

PVFS2 Roll: Users Guide



Version 5.4 Edition



PVFS2 Roll: Users Guide :

Version 5.4 Edition

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Preface

The Rocks PVFS2 Roll contains packages, installation scripts and tools to help users deploy a PVFS2 instance on their cluster.

Chapter 1. Overview

Table 1-1. Summary

Name	pvfs2
Version	5.4
Maintained By	Rocks Group
Architecture	i386, x86_64
Compatible with Rocks®	5.4

Table 1-2. Roll Compatibility

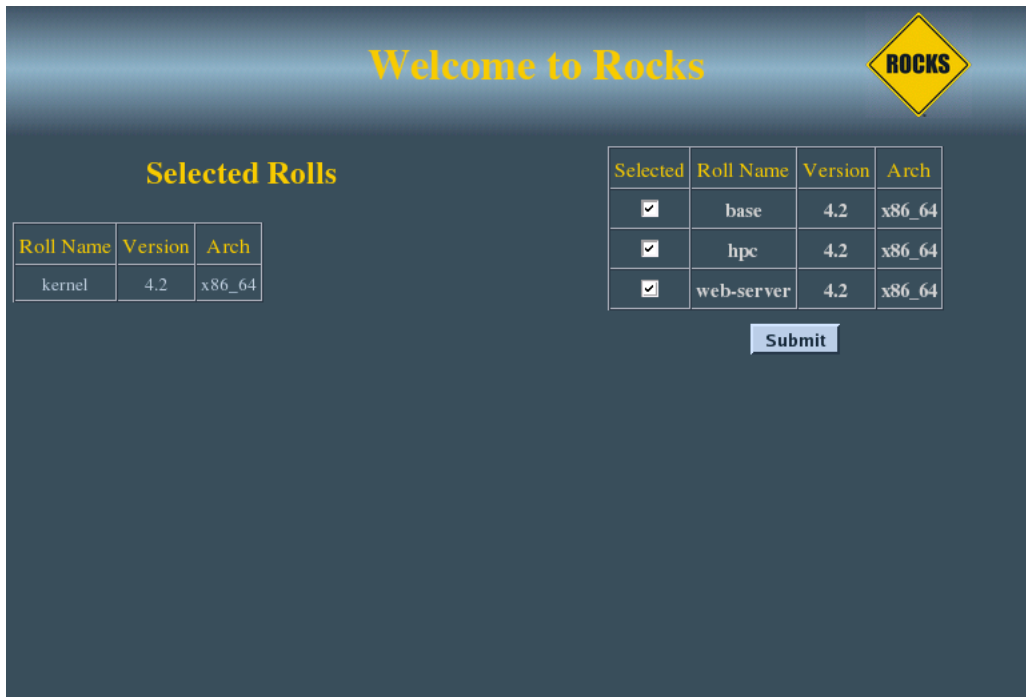
Roll	Requires ^a	Optional ^b	Conflicts
alpha		X	
area51		X	
base	X		
bio		X	
condor		X	
ganglia		X	
grid		X	
hpc		X	
java		X	
kernel	X		
os (disk 1)	X		
os (disk 2)	X		
os (disk 3)		X	
os (disk 4)		X	
os (disk 5)		X	
os (disk 6)		X	
os (disk 7)		X	
pbs		X	
service-pack		X	
sge		X	
viz		X	
web-server		X	
xen		X	

Roll	Requires ^a	Optional ^b	Conflicts
<p>Notes:</p> <p>a. You may also substitute your own OS CDs for the Rocks® OS Roll CDs. In this case you must use all the CDs from your distribution and not use any of the Rocks® OS Roll CDs.</p> <p>b. Only Rolls that have been verified as compatible with this Roll are listed. Other Rolls will likely work, but have not been tested by the maintainer of this Roll.</p>			

Chapter 2. Installing

2.1. On a New Server

The pvfs2 Roll should be installed during the initial installation of your server (or cluster). This procedure is documented in section 1.2 of the Rocks® usersguide. You should select the pvfs2 Roll from the list of available rolls when you see a screen that is similar to the one below.



2.2. On an Existing Server

The PVFS2 Roll can be installed on running frontend.

The following procedure will install the roll on the frontend. After the frontend reboots, the roll will be fully configured.

First download the PVFS2 Roll ISO from the Rocks web site. Then, as root, execute:

```
# rocks add roll pvfs2*iso
# rocks enable roll pvfs2
# cd /export/rocks/install
# rocks create distro
# rocks run roll pvfs2 | bash
```


The PVFS2 requires more manual steps after the above completes. This step is necessary as it adds a table to database and that procedure requires the root password. To complete the installation, as root execute:

```
# /opt/rocks/bin/mysql --user=root -p cluster < /tmp/pvfs2.sql
```

Then reboot:

```
# init 6
```

2.3. Adding the Roll to Nodes

To add the the PVFS2 Roll to the nodes of your cluster, you'll need to reinstall the nodes.

To reinstall all your nodes, as root execute:

```
# rocks run host /boot/kickstart/cluster-kickstart
```

Chapter 3. Configuring your PVFS2 Installation

3.1. Configuring a Metadata Server

After you install PVFS2 on your frontend, you need to specify a PVFS2 Metadata Server. A PVFS2 Metadata Server holds all the information about the files stored in a PVFS2 file system (for example, creation time, owner, group, size, etc.).

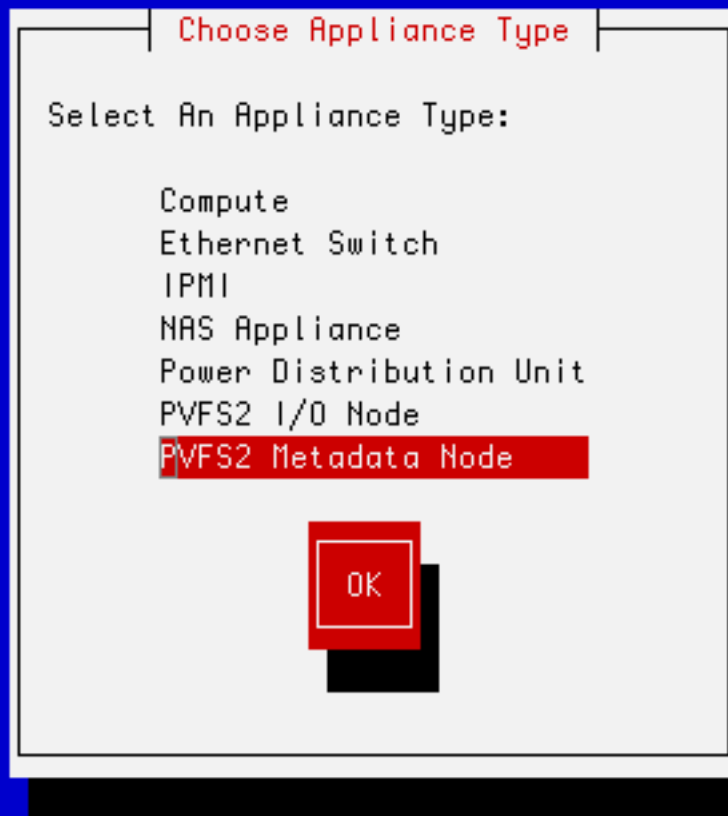


By default, the frontend is configured to be the PVFS2 Metadata Server.

Therefore, if you don't want to specify a different node in your cluster to be the PVFS2 Metadata Server, then you can skip this step.

If you wish to make one of the nodes in your cluster the PVFS2 Metadata Server, then you'll need to run `insert-ethers` and select *PVFS2 Metadata Node*.

```
Insert Ethernet Addresses -- version 5.3
Opened kickstart access to 10.1.0.0/255.255.0.0 network
```



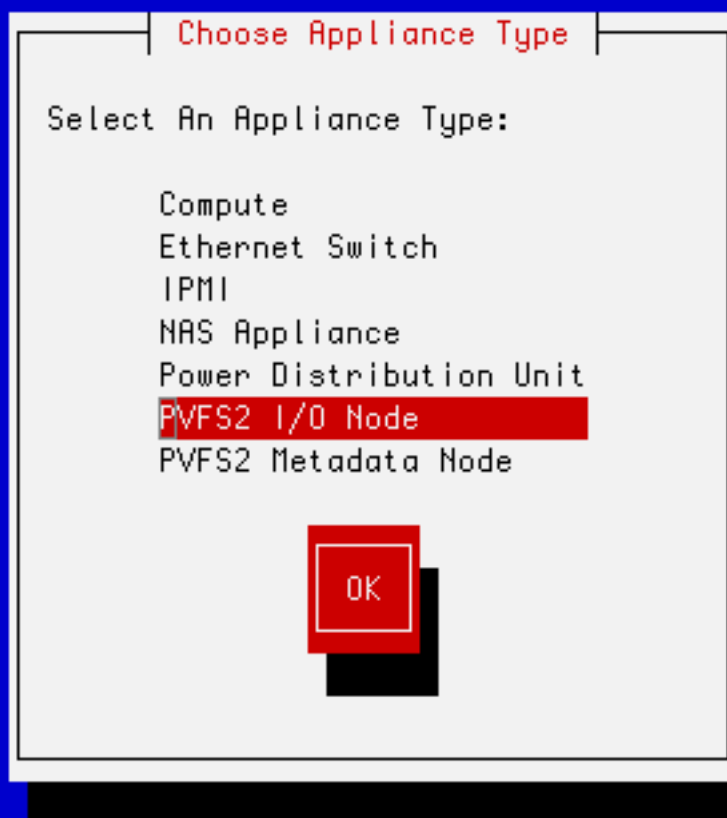
Then PXE boot the node you wish to be the PVFS2 Metadata Server (you can also boot the node with the Rocks Boot CD).

3.2. Configuring an I/O Server

After you install PVFS2 on your frontend, you need to specify at least one PVFS2 I/O Node. A PVFS2 I/O Node holds data blocks for PVFS2.

To make one of the nodes in your cluster a PVFS2 I/O Node, you'll need to run `insert-ethers` and select *PVFS2 I/O Node*.

```
Insert Ethernet Addresses -- version 5.3
Opened kickstart access to 10.1.0.0/255.255.0.0 network
```



Then PXE boot the node you wish to be a PVFS2 I/O Node (you can also boot the node with the Rocks Boot CD).

3.2.1. Configuring a Hybrid I/O Server

You can also specify a *hybrid* node that will be configured as a PVFS2 I/O Node *and* a Compute Node. Nodes that are in this configuration will serve PVFS2 blocks as well as have user jobs scheduled on them (e.g., SGE or PBS will schedule jobs on this node).



Installing *hybrid* nodes is highly discouraged.

This is because user jobs will be scheduled on hybrid nodes and user jobs have been known to crash nodes. When a PVFS2 I/O Node crashes, the entire PVFS2 file system will be offline.

To make one of the nodes in your cluster a hybrid node, you must first install a compute node in the standard way, then, assuming the compute node you want to convert into a hybrid node is named `compute-0-0`, execute:

```
# rocks set host attr compute-0-0 pvfs_io true
```

Then, reinstall the compute node.

3.3. Configuring Client Nodes

After you install your PVFS2 I/O Nodes and optionally a PVFS2 Metadata Server, you need to reinstall all your client nodes (e.g., your compute nodes). This will install the PVFS2 client software on the nodes so each node can mount the PVFS2 file system.

To reinstall your compute nodes, as root execute:

```
# rocks run host compute /boot/kickstart/cluster-kickstart
```

3.4. Applying the Configuration

After you install your PVFS2 I/O Nodes and optionally a PVFS2 Metadata Server and after you've reinstalled all your client nodes, you need to apply the new configuration to the cluster. To do this, execute:

```
# rocks sync pvfs
```

This responds with:

```
When you run this program, it will REMOVE the
previous PVFS2 installation. That is, all data
stored in the previous PVFS2 installation will
be LOST.
```

```
Are you sure you want to run this program?
Type YES to run this program:
```



If you answer *YES* and if you had a previous instance of PVFS2 running on your cluster, all data from the previous instance will be lost.

If you answer 'YES', then the following will occur:

- PVFS2 configuration files will be generated and sent to each PVFS2 I/O Node and the PVFS2 Metadata Server.
- The PVFS2 server process will be restarted on each PVFS2 I/O Node and the PVFS2 Metadata Server.
- The PVFS2 mount point name will be sent to all nodes in the cluster.
- All nodes in the cluster will mount the PVFS2 file system.

The default mountpoint is `/mnt/pvfs2`. So to test your installation, execute:

```
# ls /mnt/pvfs2
```

You can also run the above command on some client nodes to see if `/mnt/pvfs2` mounted.

Chapter 4. Customizing your PVFS2 Installation

4.1. Changing the PVFS2 Mountpoint

The default PVFS2 mountpoint is `/mnt/pvfs2`. To change it, edit the file `/opt/pvfs2/conf/variables`, and change the value:

```
PVFS2_MOUNTPOINT=/mnt/pvfs2
```

For example, to change the mountpoint to `/my/mount`, the line above should look like:

```
PVFS2_MOUNTPOINT=/my/mount
```

After you modify the file above, you must apply the change to the cluster -- see the section [Applying the Configuration](#) for details.

4.2. Changing the Storage Partition Used by a PVFS2 Storage Server

The default partition used by PVFS2 storage servers (PVFS2 I/O Nodes and the PVFS2 Metadata Server) is `/state/partition1`. To change it, you'll need to run Rocks command line programs.

To check which partition a node is using, run the command:

```
# rocks list host pvfs partition pvfs2-io-0-0
```

This will produce output like:

```
PVFS PARTITION  
/state/partition1
```

To change the partition to `/mydata`, execute the command:

```
# rocks set host pvfs partition pvfs2-io-0-0 part=/mydata
```

After you modify the PVFS2 partition info for a storage node, you must apply the change to the cluster -- see the section *Applying the Configuration* for details.

At this time, only one partition per storage node is supported.

Chapter 5. Command Reference

5.1. dump

5.1.1. dump host pvfs

rocks dump host pvfs [host...]

Dump host PVFS2 information as Rocks commands.

arguments

[host]

Zero, one or more host names. If no host names are supplied, information for all hosts will be listed.

examples

```
$ rocks dump host pvfs pvfs2-io-0-0
```

Dump PVFS2 info for pvfs2-io-0-0.

```
$ rocks dump host pvfs
```

Dump PVFS2 info for all configured PVFS2 servers.

5.2. list

5.2.1. list host pvfs partition

rocks list host pvfs partition {host...} [part=*string*]

List the partition that a PVFS2 server will use to store data blocks.

arguments

host

One or more host names.

parameters

[part=*string*]

The partition on the host that will be used to store PVFS2 data blocks.

5.3. remove

5.3.1. remove host pvfs partition

rocks remove host pvfs partition {host}

Remove the partition that is associated with a PVFS2 server. This partition is the location on the PVFS2 server that is used to store data blocks. This command simply removes the partition configuration from the frontend's database. It does not remove data on the PVFS2 server.

arguments

host

One host name.

examples

```
# rocks remove host pvfs partition pvfs2-io-0-0
```

Remove the partition entry in the database for pvfs2-io-0-0.

5.4. report

5.4.1. report pvfs

rocks report pvfs

Generates the file system configuration file for PVFS2.

examples

```
$ rocks report pvfs
```

5.5. set

5.5.1. set host pvfs partition

```
rocks set host pvfs partition {host...} [part=string]
```

Set the partition that a PVFS2 server will use to store data blocks.

arguments

host

One or more host names.

parameters

[part=*string*]

The partition on the host that will be used to store PVFS2 data blocks.

examples

```
# rocks set host pvfs partition pvfs2-io-0-0 part="/mydata"
```

Set the PVFS2 data directory on pvfs2-io-0-0 to /mydata.

5.6. sync

5.6.1. sync pvfs

```
rocks sync pvfs
```

Generates new PVFS2 configuration files for each PVFS2 storage server, then reconfigures the PVFS2 storage system. This command also remounts the PVFS2 file system on all clients.

examples

```
# rocks sync pvfs
```

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Rocks(r)
www.rocksclusters.org
version 5.4 (Maverick)

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B.1. PVFS2

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Version 2.1, February 1999

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```
*****
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*****
```

Notes

1. <http://cvs.rocksclusters.org>