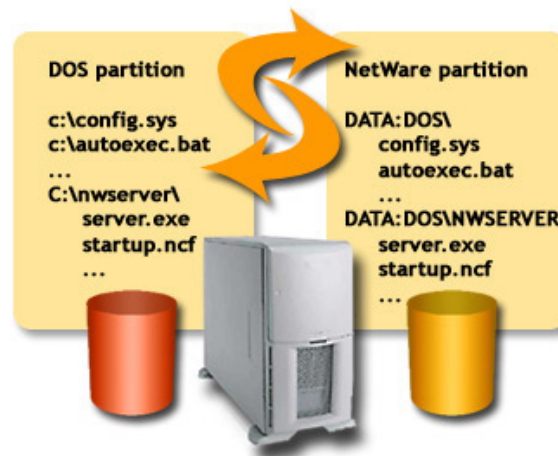


Figure 5: Remote access of a DOS partition

The SyncDOS application uses the following configuration file to perform the required tasks:

```
LOGFILE sys:\etc\syncdos.log
POLLINTERVAL 300
LOGSEVERITY 1
LOGSIZE 10000
TASK C:\ DATA:\DOS 1 1 1
```

Software distribution

In this case the central server has files in a given directory that Sync Center must copy over to remote servers and must keep the changes synchronized. Part of the servers must be copied to all servers, other files must be copied to only those servers the directory of which it is put into.

There are two ways to perform “by server” filtering:

- creating a separate group (PACKAGE) for each server;
- creating applications (APPLICATION) for these files and restricting the copying process by server names.

Here we illustrate the first solution that yields maximum flexibility.

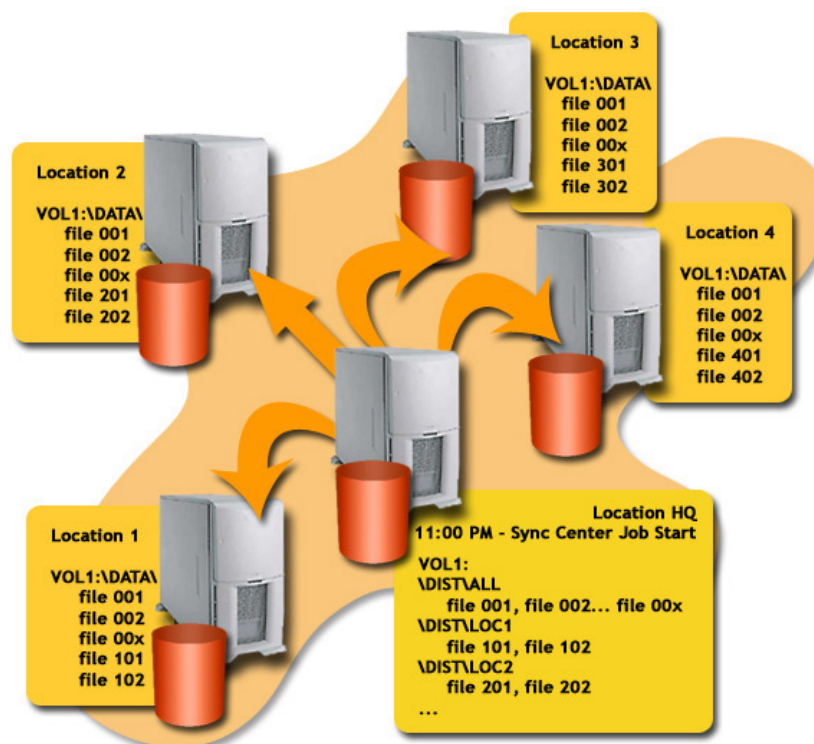


Figure 6: Software distribution

For practical reasons, Sync.nlm runs in only one copy, on the central server so it is possible to oversee the current status of the whole synchronization process on one screen.

The application uses the following configuration file:

```
VERSION 1.30

USER admin.company
PWD secret

NAMESPACE LONG
DISPLAY SERVER
LOGDIR "data:Sync Center\logs\"

PACKAGE Software distribution - LOC1

    SCHEDULE 23:00
    LOGMETHOD SERVER

    SOURCE HQ
    DEST LOC1 VOL1 MSGOFF 0 23:00

    SYNCDIR ALL DEL "vol1:Dist\all" "vol1:Data"
    SYNCDIR ALL DEL "vol1:Dist\loc1" "vol1:Data"

PACKAGE END

PACKAGE Software distribution - LOC2

    SCHEDULE 23:00
    LOGMETHOD SERVER

    SOURCE HQ
    DEST LOC2 VOL1 MSGOFF 0 23:00

    SYNCDIR ALL DEL "vol1:Dist\all" "vol1:Data"
    SYNCDIR ALL DEL "vol1:Dist\loc2" "vol1:Data"

PACKAGE END

PACKAGE Software distribution - LOC3

    SCHEDULE 23:00
    LOGMETHOD SERVER

    SOURCE HQ
    DEST LOC3 VOL1 MSGOFF 0 23:00

    SYNCDIR ALL DEL "vol1:Dist\all" "vol1:Data"
    SYNCDIR ALL DEL "vol1:Dist\loc3" "vol1:Data"

PACKAGE END

PACKAGE Software distribution - LOC4

    SCHEDULE 23:00
    LOGMETHOD SERVER

    SOURCE HQ
    DEST LOC4 VOL1 MSGOFF 0 23:00
```

```
SYNCDIR ALL DEL "vol1:Dist\all" "vol1:Data"  
SYNCDIR ALL DEL "vol1:Dist\loc4" "vol1:Data"  
  
PACKAGE END
```

Frequently asked questions

The bandwidth of the WAN link is 128 KB/s. Will it be enough?

During tests we used 33.6 KB/s bandwidth and files of several MB and we observed no problems with the synchronization.

Can it be used with NSS volumes?

There are no differences. The program works with traditional and NSS volumes as well.

We would like to copy to a virtual cluster server volume. Can it be done?

The program handles the cluster server resources like any other server volumes. In case a migration is performed, the copying process will fail but will restarts soon (see RETRYINTERVAL) and will continue from the point of interruption.

Is it possible to copy files among servers of separate NDS trees?

No, not at the moment. We are thinking about implementing this feature.

Beside our NetWare 5.1 servers we will soon install two NetWare 6 servers as well. Will the synchronization work among servers of different version?

Yes. The software can be used on any combination of NetWare 4.11 servers and any versions above.

I loaded Sync.nlm but the program did not start and writes nothing on the console. What should I do?

In case of NetWare 6 the program messages are displayed not on the server console but on the Logger screen. Please change to the Logger screen and you will find the messages.

Where can I find a list of the error codes that appear (e.g.: Sync error: NWDSLogin failed [-741/0/0])?

While it is possible to find the 3 error codes (in 3 separate lists) on the Internet, they cannot be interpreted without knowing the relevant API and the actual source code of Sync Center. Where the codes can be identified, we made every reasonable effort to print out a legible error message (e.g. *Connection lost to server*).

On the target server, will the copying be performed to the directory set at the DEST or at the SYNC DIR/SYNCFILE command?

It is always the directory name set at the SYNC DIR/SYNCFILE command that prevails. This may look at first a little too complex but it allows much-much more freedom when creating the settings and this really pays off when using several servers.

I get the following error message: Opening config file failed [-1/1/255]. How will I know which line is corrupt?

As the message says, it could not even open the configuration file, so the problem is not with its content but with its path.