



CANADA'S NATIONAL LABORATORY FOR PARTICLE AND NUCLEAR PHYSICS

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Tier-3 Support at ATLAS Canada

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LABORATOIRE NATIONAL CANADIEN POUR LA RECHERCHE EN PHYSIQUE NUCLÉAIRE ET EN PHYSIQUE DES PARTICULES

*Propriété d'un consortium d'universités canadiennes, géré en co-entreprise à partir d'une contribution
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Canadian Cloud

- Tier-1 at TRIUMF (excellent computing support)
 - Has additional resources for CA “power users”,
 - /atlas/ca/Role=(production or poweruser0).
- 5 Tier-2 (excellent computing support)
 - Acquiring additional resources for CA users,
 - CA users distinguished by /atlas/ca proxy.
- 11 Institution Tier-3
 - 6 located at Tier-1/2 but independent,
 - Support from proximity to Tier-1/2 to minimal.
- ~ 100 Canadian users.

Tier-3 in Canada

- Not expected to be on the grid:
 - Will have access to it (clients – eg. dq2),
 - (Tier-2 will have additional resources for CA.)
- Can be Institutions:
 - O (10s of cores) + O (10s of TB storage),
 - Shared facilities,
 - Include decommissioned Tier-1/2 equipment.
- Can be individuals:
 - Laptops / individual desktops,
 - Loose desktop clusters.

Setup

- Basic setup (institutions):
 - Hardware, batch, file manager, etc,
 - Consult Tier-1/2 experts but up to institution ...
 - Forum: atlas-canada-tier3-managers eGroups.
- For Tier-3, institutions or individuals, need tools:
 - Software management,
 - Data management.
- Tools (recommended, not required to use):
 - Must be easy to use, minimal administration,
 - Must handle 32/64 bit, SL 4/5, migrations, etc.

Software Management

- ManageTier3SW package:

<https://twiki.atlas-canada.ca/bin/view/AtlasCanada/ManageTier3SW>

- Safe; no root access required,
- Easy; read only one SW installation instructions (this !),
- Manages ATLAS and other software (not system SW).

Step 1: Download

```
mkdir ~/bin
```

```
cd ~/bin
```

```
cvs -d:pserver:anonymous@cvs.atlas-canada.ca:/atlas/cvs/cvs/  
atlasCanada checkout userSupport/manageTier3SW
```

Step 2: Install (unprivileged account)

```
cd ~/bin/userSupport/manageTier3SW
```

```
./updateManageTier3SW.sh --installALRB=<parent directory>
```

Step 3: Cron job

```
$(HOME)/bin/updateManageTier3SW.sh
```

What happens ... tested Software

(Last updated: 15 May 2009 19:22:52)

Name	Recommended / Tested Version	Latest Version	CERN Default	Comments	Links	Release Notes
OS	SL 4.7 / 32bit Not installed by manageTier3SW			not recommending 64 bit OS	Instructions	SL Home
ATLASLocalRootBase	V00-04-11 Discussed on next slides	V00-04-11			Instructions	Release Notes
DQ2Client	0.1.27	0.1.27	0.1.27		Instructions	CERN Notes
Ganga	5.2.2	5.2.2	5.2.2		Instructions	CERN Notes
gLite	3.1.25-0	3.1.29-0	3.1.25-0		Instructions	CERN Notes
Pacman	3.26	3.26	3.26		Instructions	BU Notes
panda-client	0.1.57	0.1.57	0.1.57		Instructions	CERN Twiki Notes
root	5.18/00 (old) 5.22.00 (pro)	5.23/01(dev) 5.22/00(pro)		only for use outside Athena	instructions	CERN Notes

https://twiki.atlas-canada.ca/bin/view/AtlasCanada/Software_Versions



What happens ... next

- Software, tested, is installed or updated,
- Patching, if required, is done:
 - eg. changes in gLite, migrations, etc,
- Nothing deleted; so versioning exists,
- Easy to delete software / reinstall,
- Can install on nfs export and share (visitors !),
- Athena installation / removal (not automatic):
 - Run application to check consistency / change,
 - Install: base, production or Tier0 caches,
 - Involves simple editing of text files ...

Example: Remove Athena

```
desilva@isabel:~/test/t2 — %1
# This file contains a listing of current installed Athena software.
# (generated by $ATLAS_LOCAL_ROOT_BASE/utilities/createConfigurationFiles.sh)
# A '-' at the start of the line will cause the system to remove the version.
# The format below is:
# name platform installation-relative-to-$ATLAS_LOCAL_ROOT_BASE version
#
[]
Athena i686 i686/Athena/Kits_SL4/13.0.40 AtlasProduction_13_0_40_1_i686_slc4_gcc
34_opt
- Athena i686 i686/Athena/Kits_SL4/13.0.40 AtlasProduction_13_0_40_2_i686_slc4_g
cc34_opt
Athena i686 i686/Athena/Kits_SL4/13.0.40 AtlasProduction_13_0_40_3_i686_slc4_gcc
34_opt
Athena i686 i686/Athena/Kits_SL4/13.0.40 AtlasProduction_13_0_40_4_i686_slc4_gcc
34_opt
Athena i686 i686/Athena/Kits_SL4/13.0.40 AtlasProduction_13_0_40_5_i686_slc4_gcc
34_opt
Athena i686 i686/Athena/Kits_SL4/13.0.40 AtlasProduction_13_0_40_i686_slc4_gcc34
_opt
Athena i686 i686/Athena/Kits_SL4/14.4.0 AtlasProduction_14_4_0_1_i686_slc4_gcc34
_opt
Athena i686 i686/Athena/Kits_SL4/14.4.0 AtlasProduction_14_4_0_i686_slc4_gcc34_o
pt
-- INSERT --                                7,1                                Top
```

- to remove

This file is generated for tier3 manager who only has to edit and prefix a "-".



Example: Install Athena

```
desilva@isabel:~/test/t2 — №1
# This file contains a listing of Athena software to add.
# A '+' at the start of the line will cause the system to add the version.
# The format below is:
# app platform installation-relative-to-$ATLAS_LOCAL_ROOT_BASE version
#
# For example,
# + Athena i686 i686/Athena/Kits_SL4/14.5.1 14.5.1+KV
# + Athena i686 i686/Athena/Kits_SL4/14.5.1 AtlasProduction_14_5_1_2_i686_slc4_g
cc34_opt
# + Athena x86_64 x86_64/Athena/Kits_SL4/13.0.30 AtlasProduction_13_0_30_x86_64_
slc4_gcc34_opt
#
# You can see a list of caches available from
# http://atlas-computing.web.cern.ch/atlas-computing/links/kitsDirectory/Produc
tion/cache/
#
# and, for available base releaes,
# pacman -d 1 -lc am-CERN # or your own repositories
#
#
+ Athena i686 i686/Athena/Kits_SL4/14.5.1 14.5.1+KV
+ Athena i686 i686/Athena/Kits_SL4/14.5.1 AtlasProduction_14_5_1_6_i686_slc4_gcc
34_opt
2,1 Top
```

+ to install

Skeleton file, with instructions, is generated for tier3 manager who will then edit it.



What does it mean for users ...

- ATLASLocalRootBase is installed:
 - These are wrappers and utility scripts,
 - If nfs exported, visitors can also access SW.
 - Users have to put these two lines in ~/.bashrc:

```
export ATLAS_LOCAL_ROOT_BASE=<path to ATLASLocalRootBase>
alias setupATLAS= \
'source ${ATLAS_LOCAL_ROOT_BASE}/user/atlasLocalSetup.sh'
```

- Or similar for *csh,

```
setenv ATLAS_LOCAL_ROOT_BASE <path to ATLASLocalRootBase>
alias setupATLAS \
'source ${ATLAS_LOCAL_ROOT_BASE}/user/atlasLocalSetup.csh'
```

- When user types “setupATLAS” ...



The user sees ...

```
desilva@atlasvm-200:~ — 5
[desilva@atlasvm-200 ~]$ setupATLAS
...Type localSetupDQ2Client to use DQ2 Client
...Type localSetupGanga to use Ganga
...Type localSetupGLite to use GLite
...Type localSetupPacman to use Pacman
...Type localSetupPandaClient to use Panda Client
...Type localSetupROOT to setup (standalone) ROOT
...Type saveSnapshot [--help] to save your settings
...Type showVersions to show versions of installed software
...Type createRequirements [--help] to create requirements/setup files
[desilva@atlasvm-200 ~]$
```

1. Environment is changed only when user types localSetup<tool> commands
2. Above commands have options; see --help

Advantages ...

- Consistent look and feel for sites/platform/OS,
 - No fumbling to know which path to setup tools.
- Up-to-date tools are available (daily cron job):
 - As soon as **tested** by ATLAS Canada.
- Python conflicts avoided ...
 - Or warnings if user insists on going forward,
 - eg. setup dq2 in different terminal window.
- User support is now much easier:
 - Only tested software installed,
 - “controlled” environment.

atlas-vm Virtual Machine

- A demonstration of manageTier3SW and ATLASLocalRootBase using atlas-vm ...
 - atlas-vm is a VMware virtual machine,
 - It is general purpose SL 4.7 32-bit;
 - can be used for non-ATLAS user tasks.
 - It can run on your laptop or desktop,
 - Eg. if desktop is non-SL(C) 4 ?
 - Fast setup platform + UI for grid submissions.

<https://twiki.atlas-canada.ca/bin/view/AtlasCanada/VMImage>
- Notice: manageTier3SW is useful on a single user machine as well as on cluster.

CernVM + manageTier3SW

- Note: atlas-vm is not the only VM for ATLAS...
- CernVM (nice work by Yushu Yao @ LBL):
 - Light-weight virtual machine (rPath Linux),
 - Nice features (web-based configuration, logbook, etc)
 - Multi-vendor (VMware, VirtualBox, Xen, etc),
 - Uses a web-based fs to distribute software,
 - Web fs (cvmfs) is also in atlasvm,
 - cvmfs: another way to access software on Tier3 !
 - ManageTier3SW integrated into CernVM.

<https://twiki.cern.ch/twiki/bin/view/Atlas/CernVM>



atlas-vm Movie

Note: this movie is targeted to Canadians:

- Examples with /atlas/ca proxy,
- Ganga and Panda both mentioned,

But it can be used by anyone !

Please play the video from

<http://trshare.triumf.ca/~desilva/ATLAS/talks/ATLASCanada-May2009/atlasvm-800x600.mov>

(preferably at 800 X 600 resolution & full screen)



Data Management

- Need a data manager for Tier-3 that
 - Fetches data (DPDs mainly) but can be any dataset / container, user created datasets,
 - Fetch with requester's proxy, (nearest Tier-2)
 - ATLAS does not like a single user to download too much data (~ 50 GB/day),
 - Only fetch data (dq2) if it does not exist locally.
 - Minimal maintenance, easy installation,
 - Minimal root access / run as unprivileged user,
 - Work has started on LDM ...

Local Data Management (LDM)

- Unprivileged account, client-server model:
 - Needs mysql (site) and myproxy server (each site or one for the cloud);
 - Local user registers with LDM (one time) information (email, etc) for notifications;
 - User subscribes a dataset/ (/ = or container):
 - Exists: return appropriate formatted file;
 - Otherwise, with the user's proxy, fetch dataset/;
 - DB tracks which datasets/ are in use at anytime;
 - Enforce quota in DB to force user unsubscribe dataset/ when not needed;
 - Server cleans up oldest & not needed datasets.



Conclusion

- ATLAS Canada:
 - Easy method to install tested software:
 - Up to date software installed with cron,
 - Used at TRIUMF, SFU, Toronto, atlasVM, ...
 - Consistent tool setups - helps user support,
 - A fast setup platform and UI to grid (atlas-vm),
 - Working on Local Data Management.
- Anyone is welcome to use and give feedback:
 - Canadian Analysis User Support eGroups.
- Thank you !
 - especially, Doug Benjamin and Rik Yoshida.

