Resource Configuration

The configuration file `resources.conf` is used to describe computing resources. When you start WRF4G, resources.conf file is copied under `~/.wrf4g/etc` directory if it does not exist. The file can be edit directly or by executing `wrf4g resource edit` command.

Configuration format

The configuration resource file consists of sections, each led by a [section] header, followed by `key = value` entries. Lines beginning with # are ignored. Allowing sections are `[DEFAULT]` and `[resource_name]`.

DEFAULT section

The DEFAULT section provides default values for all other resource sections.

Resource section

Each resource section has to begin with the line `[resource_name]` followed by `key = value` entries.

Configuration keys common to all resources:

- `enable`: true or false in order to enable or disable a resource.
  `communicator` or authentication type :
  - `local`: The resource will be accessed directly.
  - `ssh`: The resource will be accessed through ssh protocol.
- `username`: username to log on the front-end.
- `frontend`: The front-end either of a cluster or a grid user interface . The syntax is "host:port", by default the port used is 22.
- `private_key`: Private key identity file to log on the front-end.
- `scratch`: Shared directory used to store temporary files for jobs during their execution on the frontend, by default, it is `$HOME/.wrf4g/jobs`.
- `local_scratch`: Job's working directory on the worker nodes, by default, it is `$HOME/.wrf4g/jobs`.
  `lrms` or Local Resource Management System :
  - `pbs`: TORQUE/PBS cluster.
  - `sge`: Grid Engine cluster.
  - `slurm`: SLURM cluster.
  - `slurm_res`: ?RES(Red Española de Supercomputación) resources.
  - `loadleveler`: LoadLeveler cluster.
  - `lsf`: LSF cluster.
  - `fork`: SHELL.
  - `cream`: CREAM Compute Elements (CE).

Keys for non-grid resources such as HPC resources:

- `queue`: Queue available on the resource. If there are several queues, you have to use a "," as follows "queue = short,medium,long".
- `max_jobs_in_queue`: Max number of jobs in the queue.
- `max_jobs_running`: Max number of running jobs in the queue.
- `parallel_env`: It defines the parallel environments available for Grid Engine cluster.
- `project`: It specifies the project variable and is for TORQUE/PBS, Grid Engine and LSF clusters.

Keys for grid resources:

- `vo`: Virtual Organization (VO) name.
- `host_filter`: A host list for the VO. Each host is separated by a ",". Here is an example: "host_filter = prod-ce-01.pd.infn.it, creamce2.gina.sara.nl".
- `bdii`: It indicates the BDII host to be used. The syntax is "bdii:port". If you do not specify this variable, the `LCG_GFAL_INFOSYS` environment variable defined on the grid user interface will be used by default.
- `myproxy_server`: Server to store grid credentials. If you do not specify this variable, the `MYPROXY_SERVER` environment variable defined on the grid user interface will be used by default.

Examples

By default, WRF4G is going to use the local machine as fork lrms:

```
[localmachine]
enable            = true
communicator      = local
frontend          = localhost
lrms              = fork
max_jobs_running  = 1
```

TORQUE/PBS cluster, accessed through ssh protocol:

```
[meteo]
enable            = true
communicator      = ssh
username          = user
frontend          = mar.meteo.unican.es
private_key       = ~/.ssh/id_rsa
lrms              = pbs
queue             = short, medium, long
max_jobs_running  = 2, 10, 20
max_jobs_in_queue = 6, 20, 40
```

ESR virtual organization, accessed through a grid user interface:

```
[esrVO]
enable            = true
communicator      = local
username          = user
frontend          = ui.meteo.unican.es
lrms              = cream
vo                = esr
bdii              = bdii.grid.sara.nl:2170
myproxy_server    = px.grid.sara.nl
```

Example usage

How to configure a TORQUE/PBS resource

In order to configure a TORQUE/PBS cluster accessed through ssh protocol, you should follow the next steps:

Configure the `meteo` resource. If you do not have a private_key file, you can generate one by executing ?ssh-keygen. This command will generate a public key (`~/.ssh/id_rsa.pub`) that will be necessary later on.

```
[user@mycomputer~]$ wrf4g resource edit
[meteo]
enable            = true
communicator      = ssh
username          = user
local_scratch     = $TMPDIR
frontend          = mar.meteo.unican.es
private_key       = ~/.ssh/id_rsa
lrms              = pbs
queue             = short
max_jobs_running  = 2
max_jobs_in_queue = 6
```

2. List and check if resource has been created successfully :

```
[user@mycomputer~]$ wrf4g resource list
RESOURCE            STATE
```

```
meteo               enabled
```

Configure identity's resource copying the public key (`~/.ssh/id_rsa.pub`) to `authorized_keys` file on the remote frond-end, and adds the private key to the agent for the ssh authorization:

```
[user@mycomputer~]$ wrf4g id meteo init
--> Starting ssh-agent ...
--> Adding private key to ssh-agent ...
   Identity added: /home/user/.ssh/id_rsa (/home/user/.ssh/id_rsa)
   Lifetime set to 7 days
--> Copying public key on the remote frontend ...
```

That's it! Now, you can summit experiments to `meteo`.

How to configure a EGI VO

For configuring a EGI VO such as ESR accessed through user grid interface, follow the below steps:

Configure the `esrVO` resource. If the grid user interface has defined `LCG_GFAL_INFOSYS` and `MYPROXY_SERVER` variables, you do not have to indicate `bdii` and `myproxy_server` keys in your configuration:

```
[user@mycomputer~]$ wrf4g resource edit
[esrVO]
enable         = true
communicator   = local
username       = user
frontend       = ui.meteo.unican.es
lrms           = cream
vo             = esr
bdii           = bdii.grid.sara.nl:2170
myproxy_server = px.grid.sara.nl
```

2. List and check if resource has been created successfully :

```
[user@mycomputer~]$ wrf4g resource list
RESOURCE            STATE
esrVO               enabled
```

List the CEs available on the `esr` VO:

```
[user@mycomputer~]$ wrf4g host list
HID ARCH       JOBS(R/T) LRMS       HOST
0   x86_64          0/0 cream-pbs  esrVO::cream.afroditi.hellasgrid.gr
1   x86_64          0/0 cream-pbs  esrVO::ce1.ipgp.fr
2   x86_64          0/0 cream-pbs  esrVO::cr1.ipp.acad.bg
3   x86_64          0/0 cream-pbs  esrVO::sbgce2.in2p3.fr
4   x86_64          0/0 cream-pbs  esrVO::ce0.bordeaux.inra.fr
5   x86_64          0/0 cream-pbs  esrVO::cce.ihep.ac.cn
6   x86_64          0/0 cream-pbs  esrVO::ce02.ngcc.acad.bg
7   x86_64          0/0 cream-pbs  esrVO::ce01.macc.unican.es
8   x86_64          0/0 cream-pbs  esrVO::cygnus.grid.rug.nl
9   x86_64          0/0 cream-pbs  esrVO::t2ce06.physics.ox.ac.uk
10  x86_64          0/0 cream-lsf  esrVO::ce1.ts.infn.it
11  x86_64          0/0 cream-lsf  esrVO::gridce1.pi.infn.it
12  x86_64          0/0 cream-lsf  esrVO::gridce3.pi.infn.it
13  x86_64          0/0 cream-pbs  esrVO::cream02.grid.uoi.gr
14  x86_64          0/0 cream-pbs  esrVO::lapp-ce02.in2p3.fr
15  x86_64          0/0 cream-pbs  esrVO::grid002.jet.efda.org
16  x86_64          0/0 cream-lsf  esrVO::gridce4.pi.infn.it
```

```
17  x86_64           0/0 cream-lsf  esrVO::gridce0.pi.infn.it
18  x86_64           0/0 cream-lsf  esrVO::gridce2.pi.infn.it
19  x86_64           0/0 cream-pbs  esrVO::t2ce06.physics.ox.ac.uk
20  x86_64           0/0 cream-pbs  esrVO::grid0.fe.infn.it
21  x86_64           0/0 cream-pbs  esrVO::ce0.m3pec.u-bordeaux1.fr
22  x86_64           0/0 cream-pbs  esrVO::juk.nikhef.nl
23  x86_64           0/0 cream-pbs  esrVO::gridce.ilc.cnr.it
24  x86_64           0/0 cream-lsf  esrVO::cert-37.pd.infn.it
25  x86_64           0/0 cream-pbs  esrVO::cream-ce-2.ba.infn.it
26  x86_64           0/0 cream-sge  esrVO::cccreamceli09.in2p3.fr
27  x86_64           0/0 cream-sge  esrVO::cccreamceli10.in2p3.fr
28  x86_64           0/0 cream-pbs  esrVO::gazon.nikhef.nl
29  x86_64           0/0 cream-pbs  esrVO::klomp.nikhef.nl
30  x86_64           0/0 cream-pbs  esrVO::cream-ce-3.ba.infn.it
31  x86_64           0/0 cream-pbs  esrVO::cream-ce-4.ba.infn.it
32  x86_64           0/0 cream-pbs  esrVO::creamce.gina.sara.nl
33  x86_64           0/0 cream-lsf  esrVO::prod-ce-01.pd.infn.it
34  x86_64           0/0 cream-pbs  esrVO::creamce2.gina.sara.nl
35  x86_64           0/0 cream-pbs  esrVO::creamce3.gina.sara.nl
36  x86_64           0/0 cream-slur esrVO::ce3.ui.savba.sk
37  x86_64           0/0 cream-pbs  esrVO::glite-cream.scai.fraunhofer.de
38  x86_64           0/0 cream-pbs  esrVO::cream-ce02.marie.hellasgrid.gr
39  x86_64           0/0 cream-pbs  esrVO::cream-ce01.marie.hellasgrid.gr
40  x86_64           0/0 cream-pbs  esrVO::fal-pygrid-44.lancs.ac.uk
41  x86_64           0/0 cream-pbs  esrVO::hepgrid6.ph.liv.ac.uk
42  x86_64           0/0 cream-pbs  esrVO::cream-ce01.ariagni.hellasgrid.gr
43  x86_64           0/0 cream-pbs  esrVO::snf-189278.vm.okeanos.grnet.gr
44  x86_64           0/0 cream-pbs  esrVO::snf-458754.vm.okeanos.grnet.gr
45  x86_64           0/0 cream-pbs  esrVO::hepgrid5.ph.liv.ac.uk
46  x86_64           0/0 cream-pbs  esrVO::cream01.kallisto.hellasgrid.gr
47  x86_64           0/0 cream-pbs  esrVO::hepgrid10.ph.liv.ac.uk
48  x86_64           0/0 cream-pbs  esrVO::hepgrid97.ph.liv.ac.uk
```

4. Create an identity for 7 days:

```
[user@mycomputer~]$ wrf4g id esrVO init
--> Create a local proxy credential ...
Insert your Grid password:
Your identity: /DC=es/DC=irisgrid/O=unican/CN=user
Creating proxy ..................................................................................... Done
Proxy Verify OK
Your proxy is valid until: Thu Feb 26 21:37:19 2015
Your identity: /DC=es/DC=irisgrid/O=unican/CN=user
Creating proxy ................................................................ Done
Proxy Verify OK
A proxy valid for 168 hours (7.0 days) for user /DC=es/DC=irisgrid/O=unican/CN=user now exists on px.grid.sara.nl.
```

5. Check the timeleft of your identity:

```
[user@mycomputer~]$ wrf4g id esrVO info
--> Grid credentials
subject  : /DC=es/DC=irisgrid/O=unican/CN=user/CN=proxy/CN=proxy
issuer   : /DC=es/DC=irisgrid/O=unican/CN=user/CN=proxy
identity : /DC=es/DC=irisgrid/O=unican/CN=user
type     : full legacy globus proxy
strength : 2048 bits
path     : /home/user/.wrf4g/security/px.grid.sara.nl
timeleft : 167:57:52  (7.0 days)
```

That's it! Now, you can summit jobs to the `esr` VO. Keep in mind that you will have to renew your identity depending on the `proxy-lifetime` used.