

perfSONAR Toolkit Maintenance

Last Updated February 2nd, 2012

1. Introduction

The pS Performance Toolkit is currently in version 3.2.1.1, with only critical fixes expected in the first half of 2012. The following steps will prepare the nodes for operation over the next 4 – 6 months and correct some minor configuration issues.

2. MySQL Database

There are three services that use the MySQL database:

perfSONAR-BUOY (Throughput)
perfSONAR-BUOY (Latency)
PingER

The Latency nodes in particular receive a lot of MySQL traffic – perfSONAR-BUOY updates the database every minute for each of the testing pairs in the set. As such, periodic database re-maintenance is a good idea.

2.1 Problem

The databases were last backed up in the spring of 2011, they should be backed up again to increase access times. The backup scripts do not need any additional code updates, and as a part of the next release there will be an automated solution to their use. For now it is necessary for the node admin to run this process by hand.

2.2 Problem

- 1) Download the following scripts:

```
wget -c http://software.internet2.edu/usatlas/check_pSB_db  
wget -c http://software.internet2.edu/usatlas/cron-check_psb
```

- 2) Change the permissions on check_pSB_db:

```
chmod a+x check_pSB_db
```

- 3) Copy check_pSB_db to another location:

```
sudo cp check_pSB_db /opt/perfsonar_ps/perfsonarbuoy_ma/bin
```

4) Copy cron-check_psb to another location:

```
sudo cp cron-check_psb /etc/cron.d
```

5) Run the database check by hand (this may take a long time):

a. Latency Nodes

```
sudo /opt/perfsonar_ps/perfsonarbuoy_ma/bin/check_pSB_db --dbtype=owamp --verbose
```

b. Bandwidth Notes

```
sudo /opt/perfsonar_ps/perfsonarbuoy_ma/bin/check_pSB_db --dbtype=bwctl --verbose
```

6) Run the backup script (may take a while):

a. Latency Nodes

```
sudo mkdir -p /var/log/BACKUP/owamp
sudo /opt/perfsonar_ps/perfsonarbuoy_ma/bin/clean_pSB_db.pl --mysqldump-opts="--skip-lock-tables" --dbtype=owamp --maxdays=30 --owmesh-dir=/opt/perfsonar_ps/perfsonarbuoy_ma/etc/ --dumpdir=/var/log/BACKUP/owamp
```

b. Bandwidth Nodes

```
sudo mkdir -p /var/log/BACKUP/bwctl
sudo /opt/perfsonar_ps/perfsonarbuoy_ma/bin/clean_pSB_db.pl --mysqldump-opts="--skip-lock-tables" --dbtype=bwctl --maxmonths=3 --owmesh-dir=/opt/perfsonar_ps/perfsonarbuoy_ma/etc/ --dumpdir=/var/log/BACKUP/bwctl
```

3. OWAMP Testing

Each USATLAS node should be testing the same latency nodes. The following hostnames/IPs constitute the USATLAS set:

- BNL
 - lhcpfmon.bnl.gov - 192.12.15.26
- AGLT2
 - psmsu01.aglt2.org - 192.41.236.31
 - psum01.aglt2.org - 192.41.230.19
- MWT2
 - iut2-net1.iu.edu - 149.165.225.223
 - uct2-net1.uchicago.edu - 128.135.158.216
- NET2
 - atlas-npt1.bu.edu - 192.5.207.251
- SWT2
 - ps1.oceph.ou.edu - 129.15.40.231
 - netmon1.atlas-swt2.org - 129.107.255.26
- WT2
 - psnr-lat01.slac.stanford.edu - 134.79.104.208

Each LHCOPN node should be testing the same latency nodes. The following hostnames/IPs constitute the LHCOPN set:

- RAL
 - perfsonar-ps02.gridpp.rl.ac.uk - 130.246.179.197
- CC-IN2P3
 - ccperfonar-lhcopn.in2p3.fr - 193.48.99.79
- CERN
 - perfsonar-ps2.cern.ch - 128.142.223.237
- TRIUMF
 - ps-latency.lhcopn-mon.triumf.ca - 206.12.9.71
- SARA
 - ps.lhcopn-ps.sara.nl - 145.100.17.9
- ASGC
 - lhc-latency.twgrid.org - 117.103.105.188
- BNL
 - lhperfmon.bnl.gov - 192.12.15.26
- CNAF
 - perfsonar-ps.cnaf.infn.it - 131.154.254.11
- NDGF
 - perfsonar-ps.ndgf.org - 109.105.124.86
- PIC
 - perfsonar-ps-latency.pic.es - 193.109.172.189
- FNAL
 - psonar2.fnal.gov - 131.225.205.141
- KIT
 - perfsonar2-de-kit.gridka.de - 192.108.47.12

Each LHCONE node should be testing the same latency nodes. The following hostnames/IPs constitute the LHCONE set:

- AGLT2 (MSU)
 - psmsu01.aglt2.org
- AGLT2 (UM)
 - psum01.aglt2.org
- DESY-HH
 - perfsonar-ps-01.desy.de
- GRIF/LAL
 - psonar1.lal.in2p3.fr
- LRZ-LMU
 - lcg-lrz-perfs1.grid.lrz.de
- Napoli
 - perfsonar2.na.infn.it
- Prague
 - perfsonar.farm.particle.cz

- Tokyo
 - perfsonar1.icepp.jp
- Toronto
 - ps-latency.scinet.utoronto.ca
- ASGC
 - lhc-latency.twgrid.org
- BNL
 - lhcpfmon.bnl.gov
- CERN
 - perfsonar-ps2.cern.ch
- PIC
 - perfsonar-ps-latency.pic.es
- SARA
 - ps.lhcopn-ps.sara.nl
- TRIUMF
 - ps-latency.lhcopn-mon.triumf.ca
- KIT
 - perfsonar-de-kit.gridka.de

3.1 Problem

Verify that your host is testing the above (minus your own machine).

3.2 Solution Steps

- 1) Visit the web interface of your latency node. Select the “Scheduled Tests” menu:

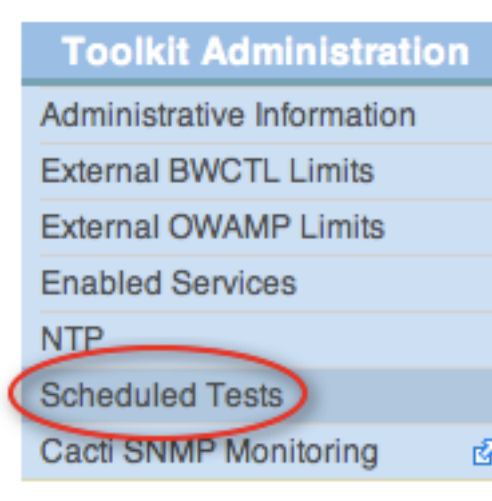


Figure 1 - Scheduled Tests

- 2) Select the test set for the OWAMP testing, and click “configure”:

Scheduled Tests Configuration Tool

Save Reset

Scheduled Tests	
one-way delay	One-Way Delay Test Configure Delete
ping test	Ping Test Configure Delete

Add New Throughput Test Add New Ping Test Add New One-Way Delay Test

Configure OWAMP Tests Port Range

Save Reset

Figure 2 - Edit the Testing Configuration

3) Verify the hosts above are in the “Test Members” area.

Test Members		
owamp.atla.net.internet2.edu	OWAMP Server at Internet2 in Atlanta, GA, USA	Delete
owamp.wash.net.internet2.edu	OWAMP Server at Internet2 in Washingont, D.C., USA	Delete
owamp.hous.net.internet2.edu	OWAMP Server at Internet2 in Houston, TX, USA	Delete

Figure 3 - Review Test Members

4) If they aren't, click “Add New Host”, and enter the missing test members.

Add Host To Test

Host

Port

Description

Add Cancel

Figure 4 - Adding a New Host

4. BWCTL Testing

Each USATLAS node should be testing the same bandwidth nodes. The following hostnames/IPs constitute the USATLAS set:

- BNL
 - lhcmn.bnl.gov - 192.12.15.23
- AGLT2

- psmsu02.aglt2.org - 192.41.236.32
 - psum02.aglt2.org - 192.41.230.20
- MWT2
 - iut2-net2.iu.edu - 149.165.225.24
 - uct2-net2.uchicago.edu - 128.135.158.219
- NET2
 - atlas-npt2.bu.edu - 192.5.207.252
- SWT2
 - ps2.oceph.ou.edu - 129.15.40.232
 - netmon2.atlas-swt2.org - 129.107.255.27
- WT2
 - psnr-bw01.slac.stanford.edu - 134.79.104.209

Each LHCOPN node should be testing the same bandwidth nodes. The following hostnames/IPs constitute the LHCOPN set:

- RAL
 - perfsonar-ps01.gridpp.rl.ac.uk - 130.246.179.196
- CC-IN2P3
 - ccperfonar-lhcopn.in2p3.fr - 193.48.99.79
- CERN
 - perfsonar-ps.cern.ch - 128.142.223.236
- TRIUMF
 - ps-bandwidth.lhcopn-mon.triumf.ca - 206.12.9.70
- SARA
 - ps.lhcopn-ps.sara.nl - 145.100.17.9
- ASGC
 - lhc-bandwidth.twgrid.org - 117.103.105.187
- BNL
 - lhcmmon.bnl.gov - 192.12.15.23
- CNAF
 - perfsonar-ow.cnaf.infn.it - 131.154.254.12
- NDGF
 - perfsonar-ps2.ndgf.org - 109.105.124.88
- PIC
 - perfsonar-ps-bandwidth.pic.es - 193.109.172.190
- FNAL
 - psonar1.fnal.gov - 131.225.205.139
- KIT
 - perfsonar-de-kit.gridka.de - 192.108.47.6

Each LHCONE node should be testing the same bandwidth nodes. The following hostnames/IPs constitute the LHCONE set:

- AGLT2 (MSU)
 - psmsu02.aglt2.org

- AGLT2 (UM)
 - psum02.aglt2.org
- DESY-HH
 - perfsonar-ps-02.desy.de
- GRIF/LAL
 - psonar2.lal.in2p3.fr
- LRZ-LMU
 - lcg-lrz-perfs2.grid.lrz.de
- Napoli
 - perfsonar.na.infn.it
- Prague
 - perfsonar-bw.farm.particle.cz
- Tokyo
 - perfsonar2.icepp.jp
- Toronto
 - ps-bandwidth.scinet.utoronto.ca
- ASGC
 - lhc-bandwidth.twgrid.org
- BNL
 - lhcmon.bnl.gov
- CERN
 - perfsonar-ps.cern.ch
- PIC
 - perfsonar-ps-bandwidth.pic.es
- SARA
 - ps.lhcopn-ps.sara.nl
- TRIUMF
 - ps-bandwidth.lhcopn-mon.triumf.ca
- KIT
 - perfsonar2-de-kit.gridka.de

4.1 Problem

Verify that your host is testing the above (minus your own machine).

4.2 Solution Steps

- 1) Visit the web interface of your latency node. Select the “Scheduled Tests” menu:

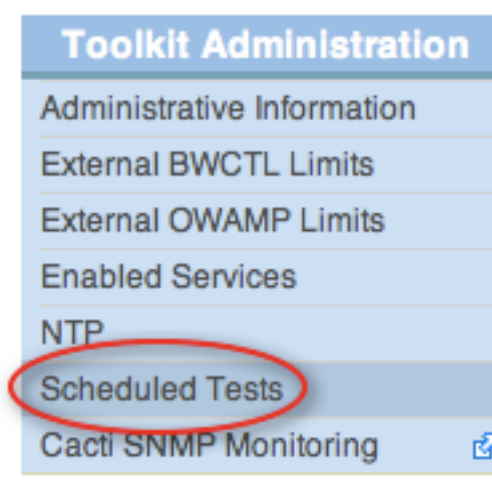


Figure 5 - Scheduled Tests

2) Select the test set for the BWCTL testing, and click “configure”:

Scheduled Tests Configuration Tool

Throughput tests will be running 48% of the time

Save Reset

Scheduled Tests		
Throughput Test (perfSONAR-BUOY/bwctl)	Throughput Test	Configure Delete
Throughput Test UDP	Throughput Test	Configure Delete

Add New Throughput Test Add New Ping Test Add New One-Way Delay Test

Save Reset

Figure 6 - Edit the Testing Configuration

3) Verify the hosts above are in the “Test Members” area.

Test Members		
ps-bw.es.net	BWCTL Server at ESnet in Berkeley, CA	Delete
nms-rthr2.newy32aoa.net.internet2.edu	BWCTL Server at Internet2 in New York, NY, USA	Delete
149.165.225.223	BWCTL Server at MWT2_IU in Indianapolis, Indiana, USA	Delete

Figure 7 - Review Test Members

4) If they aren't, click “Add New Host”, and enter the missing test members.

The image shows a dialog box titled "Add Host To Test". It has a close button in the top right corner. The dialog contains three input fields: "Host" (empty), "Port" (containing the text "861"), and "Description" (empty). Below the input fields are two buttons: "Add" and "Cancel".

Figure 8 - Adding a New Host

5. Traceroute Testing

Each USATLAS node should be testing traceroutes to the same *latency* nodes. The following hostnames/IPs constitute the USATLAS set:

- BNL
 - lhcpfmon.bnl.gov - 192.12.15.26
- AGLT2
 - psmsu01.aglt2.org - 192.41.236.31
 - psum01.aglt2.org - 192.41.230.19
- MWT2
 - iut2-net1.iu.edu - 149.165.225.223
 - uct2-net1.uchicago.edu - 128.135.158.216
- NET2
 - atlas-npt1.bu.edu - 192.5.207.251
- SWT2
 - ps1.oceph.ou.edu - 129.15.40.231
 - netmon1.atlas-swt2.org - 129.107.255.26
- WT2
 - psnr-lat01.slac.stanford.edu - 134.79.104.208

Each LHCOPN node should be testing traceroutes to the same *latency* nodes. The following hostnames/IPs constitute the LHCOPN set:

- RAL
 - perfsonar-ps02.gridpp.rl.ac.uk - 130.246.179.197
- CC-IN2P3
 - ccperfonar-lhcopn.in2p3.fr - 193.48.99.79
- CERN
 - perfsonar-ps2.cern.ch - 128.142.223.237
- TRIUMF
 - ps-latency.lhcopn-mon.triumf.ca - 206.12.9.71

- SARA
 - ps.lhcopn-ps.sara.nl - 145.100.17.9
- ASGC
 - lhc-latency.twgrid.org - 117.103.105.188
- BNL
 - lhcpfmon.bnl.gov - 192.12.15.26
- CNAF
 - perfsonar-ps.cnaf.infn.it - 131.154.254.11
- NDGF
 - perfsonar-ps.ndgf.org - 109.105.124.86
- PIC
 - perfsonar-ps-latency.pic.es - 193.109.172.189
- FNAL
 - psonar2.fnal.gov - 131.225.205.141
- KIT
 - perfsonar2-de-kit.gridka.de - 192.108.47.12

Each LHCONE node should be testing traceroutes to the same *latency* nodes. The following hostnames/IPs constitute the LHCONE set:

- AGLT2 (MSU)
 - psmsu01.aglt2.org
- AGLT2 (UM)
 - psum01.aglt2.org
- DESY-HH
 - perfsonar-ps-01.desy.de
- GRIF/LAL
 - psonar1.lal.in2p3.fr
- LRZ-LMU
 - lcg-lrz-perfs1.grid.lrz.de
- Napoli
 - perfsonar2.na.infn.it
- Prague
 - perfsonar.farm.particle.cz
- Tokyo
 - perfsonar1.icepp.jp
- Toronto
 - ps-latency.scinet.utoronto.ca
- ASGC
 - lhc-latency.twgrid.org
- BNL
 - lhcpfmon.bnl.gov
- CERN
 - perfsonar-ps2.cern.ch
- PIC

- perfsonar-ps-latency.pic.es
- SARA
 - ps.lhcopn-ps.sara.nl
- TRIUMF
 - ps-latency.lhcopn-mon.triumf.ca
- KIT
 - perfsonar-de-kit.gridka.de

5.1 Problem

Verify that your host is testing the above (minus your own machine).

5.2 Solution Steps

- 5) Visit the web interface of your latency node. Select the “Scheduled Tests” menu:

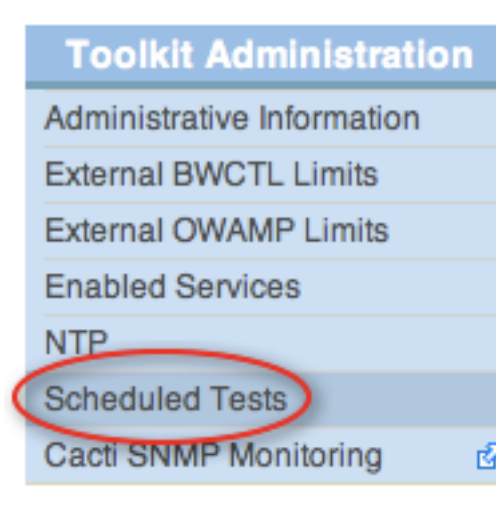


Figure 9 - Scheduled Tests

- 6) Select the test set for the Traceroute testing, and click “configure”:

Scheduled Tests		
OWAMP Tests	One-Way Delay Test	Configure Delete
LHCOPN	One-Way Delay Test	Configure Delete
USATLAS Traceroute	Traceroute Test	Configure Delete
LHCONE Traceroute	Traceroute Test	Configure Delete
LHCOPN Traceroute	Traceroute Test	Configure Delete
LHCONE Latency Test	One-Way Delay Test	Configure Delete
Ping Tests	Ping Test	Configure Delete

Figure 10 - Edit the Testing Configuration

7) Verify the hosts above are in the “Test Members” area.

Test Members		
ps1.ochep.ou.edu	1	Delete
psmsu01.aglt2.org	1	Delete
psnr-lat01.slac.stanford.edu	1	Delete
atlas-npt1.bu.edu	1	Delete
iut2-net1.iu.edu	1	Delete
netmon1.atlas-swt2.org	1	Delete
psum01.aglt2.org	1	Delete
uct2-net1.uchicago.edu	1	Delete

Figure 11 - Review Test Members

8) If they aren't, click “Add New Host”, and enter the missing test members.

Add Host To Test ✕

Host

Port

Description

Figure 12 - Adding a New Host

6. Adjusting BWCTL Ports

Due to the large number of potential BWCTL testing sites (USATLAS, LHCOPN, LHCONE) it is necessary to increase the available test ports on BWCTL nodes to prevent resource conflicts for a limited number of TCP sockets.

6.1 Problem

Verify that there are enough iperf and testing ports open in your BWCTL daemon configuration file. Add more, and open holes in the firewall if required.

6.2 Solution Steps

- 1) Open the `/etc/bwctld/bwctld.conf` file.
- 2) Make changes to support opening more ports for the “iperf_ports” option:

```
iperf_port 5001-5010
```

- 3) Note that there should not be a “#” in front of this command. Also note that any port range can be used, and that between 10 and 20 should be specified.
- 4) Make any changes to host/site firewalls for the ports specified in step 2.
- 5) N.B. Skip this step if are allowing BWCTL to use “any” port for testing (e.g. you do not have a site/host firewall). If you do have a site/host firewall, make changes to support opening more ports for the “peer_ports” option:

```
peer_port 10100-10130
```

- 6) Note that there should not be a “#” in front of this command. Also note that any port range can be used, and that at least 30 should be specified.
- 7) Make any changes to host/site firewalls for the ports specified in step 2.
- 8) Restart BWCTLD:

```
sudo /etc/init.d/bwctld restart
```