

# perfSONAR Toolkit Maintenance

*Last Updated February 4<sup>th</sup>, 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 routinely fill up with historical data. Database optimization works well in most cases, but performance tends to suffer as the number of tables and older (frequently not needed) data builds up. This maintenance is necessary to foster a responsive experience with MySQL, and it is recommended to be done every 6 months. As a part of the next release there will be an automated solution to their use, but 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 if there is lots of data):

##### 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
  - lhccperfmon.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
  - lhcterfmon.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:

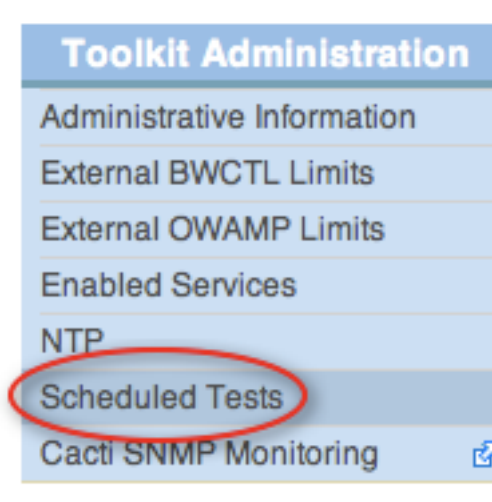


Figure 1 - Scheduled Tests

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

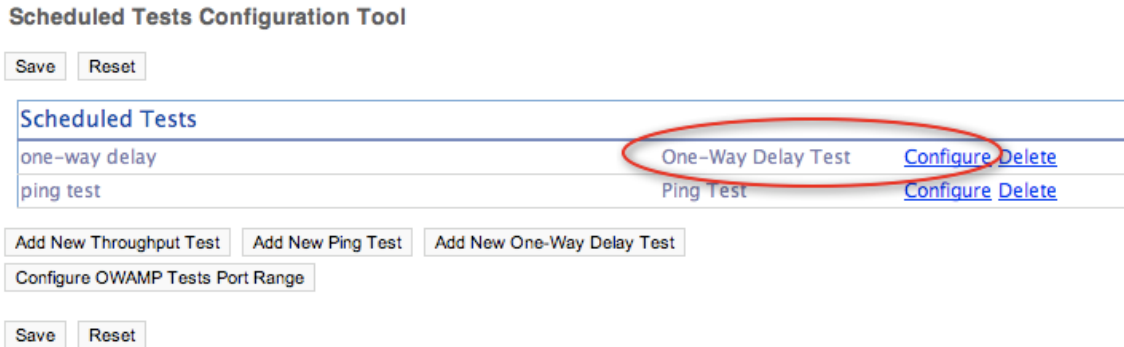


Figure 2 - Edit the Testing Configuration

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	<a href="#">Delete</a>
owamp.wash.net.internet2.edu	OWAMP Server at Internet2 in Washington, D.C., USA	<a href="#">Delete</a>
owamp.hous.net.internet2.edu	OWAMP Server at Internet2 in Houston, TX, USA	<a href="#">Delete</a>

Figure 3 - Review Test Members

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

**Add Host To Test** [X]

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

- lhcmmon.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
  - lhcmn.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:

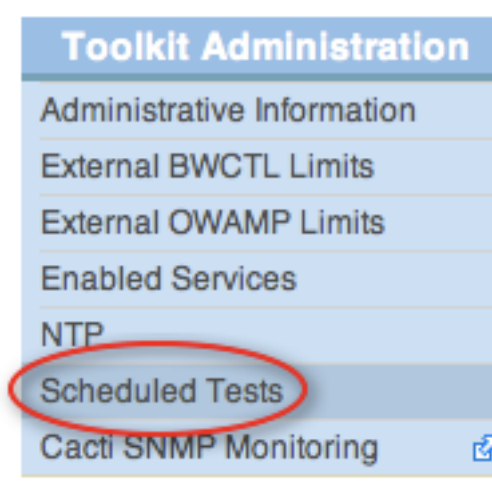


Figure 5 - Scheduled Tests

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	<a href="#">Configure</a> <a href="#">Delete</a>
Throughput Test UDP	Throughput Test	<a href="#">Configure</a> <a href="#">Delete</a>

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	<a href="#">Delete</a>
nms-rthr2.newy32aoa.net.internet2.edu	BWCTL Server at Internet2 in New York, NY, USA	<a href="#">Delete</a>
149.165.225.223	BWCTL Server at MWT2_IU in Indianapolis, Indiana, USA	<a href="#">Delete</a>

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 *latency* 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 *latency* 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 **latency** 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:

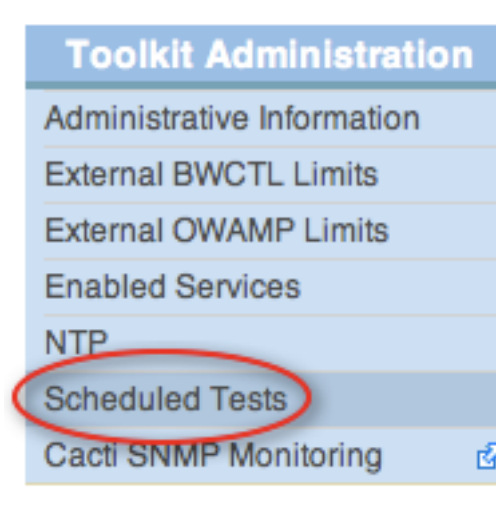


Figure 9 - Scheduled Tests

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

Scheduled Tests		
OWAMP Tests	One-Way Delay Test	<a href="#">Configure</a> <a href="#">Delete</a>
LHCOPN	One-Way Delay Test	<a href="#">Configure</a> <a href="#">Delete</a>
USATLAS Traceroute	Traceroute Test	<a href="#">Configure</a> <a href="#">Delete</a>
LHCONE Traceroute	Traceroute Test	<a href="#">Configure</a> <a href="#">Delete</a>
LHCOPN Traceroute	Traceroute Test	<a href="#">Configure</a> <a href="#">Delete</a>
LHCONE Latency Test	One-Way Delay Test	<a href="#">Configure</a> <a href="#">Delete</a>
Ping Tests	Ping Test	<a href="#">Configure</a> <a href="#">Delete</a>

Figure 10 - Edit the Testing Configuration

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

Test Members		
ps1.ochep.ou.edu	1	<a href="#">Delete</a>
psmsu01.aglt2.org	1	<a href="#">Delete</a>
psnr-lat01.slac.stanford.edu	1	<a href="#">Delete</a>
atlas-npt1.bu.edu	1	<a href="#">Delete</a>
iut2-net1.iu.edu	1	<a href="#">Delete</a>
netmon1.atlas-swt2.org	1	<a href="#">Delete</a>
psum01.aglt2.org	1	<a href="#">Delete</a>
uct2-net1.uchicago.edu	1	<a href="#">Delete</a>

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. Note that the GUI will suggest a number of ports that need to be open, make sure you are respecting this number (or higher, if possible).

### 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 5001-5100
```

- 3) Note that there should not be a “#” in front of this command. The GUI will suggest an amount of ports to be opened as you configure tests. It is **crucial** that you use this number, or higher, to prevent port conflicts. When in doubt, always make more available.
- 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
```