Pivotal HD Enterprise

Version 2.1.0

Rev: A01 – September 18, 2014

What's in the Release Notes

This document provides information related to the Pivotal HD Enterprise 2.1.0 release. It includes the following topics:

Welcome to Pivotal HD Enterprise

Pivotal HD Enterprise is an enterprise-capable, commercially supported distribution of Apache Hadoop 2.2 packages targeted to traditional Hadoop deployments.

Pivotal HD Enterprise enables you to take advantage of big data analytics without the overhead and complexity of a project built from scratch. Pivotal HD Enterprise is Apache Hadoop that allows users to write distributed processing applications for large data sets across a cluster of commodity servers using a simple programming model. This framework automatically parallelizes Map Reduce jobs to handle data at scale, thereby eliminating the need for developers to write scalable and parallel algorithms.

For more information about Apache Hadoop, see the Apache Hadoop home page: http://hadoop.apache.org/

⚠ This document does not include information about issues and features related to Pivotal Command Center's UI functionality.
For release information about that component, see the *Pivotal Command Center Release Notes*.

PHD Components

Pivotal HD Enterprise 2.1.0 includes the following open source Apache stack, Pivotal, and other components:

Core Apache Stack

Component	Version	Description
Hadoop HDFS	2.2.0	HDFS: A Hadoop distributed file system (HDFS).
Hadoop YARN	2.2.0	YARN: Next-generation Hadoop data-processing framework.
Pig	0.12.0	Procedural language that abstracts lower level MapReduce.
Hive	0.12.0	Data warehouse infrastructure built on top of Hadoop.
HCatalog	0.12.0	HCatalog is a table and storage management layer for Hadoop that enables users with different data processing tools – Pig, MapReduce, and Hive – to more easily read and write data on the grid.
HBase	0.96.0	Database for random real time read/write access.
Mahout	0.7	Scalable machine learning and data mining library.
Zookeeper	3.4.5	Hadoop centralized service for maintaining configuration information, naming, providing distributed synchronization, and providing group services.

Component	Version	Description
Flume	1.4.0	A tool used for collecting and aggregating data from multiple sources to a centralized data store.
Sqoop	1.4.2	A tool for transferring bulk data between Apache Hadoop and structured datastores.
Oozie	4.0.0	A workflow scheduler system to manage Apache Hadoop jobs. Oozie Workflow jobs are Directed Acyclical Graphs (DAGs) of actions. Oozie Coordinator jobs are recurrent Oozie Workflow jobs triggered by time (frequency) and data availability.

Pivotal and Other Components

Component	Version	Description
Pivotal Command Center	2.3	A command line and web-based tool for installing, managing and monitoring your Pivotal HD cluster.
*Pivotal HAWQ	1.2.1	HAWQ is a parallel SQL query engine that combines the merits of the Greenplum Database Massively Parallel Processing (MPP) relational database engine and the Hadoop parallel processing framework.
*Pivotal HAWQ - PXF	2.3	Extensibility layer to provide support for external data formats such as HBase and Hive.
**GemFire XD	1.3	A memory-optimized, distributed data store that is designed for applications that have demanding scalability and availability requirements.
Hamster	1.1	Developed by Pivotal, Hamster (beta) is a framework which enable users running MPI programs on Apache Hadoop YARN platform. (OpenMPI is a A High Performance Message Passing Library)
GraphLab	2.2	GraphLab is a powerful new system for designing and implementing parallel algorithms in machine learning. It is a graph-based, high performance, distributed computation framework written in C++ that makes use of MPI and has its own programming model. Note that this service is in Beta, so only community support is provided. Interested customers should contact their account managers if they plan to use GraphLab in production.

* Distributed with Pivotal Advanced Database Services (ADS) 1.2

** Distributed as part of Pivotal Real Time Services (PRTS)

Software Requirements

Java

The Oracle JDK 1.7 is required to be installed prior to a cluster installation. Instructions for checking for, and downloading the Oracle JDK are included in the installation process described in the *PHD Installation and Administrator Guide*.

⚠️ PHD 2.1.0 has been tested with JDK 1.7 (u45)

Operating System/Browser

Product	OS/Browser
Pivotal HD	RedHat 64-bit: 6.4, 6.5 CentOS 64-bit: 6.4, 6.5
Pivotal Command Center	RedHat 64-bit: 6.4, 6.5 CentOS 64-bit: 6.4, 6.5 Firefox 21 or higher Google Chrome 28.0 or higher Internet Explorer 9 or higher
HAWQ	RedHat 64-bit: 6.4, 6.5 CentOS 64-bit: 6.4, 6.5
PXF	RedHat 64-bit: 6.4, 6.5 CentOS 64-bit: 6.4, 6.5

What's New

In addition to bug fixes and performance and functionality improvements, this release includes the following new and improved features:

- **OS Support**

  - RedHat and centOS 6.5 has been added. 6.2 support removed.

- **Version Updates**

  - Pivotal HAWQ has been upgraded to 1.2.1.

  - Pivotal's Hamster has been upgraded to version 1.1

  - GraphLab 2.2 has been added to this distribution.

  - GemFireXD: GemFireXD has been upgraded to 1.3.0.

- **Security**

  - The process to set up Kerberos authentication has been simplified in this release. You can now set up a new Kerberos server, or connect to an existing Kerberos server during the installation process; or anytime after. Instructions are provided in the *PHD Installation and Administrator Guide*.

  - We are releasing a beta-version of a cluster-wide user-management tool. This tool allows the cluster administrator to create new users by running a simple command on the PCC node. These users can then login to any cluster node and run hadoop jobs securely. Internally this feature uses built-in LDAP (to keep a list of users) and Kerberos servers (for password management), but the cluster administrator does not need to explicitly install, configure or manage these servers.

  - We have documented the steps to setup user management using Corporate Active Directory Server for the Kerberos setup. See the *Security* section of the *PHD Stack and Tools Reference Guide* for details.

  - A new field in the `clusterConfig.xml` file now supports customer-defined, non-standard `krb5.conf` locations.

- **High Availability**

  - High availability is now enabled by default. Instructions for disabling and re-enabling HA are provided in the *PHD Installation and Administrator Guide*.

- **PHD API Access**

  - In order to access the PHD Rest APIs from the Admin node, you need to authenticate using OAuth; instructions for doing this have been added to the *PHD Installation and Administrator Guide*.

Installation Notes

For a brief summary of the contents of this release and Getting Started instructions, refer to the `readme.txt` file.

Pivotal Command Center (PCC) provides a command line tool (CLI) and a Web-based user interface for installing and upgrading, monitoring, and management of Pivotal HD, as such, it must be installed first. To install Pivotal Command Center and the other Pivotal HD components via the CLI, follow the instructions in the *PHD Installation and Administrator Guide*.

Pivotal HD Enterprise 2.1.0 is made up of the following tar files:

- Pivotal HD Enterprise: `PHD-2.1.0.0-175.tar.gz`

- Pivotal Command Center: `PCC-2.3.0-443.x86_64.tar.gz`

- Pivotal HAWQ, PXF (Pivotal ADS): `PADS-1.2.1.0-10335.tar.gz`

- Pivotal GemFireXD (PRTS): `PRTS-1.3.0-48613.tar.gz`

These files are available from Pivotal Network or by contacting your account manager.

Note: Pivotal Network also provides the binaries for earlier releases (PHD 2.0.1 and PHD 1.1.1). For releases prior to PHD 1.1.1, go to EMC's Download Center.

Pivotal Command Center's CLI does not currently support the installation of the following Pivotal HD components, which have to be installed manually.

- Flume, Sqoop, Oozie, Hcatalog, Hamster and GraphLab: See the latest *Pivotal HD Stack and Tool Reference Guide* for manual installation information.

Upgrade Notes

- If you are upgrading to a new version of Pivotal HD, make sure you are also upgrading to compatible versions of Pivotal Command Center and Pivotal ADS (optional). See PHD Components for more information)

- We recommend that you always back up your data before performing any upgrades.

- We recommend you upgrade Pivotal HD via the PCC command line interface (CLI) (ICM client). Instructions for upgrading components using the CLI, see the *PHD Installation and Administrator Guide*.

- If you are upgrading from PHD 1.1.1, you cannot upgrade High Availability enabled clusters or secure clusters. Before upgrading, revert clusters to non-secure and non-HA enabled. See the *PHD Installation and Administrator Guide* for details. If you are upgrading from PHD 2.0.1, the state of your cluster before upgrade (secure/non secure, HA/Non HA) can be maintained.

- Instructions for manually upgrading Pivotal HAWQ are provided in the *HAWQ Installation and Upgrade Guide*.

Supported Upgrade Paths

This release of Pivotal HD 2.1.0 supports upgrades from:

- PHD Enterprise 2.0.1 and 1.1.1

- Pivotal Command Center 2.2 and 2.1

- Pivotal HAWQ 1.2.0.1 and 1.1.4

- Pivotal HAWQ - PXF 2.2 and 2.1

Additions to Apache

Apache Patches

The following patches were applied to PHD 2.1.0:

Component	Apache Issue	Description
HADOOP	HDFS-5557	Write pipeline recovery for the last packet in the block may cause rejection of valid replicas.
HADOOP	HDFS-5710	`FSDirectory#getFullPathName` should check inodes against null.
HIVE	HIVE-5618	Hive local task fails to run when run from Oozie in a secure cluster.
OOZIE	OOZIE-1447	Sqoop actions that don't launch a map reduce job fail with an `IllegalArgumentException.`
HIVE	HIVE-6585	Bucket map join fails in presence of `_SUCCESS` file

Pivotal Apache Modification

The following changes were applied to PHD's Apache stack:

Apache Component	Pivotal Issue	Description
HIVE	HD-10534	Hive Exception Rename issue.
HADOOP	HD-7286	Ability to configure Jetty's header buffer size.
PIG	HD-10444	Pig fails to load into HBase. (`java.lang.NoClassDefFoundError`).

Resolved Issues

This section lists issues that have been resolved in Pivotal HD 2.1.0. For issues resolved in previous releases, see the corresponding release notes available at docs.pivotal.io.

⚠ For resolved issues relating to Pivotal Command Center's UI functionality, see the corresponding PCC Release Notes.

Issue	Description
HD-6149	Reconfiguration changes were not implemented following an upgrade or reconfiguration.
HD-10922	The previous security implementation would override user-provided values in cluster configuration files.
HD-10657	Oozie was unable to execute Hive action due to a missing jar file.
HD-9656	The Hive metastore and the Hive server were both writing to the same log file. They now each have their own log files.
HD-8633	When upgrading Oozie from PHD 2.0 to PHD 2.x, the symlink `/etc/gphd/oozie/conf` was removed causing the Oozie service to be unable to start.
HD-10779	HIVE: Hive table was not ignoring `_SUCCESS` flag file in table directory (Duplicated to HIVE-6585).
HD-9912	Apache issue: Write pipeline recover for the last packet in the block may cause rejection of valid replicas. Fixed by Apache patch HDFS-5557
HD-9429/ HD-10382	SQOOP: Import to HBase did not work on a secure cluster.
HD-9090	Zookeeper exception appeared in HBase shell running on a secure PHD cluster by non-root user.
HD-11251 HD-10444	Missing `hbase.jar` file was causing Pig attempts to access HBase to fail.
HD-11000	`icm_client` deploy and `icm_client` reconfigure failed to install the Pig client.
HD-10956	If a savenamespace action was triggered following a truncate (HAWQ transaction abort) in HDFS, the saved fsimage was corrupted, and HDFS was not able to restart.
HD-10703	Oozie Hive action failed in a secure PHD cluster.
HD-10654	Log exceptions were still being thrown when a cluster was stopped. This caused an excessive amount of log entries.
HD-10534	When using Oozie with exceptionally high workflows, a Hive Exception rename issue could occur.
HD-10527/ HD-9010	Command Center UI did not properly display MapReduce Job Monitor and Yarn Application Monitor information.
HD-10498	Not all installation/upgrade errors were being logged correctly.
HD-10145	`container-executor.cfg` had incorrect permissions after running `reconfigure` with security enabled; causing MapReduce jobs to fail.
HD-10033	A new field in the `clusterConfig.xml` file now supports customer-defined, non-standard `krb5.conf` locations.
HD-9439 HD-9093	Problems were caused by the home directory location for `gpadmin` user being hardcoded to `/home/gpadmin`. We now allow non-standard, customer-defined home directories for `gpadmin`.
HD-9288	`scanhosts` would fail if iptables was not installed.
HD-8953	Stale Mapreduce jobs were not removed from PCC UI following an upgrade.

Issue	Description
HD-8712	HA- ZKFC failure results in both NNs being in standby.

Known Issues

This section lists the known issues in Pivotal HD Enterprise. A workaround is provided where applicable.

⚠️ For known issues relating to Pivotal Command Center's UI functionality, see the corresponding *PCC Release Notes*

Component	Issue	Description
ICM	HD-11635	On heavily-loaded, large clusters with multiple jobs running over an extended period of time, PCC UI and PHDMgr service may become unresponsive. **Workaround**: As `root` on PCC admin node, restart the commander service by running `service commander restart`. The cluster services (hadoop, HAWQ etc) doc not need to stopped or restarted.
System Management	HD-10495	In some cases where FQDN is not set up properly, you will not be able to view log files.
ICM	HD-10436	`Scanhosts` and `Preparehosts` commands cannot properly handle blank lines.
ICM	HD-11566/ HD-10699	Modifications made to following template files will not be propagated to the host machines. `hive/hive-env.shhbase/hbase-env.shhadoop-metrics.properties` `hbase/log4j.propertiespig/log4j.propertiespig/pig.properties` `mahout/mahouthadoop/hadoop-conf/madoop-metrics2.properties` `hadoop/hadoop-conf/log4j.properties`**Workaround:** You need to make the modifications on the host machines after the deploy/reconfigure command is run.
HIVE	HD-9654	Hive can not load local data to hive table on federation cluster.
YARN	HD-11277	Fair scheduler WEB UI shows all jobs in queue are pending, but the command line tool `yarn application -list` show all jobs are running.
YARN	HD-11280	Fair scheduler stops submitting jobs even there are no, or very few jobs running.
ICM	HD-11349	GemFireXD may fail if it is not co-located with Hive.
ICM	HD-11346	Upgrades from PHD 1.1.1 to 2.1.0 with PXF installed fail if the hive server is not co-located wi the Name Node. **Workaround:** Add the `hive.noarch` package on the Name Node and copy `hive-site.xɪ` from the hive-server node to the Name Node machine.

Component	Issue	Description
ICM	HD-11347	Namenode does not start if Journal port is changed from the default (8485). **Workaround**: Add the following to `hdfs-site.xml` before deploying the cluster. ```<property>\n <name>dfs.journalnode.rpc-address</name>\n <value>0.0.0.0:${journalport}</value>\n</property>```
HADOOP	HD-11208	HDFS-6804: Race condition between transferring block and appending block causes "Unexpected checksum mismatch exception".
Install/Upgrade	HD-7339	If Hbase master is installed all alone without any other Hadoop roles, the upgrade from an old version of stack to newer version fails. **Workaround**: Stop Hbase, manually run `yum install hadoop-hdfs-<new version>` o the Hbase master node and restart Hbase.
Install/Upgrade	CC-3494	Install/Upgrades: If the RHEL ssl certificate for subscription-manager plugin has expired, yum will fail. **Workaround**: If `yum -list` reports an error on any of the cluster nodes then check the yum configurations files, /etc/yum.repos.d/ and make sure all remote repositories are DNS resolvable.

Install/Upgrade	HD-9676	If Hive is part of your PHD deployment; `java-1.5.0-gcj-1.5.0.0-29.1.el6.x86_64` w be installed on your hive server node overriding the `/usr/bin/java` to point to java-1.5.0-g instead of the Java7 you have provided as part of your base PHD deployment. This can cause issues with services that don't explicitly set the Java path (GemfireXD for example).
		
		Workaround:
		
		Following PHD deployment, set `/usr/bin/java` as follows:
		
		Either:
		`ln -f -s /usr/java/default/bin/java /usr/bin/java`
		
		or
		
		`ln -f -s /usr/java/latest/bin/java /usr/bin/java`

Hadoop	HD-8960	In environments using LDAP authentication, Namenode can fail when running queries due to JVM crash. Workaround: Add the following parameter to core-site.xml: ```<property>\n <name>hadoop.security.group.mapping</name>\n <value>org.apache.hadoop.security.ShellBasedUnixGroupsMapping</valu\n</property>```

Component	Issue	Description
HDFS	HD-9153	Namenode WebUI browse file system fails with secure HDFS.
General	HD-8493	Prepare host command fails if the root password contains certain special characters, for example: $

General	HD-7296	Some `icm_client` commands are not supported on FIPS mode-enabled clusters.
		
		The following ICM commands work on FIPS mode:
		
		`icm_client list`, `start`, `stop`, `preparehosts`, `scanhosts`, `import`, `fetch-templat`
		`fetch-configuration`
		
		The following ICM commands DO NOT work on FIPS mode:
		
		`deploy`, `uninstall`, `reconfigure`, `add-slaves`, `remove-slaves`
		
		Workaround: Disable FIPS, run the required commands, then renable FIPS.

General	HD-8926	Single-node installations fail due to a Postgres configuration issue that blocks the ip connectic needed to create hive metastore to create schema.
		
		Workaround:
		
		After installing PCC, but before cluster deployment, do the following:
		
		1. If they do not already exist, add the following lines to `/var/lib/pgsql/data/postgresql.conf`:
		
		`listen_addresses = '*' standard_conforming_strings = off`
		
		Notes:
		
		If these two lines did not exist they would automatically be added after the deployment operation.
		Another, `listen_address = 'localhost'` also exists but is commented out.
		
		2. Check that the following lines exist as shown below in `/var/lib/pgsql/data/pg_hba.conf`
		
		`# "local" is for Unix domain socket connections only`
		`local all all trust`
		
		`# IPv4 local connections:`
		`host all all 0.0.0.0 0.0.0.0 trust`
		
		`# IPv6 local connections:`
		`host all all ::1/128 trust`
		
		3. For your changes to take effect, restart postgres:
		`sudo /etc/init.d/postgresql restart`

General	CC-3501	Pivotal Command Center hostnames can only contain lower case letters.

Component	Issue	Description
General	HD-2209	After uninstalling a cluster, some of the following RPMs may be left behind: • `bigtop-jsvc.x86_64` • `bigtop-utils.noarch` • `zookeeper.noarch` • `zookeeper-server.noarch` closed as dup, need to check
General	HD-9126	PHD CLI currently does not support downgrading the Hadoop version on the entire cluster.
General	HD-9105	Sqoop cannot be installed via the PHD CLI. See the *PHD Stack and Tool Reference Guide* for details on installing Sqoop manually.
General	HD-9106	Flume cannot be installed via the PHD CLI. See the *PHD Stack and Tool Reference Guide* for details on installing Flume manually.
General	HD-2909	nmon does not monitor when there are multiple clusters. **Workaround**: After the second cluster install perform the following from the Admin node: Copy `/etc/nmon/conf/nmon-site.xml` to all the cluster hosts (same location) `massh hostfile verbose 'sudo service nmon restart'` (hostfile must contain all the existing cluster hosts)
Stack Integration	HD-8084	Attempts to copy a large file to a HDFS NFS mounted directory could cause the system to har
Stack Integration	HD-9399	Writing to an HBase table threw an `IllegalArgumentException`, causing job submission fail.

Pivotal HD Enterprise Documentation

Documentation for all releases of Pivotal HD and related products is available in PDF and HTML format on our website at pivotalhd.docs.pivotal.io.

In addition, you can still access previous versions of Pivotal HD product documentation from EMC's Support Zone.