

R-1 Differential Transfer

RepliWeb R-1 uses unique differential transfer algorithms that distribute only the deltas between source and target file-systems.

Differential Transfer allows the transferring of only the differences between two files residing on the source and target. Both files are compared and only those blocks of data that are different are subsequently transferred. Thus, network load, transfer time, and network data exposure are reduced to the minimum required to synchronize the two files.

During file transfer, the file is divided to 64K blocks. Each block on the source is compared using CRC to the target. If the blocks are identical, the block is not being transferred.

NOTE: There is no advantage at all in using the Differential Transfer option with files smaller than 64K.

1. Using Differential Transfer

The effectiveness of differential transfer and how much it will save depends on the differences between the source and target files. If the files are identical but just with different modification times - it will save almost all the data transfer.

Use this feature:

- Only on files larger than 64K
- On log files that are constantly appended
- On files that are being updated 'in place' like ACT! And Access files

Do NOT use this feature on files that were changed in a way that affects the entire structure of the blocks division [e.g. adding data to the beginning of a `.txt` file], in which case the entire file will be re-transferred.

When this feature is enabled, use the WAN Transport engine and you must specify a minimum file size. The Minimum File Size parameter specifies the minimum size of a file to be transferred using Differential Transfer. Smaller files will be sent **without** this feature.

To view the Block Level transfer report, using the:

- CLI
 - **submit** command - use `-report_style=detailed`
 - **show** command – use
 - `-query=detailed` to see that the differential transfer was used.
 - `-report=transfer` to see the blocks in use
- GUI - select **Transfer Report Style = Detailed**.

The API only provides the total bytes size of the source files and not the real transferred number of bytes.

2. Verifying Differential Transfer

1. Transfer a large file. The Transfer report will look like that:

```
##### FASTCopy started at Mon Oct 14 10:26:16 2002 ( pid = 2232 ) #####
FCOPY-I-CPYRGHT, FASTCopy V2.6.1 Copyright (c) 2001 by SoftLink Ltd.

*****          FASTCopy Statistics          *****

FCOPY-I-BANNER , RepliWeb-RDS FASTCopy license

FCOPY-I-OPEN_MODEL_S - Model file 'd:\target\a.log' opened

Source File name : c:\source\a.log
Target File name : \\localhost\d:\target\a.log
Transfer started at : Mon Oct 14 10:26:19 2002

File size : 3392790 bytes ← This shows the actual source file size

Position      %Completed    Block-size    Compressed-size    Ratio
=====
1              1              64512         64512              1:1.00
2              3              64512         64512              1:1.00
3              5              64512         64512              1:1.00
.
.
.
50             95             64512         64512              1:1.00
51             96             64512         64512              1:1.00
52             98             64512         64512              1:1.00
53             100            38166         38166              1:1.00
=====
Total:      100      3392790      3392790      1:1.00
=====

→ The Total line shows the actual size of the file (Block-size column)
and the actual number of bytes transferred (Compressed-size column). In
this case, the numbers are identical.

FCOPY-S-FILE_COPIED, file 'c:\source\a.log' FASTCopied to file
'\\localhost\d:\target\a.log' ( 3392790      Bytes )

Transfer started at : Mon Oct 14 10:26:19 2002
Transfer ended at   : Mon Oct 14 10:26:30 2002

FASTCopy termination statistics report:

FCOPY-I-FILESUMM - 1 file(s) were processed by FASTCopy
  1 file has been transferred.
  0 file(s) were filtered by modification dates.
  0 file(s) failed.

FASTCopy originally started at : Mon Oct 14 10:26:14 2002
FASTCopy ended at               : Mon Oct 14 10:26:30 2002
FCOPY-S-FINISHED, FASTCopy operation successfully finished
```

2. Append a few bytes at the end of the file
3. Transfer the file again using differential transfer. The Transfer report will look like that:

```
##### FASTCopy started at Mon Oct 14 10:48:32 2002 ( pid = 1984 ) #####
FCOPY-I-CPYRGHT, FASTCopy V2.6.1 Copyright (c) 2001 by SoftLink Ltd.
```

```
***** FASTCopy Statistics *****
```

```
FCOPY-I-BANNER , RepliWeb-RDS FASTCopy license
FCOPY-I-OPEN_MODEL_S - Model file 'd:\target\a.log' opened
```

```
Source File name : c:\source\a.log
Target File name : \\localhost\d:\target\a.log
Transfer started at : Mon Oct 14 10:48:39 2002
```

File size : 3482609 bytes ← This shows the actual source file size

Position	%Completed	Block-size	Compressed-size	Ratio
1	1	64512	12	1:5376.00 *M*
2	3	64512	12	1:5376.00 *M*
3	5	64512	12	1:5376.00 *M*
.				
.				
50	92	64512	12	1:5376.00 *M*
51	94	64512	12	1:5376.00 *M*
52	96	64512	12	1:5376.00 *M*
53	98	64512	64512	1:1.00
54	100	63473	63473	1:1.00
=====				
Total:	100	3482609	128609	1:27.08

→ The Total line shows the actual size of the file (Block-size column) and the actual number of bytes transferred (Compressed-size column).

→ In this case, the numbers of bytes transferred is smaller than the actual file size, as blocks 1-52 were not transferred!

→ Lines marked with *M* indicate blocks which were NOT transferred as they are identical. Only heading information (12 bytes) is transferred.

```
FCOPY-S-FILE_COPIED, file 'c:\source\a.log' FASTCopied to file
'\\localhost\d:\target\a.log' ( 3482609      Bytes )
```

```
Transfer started at : Mon Oct 14 10:48:39 2002
Transfer ended at   : Mon Oct 14 10:48:43 2002
```

```
FASTCopy termination statistics report:
```

```
FCOPY-I-FILESUMM - 1 file(s) were processed by FASTCopy
  1 file has been transferred.
  0 file(s) were filtered by modification dates.
  0 file(s) failed.
```

```
FASTCopy originally started at : Mon Oct 14 10:48:30 2002
FASTCopy ended at               : Mon Oct 14 10:48:43 2002
```

```
FCOPY-S-FINISHED, FASTCopy operation successfully finished
```

4. Using the CLI show command, the command output will look like that:

```
> rds show -j=4097 -query=detail
```

```
4097          DONE  UP    Mirror  END
      Source Dir  : c:\source
      Dest.  Dir  : d:\target
      Satellite   : localhost
Description   :
File specs    : *
Attempts      : 0
Files Copied  : 1 out of 1, using 1 concurrent stream(s)
Bytes transferred: 3482609
Failed        : 0
Transfer Stream #1 completed. Copied 1 files out of 1.
Files deleted: 0
Differential Transfer used ← Look for this line in the command
output
Issuer User   : administrator
Issuer Domain:
Submitted     : Mon Oct 14 10:48:20 2002
Ended         : Mon Oct 14 10:49:47 2002
Scheduled     : Not Scheduled
Schedule type: Immediate
-----
-----
RDSAPI-S-SHS, successfully displayed <1> jobs
```

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For any additional information, please contact us at support.repliweb.com