

Access to ECMWF resources

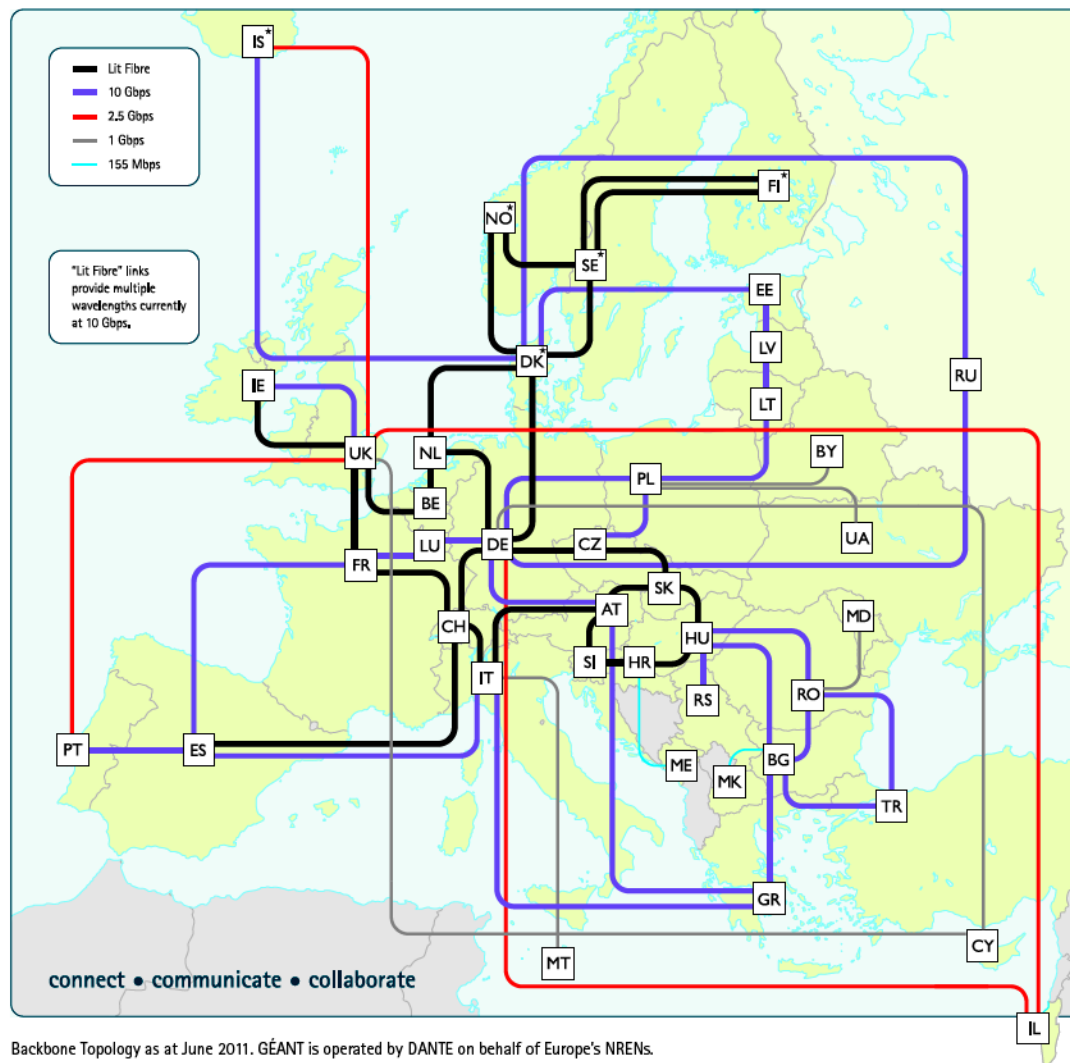
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Wide Area Network - Internet

- **Between ECMWF and Internet**
2 x 10Gb/s (redundant)
- **European Research Network**
 - 155Mb/s up to 100Gb/s
- **At your end ...?**
 - Often several Mb/s to Gb/s
- **Much higher bandwidth than RMDCN**
- **Suitable for users for (large) data transfers**
- **Increasingly used for research data dissemination**
- **Could be used as backup for RMDCN**



Wide Area Network - RMDCN

- **Regional Meteorological Data Communication Network**
 - Includes ECMWF members, WMO region VI and GISC sites
 - In 1999 29 sites; today 50 sites connected to RMDCN as of March 2014
 - 500Mb/sec ECMWF uplink
 - Access speed ranges between 64kb/sec up to 50Mb/sec
 - Member states basic package: 4Mb/sec (redundant connections)
 - Different service levels with well defined compensations when failures
- **100 Mb/sec leased line between ECMWF and the UK Met Office in Exeter**
- **RMDCN available for world wide meteorological community**
- **RMDCN often reserved for operational data dissemination and GTS. If in doubt, check with your Computing Representative**

Access to ECMWF - Security Token

- **All external access to ECMWF requires a Security token validation**
 - Interactive logins
 - ECaccess website
 - File transfers
 - Access to restricted areas on website e.g. forecasts, ecCharts
 - Webmail
 - Creation of X509 certificates
- **Some access possible with certificates, either for the web or ECaccess services**
- **Read the security rules**



Interactive Access

- **Ssh sessions via Internet:**

\$ ssh [-X] <uid>@ecaccess.ecmwf.int or

\$ ssh [-X] <uid>@ecaccess.meteo.ms

meteo.ms - domain name of your Meteorological Service

- **X11 forwarding supported (option -X)**

- **Ssh session via RMDCN:**

\$ ssh [-X] <uid>@msaccess.ecmwf.int or

\$ ssh [-X] <uid>@msaccess.meteo.ms

- **Available to Meteorological Services only**

- **RMDCN may be reserved for operational activities, check with your Computing Representative**

ECaccess – Web Access – <http://ecaccess.ecmwf.int/> *

ECMWF ECaccess login

You can manage your files, organise transfers or submit batch jobs through the web interface.

Web session

Automatic logout will occur after an idle time of : 30 minutes

Please enter your userid :

Your passcode (obtained from your security token) :

Log on

You can open an interactive session on an ECMWF system, with support for GUI applications.

NX interactive session

ECMWF server : ecgate

Or workstation :

Network link speed : adsl

Initial application : xterm

Window option (NX3) : floating window

Virtual desktop resolution (NX3) : available area

Log on (NX3) Log on (NX4)

Tips for using ECaccess

When using ECaccess, please use the menu navigation keys, not your browser back button. To make the service more secure, ECaccess instructs your browser not to cache personal information.

NX sessions

Please note that NX3 is no longer supported by NoMachine. You are encouraged to use NX4 instead.

* Also available on msaccess or on local gateways

ECaccess – Web Session

- **Manage files located in**
 - HOME
 - SCRATCH
 - ECFS
- **Submit jobs**
- **View batch queues**
- **View your own submitted and/or running jobs**
- **Manage Ectrans associations and file transfers**
- **Download ECaccess certificate**
 - Can be used in conjunction with ECtools

ECaccess – Web - NX

- **Secure remote access (ssh) and desktop virtualization (VNC like)**
- **Based on the NX software from NoMachine:**

<http://www.nomachine.com/>

Version 4 is recommended

- **Improved technology, much faster than X11 or VNC**
- **Local client available, that can be customised via session configuration files**
- **NX available on local gateways starting from ECaccess release 3.3.0 onwards**

ECaccess – Web - NX

- **With NX 4 only Virtual Desktops are available**
 - Available on ecgate and supercomputer
 - Starts WindowMaker window manager
 - One can run several graphical application within a virtual desktop

ECaccess – Web - NX

The screenshot shows a terminal window titled "xterm" with a list of running jobs. The jobs are listed in columns: ID, name, user, status, start time, end time, and host. An "Application Menu" is open over the terminal, showing options like "Info", "Allow X11 access from ...", "Update Application Menu", "Run command ...", "open xterm on ...", "local xterm", "ecgate (AIX)", "ecgate (RedHat Linux)", "c2a", "c2b", "ixlab linux cluster (ECMWF only)", "metview3", "metview4", "XCdp", "Editors", "Utils", "Applications", "Workspaces", "Selection", "Workspace", "Appearance", and "Exit". The "Editors" section is expanded, showing "XEmacs", "Emacs", "NEdit", "Xedit", and "VI".

ID	name	user	status	start time	end time	host
1291700	wind_m1	esk0	normal	RUNNING	9:27 1-00:00:00	ecgb05
1291647	datasyncro	swec	normal	RUNNING	17:15 1-00:00:00	ecgb09
1291646	us_job_all	gdq	normal	RUNNING	17:26 1-00:00:00	ecgb08
1291615	us_job_all	gdq	normal	RUNNING	19:39 1-00:00:00	ecgb04
1291546	prevl_bal	ar9	normal	RUNNING	31:40 2:00:00	ecgb10
1291539	us_job_all	gdq	normal	RUNNING	34:10 1-00:00:00	ecgb10
1291505	us_job_all	gdq	normal	RUNNING	41:23 1-00:00:00	ecgb09
1290758	soc38h1b3	fim	normal	RUNNING	2:11:35 1-00:00:00	ecgb07
1290754	get_macc_N	hc0	normal	RUNNING	2:11:40 1-00:00:00	ecgb05
1288986	controlrun	nli	normal	RUNNING	5:41:24 1-00:00:00	ecgb08
1287969	c_10_38h1b	sp0r	normal	RUNNING	8:11:42 1-00:00:00	ecgb08
1287239	mars.job	rgk	normal	RUNNING	10:43:20 1-00:00:00	ecgb10
1287143	MyM_DA_con	nkn	normal	RUNNING	10:55:05 1-00:00:00	ecgb04
1286320	retr	aure	normal	RUNNING	12:29:52 1-00:00:00	ecgb07
1285885	MyM_DA_con	nkn	normal	RUNNING	13:16:31 1-00:00:00	ecgb04
1285359	deneme18.b	tmy				ecgb10
1276179	MARSEXTR2	nkc				ecgb07
1276176	MARSEXTR2	nkc				ecgb04
1276173	MARSEXTR2	nkc				ecgb04
1276172	MARSEXTR2	nkc				ecgb04
1291155	ecgb_retri	hui				ecgb07
1289288	get_convvec	gbpw				ecgb05
1289289	get_convvec	gbpw				ecgb08
1289287	get_convvec	gbpw				ecgb07
1288855	get_convvec	gbpw				ecgb09
1287512	anneds_201	sbw				ecgb05
1287283	MONICOSHOR	sbt				ecgb08
1285860	iberia_38h	smx				ecgb07
1285855	seepa	fi2f				ecgb08
1285488	dka_h38_11	mib				ecgb09
1279334	dka_h38_11	mib				ecgb08
1276721	38h1_1_30	mdx				ecgb05
6	ecgb11:/home/us/usc/	-->				

The Emacs editor window is titled "emacs@ecgb11.ecmwf.int" and shows a shell script with the following content:

```
dir=/scratch/ms/...

the working directory of the batch script before it is
uted.

-type=FAIL

ifies that an email should be sent in case the job fails.
r options include BEGIN, END, REQUEUE and ALL (any state
ge).

=00:05:00

ifies that your job my run up to HH:MM:SS of wall clock
. The job will be killed if it exceeds this limit. If
is not defined, the default limit for the queue (qos)
be used.

-----
urrent directory and its content
-----

at your job will be executed in the specified workdir:"

pwd # prints the path name of the current directory

echo "
List of the content of the current directory:
"
ls -l

#-----
# show your PATH
#-----

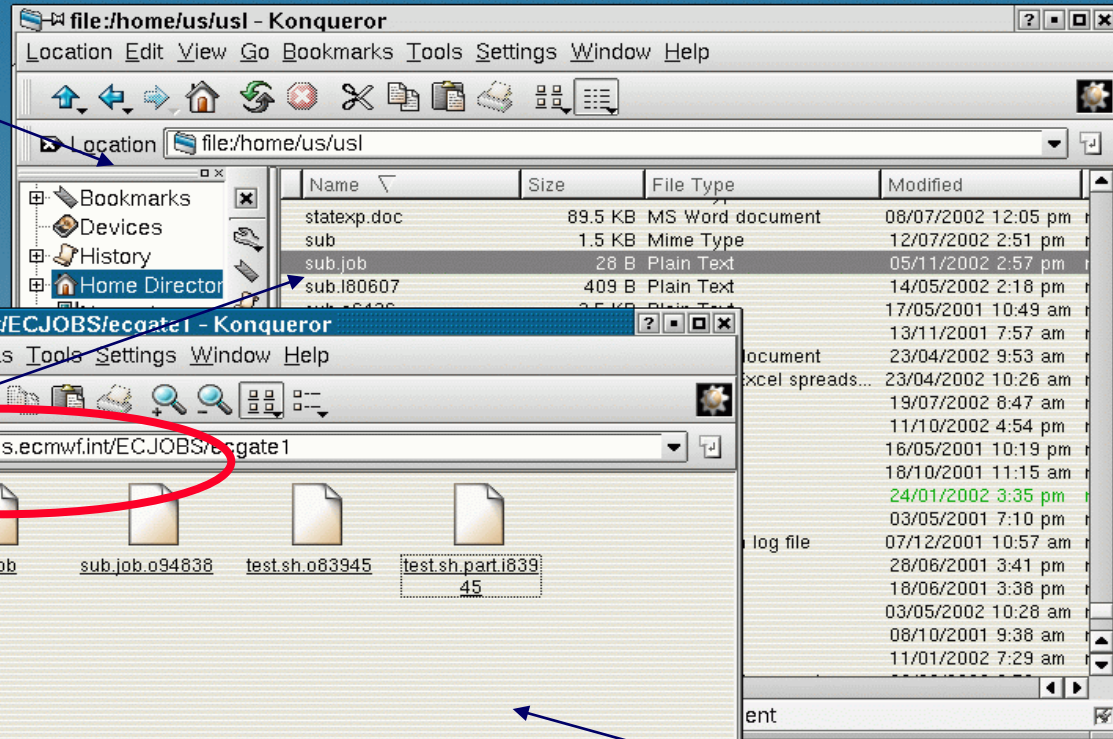
echo "
---:--- Firstjob 36% L80 (Shell-script[pdksh])-----
```

File Transfers to ECMWF – FTP or SFTP

- **Through Internet, using `ecaccess.ecmwf.int`**
- **To login, use**
 - `$ ftp ecaccess.ecmwf.int` **OR** `sftp <uid>@ecaccess.ecmwf.int`
- **Enter your UID and passcode from security token**
- **Direct access to limited number of file systems**
 - ECHOME (\$HOME)
 - ECSCRATCH (\$SCRATCH)
 - ECFS (ec:)
 - ECTMP (ectmp:)
 - ECHOST (e.g. ecgate, c2a)
- **ECtools package offers similar access via command line tools**
 - ETools may already be installed on your organisation's desktop or can be installed by yourself

File Transfers to ECMWF - Browser- ftp/sftp

Local environment



Local file can be dragged and dropped into ecaccess area.

FTP entry for batch access

File Transfers from ECMWF to MS

- A straight FTP to Meteorological Services **via RMDCN** lines from ecgate is theoretically possible
 - **This may only be available for operational purposes!**
- For transfers **via Internet** connections one has to use ectrans, FTP via the ECMWF FTP-gateway or sftp/scp.
 - ectrans is recommended; it will be covered later, during the session on ECaccess

File Transfers from ECMWF – FTP interactive

--> **ftp proxy**

Connected to proxy.ecmwf.int.

220- 136.156.64.10 PROXY-FTP server (DeleGate/9.9.5) ready.

...

220-

220-extended FTP [MODE XDC][XDC/BASE64]

220

Name (proxy:usc): **username@ms-host**

331 Password required for username.

Password: **XXXXXX**

230-- PASS for username@ms-host.

220-Welcome to Pure-FTPd.

220-You are user number 2 of 50 allowed.

220-IPv6 connections are also welcome on this server.

220 You will be disconnected after 15 minutes of inactivity.

331 User username OK. Password required

230-User username has group access to: 500

230-OK. Current directory is /

230 \(- -)/ -- { connected to 'ms-host' }

ftp>

ftp> **get filename**

...

ftp> **quit**

File Transfers from ECMWF – Batch FTP I

- **.netrc file can be used for automated login**

```
machine proxy login anonymous@kernel.org password test@test.org
```

- **FTP in shell scripts**

```
ftp proxy <<EOF  
dir  
put myfile  
quit  
EOF
```

- **Limitation of .netrc**

- Only one entry for one host !

File Transfers from ECMWF – Batch FTP II

- **FTP script with plain text password possible**

```
#!/bin/ksh  
HOST=proxy.ecmwf.int  
USER=username@myserver.org  
PASS=anonymous@myserver.org
```

```
ftp -inv $HOST << EOF  
user $USER $PASS  
dir  
put myfile  
bye  
EOF
```

File Transfers from ECMWF - sftp/scp

- **sftp/scp commands are part of the ssh package**
- **sftp is a more secure replacement for the ftp command**
- **scp is a more secure replacement for the rcp command**
- **They allow different authentication mechanisms**
- **sftp/scp transfers can be slightly slower than ftp/rcp transfers due to the encryption of the connection**
- **sftp with password:**

```
$ sftp user@host.meteo.ms
```

```
user@host.meteo.ms's password: xxxxxx
```

```
sftp>
```

- **scp example:**

```
$ scp localfile user@host.meteo.ms:/home/user/destinationfilename
```

File Transfers from ECMWF - sftp/scp

- Transfers can be automated with the use of private/public keys
- Use ssh-keygen command to generate private/public keys
- **Add** contents of `~/.ssh/id_rsa.pub` to `~/.ssh/authorized_keys` on all remote machines where you wish to transfer files to, using public key authentication
- If successful sftp, scp and ssh commands to these remote machines will not prompt for a password anymore
- This allows the use of these commands in batch mode

Data transfer of large volumes

- **To export/import “large amounts” of data (e.g. ERA, EPS or Seasonal FC) use your Internet connection whenever possible**
- **“large volume” depending on**
 - **Internet connection**
 - **Available time?**
 - **10s of TBs**
- **If network transfer is not feasible check with User Support for alternatives, e.g. transfer via media**

Further Information

- **Introduction to ECMWF computing facilities:**
 - www.ecmwf.int/services/computing/help/new_user/intro_ex
- **ECaccess service:**
 - www.ecmwf.int/services/ecaccess/
- **ECaccess user guide:**
 - www.ecmwf.int/services/ecaccess/download/ecguide-4.0.0.pdf