Status and prospects of the French/Italian/German Lattice DataGrid

D. Pleiter (NIC/DESY Zeuthen)

Participants

France: CNRS

O. Brand-Foissac, O. Pene

Germany: Latfor

DESY: M. Ernst, K. Jansen, D. Melkumyan, D.P., P. Wegner

ZAM: O. Büchner, Th. Lippert, B. Orth

ZIB: H. Stüben, S. Wollny

Italy: INFN

F. Rapuano, R. Trippicione

Aim

Deploy Lattice DataGrid infrastructure to all lattice groups:

➔ **User Interfaces (UI) at all research sites (labs and universities)**

    UI = host from which you can access the Grid

➔ **Storages Elements (SE) at all major computing sites**

    → Mass storage for permanent storage
    → Medium sized storage for replicas

Software/Deployment Status

❑ **User Interfaces (UI) and user tools**

- We provide LCG software as tar-ball for Linux
  (Redhad, Scientific Linux, Suse, Debian)
- User tool for fetching configurations being tested

❑ **Storage Elements (SE)**

- Installed at 4 sites with Petabytes storage capabilities *dCache*

❑ **Central Information Services**

- Prototype Metadata Catalogue running
- Currently general access only via Web Interface
  `http://www-zeuthen.desy.de/latfor/ldg/mdc`
- Virtual organization (VO) `ildg` has been setup
- File catalogue and other services running

Further details ➜ Poster by H. Stüben

How to Access Data (1)

☞ **Obtain certificate and register with virtual organization (VO)**

→ Certificates from Certificate Authorities (CA) trusted by LCG

→ Open also for other CAs

→ Details on VO registration will be published

How to Access Data (2)

☞ **Install UI and user tools**

→ Unpack UI tar-ball
→ Install user tools

```
# lget qcdsf_b5p40kp13610-24x48_bqcd.561.1.1.00125.tar

Welcome to the Ltool-command  lget -
Testing grid-proxy-init
grid-proxy...ok

Trying to get binary ...
Virtual Organisation is ildg
Executing lcg-cp ...

Checking nonzero size of downloaded File ...ok.
```

How to Access Data (3)

☞ **Get prepared for reading/writing ILDG standard format**

→ Both old and newly generated configurations will conform to ILDG standard format

Binary Data File Format

ILDG binary files consists of (at least):

❐ XML document with parameters useful for reading (**ildg-format**)

```
<?xml version="1.0" encoding="UTF-8"?>
<ildgFormat>
  <version> 1.0 </version>
  <field> su3gauge </field>
  <precision> 32 </precision>
  <lx> 20 </lx> <ly> 20 </ly> <lz> 20 </lz> <lt> 64 </lt>
</ildgFormat>
```

❐ Binary data (**ildg-binary-data**)

❐ LFN (**ildg-data-LFN**)

→ **Use LIME for packaging**

  LIME = Lattice QCD Interchange Message Encapsulation [SciDAC]

☞ http://www.physics.utah.edu/~detar/scidac

LIME Records and Messages

❑ LIME allows to encapsulate ≥ 1 **messages**, ≥ 1 **records**/message

❑ Only 3 messages/records mandatory for ILDG:

message	record	LIME record type
#1	...	...
...	...	...
#n	...	...
	#i	**ildg-format**
	...	...
	#j	**ildg-binary-data**
	...	...
...	...	...
#m	#1	**ildg-data-LFN**
...	...	...

❑ Collaborations free to add other messages/records

☞ File format specification: `http://www.lqcd.org/ildg`

Archiving Plans

Alpha

ALPHA
Collaboration

Partners: Berlin, Hamburg, Madrid, Milano, Münster, Roma,
Zeuthen

Parameter: - $N_\mathrm{f} = 2$ NP-Clover fermions, plaquette glue
- Schrödinger BC

Access policy: - Not yet discussed within collaboration

SESAM/TχL/GRAL

Partners: Jülich, Wuppertal

Parameter:
- $N_\mathrm{f} = 2$ Wilson fermions, plaquette glue
- $m_\mathrm{PS} = 419, ..., 900$ MeV
- $a = 0.08, ..., 0.13$ fm, $V = 0.9, ..., 2.1$ fm
- high statistics (N_traj up to 16,000 on small lattices)

Access policy:
- Open access (requires registration in VO)
- Usage has to be acknowledged in publications

QCDSF (1)

Partners: Berlin, Edinburgh, Leipzig, Liverpool, Regensburg, Zeuthen

Parameters:
- $N_{\mathrm{f}} = 2$ NP-Clover fermions, plaquette glue
- $m_{\mathrm{PS}} = 622, ..., 1086$ MeV
- $a = 0.07, ..., 0.11$ fm, $V = 1.4, ..., 2.0$ fm

Access Policy:
- Open access (requires registration in VO)
- Usage has to be acknowledged in publications

QCDSF (2)

Partners: Berlin, Edinburgh, Jülich, Leipzig, Liverpool, Regensburg, Wuppertal, Zeuthen

Parameters: - $N_\mathrm{f} = 2$ Overlap fermions, TI Lüscher-Weisz glue
      - $m_\mathrm{PS} = 400, ..., 650$ MeV
      - $a \approx 0.13$ fm, $V = 2.1$ fm (tentative)

Access Policy: - Closed

χ_L^F Collaboration

Partners: Berlin, Liverpool, Milano, Münster, Roma I+II, Zeuthen

Parameters: - $N_f = 2$ twisted-mass fermions, tree-level Szymanzik glue
                     - $a \approx 0.08, ..., 0.13$ fm, $V = 2.1, ..., 2.6$ fm

Access Policy: - Open access (requires registration in VO)
                     - Usage has to be acknowledged in publications
                     - Request draft publication in advance

Other groups at INFN and CNRS

Committed to make data available within ILDG

Following access policies are currently considered:
- Open access with acknowledgement
- Access opened after a certain period of time
- Access opened after a particular paper has been published

Summary

❑ Core components of Grid infrastructure available

  Although production level has not yet been reached

❑ Almost all groups plan to provide configurations

❑ Encouraging trend towards open access policies

For operational details watch:
→ `http://www-zeuthen.desy.de/latfor/ldg`