

Backing up

David Morgan

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Backup software options

- tar
- rsync
- cpio
- dump/restore
- dd
- dedicated and commercial programs

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tar – “tape archive”

- `tar -cvf dest.tar srcdir`
 - Executed from within parent directory of `srcdir`
 - Captures `srcdir` and its whole subtree
- `tar -xvf dest.tar`
 - Executed from within any subdirectory
 - Creates a subdirectory “`srcdir`” with whole contents of the original
- `tar -tvf dest.tar`
 - View contents

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tar faithfulness

- Better (more fully faithful) than `cp` for archiving
- Use `-p` option to preserve file permissions

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tar compression

- tar is (was) a consolidator, not a compressor
- tar default: no compression
- use in conjunction with a compression technique
 - use with gzip
 - or tar's own (added) -z option
- please follow optional naming conventions
 - <file>.tar <file>.gz <file>.tar.gz

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tar destinations

- Usually, a file
 - tar -cvf /archives/backup.tar srcdir
- Can be a device (tar = tape + archive)
 - tar -cvf /dev/fd0 srcdir
 - tar -xvf /dev/fd0
- Can be standard output
 - tar -cf - srcdir

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tar with standard input/output

- Destination can be standard output

```
tar -czf - srcdir
```

- Source can be standard input

```
tar -xzf -
```

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Dynamic tar/untar

– “Look ma, no file!”

```
tar -czf - srcdir | tar -xzf -
```

but better get positioned first

```
tar -czf - srcdir | (cd <targetdir>; tar -xzf -)
```

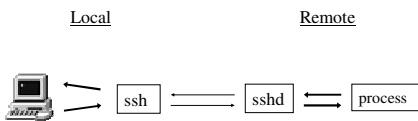
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Got a remote shell? – cross-net backup

```
tar -czf - srcdir |  
ssh <targetIP> "(cd <targetdir>; tar -xzf -)"
```

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ssh – input and output



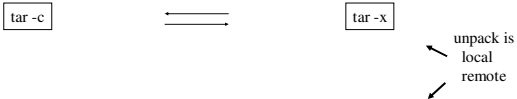
Input to ssh on local machine (e.g., what user types), transferred to remote side, becomes input to process.

Output from process on remote machine, transferred to local side, becomes output from ssh (what user sees).

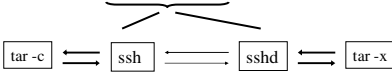
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Applied to tar

```
tar -czf - srcdir | (cd <targetdir>; tar -xzf -)
```



```
tar -czf - srcdir | ssh <targetIP> "(cd <targetdir>; tar -xzf -)"
```



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rsync – remote file synchronization

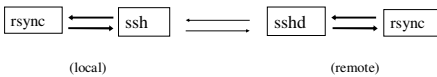
- a better rcp – remote file copy
- faithful filesystem preservation
- local or remote
 - source and destination both local, or
 - one or other remote
- can use ssh
- efficient update protocol
 - treats added/deleted/modified files only
 - transfers modified files' modified portions only

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rsync – local or remote

```
rsync -a --delete srcdir destdir
```

```
rsync -a --delete -e ssh srcdir <user>@<targetIP>:<destdir>
```



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rsync snapshot backups

```
rm -rf backup.3  
mv backup.2 backup.3  
mv backup.1 backup.2  
cp -al backup.0 backup.1  
rsync -a --delete source_directory/ backup.0/
```

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