# Technical white paper

## HP ConvergedSystem 300 for Microsoft Analytics Platform System

### Getting started guide V2 / AU1

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**Executive summary**

The HP ConvergedSystem 300 for Microsoft Analytics Platform System is a purpose-built solution developed through collaborative engineering efforts between HP and Microsoft®. Designed to simplify the implementation and management of an enterprise data warehouse environment and optimized for Microsoft SQL Server 2012 Parallel Data Warehouse Edition and Microsoft HDInsight, HP ConvergedSystem 300 for Microsoft Analytics Platform System provides excellent performance through Massively Parallel Processing (MPP) for both relational database workloads and Hadoop data workloads.

HP ConvergedSystem 300 for Microsoft Analytics Platform System is a massively parallel, scale-out, shared-nothing architecture that operates as a single entity. The approach to servicing the unit, including hardware replacement or driver and firmware updates, contrasts with scale-up, SMP server architecture maintenance methodologies.

**Important**

HP supports only the HP approved firmware and driver versioning contained in the HP ConvergedSystem 300 for Microsoft Analytics Platform System Support Pack (see, HP ConvergedSystem 300 for Microsoft Analytics Platform System Support Pack).

HP ConvergedSystem 300 for Microsoft Analytics Platform System uses a very tightly controlled composition of firmware and drivers. HP has completed extensive testing, with the specific firmware and drivers delivered from the factory, as well as those delivered in the support pack.

This paper assumes you have read the Solution Architecture white paper for the ConvergedSystem 300 for Microsoft Analytics Platform System, which you can find from hp.com/go/convergedsystem/cs300aps.

**Solution overview**

HP ConvergedSystem 300 for Microsoft Analytics Platform System uses a virtualized cluster architecture to deliver both SQL Server 2012 Parallel Data Warehouse (PDW) capabilities as well as Hadoop data cluster capabilities through Microsoft HDInsight (HDI). This section provides information on the available servers, as well as diagrams to help you locate the servers in your configuration.

**Base Scale Unit**

The Base Scale Unit is the smallest HP ConvergedSystem 300 for Microsoft Analytics Platform System configuration available, including the minimum amount of hardware and software (PDW Region only) and includes the following:

- Two FDR InfiniBand switches
- Two HP 5120-24G EI switches
- Two management servers, HST01 (the primary “Orchestration Server (PDW)”) and HST02 (the primary failover server)
- Two scale unit servers, HSA01 and HSA02, along with one D6000 disk enclosure

The systems in this base scale unit perform the following functions:

- HST01 runs four virtual machines and one service:
  - CTL01 – “Control Node”, runs MPP engine, controls DMS on all nodes, is the location where client applications connect.
  - MAD01 – Provides a staging location for software upgrades and patch deployment, holds software images in case a node needs re-imaging, and holds Active Directory for the PDW (also known as the workload) domain.
  - AD – Active Directory for the Fabric Domain, owning all hardware and iSCSI Virtual Machines.
  - VMM – Hosts System Center 2012 Virtual Machine Manager, performing VM provisioning and management. Also provides Windows® Server Update Services (WSUS) for Windows Update.
  - Corralling Service – a coordination service to align virtual machines to run in the expected configuration (i.e. all stay together and failover together as necessary).
- HST02 does not actively run a workload, the server is available to host one or more virtual machines in the event of some kind of failure in the environment.
- HSA01 runs CMP01, the PDW “compute node” virtual machine that runs the SQL Server 2012 PDW workload. It also hosts the iSCSI01 VM to coordinate storage within the solution.
- HSA02 runs CMP02, another PDW “compute node”, as well as the iSCSI02 VM.
- The D6000 disk enclosure contains seventy (70) one, two, or three Terabyte drives. These drives hold the PDW relational data, as well as the Virtual Machines hosted on HST01, and all the data accessed by HSA01 and HSA02 virtual machines.

**Figure 1:** Front and rear views of a Base Scale Unit HP ConvergedSystem 300 for Microsoft Analytics Platform System
A fully populated unit

A fully populated HP ConvergedSystem 300 for Microsoft Analytics Platform System configuration will contain all the systems in the Base Scale unit, and may include the following components:

- An additional PDW Failover Server. This server will be known as HST03 if there are no HDI components installed. If the HDI components are included, then the server will be known as HST05. In either case, the server will physically be in the same location in the rack (shown as HST05 in Figure 2 below).
- Two HDI management servers, HST03 (the primary "Orchestration Server (HDI)") and HST04 (the HDI failover server).
- Up to three additional scale units, with each unit made up of two scale unit servers, HSAxx and HSAxx, along with one D6000 disk enclosure. At least one of these scale units (within the HP ConvergedSystem 300 for Microsoft Analytics Platform System) must be running HDI software if an HDI region is added to the system.

The additional systems in this configuration perform the following functions:

- HST03 (HDI) runs four virtual machines and one service:
  - HHN01 – The Hadoop head node, providing job tracker, Namenode, HistoryServer, HiveServer, OozieService.
  - HMN01 – Management Node providing Active Directory services for HDI. Also provides IIS services for Ambair.
  - HSN01 – The Secure Gateway Node, providing IIS web services for the developer dashboard.
  - Corralling Service – a coordination service to align virtual machines to run in the expected configuration (i.e. all stay together and failover together as necessary).
- HST04 does not actively run a workload, the server is available to host one or more virtual machines in the event of some kind of failure in the environment of HST03. Note that this failover server does not service any PDW base scale unit failover, and is ONLY available for HST03 failures.
- HSAxx servers will either run the PDW compute node virtual machines, named CMPxx, or if being used as an HDI component, will run two HDI Data Nodes, HDN001 and HDN002, for example. All HSAxx servers run an iSCSI virtual machine as well.
- Each D6000 disk enclosure contains seventy (70) one, two, or three Terabyte drives. These drives hold the PDW relational data, or the Hadoop data files, for each set of virtual machines hosted on the attached HSAxx servers.

In Figure 2 below, a fully populated Rack #1 is shown. This system has both PDW and HDI regions, as shown by the presence of the HST01 and HST02 servers for PDW, and the HST03 and HST04 servers for HDI. The optional HST05 server as a secondary failover server for the PDW workload is also present. Four scale units are installed, the maximum capacity for a single rack.
Figure 2: Front and rear views of a Full Rack #1 in an HP ConvergedSystem 300 for Microsoft Analytics Platform System

Figure 3 shows an example of a multi-rack HP ConvergedSystem 300 for Microsoft Analytics Platform System. Note that after Rack #1, there will be at most one additional failover server in the configuration, matching the location of HST01. The name of this server will be the next sequentially available HST numbered system, starting at rack one and counting up as you add racks. This failover server will only be used to host virtual machine failovers from PDW components. HDI data node failover is handled by having multiple copies of the data hosted by different virtual machines, rather than using failover clustering services.

Each additional rack can host up to 4 additional scale units, and will always have two InfiniBand switches and two Ethernet switches.
Note
Environments vary and can contain different quantities of scale units and failover servers. HP ConvergedSystem 300 for Microsoft Analytics Platform System scales up to seven racks containing a maximum of 64 active and failover server nodes.

Figure 3: The Solution scales from a “quarter rack” up to seven racks

HP racks and configures HP ConvergedSystem 300 for Microsoft Analytics Platform System in the factory, and installs all of the supplied software, including Windows Server 2012 Standard Edition as the bare metal host operating systems, and all virtual machines. This configuration will include the Active Directory configuration for the assigned domains, and the IP address configurations as requested by the customer.

All D6000s and disk sizes within the D6000s must be the same. If they are different, you can only use the amount of space available on the smallest hard disk used in any of the D6000 enclosures.

HP ConvergedSystem 300 for Microsoft Analytics Platform System architecture for PDW enables simultaneous query execution, and each individual query can execute on all the servers and all the D6000 disks storing user data, in parallel. This massively parallel architecture gives HP ConvergedSystem 300 for Microsoft Analytics Platform System (CS300 for APS) the speed to provide user queries with significantly higher levels of I/O throughput than is available on a scale-up SMP system.

For more information about the architecture, see “Understanding SQL Server PDW” in the APS.chm file located on the Control Virtual Machine (CTL01 VM) in the C:\PDWINST\ClientTools directory, or downloaded directly from the APS Yammer site.

Figure 4: Client programs included with the CS300 for APS
Using the CS300 for APS Web Admin Console

Any user with security access can open the Admin Console. However, an administrator will need to publish the IP address or otherwise make it known.

To determine your Node Cluster IP address:
1. Connect up to HST01 and open Failover Cluster Manager. Connect to the “local” cluster if no cluster is loaded for you. The cluster will be named <FABDOM>-WF0HST01.<Fabdom>.fab.local.
2. Connect to the <pdwdom>-MAD01 Virtual Machine in Failover Cluster Manager. Log in with PDW domain administrator credentials.
3. Double-click the dwconfig shortcut to start the Configuration Manager.

Note
A shortcut to dwconfig should be found on the desktop. If the shortcut is not found, use the path below to the dwconfig application and double-click on the executable listed:

C:\Program Files\Microsoft SQL Server Parallel Data Warehouse\100\dwconfig.exe

The Microsoft Analytics Platform System Configuration Manager will open.

4. Click Network in the left navigation pane.
5. Locate and select <domain_name> CTL01 in the list under Nodes.
6. Make note of the Node Cluster IP address listed for <domain_name> CTL01. This will be the IP address used for both the management console and any SQL Server query tools such as the SQL Server Data Tools or SQLCMD.

Figure 5: The CS300 for APS Configuration Manager
7. Enter the Node Cluster IP address into a browser using an HTTPS secure connection from any computer that has access to the system. In the screenshot above, you would connect to https://172.16.252.5. The browser might return an error regarding a security certificate for this device.

**Figure 6: Security certificate warning**

![Security certificate warning](image1)

To avoid this error, replace the default certificate with a trusted certificate. For more information, see the “Appliance Configuration Tasks (Analytics Platform System)” in the APS.chm help file.

8. Click “Continue to the website (not recommended)”

9. Your system might return the following security alert. Click OK.

**Figure 7: Security Alert**

![Security Alert](image2)

10. Your system might return the following pop-up, indicating that you need to add the IP address as a trusted site. This will happen on servers that have the IE Enhanced Security Configuration turned on, such as those that are shipped with the APS solution. You should not see this on a desktop computer.

**Figure 8: Internet Explorer warning**

![Internet Explorer warning](image3)

11. Check the box next to “Continue to prompt when website content is blocked”, and then click Add.

12. Verify the IP address, and then click Add.

13. Click Close.
14. After you are connected, the Admin Console prompts you for a user name and password.
15. Enter `sa` in the Login field, and then enter your password in the Password field.

**Figure 9**: The CS300 for APS Web Console Login Screen

The Admin Console Landing Page appears.

**Figure 10**: The CS300 for APS Web Console Home Page
Adding new logins (PDW)

Add new SQL Server 2012 Parallel Data Warehouse logins using the CREATE LOGIN SQL statement. For more information, see “SQL Reference, Security Statements, CREATE LOGIN” in the APS.chm help file.

**Figure 11**: The CS300 for APS Help File for CREATE LOGIN

As of AU1, SQL Server PDW supports both Windows Integrated security logins and SQL Server security logins. Please follow the guidance from the APS guide in creating your security logins. Do note that the admin console supports both SQL Server security and Windows Integrated Security userid/passwords, but does require provisioning and permissions to run the admin console as noted in the APS.chm documentation, under “SQL Server Parallel Data Warehouse, Database Administration, PDW Permissions, Grant Permissions to Use the Admin Console”.
**Adding new logins (HDI)**

Security for HDI users is administered using the DWConfig utility on the MAD01 virtual machine. Navigate to the HDInsight Topology ➔ User Management menu on the left, and you can then add users to the HDI domain. Note that you must add users with this interface, and not using the native Active Directory tools.

**Note**

This is an optional component of the APS system, so may not be present on your system unless you purchased an HDI region.

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**Figure 12**: The Configuration Manager User Management Interface for HDI

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**Admin Console features**

**Overview**

- Use the Admin Console to monitor and review system activities.
- To access and log on to the Admin Console, see Using the CS300 for APS Web Admin Console.
- After you log on to the Control Node Cluster, the Microsoft Analytics Platform System Web Admin Console Home screen (Figure 10, above) appears.

**Home screen**

The Home screen provides a starting point for viewing the current system health overall, and to monitor performance.

- Health – Check overall system operation.
- Performance monitor – Monitor performance in real-time.
Health interface
The Health status interface provides access to the status of the various physical hosts in the system.

1. Select HEALTH in the left navigation pane.
2. The default view should be STATUS. This presents the overall status of the individual nodes.

Figure 13: Health View for the CS300 for APS

3. Click Alerts, All Alerts, or Errors to see any alerts or errors for all nodes.
4. Click an individual node name to see additional details about the health status of that node.
Performance Monitor interface
Use the Performance Monitor interface to view the current performance in real time.

1. Select PERFORMANCE MONITOR in the left navigation pane.
   Performance monitor requires the use of Microsoft Silverlight. If your server does not have Silverlight installed, the system prompts you to install it.
2. After you have installed Silverlight, click PERFORMANCE MONITOR to see the CS300 for APS performance in real time.

Figure 14: Performance Monitor for the CS300 for APS
Parallel Data Warehouse Home screen

The Parallel Data Warehouse Home screen provides a starting point for viewing and changing PDW configuration information including:

- Sessions – Access individual session information to review activities performed during that session.
- Queries – Review and analyze queries.
- Loads – Check Loads status and detail.
- Backups/Restores – Review current and previous backup/restore operations.
- Health – Check overall PDW Region Health.
- Resources – Check resource status including locks or waits.
- Storage – Review allocation of storage across the PDW Region.
- Performance monitor – Monitor performance in real-time.

Figure 15: Parallel Data Warehouse Home Interface
Sessions screen
Use the Sessions screen to view session information:

1. Click **SESSIONS** in the left navigation pane.
2. Click an SID number in the **SESSION ID** column to see details about that session.

**Figure 16:** CS300 for APS PDW Sessions

To view Queries, Locks, or Waits for a particular session (Session ID #: sid13803 in Figure 17), click the individual word, and then click a number in the ID column.

You can view details about work performed during that session, as well as the IP address of the client that performed the work (in the example, 172.16.252.100).

**Figure 17:** PDW Session Details

For example, if you selected Queries, and then the ID QID160904, the system displays information about the query text and query plan for that session. (Figure 18)
You can also view Locks and Waits information from the Resources interface.

**Queries screen**
The Queries screen provides an additional method for accessing information about specific queries.

1. Select QUERIES in the left navigation pane.
2. Click a QID number in the ID column.

**Figure 19:** PDW Query Overview

For example, if you selected the ID QID160939, the system displays information about the query text and query plan for that session. (Figure 20)
Figure 20: PDW Query Additional Details

Loads screen

The Loads screen provides an additional method for accessing Loads information about specific queries.

1. Select LOADS in the left navigation pane.
2. Click a number in the ID column.

Figure 21: PDW Loads

For example, if you selected the ID 783, the system displays the actual query used for that data load, as well as the details associated with the load. (Figure 22)
**Figure 22: PDW Load Details**

<table>
<thead>
<tr>
<th>Stage</th>
<th>Status</th>
<th>Start Time</th>
<th>End Time</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data Load</td>
<td>Completed</td>
<td>5/21/2014 11:00 AM</td>
<td>5/21/2014 1:00 PM</td>
<td>0:00:00</td>
</tr>
<tr>
<td>Load Data</td>
<td>Completed</td>
<td>5/21/2014 11:00 AM</td>
<td>5/21/2014 1:00 PM</td>
<td>0:00:00</td>
</tr>
<tr>
<td>Load Cleanup</td>
<td>Completed</td>
<td>5/21/2014 11:00 AM</td>
<td>5/21/2014 1:00 PM</td>
<td>0:00:00</td>
</tr>
</tbody>
</table>

**Backups/Restores screen**

The Backup/Restores screen provides a quick view of PDW backup and restore operations.

1. Select BACKUPS/RESTORES in the left navigation pane.
2. Choose the ID associated with the type of activity you want to review. (Note “backup” or “restore” in the “TYPE” column).
3. Click the number in the ID column for that activity type.

**Figure 23: PDW Backups/Restores**

The system returns the backup or restore details associated with the ID you selected.
As shown in the following example, multiple backup processes for all compute nodes can occur in parallel. When you issue a backup or restore command, the SQL Server 2012 Parallel Data Warehouse software executes multiple operations in parallel.

**Figure 24:** PDW Backup Details

![PDW Backup Details](image)

**Health screen**
The Health status screen provides access to the status of the various PDW virtual machines.

1. Select HEATH in the left navigation pane.
2. Click STATUS in the command line. This presents the overall status of the individual virtual machines.

**Figure 25:** PDW Health

![PDW Health](image)

3. Click Alerts, All Alerts, or Errors to see any alerts or errors for all virtual machines.
4. Click an individual node name to see additional details about the health status of that virtual machine.
### Resources screen

The Resources screen provides information about Locks and Waits, which can affect the PDW resources and workload performance.

1. Select RESOURCES in the left navigation pane.
2. Click either LOCKS or WAITS to see the reports available for either.

**Figure 26: PDW Resources**

### Storage screen

The Storage screen provides a report showing the allocation of disk storage across various databases, including tempdb.

1. Select STORAGE in the left navigation pane. The system provides information about the overall space utilization of PDW, including the OS and databases, and lists the databases by size (DATA(GB)).

**Figure 27: PDW Storage Usage**

2. Click a database name to view detailed information about that database.
The following example shows a database with data evenly distributed across both compute nodes (CMP01 and CMP02).

**Figure 28: PDW Storage Distribution**

![PDW Storage Distribution](image)

**Performance Monitor screen**
Use the Performance Monitor screen to view the current performance in real time.

1. Select PERFORMANCE MONITOR in the left navigation pane.
   Performance monitor requires the use of Microsoft Silverlight. If your server does not have Silverlight installed, the system prompts you to install it.
2. After you have installed Silverlight, click PERFORMANCE MONITOR to see the Parallel Data Warehouse performance in real time.

**Figure 29: PDW Performance Monitor**

![PDW Performance Monitor](image)
Installing Microsoft Silverlight

To view the current performance in real time, you will need to install Microsoft Silverlight on any computer you wish to use to monitor the system.

If the monitoring web browser client has Internet access, you can download Silverlight directly from Microsoft from within the Performance Monitor screen. Otherwise, you can put Silverlight on a USB stick and install it on the required host.

You can get the Silverlight download from the Microsoft webpage (microsoft.com/silverlight).

1. Click Silverlight_x64.exe to launch the installation program.

**Figure 30: Install Silverlight**

2. Click Install now.
3. Wait for the installation to finish, and then close and reopen your browser.

After you have installed Silverlight, log onto the Admin console and return to the Performance Monitor screen.

**SQL Server 2012 Parallel Data Warehouse Client Tools**

**Client Tools and connection strings**

HP ConvergedSystem 300 for Microsoft Analytics Platform System supports Microsoft SQL Server 2012 Parallel Data Warehouse Client Tools for the following Data Access APIs:

- ADO.NET
- OLE DB
- ODBC
- JDBC

For connection string information, see the APS.chm documentation.
Figure 31: APS Connection String Documentation

<table>
<thead>
<tr>
<th>Connection Strings (SQL Server PDW)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Data Access API</strong></td>
</tr>
<tr>
<td>ADO.NET</td>
</tr>
<tr>
<td>OLE DB</td>
</tr>
<tr>
<td>ODBC</td>
</tr>
<tr>
<td>JDBC</td>
</tr>
</tbody>
</table>

**Supported Query Tools**

Previous versions of HP ConvergedSystem 300 for Microsoft Analytics Platform System used Nexus client software to query and manage the database; however, Microsoft no longer includes Nexus with SQL Server 2012 Parallel Data Warehouse. Instead, Microsoft provides and recommends SQL Server Data Tools as the query tool. For more information about SQL Server Data Tools, see “Install SQL Server Data Tools for Visual Studio (SQL Server PDW)” in the APS.chm help file. Do note that only Visual Studio 2012 and Visual Studio 2013 are supported SQL Server Data Tools environments for SQL Server PDW.

Figure 32: SQL Server Data Tools Documentation
Client Tool Connectivity – Port 17001

In this release, ODBC and OLE DB connections use SQL Server Native Client. ADO connections use .NET Framework Data Provider for SQL Server (SqlClient).

All of these connections use port 17001, because SQL Server 2012 Parallel Data Warehouse only listens to port 17001. To avoid connection failures, append all connection strings with a comma and the port number 17001.

For example, change 10.192.54.48 to 10.192.54.48,17001.

You do not need to rebuild existing SSIS loading packages in order to update the port to 17001.

PolyBase Hadoop integration

For SQL Server 2012 Parallel Data Warehouse, Microsoft has included PolyBase as the integrated query across Hadoop and relational data. Use PolyBase to query Hadoop data using T-SQL, import data from Hadoop for persistent storage in SQL Server 2012 Parallel Data Warehouse as a distributed or replicated table, and export data from SQL Server 2012 Parallel Data Warehouse into Hadoop. This will work whether the Hadoop data is stored as part of HDInsight (HDI) within the system, or stored in an external Hadoop infrastructure.

For more information, see “PolyBase for Hadoop and WASB Integration (SQL Server PDW)” in APS.chm.

Figure 33: PolyBase Documentation

APS.chm also contains detailed information on configuring Hadoop for SQL Server 2012 Parallel Data Warehouse connectivity, as well as details about the HDInsight implementation of Hadoop.
Data management

Data loading prerequisites

With the hardware and software up and running, you can load data into the system. Before loading data, see “Distributed and Replicated Tables (SQL Server PDW)” in APS.chm. This documentation provides information about SQL Server 2012 Parallel Data Warehouse terminology regarding distributed tables and replicated tables, and provides best practices for designing a data warehouse for the system.

Figure 34: Distributed and Replicated Tables

In addition, HP recommends that you have a good logical and physical database design. The following sections provide insight into design considerations. Contact HP Consulting Services or Microsoft Services for additional information regarding optimal SQL Server 2012 Parallel Data Warehouse database design techniques.

Best practices for performance

For the best performance from SQL Server 2012 Parallel Data Warehouse, try eliminating all indexes except for Clustered Columnstore Indexes. Using indexes encourages disk head movement, and excessive disk head movement slows data streaming because of the excessive seek time required.

Indexing strategies, database design, or data loading optimizations using SQL Server 2012 Parallel Data Warehouse best practices is beyond the scope of this document; however, HP Consulting Services or Microsoft services can assist with these capabilities.

Distributed and replicated tables

A critical issue with SQL Server 2012 Parallel Data Warehouse database design involves defining replicated tables versus distributed tables. Tables default to replicated tables unless you define a distribution key. In general, large tables (such as fact tables) should be distributed, and small tables (such as dimension tables) should be replicated.

HP ConvergedSystem 300 for Microsoft Analytics Platform System running SQL Server 2012 Parallel Data Warehouse enables parallel execution of queries. The combination of hardware and software provides high levels of I/O throughput while maintaining consistent and predictable response times, which is useful when executing ad-hoc queries.
In-Memory analytics engine

The Microsoft SQL Server in-memory analytics engine, and the "memory-optimized" columnstore index are both features of the Microsoft Analytics Platform. The columnstore index feature, enables high performance query processing in SQL Server data warehouses and data marts. For example, business intelligence end-users tend to submit queries that select a relatively small number of columns (hot columns) in the fact tables or dimension tables. This implies that, rather than having a database retrieve all the columns in a row, it makes sense to structure the database in a columnar fashion. Columnstore table structures only need to access, and potentially cache, the small percentage of columns that a majority of users request.

Efficient compression is a side effect of a columnstore design in data warehousing. Database compression rates for data warehouses and data marts tend to be significantly greater when data is stored by column versus storing data by row. This is especially noticeable when a column has low cardinality.

By reorienting data storage in a column rather than a row, organizations can see HP ConvergedSystem 300 for Microsoft Analytics Platform System performance improve by reducing the query time from hours to seconds and compression ratios for data. In addition, Microsoft Parallel Data Warehouse enables updates to the HP ConvergedSystem 300 for Microsoft Analytics Platform System columnstore table. This capability has also been introduced into SQL Server 2014.

Data loading tools

HP ConvergedSystem 300 for Microsoft Analytics Platform System does not require the purchase of a data loading server. Instead, HP recommends a server with sufficient memory, storage, and connectivity (both Ethernet and dual-InfiniBand networking cards) be used as a platform for ETL and dwloader, HP Insight Remote Support, and backup/restore operations. Because most site requirements do not promote backing up HP Parallel Data Warehouse in tandem with a data upload, combining ETL and landing zone functionality on the same physical hardware as the backup makes sense.

Be sure to consider network connectivity when connecting a server for landing zone functions. For maximum throughput, HP recommends InfiniBand, followed by 10 Gb Ethernet. The slowest connection is 1 Gb Ethernet connectivity between the data loading/backup node and the CS300 for APS.

There are two ways to load data into the SQL Server 2012 Parallel Data Warehouse database:

- Load data directly from SSIS.

  If SSIS ETL software executes on an external server with the suggested InfiniBand connections, data can load directly from the server hosting SSIS into the staging database and into SQL Server 2012 Parallel Data Warehouse tables.

- Load data using dwloader (command line tool) from a cleansed and pre-formatted flat file.

  If you are loading data from a cleansed flat file residing on the suggested server, dwloader can perform faster than SSIS.
Copying the Client Tools installer

It is recommended that you use this procedure to load and configure the Client Tools. Before loading any data, copy the ClientTools-amd64.msi file to the servers that will load the data. You can find this file on the Parallel Data Warehouse Control VM (CTL01) in the C:\PDWINST\ClientTools directory.

Use either Failover Cluster Manager to access CTL01, or you can connect directly to CTL01 using Windows Remote Desktop. Windows Remote Desktop supports copy and paste functionality, so you can copy the appropriate Windows Installer files to the server that will run dwloader.

Otherwise, use Failover Cluster Manager to access CTL01:

1. Log onto Failover Cluster Manager. If this is your first time using Failover Cluster Manager, see Using Failover Cluster Manager.
2. Expand Roles, and then Nodes in the left navigation pane.
3. Right-click CTL01, and then select Connect.

Figure 35: Failover Cluster Manager

4. Navigate to the C:\PDWINST\ClientTools directory, and then locate the ClientTools-amd64.msi file.
5. Copy the file to the server that will run dwloader.

Figure 36: Client Tools Directory
Installing Client Tools
The following procedure uses the ClientTools-amd64.msi file to install Client Tools onto a stand-alone server.

Launch the Client Tools installation.
1. To launch the installer, double-click the appropriate Windows Installer file on your data source server.
2. Click Next.

Figure 37: Client Tools Setup Splash Screen

3. Read and accept the terms in License Agreement to continue with the installation.
4. Click Next.

Figure 38: Client Tools licensing

5. Choose your installation type, and then click Next.
6. Click Install. The installation takes a few minutes, and then displays the following screen.
Creating a staging database
Microsoft recommends creating and using only one staging database for optimal SQL Server 2012 Parallel Data Warehouse performance.

**Note**
Do not create tables in the staging database. When you run the dwloader tool, it creates tables for you.

SQL Server 2012 Parallel Data Warehouse includes the tempdb database for internal use by the software to store temporary tables on local disks of the Control node. As a best practice, avoid using tempdb. Instead, create your own production databases for your environment.

The following example of a command file shows how you can create a database and the associated tables as the destination for the loaded data.

```sql
// Getting Started Guide - Sample DB and table creation
// Create target database for load test
CREATE DATABASE db100gb
WITH (
    AUTOGROW = ON,
    REPLICAED_SIZE = 50,
    DISTRIBUTED_SIZE = 100,
    LOG_SIZE = 5
)
;

// Create staging database (Refer to the "Create the Staging Database (SQL Server PDW)" in the APS.chm documentation.

SQL Server 2012 Parallel Data Warehouse uses a staging database to store data temporarily during the load process. By default, Parallel Data Warehouse uses the destination database as the staging database, which can cause table fragmentation.

To reduce table fragmentation, create a user-defined staging database. If rollback from a load failure is not a concern, you can use the fastappend loading mode to improve performance. The fastappend loading mode skips the temporary staging table and loads directly into the destination table.
CREATE DATABASE staging
WITH (
    AUTOGROW = ON,
    REPLICA TED_SIZE = 40,
    DISTRIBUTED_SIZE = 90,
    LOG_SIZE = 4
);

USE db100gb;

// Create partsupp table
// partsupp table will be distributed using ps_partkey column

CREATE TABLE partsupp   (
    ps_partkey      bigint,
    ps_suppkey      bigint,
    ps_availqty     integer,
    ps_supplycost   decimal(15,2),
    ps_comment      varchar(199))
WITH (Distribution = hash(ps_partkey));

**Loading data using dwloader**

After creating the databases and tables, you can load your data.

SQL Server 2012 Parallel Data Warehouse supports either ETL or ELT data loading techniques. In either case, load your data into the HP ConvergedSystem 300 for Microsoft Analytics Platform System from a server that contains the input data file.

If you have not installed the Client Tools, see Installing Client Tools (above) before downloading any data.

**Note**

SQL Server 2012 Parallel Data Warehouse allows dwloader to execute from multiple servers when those servers act as data loading sources. Data loading timelines improve when ETL software executes on multiple servers in parallel.

Initiate your data load using dwloader. You can find dwloader at the following location:

```
%SystemDrive%\Program Files\Microsoft SQL Server Parallel Data Warehouse\100\dwloader.exe
```

The following SQL command is an example of a load command using the common parameters listed below.

```
sqlcmd -S "172.16.255.5,17001" -U sa -P -d staging -m -t "!* -r 0x7e0x0d0x0a -T tpcihltb.partsupp -i d:\flatfiles.1TB\1\partsupp.tbl -R partsupp.out -rv 100 -b 100000
```

- `-S` – IP address of the CS300 for APS
- `-U` – User ID (in our example, sa).
- `-P` – System password.
- `-d` – Name of the staging database.
Note
Microsoft recommends using a staging database for optimal performance. A staging database helps Parallel Data Warehouse maintain sequential storage, which reduces disk seek times.

The \-d parameter specifies the use of the staging database. If you omit this parameter, data loads directly into the destination tables without using the staging database, which can reduce overall database performance.

- \-m – Commit loads in parallel. Required option for \-M fastappend. Performs much faster than the default loading mode by bypassing the staging database. Has no rollback function, so any recovery from a failed or aborted load must be handled by your own load process.
- \-t "| " – Delimit each field (column) in the row.
- \-r 0x7c0x0d0x0a – Delimit row.
- \-T – Target database.
- \-i – Source data location (input).
- \-R – File where you can find the rows which failed to load.
- \-rv – Number or percentage of row rejections to allow before halting the load (in this example, 100).
- \-b – Batch size; the number of rows to load per transaction. Defaults to 10,000.

For more information about this command and its parameters, see "SQL Server Parallel Data Warehouse\Load\dwloader Command-Line Loader" in APS.chm.

After loading your data, you can use Client Tools that support OLE DB, ODBC, or ADO.NET to query your data. The most common tools used to query the database are Reporting Services, SQL Server Analysis Services (OLAP cubes), SQL Server Data Tools (SSDT), and SSIS.

SSIS is useful when you need to perform a table look up during ETL processing. SQL Server Analysis Services translate MDX queries into SQL queries, which send the request to the Parallel Data Warehouse Control node for query processing.

Loading data using fastappend
When you need to complete a data load in a short time frame, and you don’t need to rely on rollback, you can use fastappend. The fastappend command skips the temporary staging table and loads data directly into the destination table. In fastappend mode, the loader appends rows directly to the end of existing rows in the destination table without using a temporary table.

You can neither specify a staging database when using fastappend nor rely on rollback, so you must handle any recovery from a failed or aborted load as part of your own load process. However, fastappend speeds up loading, which is useful when you are under time constraints, such as having to complete a data load in two hours.

Using fastappend requires using the multi-transaction (\-m) option.

Load data using fastappend:
1. Connect to a database using sqlcmd. The following example connects to a database called tpch1tb.
   sqlcmd -S "172.16.255.5,17001" -U sa -P password -I -d tpch1tb
2. Create a table named partsupp.
   CREATE TABLE partsupp (    ps_partkey     bigint,    ps_suppkey     bigint,    ps_availqty    integer,    ps_supplycost   decimal(15,2),    ps_comment      varchar(199)) WITH (Distribution = hash(ps_partkey));

The hashed distribution key, ps_partkey, distributes the data across all of the Compute VMs on the physical HSAns servers.
3. Execute `dwloader` on the servers that contain the source data.

   \[
   \text{dwloader} \ -S \ 172.16.254.5 \ -U \ sa \ -P \ <\text{password}> \ -M \ fastappend \ -m \ -t \ "|" \ -r \ 0x7c0x0d0x0a \ -T \ tpcch1tb..partsupp \ -i \ d:\flatfiles.1TB\1\partsupp.tbl \ -R \ partsupp.out \ -rv \ 100 \ -b \ 100000
   \]

Parameters include:

- `-S` – IP address of the PDW Control VM.
- `-U` – User ID (in our example, sa).
- `-P` – System password.
- `-M fastappend` – Append rows directly to the end of existing rows in the destination table. Requires the multi-transaction (`-m`) option.
- `-m` – Commit loads in parallel. Required option for `-M fastappend`. Performs much faster than the default loading mode by bypassing the staging database. Has no rollback function, so any recovery from a failed or aborted load must be handled by your own load process.
- `-t "|"` – Delimit each field (column) in the row.
- `-r 0x7c0x0d0x0a` – Delimit row.
- `-T` – Target database.
- `-i` – Source data location (input).
- `-R` – File where you can find the rows which failed to load.
- `-rv` – Number or percentage of row rejections to allow before halting the load (in this example, 100).
- `-b` – Batch size; the number of rows to load per transaction. Defaults to 10,000.

The following example shows the beginning and end of `fastappend` command output.
Password management

System Password Reset screen
As part of the HP ConvergedSystem 300 for Microsoft Analytics Platform System installation and startup service, HP Support changes the factory default passwords to site-specific passwords. You can change passwords at any time using the Password Reset screen of the DWConfig application, hosted on the MAD01 Virtual Machine.

Passwords must meet the following requirements:
- 4 to 16 characters
- Any ASCII alphanumeric characters
- !, @, &, %, #, *, ^ and _ are also allowed

Use the menu to change the associated passwords. HP recommends using the same password for all components in the system. Additionally, it is required that the local administrator accounts on all systems share the password of the domain administrator for the owning domain.

This interface can be used to change the passwords for the fabric domain, the PDW domain, the HDI domain, and the sa account for SQL Server 2012 PDW.

Figure 42: Password reset via DWConfig

Changing individual device passwords
During installation, the HP support team will reset all passwords according to site requirements. Use the following procedures if you need to change the passwords for the hardware or HP software components of the HP ConvergedSystem 300 for Microsoft Analytics Platform System.

Note
HP strongly recommends using the same password throughout the HP ConvergedSystem 300 for Microsoft Analytics Platform System.
Changing passwords requires the IP addresses of the various system components, including iPDUs, iLO, and InfiniBand switches.

**Finding device IP addresses**

Find the device IP addresses.

1. Log on to HST01 (physical server, not the VM).
2. Open the C: \PDWINST\Media folder.
3. Locate and open HPApplianceDetails.xml in a text editor. The file lists the IP addresses for the system components, as shown in the following example:

```
<IB_Switches>
  <IB_Switch RackId="1" SwitchId="1" SwitchIP="172.16.253.52" SwitchSubnetMask="255.255.254.0" Location="U42" />
  <IB_Switch RackId="1" SwitchId="2" SwitchIP="172.16.253.53" SwitchSubnetMask="255.255.254.0" Location="U44" />
</IB_Switches>
<ETH_Switches>
  <ETH_Switch RackId="1" SwitchId="1" SwitchIP="172.16.253.66" SwitchSubnetMask="255.255.254.0" Location="U40" />
  <ETH_Switch RackId="1" SwitchId="2" SwitchIP="172.16.253.67" SwitchSubnetMask="255.255.254.0" Location="U39" />
```

**iLO passwords**

To change the iLO password you need to know the iLO IP addresses. You can find all server iLO IP addresses on HST01 in the BmcAddress file under C: \PDWINST\Media\HPApplianceDetails.xml.

1. Open a browser window.
2. Enter one iLO IP address into the browser, and then press Enter.
3. The browser might return an error regarding a security certificate for this device.

**Figure 44: Security Certificate Warning**

To avoid this error, replace the default certificate with a trusted certificate. For more information, see the "Appliance Configuration Tasks (Analytics Platform System)" in the APS.chm.
4. Click “Continue to website (not recommended)” to launch the iLO HP ProLiant log in screen.

**Figure 45:** iLO login screen

5. Log in to the iLO 4 HP ProLiant as Administrator using the current password.
6. In the iLO Overview screen, click Administration to expand the list, and then select User Administration.

**Figure 46:** iLO User Administration
7. Under Local Users, select the box next to Administrator, and then click Edit.  

![Figure 47: iLO Administrator account Edit](image)

8. Enter the new password information, and then click Save.  

![Figure 48: iLO password change](image)

9. Repeat this procedure for the iLO on each physical server in the system.  

**Ethernet switch passwords**

**Enabling Ethernet switch browser access**  
Requirements at your site might include disabling browser access to the Ethernet switches for security reasons. You can enable browser access to simplify any necessary password changes. Disabling browser access after you complete the password changes is optional.

1. Log on to the Ethernet switch as admin.
2. Enter system-view at the system prompt, and then press Enter.
3. Enter ip http enable, and then press Enter.
4. Enter save force, and then press Enter.
   Wait while the system validates the file.
5. Enter local-user admin, and then press Enter.
6. Enter service-type web at the luseradmin prompt, and then press Enter.
7. Enter save force, and then press Enter.
8. Wait while the system validates the file.
9. Continue when you see “Configuration is saved to device successfully.”  

Verify that the change was successful.

1. Enter display current-configuration at the system prompt, and then press Enter.
2. Scroll through the data returned by the command to local-user admin.
3. Verify that service-type web appears in the list as shown below.

```
# local-user admin
password cipher ScS3S1NkvR8QxIYQAqdTqDdoewEMV10NrXQqFt8XpDe4p
authorization-attribute level 3 service-type lan-access service-type ssh terminal service-type portal service-type web
```

### Ethernet switch passwords

To change the Ethernet switch password you need to know the Ethernet switch IP addresses. To find them, see Finding device IP addresses. You might also need to enable browser access to the Ethernet switch (see Enabling Ethernet switch browser access).

To change the Ethernet switch password:

1. Open a browser window.
2. Enter one Ethernet switch IP address into the browser, and then press Enter.
   The browser might return an error regarding a security certificate for this device.

**Figure 49: Security Certificate Warning**

![Security Certificate Warning](image)

To avoid this error, replace the default certificate with a trusted certificate. For more information, see the “Appliance Configuration Tasks (SQL Server PDW)” in the APS.chm.

3. Click “Continue to website (not recommended)” to launch the Web User Login.
4. Log into the switch as admin using the current password.

**Figure 50: Ethernet Switch Login**
5. Click Summary, and then click Device in the left navigation pane.

**Figure 51:** Ethernet Switch Management

6. Select Users from the Device list, and then click the admin username.
7. Click the Modify tab.

**Figure 52:** Ethernet Switch User Management
8. At the bottom of the screen, select the box next to Modify Password, and then enter the old and new passwords.

**Figure 53: Ethernet Switch Password Change**

9. Click Apply, and then click Logout in the upper right corner of the screen to exit the switch.
10. Repeat this procedure for each Ethernet switch in the configuration.

**iPDU passwords**

**Using PuTTY to change iPDU passwords**

To change the iPDU password you need to know the iPDU IP addresses. To find them, see Finding device IP addresses.

If you have disabled web access on the iPDU for security reasons, use a serial cable to connect a laptop to the iPDU. HP has provided an extension serial cable to simplify this laptop connection. The serial cable provided is attached to the iPDU.

If you are able to use a browser, see Using a browser to change iPDU passwords.
To change the iPDU password using PuTTY as the Telnet interface (or something similar):

1. Attach your serial cable to the extension serial cable, which is strapped to the rear door of the system, and then use PuTTY to access the iPDU. Do not use ssh.
2. Log on as admin using your current password.
3. At the prompt, enter 3 (User Accounts), and then press Enter.

**Figure 54:** iPDU Management via PuTTY

4. Enter 1 (admin), and then press Enter.

**Figure 55:** iPDU user management
5. Enter 2 (Change Password), and then press Enter.

**Figure 56**: iPDU password change

6. Enter the new password information, and then press Enter.

7. Enter S (Save New Changes and Restart), and then press Enter.

**Figure 57**: iPDU save changes

8. Repeat this procedure for each iPDU in the configuration.
**Using a browser to change iPDU passwords**

To change the iPDU password you need to know the iPDU IP addresses. To find them, see Finding device IP addresses.

If you are unable to use a browser, see Using PuTTY to change iPDU passwords.

Change the iPDU password using a browser:

1. Open a browser window.
2. Enter one iPDU IP address into the browser, and then press Enter.
3. The browser might return an error regarding a security certificate for this device.

**Figure 58: Website Security Certificate Warning**

To avoid this error, replace the default certificate with a trusted certificate. For more information, see the “Appliance Configuration Tasks (SQL Server PDW)” in the APS.chm.

4. Click “Continue to website (not recommended)” to launch the HP Intelligent Modular PDU software.
5. Log into the switch as Admin using the current password.

**Figure 59: HP iPDU Login**
6. From the Home screen, select the Setup tab.

**Figure 60:** iPDU Setup

7. Click User Accounts in the left navigation pane.
8. Enter the new password in the Password field, and then enter the same password into the Verify Password field.

**Figure 61:** iPDU Password Management

9. Click Save Settings.

**Figure 62:** Confirmation dialogue

10. Click OK, and then click sign out in the upper right corner of the HP Intelligent Modular PDU screen.
11. Repeat this procedure for each iPDU in the configuration.
FDR InfiniBand switch passwords

Using PuTTY to change FDR InfiniBand switch passwords
To change the FDR InfiniBand passwords you need to know the FDR InfiniBand IP addresses. To find them, see Finding device IP addresses.

If you have disabled web access on the InfiniBand switches for security reasons, you can use a serial cable to connect a laptop (or use one of the HST servers) to the switch.

If you are able to use a browser, see Using a browser to change FDR InfiniBand switch passwords.

To change the InfiniBand password using PuTTY as the Telnet interface:
1. Connect your laptop to the InfiniBand switch, and then use PuTTY to access the switch.
2. Log on as admin using your current password.
3. At the command prompt, enter Enable, and then press Enter.
4. Enter Configure terminal, and then press Enter.

![InfiniBand Switch Login](image)

5. Enter the new password at the Password prompt, and then press Enter.
6. Enter the new password again at the Confirm prompt, and then press Enter.
7. Enter Exit, and then press Enter.
8. Enter Exit, and then press Enter.
9. Repeat this procedure for each FDR InfiniBand switch in the configuration.

Using a browser to change FDR InfiniBand switch passwords
To change the FDR InfiniBand password you need to know the FDR InfiniBand IP addresses. To find them, see Finding device IP addresses.

If you are unable to use a browser, see Using PuTTY to change FDR InfiniBand switch passwords.

Change the System Administrator password using a browser:
1. Open a browser window.
2. Enter one InfiniBand IP address into the browser, and then press Enter.
3. The browser might return an error regarding a security certificate for this device.

**Figure 64: Website Security Certificate Warning**

To avoid this error, replace the default certificate with a trusted certificate. For more information, see the "Appliance Configuration Tasks (SQL Server PDW)" in the APS.chm.

4. Click “Continue to website (not recommended)” to launch the Mellanox MLNX-OS Management Console.

5. Log into the switch as admin using the current password.

**Figure 65. InfiniBand Switch Login**
6. From the Summary screen, select the Security tab.  

**Figure 66: InfiniBand Security Management**

7. Click Edit next to the admin Username under User Accounts.  

**Figure 67: InfiniBand Switch User Management**
8. Enter the new password in the New password field, and then enter the same password into the Confirm new password field.
9. Click Apply, and then click OK.

**Figure 68: InfiniBand Switch Password Change**

10. Click Save in the lower right corner.

Change the System Monitor password:
1. Click Edit on the System Monitor line under User Accounts.

**Figure 69: Edit System Monitor User**
2. Enter the new password in the New password field, and then enter the same password into the Confirm new password field.
3. Click Apply, and then click OK.

**Figure 70**: Changing the System Monitor Password

4. Click Logout in the upper right corner of the MLNX-OS Management Console to log off of the switch, and then log on again to verify the new passwords.
5. Repeat this procedure for each FDR InfiniBand switch in the configuration.
Server management

Starting Hyper-V Manager

Hyper-V Manager has many uses in HP ConvergedSystem 300 for Microsoft Analytics Platform System management. Consider creating a desktop shortcut for easy access to this commonly used utility.

Start Hyper-V Manager:
1. Logon to HST01 using the PDW domain administrator account and password.
2. From the Server Manager Dashboard, click Tools, and then select Hyper-V Manager.

Figure 71: Server Manager

You can also log on to HST01 using the Windows Server 2012 Administrative Tools:

Figure 72: Windows Server Start Screen
Adding nodes

Hyper-V Manager should list every server in your configuration. In a single-rack configuration, for example, you should see the following nodes:

<Fabric name>-HST01
<Fabric name>-HST02
<Fabric name>-HST03
<Fabric name>-HST04
<Fabric name>-HST05
<Fabric name>-HSA01
<Fabric name>-HSA02
<Fabric name>-HSA03
<Fabric name>-HSA04
<Fabric name>-HSA05
<Fabric name>-HSA06
<Fabric name>-HSA07
<Fabric name>-HSA08

Multiple-rack installations include a similar list for each rack. If Hyper-V Manager does not list all of the nodes for your configuration, you can add them using the following procedure.

1. Logon to HST01 and launch Hyper-V Manager.
2. Right-click Hyper-V Manager in the left navigation, and then click Connect to Server...

**Figure 73:** Connect to Server

3. Select Another Computer, and then enter a server name into the text box.

**Figure 74:** Select Another Computer
4. You can also click Browse to locate the servers you want to add, and then click OK.

**Figure 75:** Browse for Computers

<table>
<thead>
<tr>
<th><img src="image" alt="Select Computer" /></th>
</tr>
</thead>
<tbody>
<tr>
<td>Select this object type:</td>
</tr>
<tr>
<td>Computer</td>
</tr>
<tr>
<td>Enter the object name to select (examples):</td>
</tr>
<tr>
<td>FTUKA-HST04</td>
</tr>
<tr>
<td>Advanced... OK Cancel</td>
</tr>
</tbody>
</table>

5. After connecting to all the servers, your Hyper-V Manager screen should appear similar to the following, depending upon the number of scale units you have purchased.

**Figure 76:** Hyper-V with the servers added

<table>
<thead>
<tr>
<th><img src="image" alt="Hyper-V Manager" /></th>
</tr>
</thead>
<tbody>
<tr>
<td>File Action View Help</td>
</tr>
<tr>
<td>Virtual Machines</td>
</tr>
<tr>
<td>Name FTUKA-HST01</td>
</tr>
<tr>
<td>Name FTUKA-HST02</td>
</tr>
<tr>
<td>Name HTUKA-HST04</td>
</tr>
<tr>
<td>Name FTUKA-HST05</td>
</tr>
<tr>
<td>Name HTUKA-HST06</td>
</tr>
<tr>
<td>Name FTUKA-HST07</td>
</tr>
<tr>
<td>Name FTUKA-HST08</td>
</tr>
<tr>
<td>Name FTUKA-HST09</td>
</tr>
<tr>
<td>Name FTUKA-HST10</td>
</tr>
</tbody>
</table>

6. Verify that each HSA node running PDW has one compute node VM and one iSCSI VM:
   - HSA01 = CMP01 VM and ISCSI01
   - HSA02 = CMP02 VM and ISCSI02
   - etc.

7. Verify that each HSA node running HDI has two Hadoop data node VMs and one iSCSI VM:
   - HSA03 = HDN001 and HDN002 VM and ISCSI01
   - HSA04 = HDN003 and HDN004 VM and ISCSI02
   - etc.
8. Check the State column for each compute or data node VM and each iSCSI VM.
9. Start any VMs that are not shown as Running:
   A. Highlight the server in the left navigation pane.
   B. Right-click the VM in the center pane, and then click Start.

**Figure 77:** Hyper-V VM Alignment

If you find that any of the HSA servers are not aligned with the respective VMs (HSA01 with ISCSI01 and CMP01), see Aligning servers and VMs to realign the VMs.
Using Failover Cluster Manager

The Failover Cluster Manager has many uses in HP ConvergedSystem 300 for Microsoft Analytics Platform System management.

Consider creating a desktop shortcut for easy access to this commonly used tool.

To access the Failover Cluster Manager:

1. Log on to HST01 using your domain administrator account and password.
2. From the Server Manager Dashboard, click Tools, and then select Failover Cluster Manager.

You can also access Failover Cluster Manager using the Windows Server 2012 Administrative Tools.

---

**Figure 78:** Server Manager

---

**Figure 79:** Windows Server 2012 Start Screen
3. Right-click Failover Cluster Manager in the left navigation pane, and then select Connect to Cluster...

**Figure 80**: Failover Cluster Manager

4. Click the arrow next to the cluster to expand the cluster view.

**Figure 81**: Failover Cluster Expanded

In the list of nodes shown in the left panel of the Failover Cluster Manager, each server has a green server icon, which indicates that the server is running.
Aligning servers and VMs
Under normal operation, HST01 runs five roles: the Corralling Service Controller and the four virtual machines, AD, VMM, MAD01, and CTL01. If you have the optional HdiInsight servers, HST03 will host the HHN01, HMN01, and HSN01 virtual machines, plus the HdiCorrallingServiceController. The remaining PDW HSTs exist for backup purposes in case of a system failure.

Occasionally, a VM becomes associated with an incorrect HST failover server, as shown below where CTL01 VM is running in HST02. CTL01 is a misaligned VM that you must move back to HST01 so that it is aligned with the appropriate server and exists with the four PDW VMs on HST01.

Figure B2: Mis-aligned VM

In a configuration where HST01 and HST02 are the only passive servers available, this misalignment can cause a reduction in availability levels because no passive servers are available if a compute node fails. This occurs because PDW resource requirements do not allow two separate Compute VMs to exist on the same failover server.

Because this misalignment can cause a system failure, consider periodically verifying that all four VMs are properly aligned on HST01 and take steps to realign the VMs when necessary.

Realigning VMs
HP ConvergedSystem 300 for Microsoft Analytics Platform System includes a Corralling Service Controller designed to keep the HST01 VMs together on one node. If a VM becomes misaligned, you can move a VM from one node to another. Be sure to stop the Corralling Service Controller first so that the service does not interfere with your activities.

Shutting down the corralling service
Shut down the Corralling Service Controller:
1. From the Failover Cluster Manager, log onto the <fab name>-HST01 server using your domain account.
2. Under Nodes, select HST01.
3. Under Roles, right-click Corralling Service Controller, and then select Stop Role.
4. Wait for the Corralling Service Controller to stop.

Moving a VM
After you have shut down the Corralling Service Controller, you can move VMs from one location to another.
1. Under Nodes in the left navigation, right-click HST02.
2. Select Move → Quick Migration → Select Node.

Note
Live Migration is not supported and should not be used.
Figure B3: Using Quick Migration

In the Move Virtual Machine window, select HST01, and then click OK. Wait a few minutes for the operation to complete.

Figure B4: Selecting a target Hyper-V Host

3. In the Move Virtual Machine window, select HST01, and then click OK. Wait a few minutes for the operation to complete.

System management

Power up the system

The HP support team installs, connects, and powers up the HP ConvergedSystem 300 for Microsoft Analysis Platform System as part of the installation process. Use the following procedure to power up the system if required.
**Important**

When powering on the system, follow all steps in the exact order listed. Allow each step to complete before starting the next, unless otherwise noted. Performing steps out of order or without waiting for each step to complete could result in startup errors.

1. Power on all non-server components in this order:
   A. PDUs – Make sure there are no error lights. Visually check power connections.
   B. Switches (InfiniBand, Ethernet) – Make sure there are no error lights. Visually check connections.
   C. Storage (D6000s).
   D. Wait 10 minutes for all components to start.
2. Power up the HSAxx servers:
   A. Connect a monitor to each server as you power it up to watch each server boot (optional).
   B. Start at the bottom of the rack, and power up the first HSAxx compute node server.
   C. Wait approximately three minutes for the server to completely start before powering up the next compute node server.
   D. When the HSA compute node server is running, power up the next server above it in the rack.
   E. Wait approximately three minutes for the server to completely start before powering up the next compute node server.
   F. Repeat steps until you have powered up all of the HSA compute node servers.
3. After you have powered up all the HSAxx servers, let them run for about 10 minutes to make sure that each server is fully booted.
4. Check all components to verify that there are no errors. If errors exist, contact support (see Support and resources).
5. Power up the HSTxx servers starting from the top of the first rack:
   A. Power up HST01, the top server in the rack.
   B. Wait approximately five minutes for the server to start.
   C. Power up HST02, and then wait approximately five minutes for the server to start.
   D. If the optional or HDI, HST03 server exists in the configuration, power up HST03, and then wait approximately 5 minutes for the server to start.
   E. If the optional or HDI, HST04 server exists in the configuration, power up HST04, and then wait approximately 5 minutes for the server to start.
   F. If the optional HST05 server exists in the configuration, power up HST05, and then wait approximately 5 minutes for the server to start.

**Starting the AD VM**

1. Log in to HST01 and start the Hyper-V Manager. Make sure you log in as the Fabric Domain administrator.
   If you are unsure which account you are logged in with, use the whoami command to verify your identity.
2. Select HST01, right-click on the `<fabdom>-AD Virtual Machine`, and select start.
   A. If you are unable to see `<fabric name>-AD` on HST01, check each HST server to locate it, and then move it to HST01 (see Aligning servers and VMs).
   B. If you are still unable to find `<fabric name>-AD`, reboot HST01 and check again.
   C. If that doesn't work, contact PDW Support.
3. Wait at least three minutes for it to fully start. The VM is fully started when the computer icon next to it turns green, and you can see the Windows Login screen in the miniature VM view.

**Starting the remaining PDW and Fabric VMs on HST01**

1. Log on to Failover Cluster Manager.
2. Make sure the CorrallingServiceController service, as well as the VMM, CTL01 and MAD01 Virtual Machines are on HST01. If not, align them to HST01 (see Aligning servers and VMs). AD should also be there, since you just started it.
3. Start the CorrallingServiceController service (right-click, select start). This should automatically start the VMM, MAD01 and CTL01 virtual machines.
   A. If the VMs do not start automatically, start the VMM, wait for it to start, then start MAD01, wait for it to start, then lastly start CTL01.
4. Each VM takes approximately three minutes to fully start.
5. Click HST01 under Nodes, and then check the center pane to verify the presence and status of each of the four VMs (AD, VMM, MAD01, CTL01) and the Corralling Service Controller.

**Figure 85:** All PDW and Fabric VMs started

### Starting the HDI VMs on HST03

If you have HDInsight installed, perform these steps:

1. Make sure the HdiCorrallingServiceController service, as well as the HHN01, HSN01 and HMN01 Virtual Machines are on HST03. If not, align them to HST03 (see Aligning servers and VMs).
2. Start the HdiCorrallingServiceController service (right-click, select start). This should automatically start HHN01, HSN01 and HMN01 Virtual Machines.
   a. If the VMs do not start automatically, start HMN01, wait for it to start, then start HHN01, wait for it to start, then lastly start HSN01.
3. Each VM takes approximately three minutes to fully start.
4. Click HST03 under Nodes, and then check the center pane to verify the presence and status of each of the three VMs (HHN01, HSN01, HMN01) and the HdiCorrallingServiceController.

### Starting the VMs on the HSA nodes

Each PDW HSA node has one compute VM (CMPxx) and one iSCSI VM (iSCSIxx), similar to the following list:

- HSA01 = CMP01 VM and iSCSI01 VM
- HSA02 = CMP02 VM and iSCSI02 VM
- Etc.

If HDI components are present, they will have two data nodes (HDNOxx) and one iSCSI VM (iSCSIxx) per HSA node, similar to this list:

- HSA03 = HDN001 and HDN002 VM and iSCSI03 VM
- HSA04 = HDN003 and HDN004 VM and iSCSI04 VM
- Etc.
Like the HST VMs, the HSA VMs can become misaligned. Use the following procedure to check the alignment of each VM, and then start it. If you need to realign any VMs, see Aligning servers and VMs.

1. Click an individual HSA node to make sure that it is running its respective iSCSI and CMPxx (or HDNxxx) VMs.

**Figure 86:** VMs running and aligned

![VMs running and aligned](image)

2. Check the Status column for each VM:
   A. If the Status of both VMs is Running, repeat steps 1 and 2 for the next HSA node.
   B. If the Status of either VM is not Running continue with the next step.

3. Right-click the CMP or HDI VM (CMPxx) (or HDNxxx) VM, and then click Start.

4. Wait about 10 minutes for CMPxx or HDxx to start running. A green computer icon next to the VM name indicates that it has started. You can also see a started VM in the bottom ribbon of the Failover Cluster Manager screen. Click the down-arrow to expand the view for more detail about that VM.

**Figure 87:** CMPxx nodes running

![CMPxx nodes running](image)

5. Right-click the iSCSI VM (iSCSIxx), and then click Start.
6. Wait several minutes for the iSCSI VM to start. A green computer icon next to the VM name indicates that it has started.
7. Repeat this procedure for the VMs on each HSA node in the configuration.
Starting the software
With the HP ConvergedSystem 300 for Microsoft Analytics Platform System hardware powered on, start the software.

1. Connect to the MAD01 Virtual Machine using Failover Manager to connect, and start DWConfig from the desktop shortcut (log in as the PDW Domain Administrator).
2. Click Service Status under Parallel Data Warehouse Topology in the left navigation pane.
3. Click Start Region.

**Figure 88: Starting PDW Services**

Repeat the process under the HDInsight Topology section to start the HDInsight software.
Power down the system

1. Connect to the HST01 server using the Fabric Domain Administrator account.
2. Open the Failover Cluster Manager on HST01.
3. Connect to the MAD01 virtual machine.
4. Launch dwconfig using the desktop shortcut.
5. Click the “Stop Region” button on the “Services Status” tab for each region if present.

**Figure 89:** First stop the HDI region

**Figure 90:** Then Stop the PDW Region
6. After the services are stopped, then navigate back to Failover Cluster Manager on HST01 server host.
7. **Stop** the HdiCorrallingServiceController (most likely running on HST03/HST01) by right-clicking and clicking "Stop Role".

**Figure 91:** Stop the HdiCorrallingServiceController

![Failover Cluster Manager](image)

**Figure 92:** Stop the CorrallingServiceController

![Failover Cluster Manager](image)
8. Shut down all VMs on each HSAxx host by clicking on "Nodes". You will see each VM running on each server. To shut down the VMs, right-click on the VMs and click "Shut Down" then wait a minute for the VM to shut down before you shut down the next VM.
   A. It is safest to shut down all the VMs running in the HSAxx (compute nodes) first AND in numerical order.

**Figure 93:** Stop the HDI Region Hosts

![Failover Cluster Manager](image1.png)

**Figure 94:** Stop the PDW Region Hosts

![Failover Cluster Manager](image2.png)

9. Shut down the VMs on HSTxx host (most likely HST03) in the following order:
   A. Stop the HdiCorrallingServiceController (verify it is still stopped)
   B. HHN01 VM
   C. HSN01 VM
   D. HMN01 VM

10. Validate all VMs have been shut down successfully.
11. Lastly, shut down the VMs on HSTxx host (most likely HST01) in the following order:
   A. Stop the Corralling Service (already performed above, but verify it still remains stopped)
   B. Control VM (CTL01)
   C. Management VM (MAD01)
   D. VMM
   E. AD VM

12. Validate all VMs have been shut down successfully.

13. Shut down the physical server hosts with HSAxx (HDI first, PDW second), and then finally shut down the HSTxx servers (HDI first, PDW second).


**Backing up and restoring SQL Server 2012 Parallel Data Warehouse data**

Microsoft created backup and restore syntax for SQL Server 2012 Parallel Data Warehouse to capitalize on the parallel nature of the system. For more information about backup operations, see “Plan for Backup and Loading Hardware” in APS.chm.

**Figure 95: APS.chm file**
To provide for more flexible disaster recovery architectures, HP ConvergedSystem 300 for Microsoft Analytics Platform System enables you to connect multiple backup nodes. For detailed information about backup and restore software, see "Backup and Restore" in APS.chm.

**Figure 96: APS.chm file**

Backup and restore syntax

Backing up the PDW region databases on an HP ConvergedSystem 300 for Microsoft Analytics Platform System is a simple BACKUP DATABASE T-SQL command. As with all other query tools you would use, connect to the cluster IP address of the CTL01 VM, using port 17001. For example, if you used the sqlcmd command line utility, the following would be the command:

```
sqlcmd -S "172.16.252.5,17001" -U sa -P <yoursapassword> -I -d AdventureWorksPDW2012
```

Parameters included in the example are defined as follows:

- **S** – IP address of the Control node CLUSTER that the Admin Console, operation commands, and users use for access
- **U** – User ID (in the example, sa)
- **P** – System password
- **I** – Enabled Quoted Identifiers
- **d** – Name of the database to back up

Unlike a standard SQL Server backup, a SQL Server PDW backup will be a collection of files. Therefore, when running the backup command, you will specify the UNC path to a backup directory. It is strongly recommended that this IP address be of a server attached over the InfiniBand network as described earlier in this document. If so, then your high speed backup will flow onto the backup server over the InfiniBand connection. This will be on a separate subnet from your Ethernet connections.

In our example, if we had a backup/data loading server, it could have two IB connections to the CS300 for APS, one on the IB1 network (172.16.254.99), and one on the IB2 network for redundancy (172.16.255.99). To run the backup, we’d have a file share (for example, PDWBackups), and the command would look like:

```
BACKUP DATABASE AdventureWorksPDW2012 to DISK='\\172.16.254.99\PDWBackups\AdventureWorksPDW2012';
```
Restoring a database is a reverse of the same process. The exception is that if you need to restore the master database, you must use the dwconfig utility.

To restore the AdventureworksPDW2012 database we backed up above, you would run:

```
RESTORE DATABASE AdventureWorksPDW2012 FROM DISK='\172.16.254.99\PDWBackups\AdventureWorksPDW2012';
```

For additional details about backup and restore syntax, refer to your APS.chm documentation.

**Moving backup data to a corporate-wide backup system**

Copy the backup directory files to a corporate-wide backup or tape library for disaster recovery purposes.

If you follow the advice in this getting started guide and use an InfiniBand connected backup server, moving a backup set off the backup node can negatively impact restore performance. Whenever possible, perform restore operations from the backup files as they were originally stored on the InfiniBand-connected server. If possible, copy the backup directory from your corporate-wide backup or tape library to the recommended server, and then perform the restore for optimal performance.

**Configuration Manager**

This section describes the Microsoft Analytics Platform System Configuration Manager dialogs and functions. For more information, see “Appliance Operations Guide, Appliance Configuration Tasks” in the APS.chm help file.

HP Services performs the necessary setup tasks in this section during the installation. HP recommends reviewing each function within the Configuration Manager to be sure that the parameters are set to the appropriate values, and to verify the IP address firewall and security settings that allow the HP ConvergedSystem 300 for Microsoft Analytics Platform System access to and from your corporate network.

Always use the Microsoft Analytics Platform System Configuration Manager to start and stop the PDW and HDI regions on the HP ConvergedSystem 300 for Microsoft Analytics Platform System.

**Running Configuration Manager**

After logging onto MAD01 VM as the PDW domain administrator (see above, Starting the software), you can manage many PDW and HDI functions, as well as global configuration changes, using dwconfig.exe, the Configuration Manager. A shortcut to the utility will already be on the administrator’s desktop.

From this application, you can view and modify many of the HP ConvergedSystem 300 for Microsoft Analytics Platform System configuration settings.
**Appliance Topology screen**
When you execute dwconfig, the Appliance Topology screen appears and lists all of the servers available in the fabric domain (physical servers and VMs). From this page you can see which components are used for the PDW and HDI regions, as well as Ethernet and InfiniBand addresses.

**Figure 97: Configuration Manager**
**Password Reset**

As part of the HP ConvergedSystem 300 for Microsoft Analytics Platform System installation and startup service, HP Support changes the factory default passwords to site-specific passwords. You can change passwords at any time using the Password Reset screen. This interface is documented earlier in the Password management section.

**Figure 98: Configuration Manager**

![Configuration Manager](image)

**Time Zone configuration**

Use this screen to verify the time zone, and to enable the system to adjust for Daylight Saving Time.

**Figure 99: Configuration Manager**

![Configuration Manager](image)
**Network configuration**

The Network tab presents the IP configuration information for various HP ConvergedSystem 300 for Microsoft Analytics Platform System components. Click the arrow next to the Node name to see a menu of the available components on that node.

If you need to change the IP addresses of any components on your system, contact Microsoft support for additional assistance. This interface is read-only as of AU1.

*Figure 100: Configuration Manager*

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**Parallel Data Warehouse Topology**

The Parallel Data Warehouse Topology screen displays the components that are in the PDW domain. Note that all PDW domain components are virtual machines. From this page you can view the Ethernet and InfiniBand addresses. However, you will note that the Cluster address, used for connectivity, is not available in this interface.

*Figure 101: Configuration Manager Topology*
**PDW Certificate provisioning**

Use this screen to provision certificates for establishing secure connections to HP ConvergedSystem 300 for Microsoft Analytics Platform System. You can obtain certificates from a server within your corporate infrastructure, or buy a publicly issued certificate from a certificate authority. More details on certificates are in the APS.chm help file.

*Figure 102: Configuration Manager – Certificate*

![Certificate Provisioning Screen](image)

**PDW Firewall**

Use this interface to enable or disable firewall rules that allow or prevent access to specific ports on HP ConvergedSystem 300 for Microsoft Analytics Platform System for PDW.

*Figure 103: Configuration Manager*

![Firewall Configuration Screen](image)
**PDW Services Status**

Use this interface to view the status of various SQL Server 2012 Parallel Data Warehouse services, as well as to stop and start the PDW services.

- When **shutting down**, click Stop Region to take the cluster offline and shut down the SQL Server 2012 Parallel Data Warehouse services.
- When **starting up**, click Start Region to start the cluster and start the SQL Server 2012 Parallel Data Warehouse services.

*Figure 104: Configuration Manager*

**PDW Instant File Initialization**

Use this screen to provide Instant File Initialization, which reclaims used disk space without filling space with zeros. Instant File Initialization overwrites disk content with the new data written to the files. Log files cannot be initialized instantaneously.

When enabled, data file operations can execute more quickly.
Figure 105: Configuration Manager

PDW Restore Master Database
The Restore Master Database interface enables you to specify the master backup folder on a network drive. If you are thinking of restoring the master database, it is highly recommended to be in contact with Microsoft Support before you take action in restoring this critical system database.

Figure 106: Configuration Manager – Restore Master Database
**HDInsight Topology**

The HDInsight Topology screen displays the components that are in the HDI domain. Note that all HDI domain components are virtual machines. From this page you can view the Ethernet and InfiniBand addresses.

**Figure 107: Configuration Manager**

![HDInsight Topology Screen]

**HDI Certificate provisioning**

Just like the PDW certificate provisioning, you use this interface to provision certificates for establishing secure connections to HP ConvergedSystem 300 for Microsoft Analytics Platform System. You can obtain certificates from a server within your corporate infrastructure, or buy a publicly issued certificate from a certificate authority. More details on certificates are in the APS.chm help file.

**Figure 108: Configuration Manager – Certificate**

![Certificate Provisioning Interface]
**HDI Firewall**

Use this interface to enable or disable firewall rules that allow or prevent access to specific ports on HP ConvergedSystem 300 for Microsoft Analytics Platform System for HDI.

*Figure 109: Configuration Manager – topology*

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**HDI Services Status**

Use this interface to view the status of various HDInsight services, as well as to stop and start the HDI services.

- When *shutting down*, click Stop Region to take the cluster offline and shut down the HDInsight services.
- When *starting up*, click Start Region to start the cluster and start the HDInsight services.

*Figure 110: Configuration Manager*
**HDI user management**
Use this interface to manage HDI users. See the Adding new logins (HDI) section earlier for details.

**Support and resources**

**HP ConvergedSystem 300 for Microsoft Analytics Platform System Support Pack**
Keeping your HP ConvergedSystem 300 for Microsoft Analytics Platform System running at maximum performance is critical and requires updating firmware and drivers to maintain the overall health of servers, storage arrays, switches, and all components included in the hardware stack. Developing a methodology for maintaining firmware on a complex hardware stack like the multi-server, MPP system powered by SQL Server 2012 Parallel Data Warehouse Edition, and HP ConvergedSystem 300 for Microsoft Analytics Platform System, requires a number of considerations.

HP ConvergedSystem 300 for Microsoft Analytics Platform System requires a specific, tested firmware and driver software stack that uses consistent firmware and driver versions across all similar nodes and subsystems throughout the system. Designed to help you simplify installation and maintenance tasks, the HP ConvergedSystem 300 for Microsoft Analytics Platform System Support Pack utility suite for HP ConvergedSystem 300 for Microsoft Analytics Platform System provides a unique set of tools and a collection of solution-tested HP firmware and drivers to maintain and support the correct MRA configuration level. All maintenance procedures require careful coordination with support.

HP support customers can download the HP ConvergedSystem 300 for Microsoft Analytics Platform System Support Pack from the HP Software Updates website (hp.com/go/hpsoftwareupdatesupport).

**Download and installation**

1. Download the latest Support Pack from the HP website (hp.com/go/hpsoftwareupdatesupport).
2. Log in using HP Passport.
3. Enter the appropriate customer information under Directly Enter SAID.
4. Review and accept the Terms and Conditions.
5. Click View available products. If you have used this site before, click View previously selected products, and then skip the following step.
6. Enter APS in the Search for products in all categories / product centers field.
7. Click Get software updates.
8. Select the latest version of the Complete Tool, which includes all of the tools in the latest toolkit, or select an individual Support Pack tool from the same location by choosing a tool from the list.
9. Copy the Support Pack zip file to the HST01 server.
10. Double-click the zip file, and then click Extract all files.
11. Unzip the appropriate hardware-based folder. Make note of the directory location of the files associated with the support pack so that you can run the various scripts provided with the tool.

**HPApplianceXmlGenerator component**
- Creates the HPAppliancedetails.xml file based off of the current hardware configuration. This file is needed for the support pack to function.
- Maps software IPs from definition files
- Discovers Ethernet switch IPs, IB switch IPs and iPDU IPs
- Determines server models
- Determines IB switch type
- Determines topology and identifies existing HDI and PDW regions
- Detailed logs are created for easy troubleshooting
- Supports AU.5 and AU1.0. Supports v1 and v2 hardware

**Validator features**
- Supports AU.5 and AU1.0. Supports v1 and v2 hardware
- By default calls HPApplianceXmlGenerator
- Verifies PowerShell is run with elevated privileges and user is in domain admin group
- Checks topology
- Checks server models
• Checks IB switch type
• Checks switch IPs (Fibre Channel/Ethernet/InfiniBand)
• Checks all bare metal hosts and VMs
• Pings components
• Verifies and validates common password and domain password
• Validates firmware/driver compliance against MRA for all components
• Iterates through all MRA files and finds closest MRA matching recipe
• Reports firmware/driver version mismatches
• Creates detailed logs of all operations and errors

**Diagnostics features**
• Supports AU.5 and AU1.0. Supports v1 and v2 hardware
• By default calls HPApplianceXmlGenerator
• Verifies PowerShell is run with elevated privileges and user is in domain admin group
• Checks topology
• Checks server models
• Checks IB switch type
• Checks switch IPs (Fibre Channel/Ethernet/InfiniBand)
• Checks all bare metal hosts and VMs
• Pings components
• Verifies and validates common password and domain password
• Checks cable wiring (FC, iPDU, Ethernet and InfiniBand)
• Verifies storage including internal as well as external varieties of P2000/D6000. Hard disk drive capacities, health statuses, RAID levels, and logical volumes are all verified
• Verifies processors installed (processor models and speeds)
• Verifies memory installed (DIMM slots, sizes and amounts)
• Verifies PCIe components installed, along with which slots (FDR and H221 HBA cards) into which they have been installed
• Verifies server configuration settings towards BIOS configuration settings
• Verifies Fibre channel/Ethernet/InfiniBand switch health, including fan, power, temperature status
• Creates detailed logs of all operations and errors

**Reporter features**
• Supports AU.5 and AU1.0. Supports v2 hardware
• By default calls HPApplianceXmlGenerator
• Verifies PowerShell is run with elevated privileges and user is in domain admin group
• Checks topology
• Checks server models
• Checks IB switch type
• Checks switch IPs (Ethernet/InfiniBand)
• Checks all bare metal hosts and VMs
• Pings components
• Verifies and validates common password and domain password
• Creates reports in csv and html file formats
• Report type 1: Serial number discovery for switches, storage enclosures, servers and iPDU
• Report type 2: Firmware and driver version numbers for all components
• Report type 3: Physical hard disk drive properties (server, location, firmware/driver version, serial number, model)
• Creates detailed logs of all operations and errors
Proactive Care report features

- Supports AU.5 and AU1.0. Supports v2 hardware
- By default calls HPApplianceXmlGenerator
- Verifies PowerShell is run with elevated privileges and user is in domain admin group
- Checks topology
- Checks server models
- Checks IB switch type
- Checks switch IPs (Ethernet/InfiniBand)
- Checks all bare metal hosts and VMs
- Pings components
- Verifies and validates common password and domain password
- Provides a comprehensive rollout from the results of the Validator, Diagnostics and Reporter tools into a csv file (viewable from Excel)
- Report is sorted by component (rack ID, U location, device, IP address, serial number, make and model, status)
- Compiles serial numbers for hardware components (switches, iPDUs, servers, and storage enclosures)
- Report contains each component’s validation issues with firmware and driver versions
- Report contains each component’s diagnostic issues
- Creates detailed logs of all operations and errors

Configuring Windows Server Update Services

There are many installations of Windows Server 2012 and SQL Server 2012, as well as other components included in the HP ConvergedSystem 300 for Microsoft Analytics Platform System. Keeping these systems up to date with Windows Update is accomplished by configuring the Configure Windows Server Update Services (WSUS). This is a post-installation configuration requirement that you must configure. Work with Microsoft support to set this up. For more information, see “Configure Windows Server Update Services” in the APS.chm help file.

Figure 111: APS.chm file
**HP Insight Remote Support software and HP ConvergedSystem 300 for Microsoft Analytics Platform System**

HP Insight Remote Support (Insight RS) is a key component of HP Proactive Care support from HP. This software provides continuous proactive monitoring of the hardware components within the ConvergedSystem 300 for Microsoft Analytics Platform System environment.

Your HP consultants installing the CS300 for APS will work with you to install and configure an Insight RS system. This system cannot be part of the CS300 for APS.

For additional information about Insight RS, see the HP website (hp.com/go/insightremotesupport).
For more information

HP ConvergedSystem 300 for Analytics Platform System QuickSpecs, available from the HP website QuickSpecs access through HP Marketing Document Library, hp.com/go/qspec

ConvergedSystem 300 for Microsoft Analytics Platform System website, hp.com/go/convergedsystem/cs300aps


HP ConvergedSystem, hp.com/go/convergedsystem

HP Insight Remote Support, hp.com/go/insightremotesupport

HP ActiveAnswers for Microsoft SQL Server, hp.com/solutions/activeanswers/microsoft/sql

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