

## Logging & Bookkeeping User Interaction Interfaces

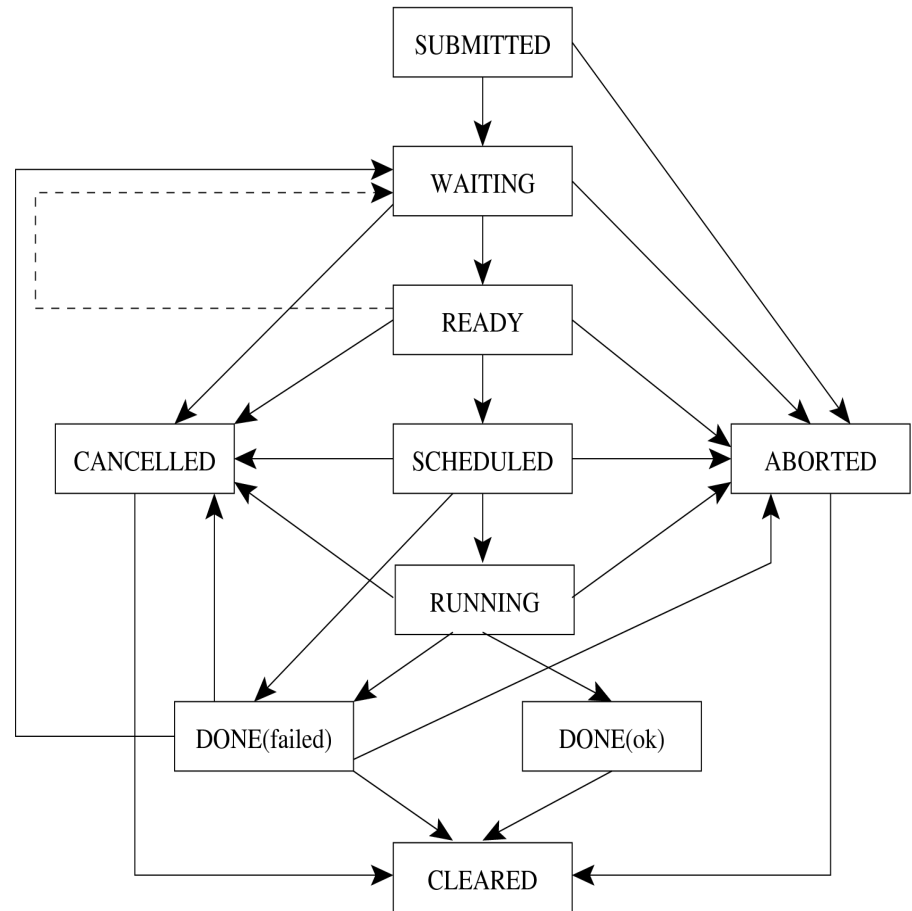
*Training the Trainers, Nicosia, 6 May 2009*

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Dvořák, F; Mulač, M.; Filipovič, J. Salvet, Z.;  
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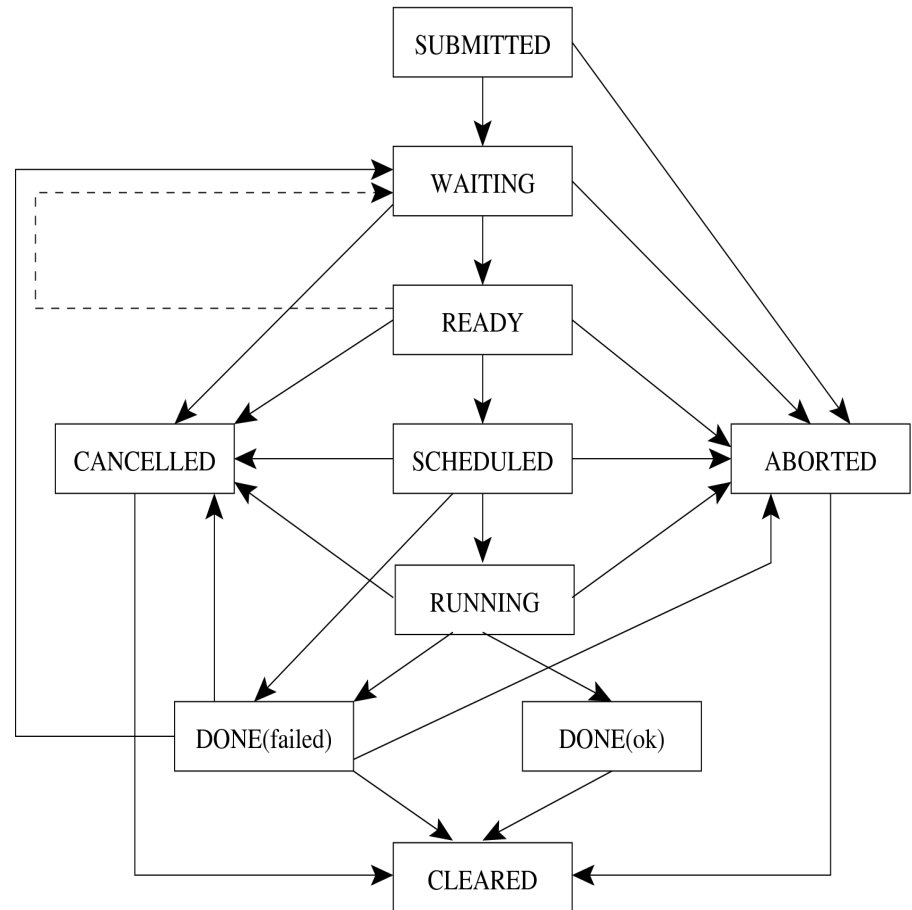
- **Introduction to L&B Concepts**
- **Interfaces**
  - Standard L&B Interface
  - Lightweight HTTP Interface
- **L&B Notifications**
- **Conclusions and References**

- **States**
  - Current status of the job
  - Generated from known events
- **Events**
  - Generated by grid components
  - Passed (pushed) to the L&B Server on a store-and-forward basis
  - Asynchronous delivery
    - The only exception being job registration – the first step in the chain
- **Grid components generate L&B events as the job passes through the grid**
- **L&B Server stores the events on delivery, and uses the information to compute job states**

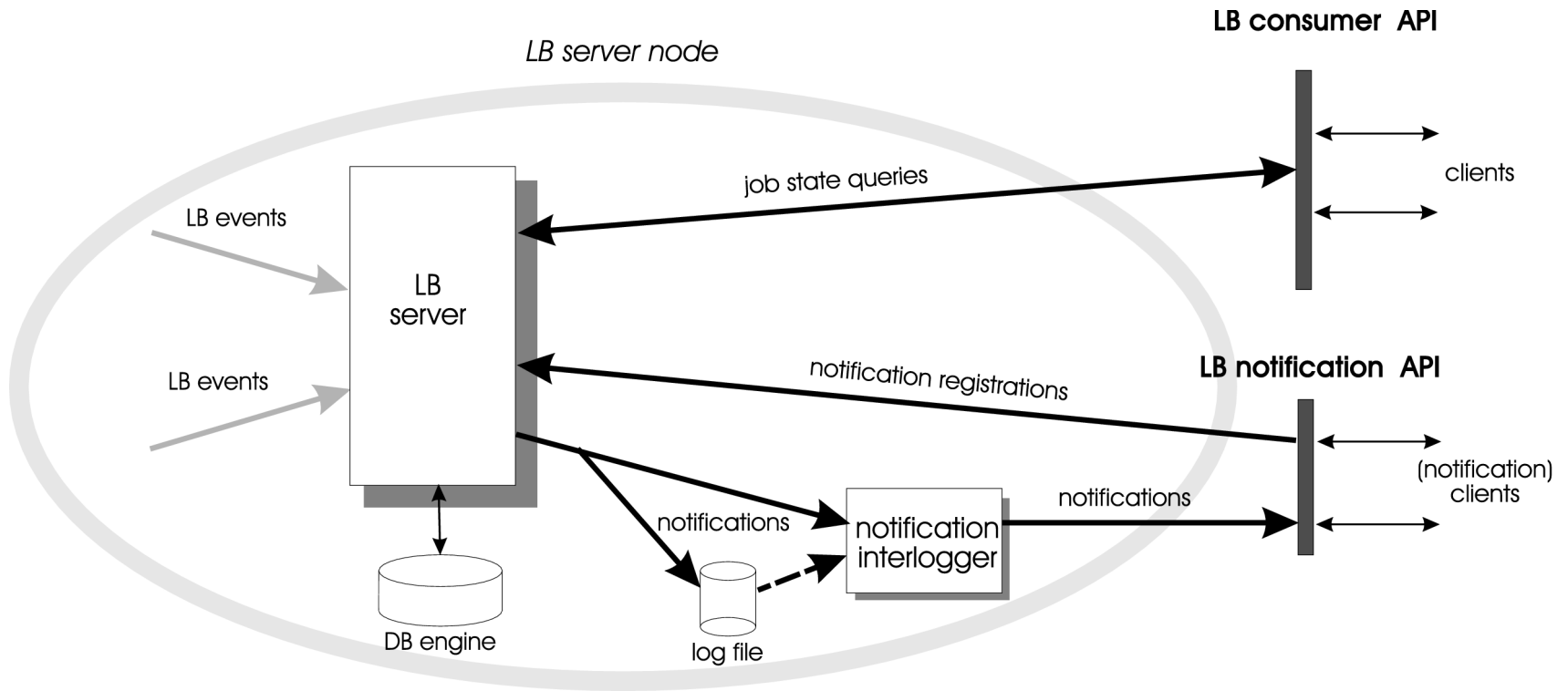
- **gLite State diagram**
- **Interpretation of even a single event may not be straightforward**
  - Resubmission
  - Skewed time
  - Events delivered out of sequence
  - etc.
- **There are related tasks**
  - Keeping low-cost track of purged jobs



- **The actual State Diagram is even more complex**
  - e. g. state may still be “running” despite receiving a “done” event
    - “done” event from CE is not enough to trigger state change, L&B needs to receive confirmation from Log Monitor.
    - Job may still be resubmitted.



- **Two types of user interfaces**
  - Query – Response (consumer API)
  - Register – Push/Receive (notification API)



- **Command line interface available on the UI**
- **Features available in the UI are a subset of all features available through the L&B API**
- **Getting the current status of a job**
  - glite-wms-job-status
- **Getting the history of events logged for a job**
  - glite-wms-job-logging-info
- **Outputs with various levels of detail**
- **Logging your own information concerning the job**
  - glite-lb-logevent
- **Other commands you may find useful are installed among *examples* on the UI.**

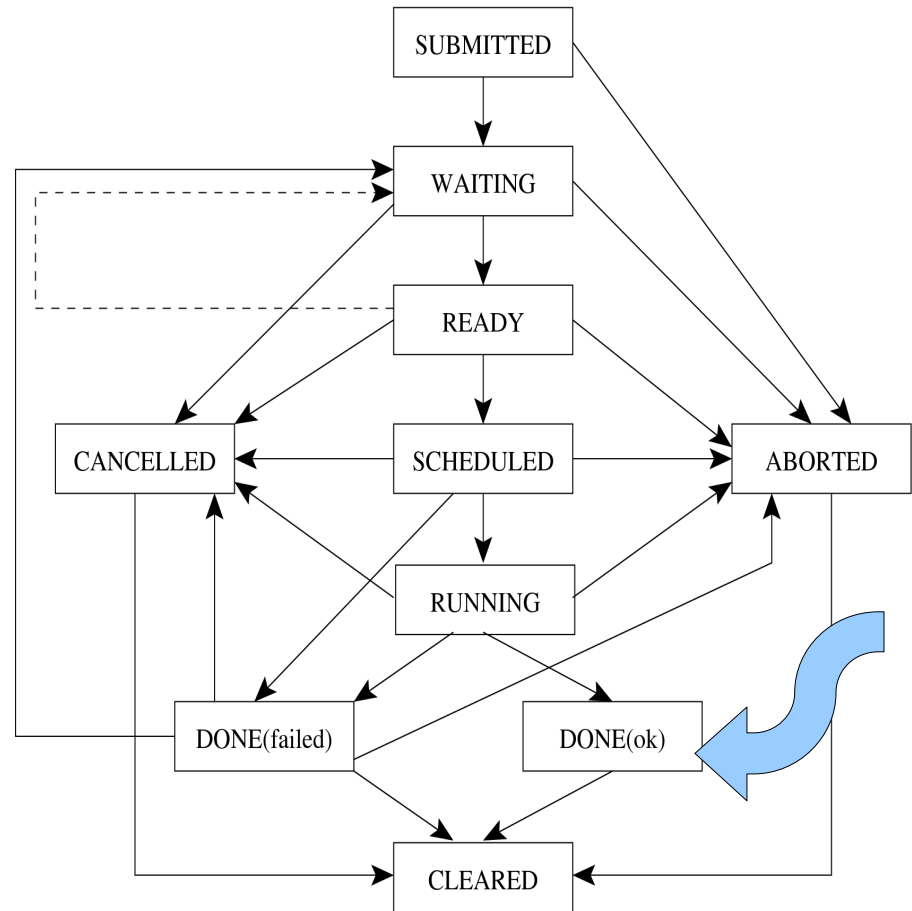
- glite-wms-job-status Example**

```

uil.egee.cesnet.cz$ glite-wms-job-status
https://
/skurut68-2.cesnet.cz:9000/BjVXwjWlpVLvFZn96
VjpIQ

*****
BOOKKEEPING INFORMATION:

Status info for the Job :
https://skurut68-2.cesnet.cz:9000/BjVXwjWlpV
LvFZn96VjpIQ
Current Status:      Done (Success)
Exit code:           0
Status Reason:       Job terminated
successfully
Destination:
ce.grid.tuke.sk:2119/jobmanager-pbs-voce
Submitted:           Wed Apr 22 10:47:11 2009
CEST
*****
  
```





- glite-wms-job-status Example (--verbosity 2)**

```

uil.egee.cesnet.cz$ glite-wms-job-status --verbosity 2
https://skurut68-2.cesnet.cz:9000/BjVXwjWlpVLvFzn96VjpIQ

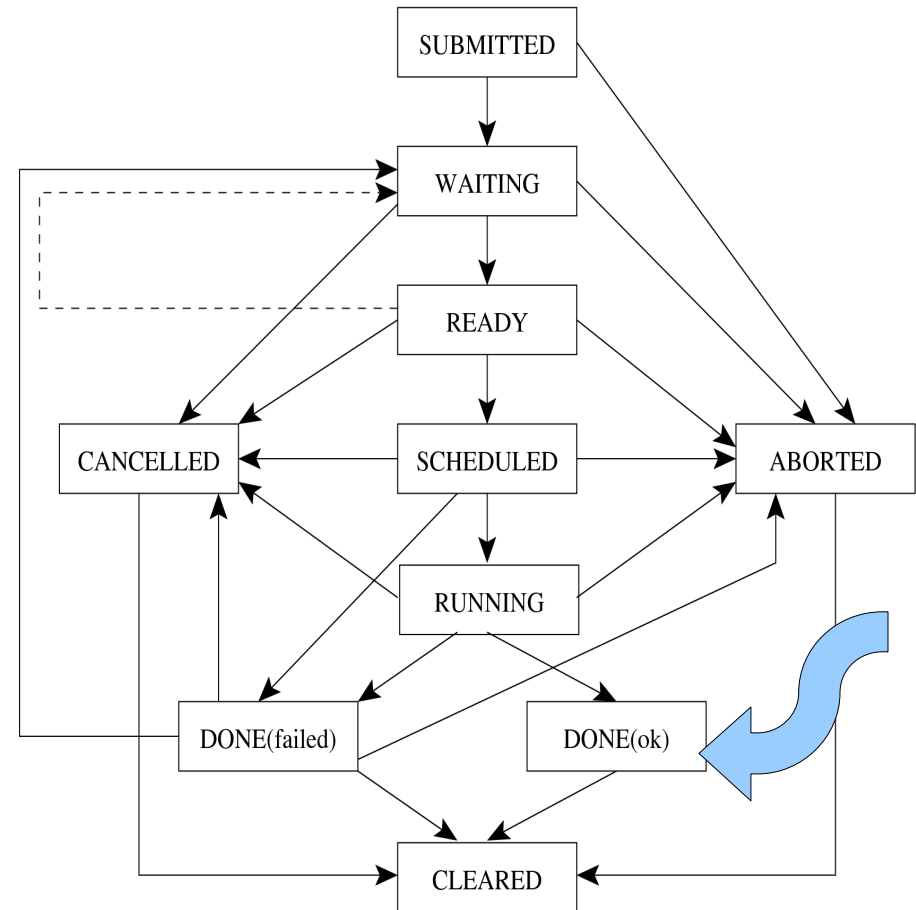
*****
BOOKKEEPING INFORMATION:

Status info for the Job :
https://skurut68-2.cesnet.cz:9000/BjVXwjWlpVLvFzn96VjpIQ
Current Status:      Done (Success)
Exit code:           0
Status Reason:       Job terminated successfully
Destination:         ce.grid.tuke.sk:2119/jobmanager-pbs-voce
Submitted:           Wed Apr 22 10:47:11 2009 CEST
---

- Cancelling                = 0
- Ce node                    = gt2 ce.grid.tuke.sk:2119/jobmanager-pbs
- Children num               = 0
- Condorid                   = 287435
- Condor job exit status     = 0
- Condor job pid             = 0
- Condor shadow exit status  = 0
- Condor shadow pid         = 0
- Condor starter exit status = 0
- Condor starter pid        = 0
- Cputime                    = 0
- Destination                = ce.grid.tuke.sk:2119/jobmanager-pbs-voce
- Done code                  = 0
- Expectupdate               = 0
- Jobtype                    = 0
- Lastupdatetime             = Wed Apr 22 10:50:45 2009 CEST
- Location                   = none
- Network server              = wms2.egee.cesnet.cz
- Owner                      = /DC=cz/DC=cesnet-ca/O=University of West
Bohemia/CN=Jiri Sitera
- Payload running            = 0
- Pbs exit status            = 0
- Pbs pid                    = 0
- Possible ce nodes          = gt2 ce.grid.tuke.sk:2119/jobmanager-pbs
- Possible destinations       = ce.grid.tuke.sk:2119/jobmanager-pbs-voce
- Resubmitted                = 0
- Stateentertime             = Wed Apr 22 10:50:45 2009 CEST
- Subjob failed              = 0
- Suspended                  = 0

*****

```





- glite-wms-job-logging-info Example**

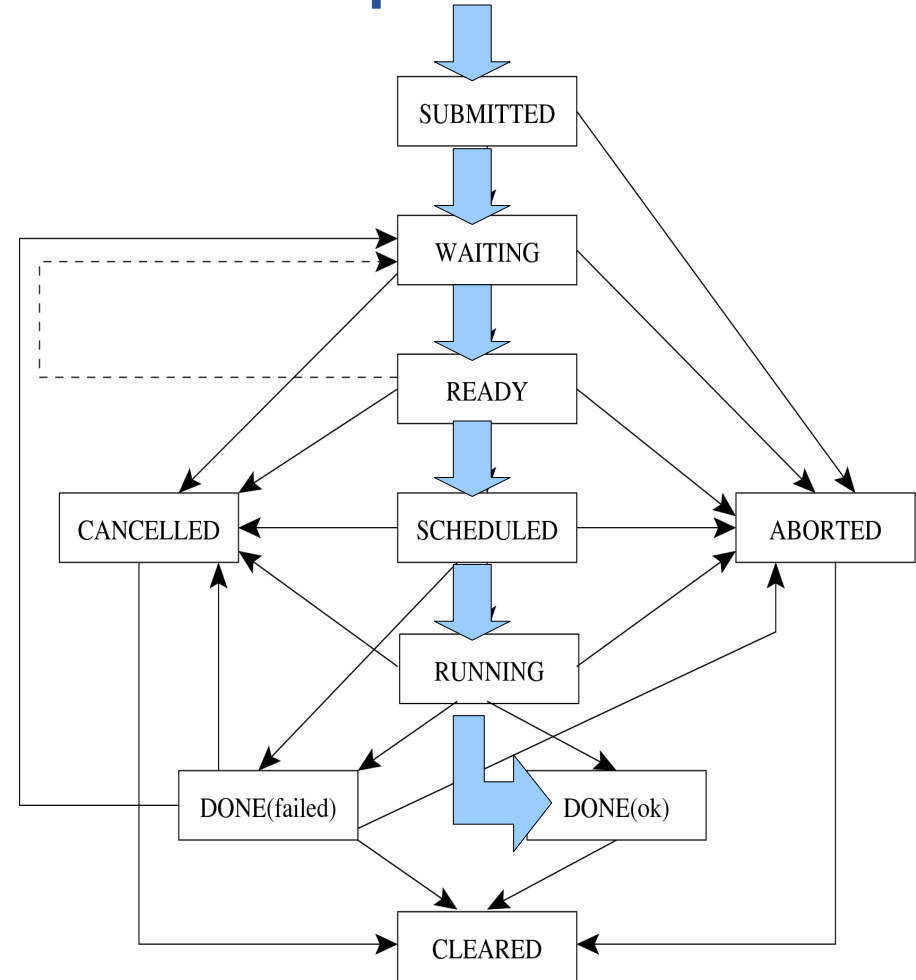
```

glite-wms-job-logging-info
https://skurut68-2.cesnet.cz:9000/BjVXwjWlpVLvFZn96VjpIQ

*****
LOGGING INFORMATION:

Printing info for the Job :
https://skurut68-2.cesnet.cz:9000/BjVXwjWlpVLvFZn96VjpIQ

---
Event: RegJob
- Source           = NetworkServer
- Timestamp        = Wed Apr 22 10:47:11 2009
CEST
---
Event: RegJob
- Source           = NetworkServer
- Timestamp        = Wed Apr 22 10:47:11 2009
CEST
---
Event: Accepted
- Source           = NetworkServer
- Timestamp        = Wed Apr 22 10:47:12 2009
CEST
---
Event: EnQueued
- Result           = START
- Source           = NetworkServer
- Timestamp        = Wed Apr 22 10:47:12 2009
CEST
---
Event: EnQueued
- Result           = OK
- Source           = NetworkServer
- Timestamp        = Wed Apr 22 10:47:12 2009
CEST
    
```



- Record (“upload”) information regarding your job

- `glite-lb-logevent`

- Record an User Tag for your job

```
glite-lb-logevent -s Application -e UserTag -j <job_id> -c <seq_code> \
  --name <tag_name> --value <tag_value>
```

- Adding a user specified by a DN to the ACL

```
glite-lb-logevent -e ChangeACL -s UserInterface -p --permission 1 \
  -j <job_id> --user_id <DN> --user_id_type 0 --permission_type 0 \
  --operation 0
```

- Adding a VOMS group to the ACL

```
glite-lb-logevent -e ChangeACL -s UserInterface -p --permission 1 \
  -j <job_id> --user_id 'VOCE:/VOCE' --user_id_type 1 \
  --permission_type 0 --operation 0
```

- Credentials loaded in a Web browser
- Use ID as URL
  - Note the following ID structure example:

## Job ID:

*https://scientific65.zcu.cz:9010/JIZWsd1dcrBi5kpsXW9Zw*

protocol

Server address

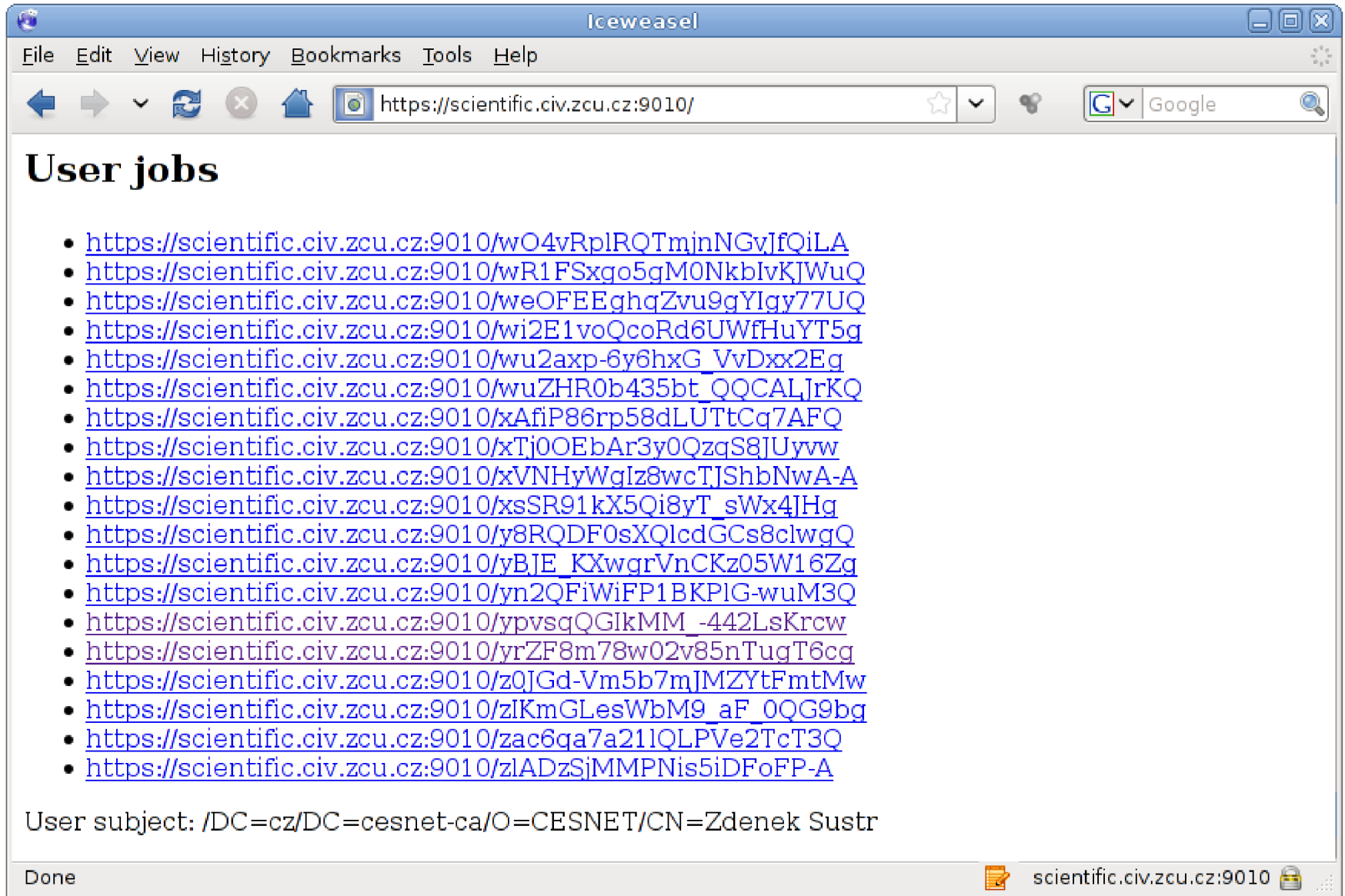
Port

Unique Job Identifier

## Live demo #1

### L&B user jobs and job status – https interface

- list of jobs*
- job overview*
- pure text output*



The screenshot shows a web browser window titled "Iceweasel" with the address bar containing "https://scientific.civ.zcu.cz:9010/". The page content is titled "User jobs" and lists 20 hyperlinks. At the bottom, it shows the user subject information: "/DC=cz/DC=cesnet-ca/O=CESNET/CN=Zdenek Sustr".

**User jobs**

- <https://scientific.civ.zcu.cz:9010/wO4vRplRQTmjnNGvjfQiLA>
- <https://scientific.civ.zcu.cz:9010/wR1FSxgo5gM0NkblvKJWuQ>
- <https://scientific.civ.zcu.cz:9010/weOFEEghqZvu9gYlgy77UQ>
- <https://scientific.civ.zcu.cz:9010/wi2E1voQcoRd6UWfHuYT5g>
- [https://scientific.civ.zcu.cz:9010/wu2axp-6y6hxG\\_VvDxx2Eg](https://scientific.civ.zcu.cz:9010/wu2axp-6y6hxG_VvDxx2Eg)
- [https://scientific.civ.zcu.cz:9010/wuZHR0b435bt\\_QQCALrKQ](https://scientific.civ.zcu.cz:9010/wuZHR0b435bt_QQCALrKQ)
- <https://scientific.civ.zcu.cz:9010/xAfiP86rp58dLUTtCq7AFQ>
- <https://scientific.civ.zcu.cz:9010/xTj0OebAr3y0QzqS8JUyvw>
- <https://scientific.civ.zcu.cz:9010/xVNHyWgIz8wcTJShbNwA-A>
- [https://scientific.civ.zcu.cz:9010/xsSR91kX5Qi8yT\\_sWx4IHg](https://scientific.civ.zcu.cz:9010/xsSR91kX5Qi8yT_sWx4IHg)
- <https://scientific.civ.zcu.cz:9010/y8RQDF0sXQlcdGCs8clwgQ>
- [https://scientific.civ.zcu.cz:9010/yBJE\\_KXwgrVnCKz05W16Zg](https://scientific.civ.zcu.cz:9010/yBJE_KXwgrVnCKz05W16Zg)
- <https://scientific.civ.zcu.cz:9010/yn2QFiWiFP1BKPIG-wuM3Q>
- [https://scientific.civ.zcu.cz:9010/ypvsgQGikMM\\_-442LsKrcw](https://scientific.civ.zcu.cz:9010/ypvsgQGikMM_-442LsKrcw)
- <https://scientific.civ.zcu.cz:9010/yrZF8m78w02v85nTugT6cg>
- <https://scientific.civ.zcu.cz:9010/z0jGd-Vm5b7mJMZYtFmtMw>
- [https://scientific.civ.zcu.cz:9010/zIKmGLesWbM9\\_aF\\_0QG9bg](https://scientific.civ.zcu.cz:9010/zIKmGLesWbM9_aF_0QG9bg)
- <https://scientific.civ.zcu.cz:9010/zac6qa7a21lQLPVe2TcT3Q>
- <https://scientific.civ.zcu.cz:9010/zlADzSjMMPNis5iDFoFP-A>

User subject: /DC=cz/DC=cesnet-ca/O=CESNET/CN=Zdenek Sustr

Done scientific.civ.zcu.cz:9010



Iceweasel

File Edit View History Bookmarks Tools Help

https://scientific.civ.zcu.cz:9010/-caUWWSrKPNRpt2inRL

**https://scientific.civ.zcu.cz:9010/-caUWWSrKPNRpt2inRLcuQ**

**Status:** Submitted  
**owner:** /DC=cz/DC=cesnet-ca/O=CESNET/CN=Zdenek Sustr  
**State entered:** Thu Oct 16 15:54:50 2008  
**Last update:** Thu Oct 16 15:54:50 2008  
**Expect update:** NO  
**Cancelling:** NO

**Job description**

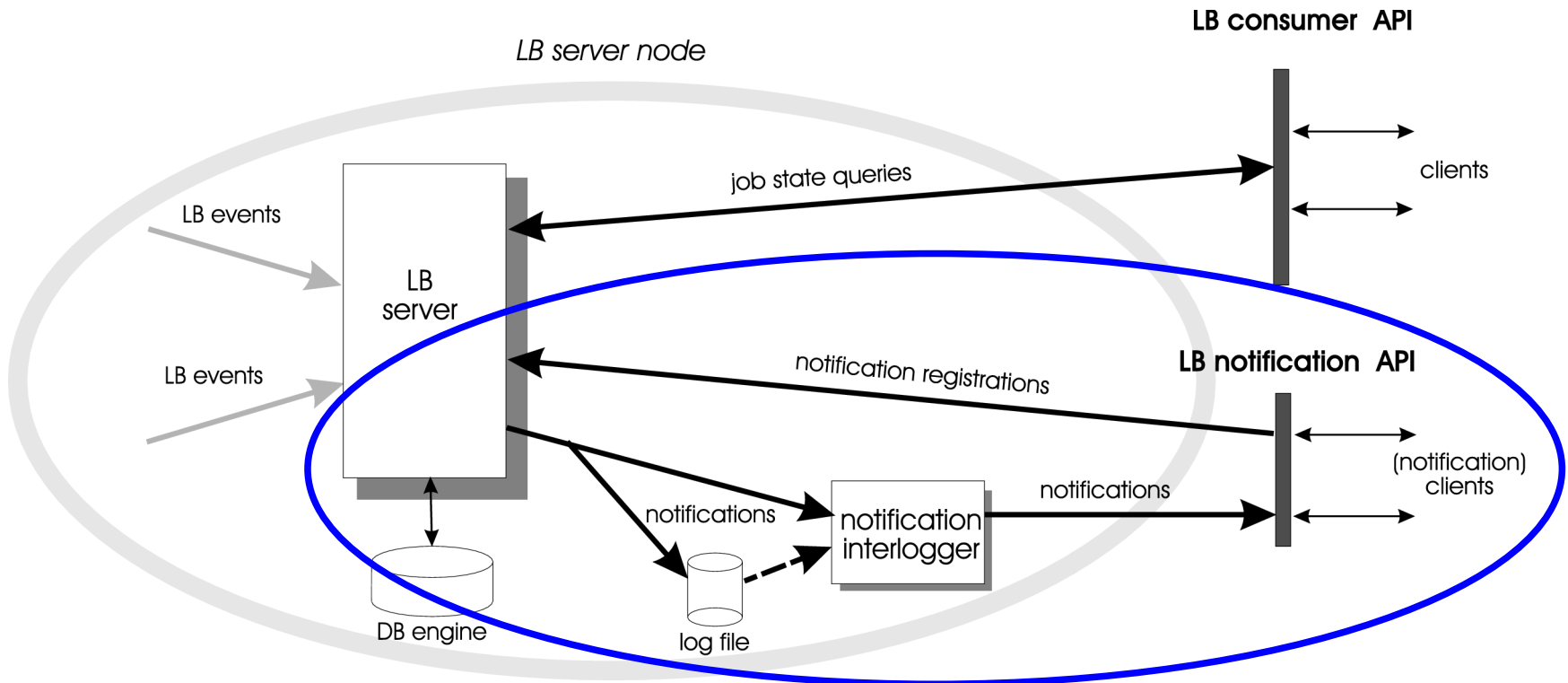
```
[
Executable = "/bin/echo";
Arguments = "Hello World";
StdOutput = "message.txt";
StdError = "stderr";
OutputSandbox = {"message.txt","stderr"};
VirtualOrganisation = "voce";
]
```

Done scientific.civ.zcu.cz:9010





```
sustr4@nori: ~  
File Edit View Terminal Tabs Help  
[scientific] /home/sustr > curl -3 --key /tmp/x509up_u30030 --cert /tmp/x509up_u30030 --capath /etc/grid-security/certificates https://scientific.civ.zcu.cz:9010/-caUWWSrKPNRpt2inRLcuQ?text  
Job=https://scientific.civ.zcu.cz:9010/-caUWWSrKPNRpt2inRLcuQ  
Status=Submitted  
owner=/DC=cz/DC=cesnet-ca/0=CESNET/CN=Zdenek Sust  
expectUpdate=NO  
cancelling=NO  
jdl=[\nExecutable = "/bin/echo";\nArguments = "Hello World";\nStdOutput = "message.txt";\nStdError = "stderr";\nOutputSandbox = {"message.txt","stderr"};\nVirtualOrganisation = "voce";  
\n]\n[scientific] /home/sustr > █
```



- **Publish/subscribe streaming model**
  - Preventing periodic L&B Server queries
- **Delivery through a dedicated component**
  - notification interlogger

- **Registration**
  - Specify criteria
  - Get unique Notification ID
  - Information on events matching the criteria stored in queue
- **Receiving data**
  - Receive notifications on events matching criteria
  - Once started, all queued notifications are delivered
  - Go on listening to keep receiving notifications as the events occur
  - Client may stop listening temporarily
    - Can resume from another location
- **Refreshing registration validity**
  - Registrations need to be refreshed periodically
  - Expired registrations are dropped and event notifications removed from the queue.

- **Register notifications on state changes for all “My” jobs**
  - `glite-lb-notify new -c -0`
- **Register notifications on everything regarding a specific job**
  - `glite-lb-notify new -j <Job ID>`
- **Register notifications as jobs enter particular states**
  - `glite-lb-notify new -c --state <state1,state2,...>`
- **Start receiving notifications**
  - `glite-lb-notify receive <notif_id>`

## Live demo #2

### L&B notifications in command line

- Credentials loaded in a Web browser
- Use ID as URL
  - Note the following ID structure example:

## Notification ID:

*https://scientific65.zcu.cz:9010/NOTIF:B9TgSJD2pBonV1sZMSjobw*

protocol

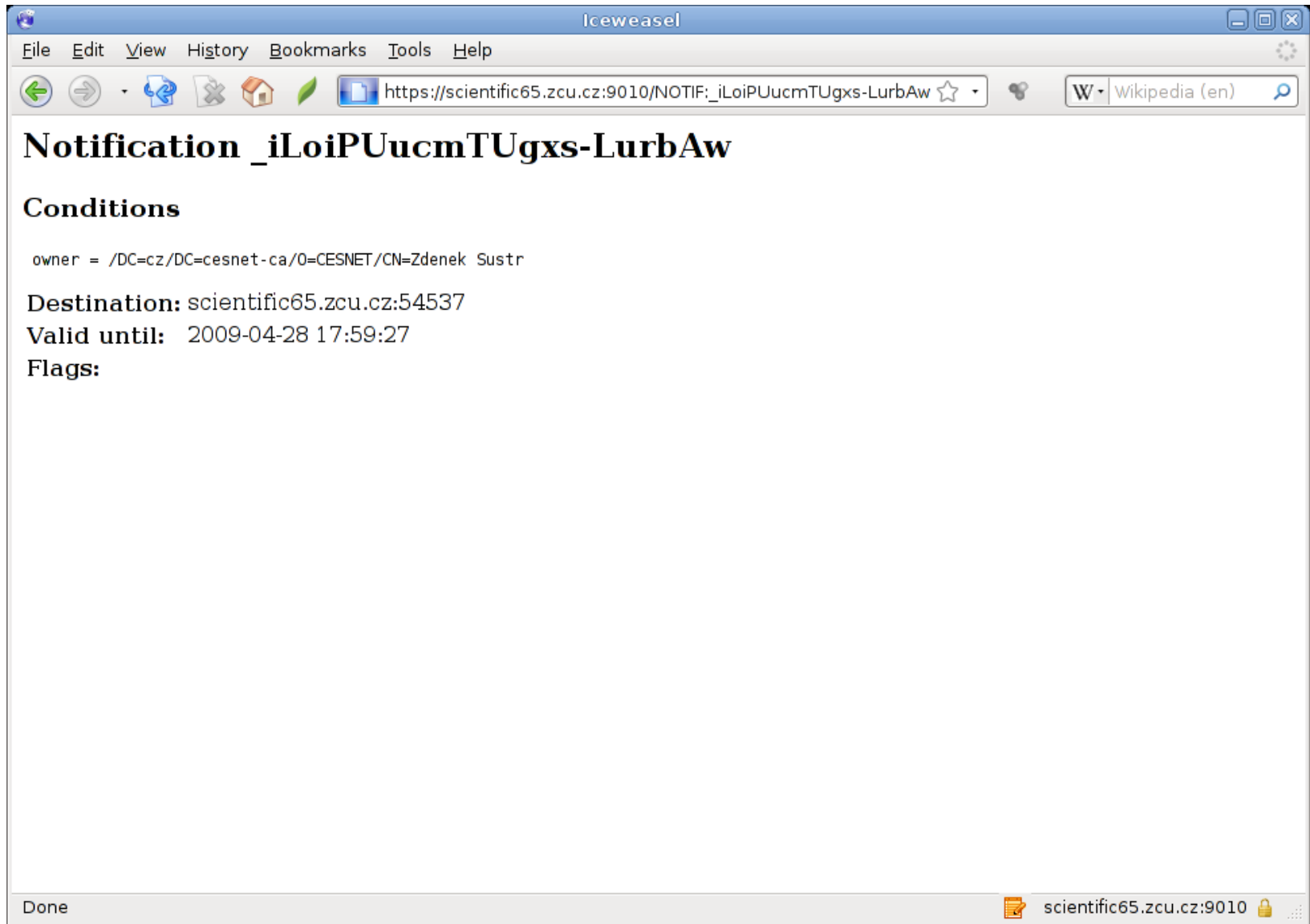
Server address

Port

Prefix

Unique Notification Identifier

**Live demo #3**  
**L&B notifications – https interface**  
**RSS interface**



The screenshot shows a web browser window titled "Iceweasel". The address bar contains the URL "https://scientific65.zcu.cz:9010/NOTIF:\_iLoiPUucmTUgxs-LurbAw". The page content is as follows:

## Notification \_iLoiPUucmTUgxs-LurbAw

### Conditions

owner = /DC=cz/DC=cesnet-ca/0=CESNET/CN=Zdenek Sustr

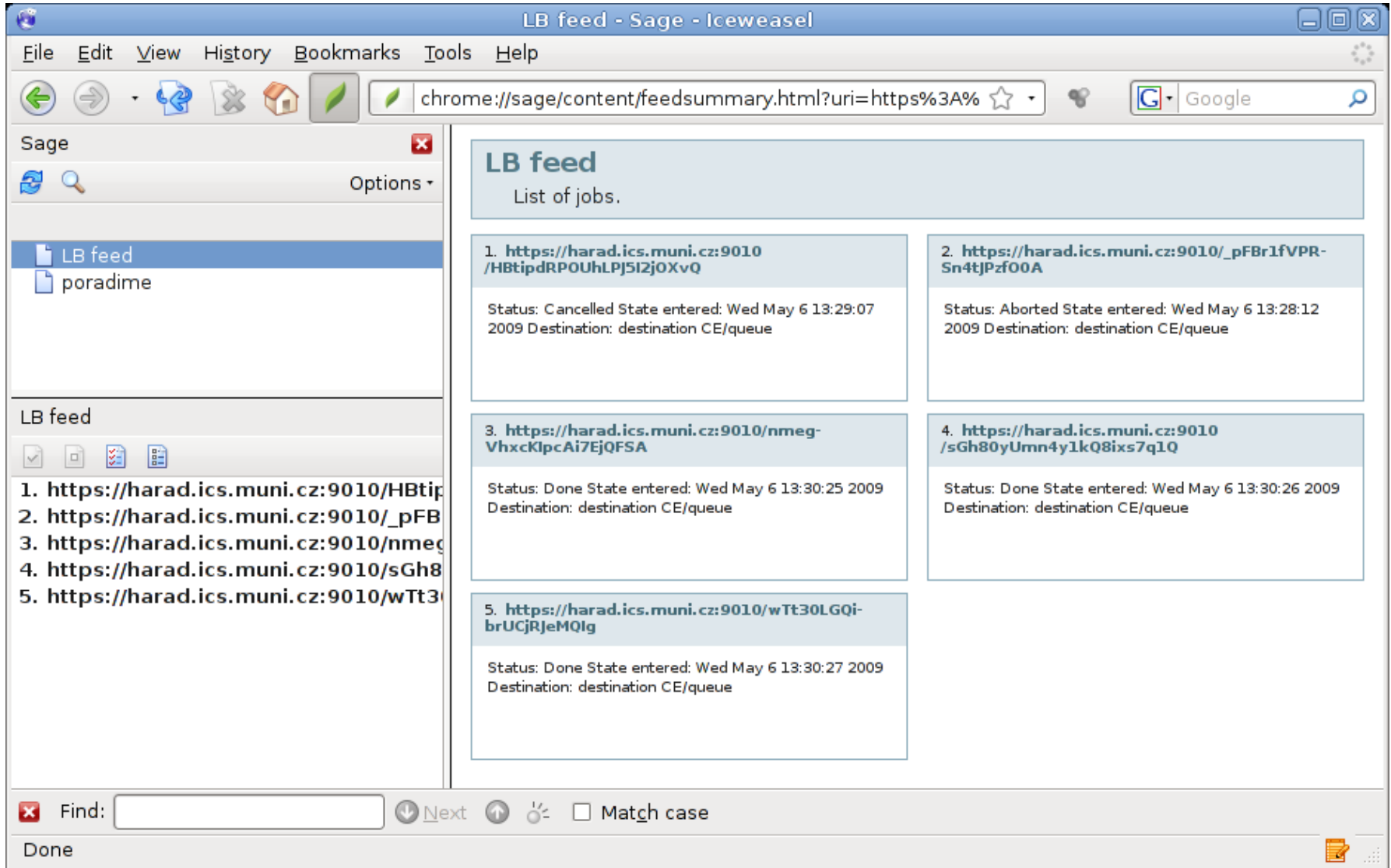
**Destination:** scientific65.zcu.cz:54537

**Valid until:** 2009-04-28 17:59:27

**Flags:**

The browser status bar at the bottom shows "Done" on the left and "scientific65.zcu.cz:9010" with a lock icon on the right.





The screenshot shows a web browser window titled "LB feed - Sage - Iceweasel". The address bar contains the URL: `chrome://sage/content/feedsummary.html?uri=https%3A%`. The browser interface includes a menu bar (File, Edit, View, History, Bookmarks, Tools, Help), a toolbar with navigation icons, and a search bar with the Google logo.

The main content area is titled "LB feed" and contains a "List of jobs." section. The jobs are displayed in a grid-like format with the following details:

Job ID	Status	State entered	Destination
1. <a href="https://harad.ics.muni.cz:9010/HBtipdRPOUhLPJ5I2jOXvQ">https://harad.ics.muni.cz:9010/HBtipdRPOUhLPJ5I2jOXvQ</a>	Cancelled	Wed May 6 13:29:07 2009	destination CE/queue
2. <a href="https://harad.ics.muni.cz:9010/_pFBr1fVPR-Sn4tjPzf00A">https://harad.ics.muni.cz:9010/_pFBr1fVPR-Sn4tjPzf00A</a>	Aborted	Wed May 6 13:28:12 2009	destination CE/queue
3. <a href="https://harad.ics.muni.cz:9010/nmeg-VhxcKlpcAi7EjQFSA">https://harad.ics.muni.cz:9010/nmeg-VhxcKlpcAi7EjQFSA</a>	Done	Wed May 6 13:30:25 2009	destination CE/queue
4. <a href="https://harad.ics.muni.cz:9010/sGh80yUmn4y1kQ8ixs7q1Q">https://harad.ics.muni.cz:9010/sGh80yUmn4y1kQ8ixs7q1Q</a>	Done	Wed May 6 13:30:26 2009	destination CE/queue
5. <a href="https://harad.ics.muni.cz:9010/wTt30LGQi-brUCjRjeMQlg">https://harad.ics.muni.cz:9010/wTt30LGQi-brUCjRjeMQlg</a>	Done	Wed May 6 13:30:27 2009	destination CE/queue

The browser's left sidebar shows a "Sage" window with a "LB feed" folder selected. Below the sidebar, there is a "LB feed" section with a list of job URLs and a search bar at the bottom with the text "Find:" and "Match case" checkbox.

- **Multiple ways to access L&B information**
  - *Full-featured vs. Lightweight*
  - *Query/response vs. Publish/subscribe/receive*
- **Choose whichever suits your purpose**
- **Availability**

	gLite 3.1	gLite 3.2
UI	<i>Full</i>	<i>Full</i>
Notifications	<i>Core</i>	<i>Full</i>
HTTPS	<i>Full</i>	<i>Full</i>
RSS	<i>N/A</i>	<i>Full</i>

- <http://egee.cesnet.cz/en/JRA1/>
  - General information
  - Guides
  - Contacts

**Thank You**  
*for your attention!*