

HP Backup Navigator

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User's Guide

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Chapter 1: Introduction

HP Backup Navigator is a web-based application that provides an additional reporting functionality for your HP Data Protector backup environment. It is a comprehensive and scalable tool, which enables you to create, generate, and deliver a wide range of reports for the web browser-based presentation and user-defined exploration.

In the web user interface you can generate numerous predefined reports on different aspects of the Data Protector cells, create the reports of your choice, and export them to various formats. Predefined reports provide information on the Data Protector cell infrastructure, IDB, media management, devices, sessions, capacity, and performance. For example, you can monitor active backup sessions, get a list of most unreliable media, track the backup volume growth, check the transfer rate during the restore sessions, analyze trends in backup capacity changes, make future predictions, and so on.

The key tasks of the HP Backup Navigator are:

- Recognizing the Data Protector Cell Manager systems that provide input data for your reports.
- Collecting data from the Data Protector Internal Database (IDB).
- Generating reports from the collected data considering user-defined scope and parameters.

HP Backup Navigator benefits

- Central monitoring of multiple Cell Managers
- Simplified tracking of infrastructure changes across the entire Data Protector environment
- Overview of backup resources
- Performance, capacity trending, and future planning
- Simplified error analysis
- Customizable reporting and dashboard
- Notifications on specified events

HP Backup Navigator features

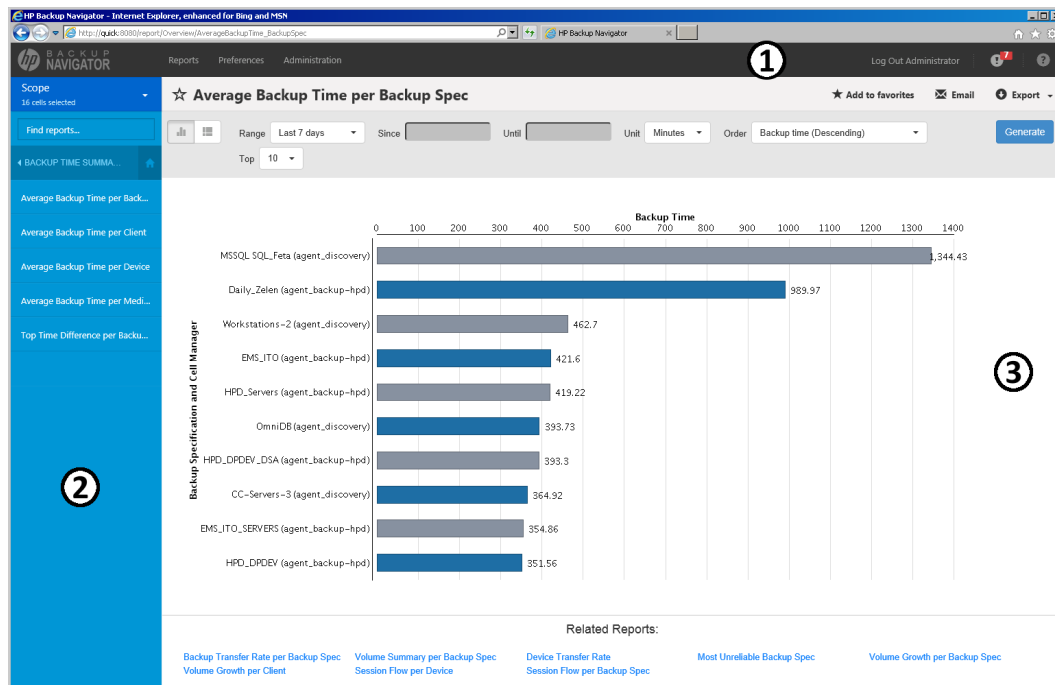
- You can select the Data Protector cells, from which you want to receive the input data for your reports.
- You can create reports of your choice with the same available options as predefined reports.
- You can configure the dashboard to display the reports in the way which is convenient for you to

view them.

- You can switch between the chart and table presentation of the report.
- You can examine report data in more detail by using the drill-down functionality.
- You can add a report to your favorites to access it quicker next time when you need it.
- You can subscribe to your favorite report to receive it regularly by email.
- You can export the reports output to various formats.
- You can navigate from the selected report to other reports with the related content and the same scope.
- You can customize report charts by sorting data according to different available parameters.
- You can get notifications on the events occurred in the HP Backup Navigator including error states and failures.
- HP Backup Navigator retrieves only the data, which is needed for a report presentation at the time. This enhances performance by saving the time and the resources that would be needed to load all available data.

HP Backup Navigator web user interface

Figure 1: HP Backup Navigator web user interface



- 1 Menu Bar
- 2 Navigation Pane
- 3 Results Area

The elements of the HP Backup Navigator web user interface are:

- **Menu Bar**

The Menu Bar is an upper bar of the HP Backup Navigator web user interface. Depending on your user rights, you can access all or only some of the following contexts:

Reports

The predefined reports are logically grouped in four report categories (Overview, Monitoring, Capacity, Performance). You can generate reports, add reports to your favorites, subscribe for reports, export a report to various formats, and so on.

Preferences

You can configure your personal settings, specify input data filters, and manage your subscriptions.

Administration (available for users with the administrator's user rights):

You can specify from which Data Protector cells you want to collect input data and use them for your reports. Manage your input data by adding new Data Protector Cell Managers to the data collection, starting or stopping input data collection on the specific Cell Managers, detaching the specific Cell Managers from or attaching them back to the HP Backup Navigator. You can also create and manage your custom reports, perform licensing related tasks, configure your mail server and logging settings, view your database settings.

Notification

Access and view the HP Backup Navigator events. If monitors are specified for the events of a higher severity and such events occur, alarms are raised and are displayed next to the icon.

Help

Access the *HP Backup Navigator User's Guide* with introduction to HP Backup Navigator and instructions on how to use it.

- **Navigation Pane**

The Navigation Pane is a left side panel of the HP Backup Navigator web user interface. You can switch between different items to view them or to change them in the Results Area. When you select an item in the Navigation Pane, the corresponding information is displayed in the Results Area.

The content of the Navigation Pane is context specific. For example, the Reports context provides scope settings, search report functionality, a list of report categories and subcategories, and favorite reports. In the Preferences and Administration contexts, you can select an item to specify or change the corresponding configuration settings, such as user profile or logging settings.

- **Results Area**

The Results Area is a central area of the HP Backup Navigator web user interface. It displays information that corresponds to the item selected in the Navigation Pane.

In the Reports context, the Results Area is represented as a dashboard with a configurable layout, or as a report output, when a specific report is selected. You can view the selected report, generate it with different parameters, switch to the table presentation of the report, see the related reports, export the report to different formats, send it by email, and subscribe to the report.

In other contexts, you can specify or change the configuration settings of the item selected in the Navigation Pane.

Chapter 2: Installation and Configuration

HP Backup Navigator environment is a set of systems that obtain, manage, and analyze the specified data from the Data Protector cell, and present it as reports in the web-based application. The environment consists of the following parts:

- **HP Backup Navigator system**

A system where HP Backup Navigator resides. HP Backup Navigator processes the data collected in the Data Protector environment and presents it as specific reports in the web user interface. A database that contains the HP Backup Navigator functionality related data, the data collected from the Data Protector sessions, and the Data Protector cell infrastructure related data also resides on the HP Backup Navigator system.

- **HP Backup Navigator web user interface**

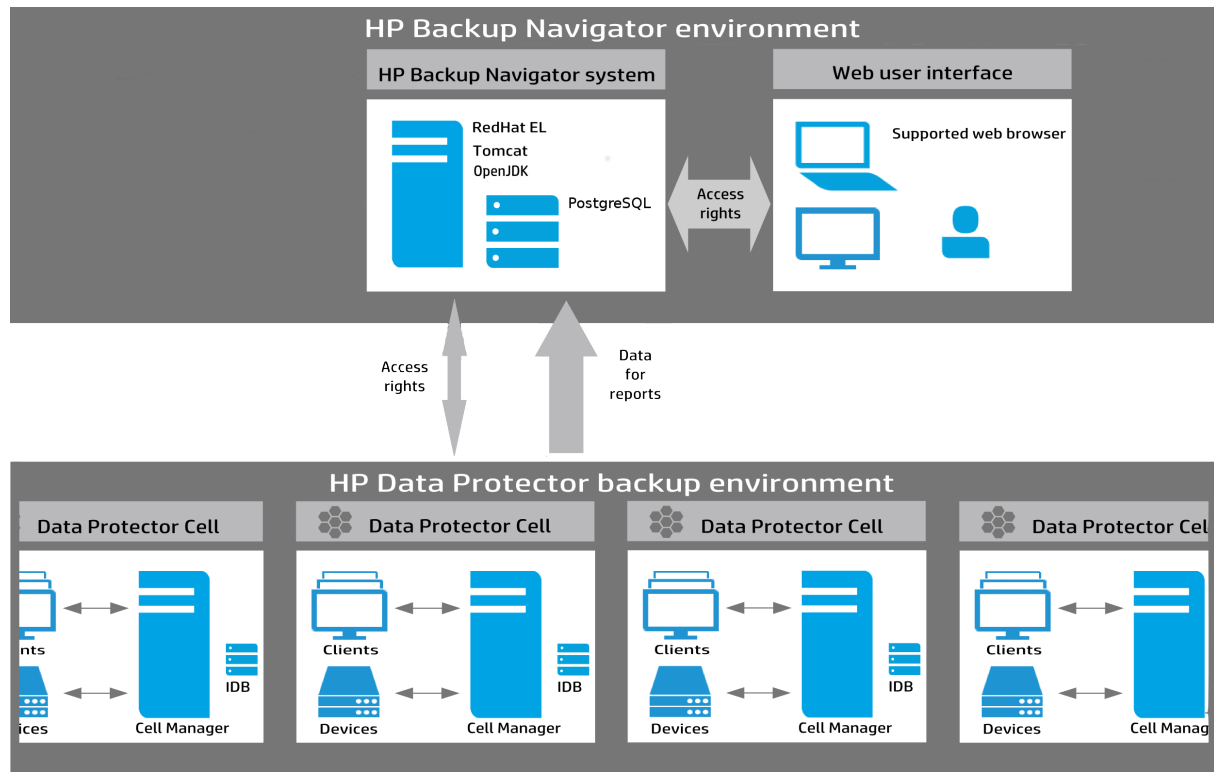
A system with a web browser, from which you access HP Backup Navigator. The web user interface also provides administration tools to adjust the environment to your needs. HP Backup Navigator web user interface has an established connection to the HP Backup Navigator system.

- **Data Protector environment**

A backup environment, from which you collect data for your reports.

This diagram shows the HP Backup Navigator environment and its elements as well as how HP Backup Navigator interacts with Data Protector:

Figure 2: HP Backup Navigator environment



Prerequisites

Before installing HP Backup Navigator, consider the following:

HP Backup Navigator system prerequisites

- Red Hat Enterprise Linux 6.4/6.5 operating system (Basic Server installation type)

For the installation and configuration instructions, see ["Installing and Configuring Red Hat Enterprise Linux" on page 66](#).

- System requirements

At least 20 GB of disk space and at least 8 GB of RAM.

- OpenJDK 1.7

OpenJDK is installed and configured on the system automatically when running the HP Backup Navigator installation script. You can also install and configure it manually. For the installation instructions and HP Backup Navigator specific configuration, see ["Installing OpenJDK" on page 75](#).

- Apache Tomcat 7.x

Apache Tomcat is installed and configured on the system automatically when running the HP Backup Navigator installation script. You can also install and configure it manually. For the installation instructions and HP Backup Navigator specific configuration, see ["Installing and configuring Tomcat" on page 75](#).

- PostgreSQL 9.3

PostgreSQL server can be installed and configured on the same system with HP Backup Navigator automatically when running the HP Backup Navigator installation script. You can also install and configure it manually. For the installation instructions and HP Backup Navigator specific configuration, see ["Installing and configuring PostgreSQL" on page 80](#).

HP Backup Navigator web user interface

The HP Backup Navigator web user interface supports the following web browsers:

- Internet Explorer 10, 11
- Mozilla Firefox 26 and later versions

If you want to use Kerberos authentication, perform the following configuration steps in the browser:

- a. In the address bar, type: **about:config**
- b. In the Search text box, type: **negotiate**
- c. Double-click the **network.negotiate-auth.trusted-uris** string, enter the domain name of the HP Backup Navigator system in the pop-up text box (for example, **company.com**), and then click **OK**.

When you log in to the HP Backup Navigator system, specify the fully qualified domain name in the address string (for example, **computer.company.com:8080**).

- Google Chrome 30 and later versions

Data Protector environment

- HP Backup Navigator can be used with Data Protector versions 7.xx, 8.00-8.12, 9.00-9.02.
- You need an admin user account to access the Data Protector Cell Manager.
- If a Cell Manager is running in an encrypted mode, add your HP Backup Navigator system to the Security Exceptions list on the respective Cell Manager to allow non-encrypted communication.
- To access and collect the data in a Data Protector cell, add your HP Backup Navigator system to the Data Protector Admin user group on the respective Cell Manager.
- To enable data collection for the Cell Manager Services, IDB Health, and Licenses related reports from the UNIX and Linux Cell Managers, create the following softlinks on such Cell Managers:

```
ln -s /opt/omni/sbin/omnisv /opt/omni/lbin/omnisv
ln -s /opt/omni/sbin/omnidbcheck /opt/omni/lbin/omnidbcheck
ln -s /opt/omni/bin/omnicc /opt/omni/lbin/omnicc
ln -s /opt/omni/bin/omnidb /opt/omni/lbin/omnidb
ln -s /opt/omni/bin/omnimm /opt/omni/lbin/omnimm
ln -s /opt/omni/bin/omnicellinfo /opt/omni/lbin/omnicellinfo
```

For more information, see the Data Protector documentation at the HP support website at:
<http://support.openview.hp.com/selfsolve/manuals>

Recommendations

Before installing and configuring HP Backup Navigator, you should consider the factors that affect performance of the application. The HP Backup Navigator performance mainly depends on the number of the Data Protector objects collected from the Cell Managers for various reports. One HP Backup Navigator system can collect up to 1 million objects from the Data Protector environment. To calculate how many objects reside on a Cell Manager system, see "[Calculating the number of objects on a Data Protector Cell Manager](#)" on the next page.

If you have multiple Cell Managers and more than 1 million objects in your backup environment, determine how many HP Backup Navigator applications you need to install and from which Cell Managers each of the HP Backup Navigator will collect data. When planning, which Cell Managers will be dedicated to a specific HP Backup Navigator system, consider the following:

- The number of objects residing on these Cell Managers should not exceed 1 million.
- The Cell Managers should be grouped according to their geographical location to avoid connectivity and network problems.

Calculating the number of objects on a Data Protector Cell Manager

Steps

1. On a Data Protector Cell Manager system, run the following command as an administrator:

Windows: `omnidbutil -info > <filename>.txt`

Linux: `/opt/omni/sbin/omnidbutil -info > <filename>.txt`

2. Open the generated TXT file and search for the number of object under the Catalog Database space usage section > Items Used column > Objects.

Installation procedure

The HP Backup Navigator installation procedure consists of the following phases:

1. ["Running the HP Backup Navigator installation script" below.](#)
2. ["Configuring HP Backup Navigator" on page 16.](#)

If you want to enable Windows sessions credentials authentication, configure Kerberos on the system where you installed HP Backup Navigator. See ["Configuring Kerberos authentication" on page 19.](#)

Running the HP Backup Navigator installation script

You can use the HP Backup Navigator installation script to install HP Backup Navigator with all prerequisites (PostgreSQL, Apache Tomcat, and OpenJDK). The installation script simplifies the installation process and provides all necessary configuration specific to HP Backup Navigator. It is recommended to use this installation approach. However, if you want to configure firewall and network or install and configure the prerequisite software manually, see ["Configuring firewall and network" on page 73](#), ["Installing and configuring Tomcat" on page 75](#), and ["Installing and configuring PostgreSQL" on page 80](#).

Prerequisites

- Red Hat Enterprise Linux 6.4/6.5 is installed and configured as described in ["Installing and Configuring Prerequisite Software" on page 73](#).
- If you do not have access to the internet on the HP Backup Navigator system, make sure, that you prepare the following packages on this system. It is recommended that this packages are saved in a temporary directory with write permissions, for example, `\tmp`:

OpenJDK 1.7:

Download the `jdk-7u67-linux-x64.rpm` installation package from:

<http://www.oracle.com/technetwork/java/javase/downloads/jdk7-downloads-1880260.html>

Apache Tomcat:

Download Tomcat from the Core Binary distribution (`tar.gz` file) from:

<http://tomcat.apache.org/download-70.cgi>

PostgreSQL:

- Download the following packages from http://yum.postgresql.org/9.3/redhat/rhel-6-x86_64/repoview/postgresqldbserver93.group.html:

```
postgresql93
postgresql93-contrib
postgresql93-libs
postgresql93-server
```

- Download the `uuid-1.6.1-10.el6.x86_64.rpm` package from:
http://mirror.centos.org/centos/6/os/x86_64/Packages/uuid-1.6.1-10.el6.x86_64.rpm
- On RHEL 6.4, download the `openssl` package to your system from:
http://mirror.centos.org/centos/6/os/x86_64/Packages/openssl-1.0.1e-30.el6.x86_64.rpm

Steps

1. Depending on the format of your HP Backup Navigator installation, do one of the following:
 - Insert and mount the HP Backup Navigator installation DVD-ROM or mount the ISO image directly.
 - Untar the `hp-backup-navigator-8.01.tar` installation package to a temporary directory, for example, `/tmp`:


```
# tar -xvf /tmp/hp-backup-navigator-9.00.tar
```
2. In the command-line console, run the following command:


```
# sudo hp-backup-navigator-install.sh
```
3. The script starts the installation and configuration of HP Backup Navigator and prerequisite software, such as, OpenJDK, Tomcat, and PostgreSQL as well as firewall and network configuration. In case of the PostgreSQL installation, the database user with appropriate permissions is created.
4. You are provided with the user name (`admin`) and password (randomized, unique) for the first login to the HP Backup Navigator web application.

Configuring HP Backup Navigator

Make sure that Tomcat is up and running.

Steps

1. Start the web browser and connect to the system where you installed HP Backup Navigator (type **hostname**).

Note: If you use Kerberos authentication in the Firefox, specify the fully qualified domain name in the address string (for example, `computer.company.com`).

2. Log in to the web application with the provided user name and password. The Welcome Installation wizard opens. Click **Next**.
3. In the Database setup window, specify the following:
 - the hostname of the system where the HP Backup Navigator database resides
 - the port of the system where the database resides (by default, 5432)
 - the user name and the password of the PostgreSQL admin user with the SUPERUSER permissions (See instructions on how to create such user account in ["Installation and Configuration" on page 10.](#))
 - the database name

Figure 3: Database setup page

The screenshot shows a web interface for database setup. At the top, it says "Welcome to installation". Below this is a progress bar with four steps: "Start" (highlighted in green), "Database" (highlighted in blue), "User", and "Finish". The "Database" step is currently active. Below the progress bar, the section "Database setup" is displayed. It contains five input fields: "Hostname" (with placeholder "Enter hostname"), "Port" (with value "5432"), "Username" (with placeholder "Enter your username"), "Password" (with placeholder "Enter your password"), and "Database name" (with placeholder "Enter database name"). At the bottom of the form, there are two buttons: "Test connection" and "Next".

For more information on the database, see the PostgreSQL documentation.

4. Click **Test connection** to verify whether the connection to the database with the specified data is established. Depending on the test results, do one of the following:
 - If the connection to the database server is successful and the specified database is valid, click **Next**.
 - If the connection to the database server is successful, but the database does not exist on this host, click **Create database**. The database will be created automatically.

- If the connection to the database server is successful, but the specified database is not valid for HP Backup Navigator, ensure that you specify the database that meets the HP Backup Navigator requirements, and then test the connection again.
 - If the connection to the database server is successful and the specified database was configured earlier, click **Attach**. When you attach to the existing database, the user configuration step (next step) is skipped, because the administrator is already configured.
 - If the connection to the database server fails, check that the information you provided is correct and then test the connection again.
5. In the User setup window, create a new administrator's account. Enter the new user name and password, and click **Create new user**. The newly created user account will be the HP Backup Navigator administrator. Note, that this step is skipped, if you attached to the existing database.

Figure 4: User setup page

Welcome to installation

Start > Database > **User** > Finish

User setup

Create your admin account

Username:

Password:

Confirm password:

6. The HP Backup Navigator Installation Successful window displays. Click **Take me to application**.
7. Log in to the HP Backup Navigator web user interface with the new user account.

Note: You can install Data Protector on the system where HP Backup Navigator is already installed. Stop Tomcat on the HP Backup Navigator system before the Data Protector installation and start it again after the Data Protector installation.

Configuring Kerberos authentication

To enable Windows sessions credentials authentication, configure Kerberos on the system where you installed HP Backup Navigator.

Prerequisite

Make sure, that time on the system where you want to install HP Backup Navigator is synchronized with NTP of your network.

Steps

1. Set up the `/etc/krb5.conf` file as follows:

```
# cat /etc/krb5.conf
[logging]
default = FILE:/var/log/krb5libs.log
kdc = FILE:/var/log/krb5kdc.log
admin_server = FILE:/var/log/kadmind.log

[libdefaults]
default_tkt_enctypes = aes128-cts rc4-hmac des3-cbc-sha1 des-cbc-md5 des-cbc-crc
default_tgs_enctypes = aes128-cts rc4-hmac des3-cbc-sha1 des-cbc-md5 des-cbc-crc
permitted_enctypes = aes128-cts rc4-hmac des3-cbc-sha1 des-cbc-md5 des-cbc-crc
default_realm = COMPANY.COM
dns_lookup_realm = true
dns_lookup_kdc = true
ticket_lifetime = 24h
forwardable = yes

[realms]
COMPANY.COM = {
kdc = dc_computer.company.com
admin_server = dc_computer.company.com
```

```
default_domain = company.com  
}
```

```
[domain_realm]  
.company.com = COMPANY.COM  
company.com = COMPANY.COM
```

```
[appdefaults]  
pam = {  
  debug = false  
  ticket_lifetime = 36000  
  renew_lifetime = 36000  
  forwardable = true  
  krb4_convert = false  
}
```

where:

dc_computer.company.com is the company Key distribution center host.
company.com is the company domain name.

2. Test the Kerberos configuration as follows:

```
# kinit user@COMPANY.COM  
Password for user@COMPANY.COM:
```

```
# klist  
Ticket cache: FILE:/tmp/krb5cc_0  
Default principal: user@COMPANY.COM
```

```
Valid starting Expires Service principal  
03/18/14 11:10:19 03/18/14 21:10:23 krbtgt/COMPANY.COM@COMPANY.COM  
renew until 03/19/14 11:10:19
```

where:

user@COMPANY.COM is your user account, which is already in AD and has permissions to add a system to AD.
company.com is the domain name of the system, where you want to install HP Backup Navigator.

3. Make sure that Samba server is installed:

```
# rpm -qa | grep -i samba-  
samba-3.6.9-167.el6_5.x86_64  
samba-winbind-clients-3.6.9-167.el6_5.x86_64  
samba-winbind-3.6.9-167.el6_5.x86_64  
samba-client-3.6.9-167.el6_5.x86_64  
samba-common-3.6.9-167.el6_5.x86_64
```

4. Stop Samba services (smb, nmb, and winbind):

```
# service smb stop
# service nmb stop
# service winbind stop
```

5. Configure Samba server as follows:

```
# cat /etc/samba/smb.conf
[global]
workgroup = WORKGROUP
security = ads
realm = COMPANY.COM
kerberos method = dedicated keytab
create krb5 conf = no
dedicated keytab file = /etc/krb5.keytab

wins support = no
preferred master = no
local master = no
domain master = no
```

where:

workgroup is the name of your workgroup.

company.com is the domain name of the system, where you want to install HP Backup Navigator.

6. Join Samba to Active Directory. Make sure that:

- Your Kerberos ticket is valid or initialize it again.
- No old Kerberos keytab specified by the Samba config.
- You have the root user permissions.

Run the following commands:

```
# rm -f /etc/krb5.keytab

# kinit user@COMPANY.COM
Password for USER@COMPANY.COM:

# klist
Ticket cache: FILE:/tmp/krb5cc_0
Default principal: user@COMPANY.COM
```

```
Valid starting Expires Service principal
03/18/14 11:21:37 03/18/14 21:21:40 krbtgt/COMPANY.COM@COMPANY.COM
renew until 03/19/14 11:21:37
```

```
# net ads join -k COMPANY.COM
Using short domain name -- NAME
Joined 'computer' to dns domain 'company.com'
```

```
# net ads testjoin
Join is OK
```

where:

user@COMPANY.COM is your user account, which is already in AD and has permissions to add a system to AD.

company.com is the domain name of the system, where you want to install HP Backup Navigator.

NAME is a shortened form of the domain name.

7. Start Samba services (smb, nmb, and winbind):

```
# service smb start
# service nmb start
# service winbind start
```

8. Create the Kerberos Keytab HTTP Principal to communicate through the security channel, as follows:

```
# net ads keytab create
# net ads keytab add HTTP/computer.company.com
# net ads keytab list | grep -i http
4 DES cbc mode with CRC-32 HTTP/computer.company.com@COMPANY.COM
4 DES cbc mode with RSA-MD5 HTTP/computer.company.com@COMPANY.COM
4 ArcFour with HMAC/md5 HTTP/computer.company.com@COMPANY.COM
4 AES-128 CTS mode with 96-bit SHA-1 HMAC
HTTP/computer.company.com@COMPANY.COM
4 AES-256 CTS mode with 96-bit SHA-1 HMAC
HTTP/computer.company.com@COMPANY.COM
```

where:

computer.company.com is the hostname of the system, where you want to install HP Backup Navigator.

company.com is the domain name of the system, where you want to install HP Backup Navigator.

9. Create a dedicated group for accessing the Kerberos keytab and set up permissions accordingly:

```
# grep 200 /etc/group
# groupadd -g 200 krb5keytab
# chgrp krb5keytab /etc/krb5.keytab
# chmod g+r /etc/krb5.keytab
```

10. In `/opt/dpa-ext/conf` create the `kerberos.groovy` file with the following content:

```
grails.plugins.springsecurity.kerberos.ticketValidator.servicePrincipal =
'HTTP/computer.company.com@COMPANY.COM'
grails.plugins.springsecurity.kerberos.ticketValidator.keyTabLocation =
'file:///pathname.keytab'
```

where:

computer.company.com is the hostname of the system, where you want to install HP Backup Navigator.

company.com is the domain name of the system, where you want to install HP Backup Navigator.

pathname is the path to the keytab location.

Chapter 3: Upgrading HP Backup Navigator

You can upgrade HP Backup Navigator from the 8.0x version.

Prerequisites

If you do not have access to the internet on the HP Backup Navigator system, make sure, that you prepare the following packages on this system. It is recommended that these packages are saved in a temporary directory with write permissions, for example, `\tmp`:

Apache Tomcat:

Download Tomcat from the Core Binary distribution (tar.gz file) at:
<http://tomcat.apache.org/download-70.cgi>

PostgreSQL:

- Download the following packages from http://yum.postgresql.org/9.3/redhat/rhel-6-x86_64/repoview/postgresqldbserver93.group.html:

```
postgresql93
postgresql93-contrib
postgresql93-libs
postgresql93-server
```

- Download the `uuid-1.6.1-10.el6.x86_64.rpm` package from:
http://mirror.centos.org/centos/6/os/x86_64/Packages/uuid-1.6.1-10.el6.x86_64.rpm
- On RHEL 6.4, download the `openssl` package to your system from:
http://mirror.centos.org/centos/6/os/x86_64/Packages/openssl-1.0.1e-30.el6.x86_64.rpm

OpenJDK 1.7:

Download the `jdk-7u67-linux-x64.rpm` installation package from:
<http://www.oracle.com/technetwork/java/javase/downloads/jdk7-downloads-1880260.html>

Limitation

The custom reports are not migrated to the new database during the upgrade.

Steps

1. Depending on the format of your HP Backup Navigator installation, do one of the following:
 - Insert and mount the HP Backup Navigator installation DVD-ROM or mount the ISO image directly.
 - Untar the `hp-backup-navigator-9.00.tar` installation package to a temporary directory, for example, `/tmp`:

```
# tar -xvf /tmp/hp-backup-navigator-9.00.tar
```


2. In the command-line console, run the following command:

```
# sudo hp-backup-navigator-install.sh
```

3. The script starts and discovers that HP Backup Navigator is already installed. When the script prompts you to upgrade the existing version, type **y** and follow the further script instructions.
4. The script installs PostgreSQL database, checks all the prerequisite software, and prompts you to update it to a newer version, when discovers the respective installation packages in a local directory or on the internet. If you want to upgrade the software and have the respective installation packages, type **y** and follow the further script instructions.
5. You are provided with the user name (**admin**) and password (randomized, unique) for the first login to the HP Backup Navigator web application.
6. The browser starts. It is connected to the system where you installed HP Backup Navigator.
7. Log in to the web application with the provided user name and password. The Welcome Installation wizard opens. Click **Next**.
8. In the Database setup window, select one of the following options:

- **Create database:**

To create a new PostgreSQL database without migrating data from the old database.

- **Create database and migrate old data:**

To create a new PostgreSQL database and migrated all data from the old database to the newly created database.

Note: The data migration process may take several minutes.

Figure 5: Create database page

Welcome to installation

Start > Database > Finish

Create and configure a new PostgreSQL database

Please select the preferred option:

☐ **Create database**
Creates a new PostgreSQL database. Data from the old database is not migrated.

☒ **Create database and migrate old data**
Creates a new PostgreSQL database. All data from the old database is migrated to the newly created database.

Next

Click **Next**.

9. If you selected the **Create database** option, the PostgreSQL database setup window displays. Specify the following: the hostname of the HP Backup Navigator system, the port of the system (by default, 5432), the user name and the password of the PostgreSQL admin user with the SUPERUSER permissions, and the database name.

If you selected the **Create database and migrate old data** option, the MariaDB setup window displays. Specify the required data of the existing database to ensure the data migration, click **Test connection** to verify whether the connection to the database with the specified data is established, and then click **Next**. The PostgreSQL database setup window displays. Specify the required data, as described for the **Create database** option.

Click **Test connection** to verify whether the connection to the database with the specified data is established, and then click **Next**.

10. The HP Backup Navigator Installation Successful window displays. Click **Take me to application**.

As soon as the upgrade procedure is completed successfully, you can start using HP Backup Navigator.

Chapter 4: Removing HP Backup Navigator

To remove HP Backup Navigator, run the following command:

```
# rpm -e hp-backup-navigator-9.00.el6.x86_64
```

Chapter 5: Licensing

After you installed and configured HP Backup Navigator, you can start using it immediately. An Instant-On password is built in the product when first installed. You are able to use the software for 60 days and buy the permanent license within this period. If you don't buy a permanent license, new data will not be collected after 60 days.

There are two types of the HP Backup Navigator licenses:

- Regular HP Backup Navigator licenses are capacity based. You should estimate the capacity of your backup environment to purchase an appropriate number of licenses. The capacity of your backup environment is an overall size of the latest successful full backups for all backup specifications on the Cell Managers that are monitored by HP Backup Navigator. If the capacity of your backup environment grows, you should buy additional licenses.
- HP Backup Navigator lite licenses are designed for smaller and medium business environments. Such license can be used in the backup environments with the single Cell Manager and the capacity that does not exceed 10 TB.

How licensing works

Use the HP Backup Navigator web user interface to request and manage licenses for your environment.

Perform the following licensing tasks:

1. Configure a license request. See ["Configuring license requests" below](#).
2. Request and obtain licenses from the web licensing portal. See ["Requesting and retrieving licenses" on page 31](#).
3. Activate the licenses to start using HP Backup Navigator. See ["Activating licenses" on page 31](#).
4. When the protected data capacity of your backup environment grows, you can purchase additional licenses to cover your new needs. See ["Adding new licenses" on page 32](#).
5. If you use a HP Backup Navigator lite license and t your backup environment grows, you can upgrade your license to a capacity-based license to cover your new needs. See ["Upgrading HP Backup Navigator lite licenses" on page 32](#).
6. You can always verify the licensing related information. See ["Verifying licenses" on page 33](#).

Configuring license requests

To obtain your HP Backup Navigator licenses, you should submit a request form to the web licensing portal.

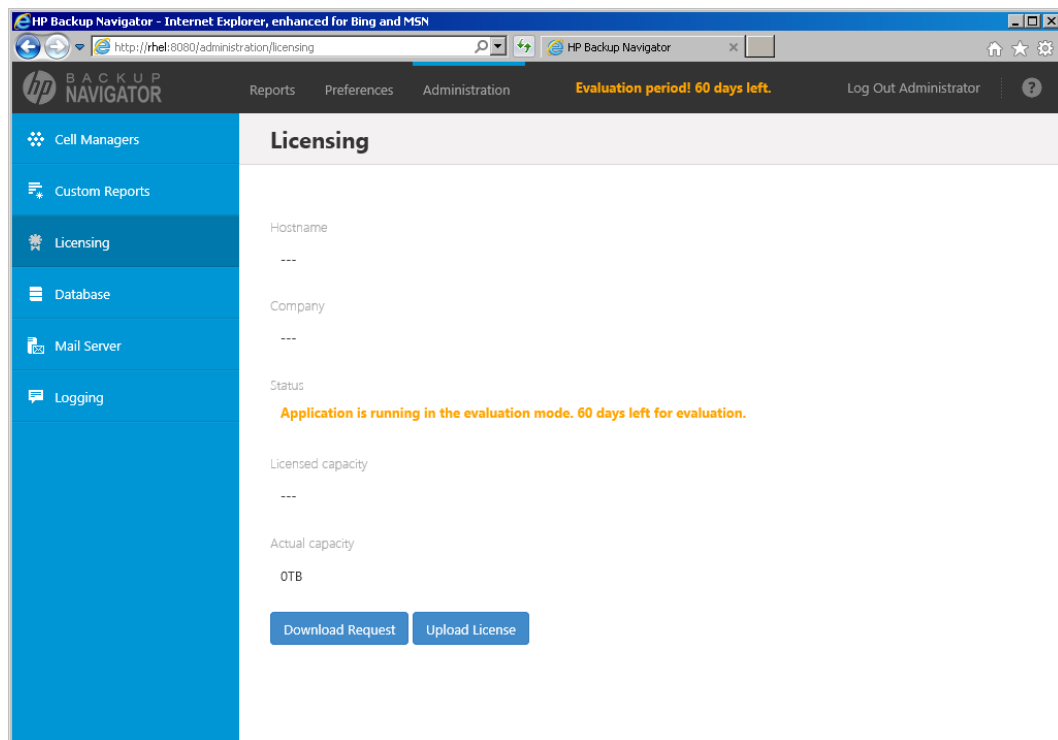
Prerequisite

You have already bought a needed number of the HP Backup Navigator licenses and have an entitlement order number.

Steps

1. Select the **Administration** context.
2. In the Navigation Pane, click **Licensing**.

Figure 6: Configuring a license request



3. In the Results Area, click **Download Request**.
4. In the Download Request window, specify the company name and select the license type. Click **Download** to save the license request file to the specified location.

Example of the request .req license request file:

```
CN myCompany
PID dpnavigator
ND computer.company.com
HSUD 39B0A9E382AFB2E2DA0965DA97C26D88E7D7FECC4E43BBBA6906C7EA6608C642
NEXT NODE
```

Requesting and retrieving licenses

After you created a license request file, you can obtain the licenses from the licensing portal.

Steps

1. Connect to the web licensing portal at: <http://hp-licensing.comtrade.com>
2. If you already have a licensing portal account, click **Sign in**, enter your user name and password, and then click **Login**. Otherwise, create an account and then sign in with a newly created user account.
3. Click the **License Activation** link and then enter the entitlement order number in the text box. Click **Next**.
4. Perform the following:
 - a. Select **HP Backup Navigator** or **HP Backup Navigator lite**.
 - b. For HP Backup Navigator, specify the number of licenses you want to request. One license covers 1 TB of protected data in your backup environment.
 - c. Browse for the license request file and then click **Request License**.

Within a few minutes, you should receive an email with a license activation file `dpnavigator_licact_new.dat` attached.

5. Save the license activation file locally.

Activating licenses

After you submit your license request for the HP Backup Navigator licenses to the web licensing portal, you get an email with a product license activation file attached. Activate the licenses.

Steps

1. Select the **Administration** context.
2. In the Navigation Pane, click **Licensing**.
3. Click **Upload License**, browse for the license activation file received by email, and then click **Upload**.

After the licenses are activated, the licensing related information is updated.

Note: If during the evaluation period you added more than one cell to collect data for reporting, but the license you activated is a lite edition, all cells are automatically detached. When detached, the cells are not visible in the scope and in the reports. You can attach only one cell

to start data collection from it. For instruction on how to attach a cell, see "Administering cells" on page 37.

Adding new licenses

Add new licenses for your grown backup environment.

Steps

1. Buy as many HP Backup Navigator licenses as you need in addition to the licenses you already use.
2. Release the HP Backup Navigator licenses you currently use as follows:
 - a. Connect to the web licensing portal at: <http://hp-licensing.comtrade.com>
 - b. Sign in to the web licensing portal.
 - c. Click the **License Redesignation** link and follow the instructions to complete the procedure.

The system will automatically process your request and send you the updated licensing information by email. You can later use the released licenses for the new license request.

3. Perform the licensing procedure, as described in the above sections, for a needed number of HP Backup Navigator licenses, which is a sum of the released and additionally bought licenses.

Upgrading HP Backup Navigator lite licenses

Upgrade a HP Backup Navigator lite license to a capacity-based license to cover needs of your grown backup environment.

Prerequisite

You have already bought a HP Backup Navigator license for upgrade and have an entitlement order number.

Steps

1. Release the HP Backup Navigator lite license you currently use as follows:
 - a. Connect to the web licensing portal at: <http://hp-licensing.comtrade.com>
 - b. Sign in to the web licensing portal.
 - c. Click the **License Redesignation** link and follow the instructions to complete the procedure.

The system will automatically process your request and send you the updated licensing information by email. You can later use the released licenses for the new license request.

2. Perform the upgrade procedure as follows:

- a. Connect to the web licensing portal at: <http://hp-licensing.comtrade.com>
- b. Sign in to the web licensing portal.
- c. Click the **License Upgrade** link and then enter the entitlement order number in the text box. Click **Next**.
- d. Make sure that you released the HP Backup Navigator lite licenses and then click **Yes**.

The system will automatically process your request and send you the updated licensing information by email.

3. Activate the upgraded license on the HP Backup Navigator system. See "[Activating licenses](#)" on page 31.

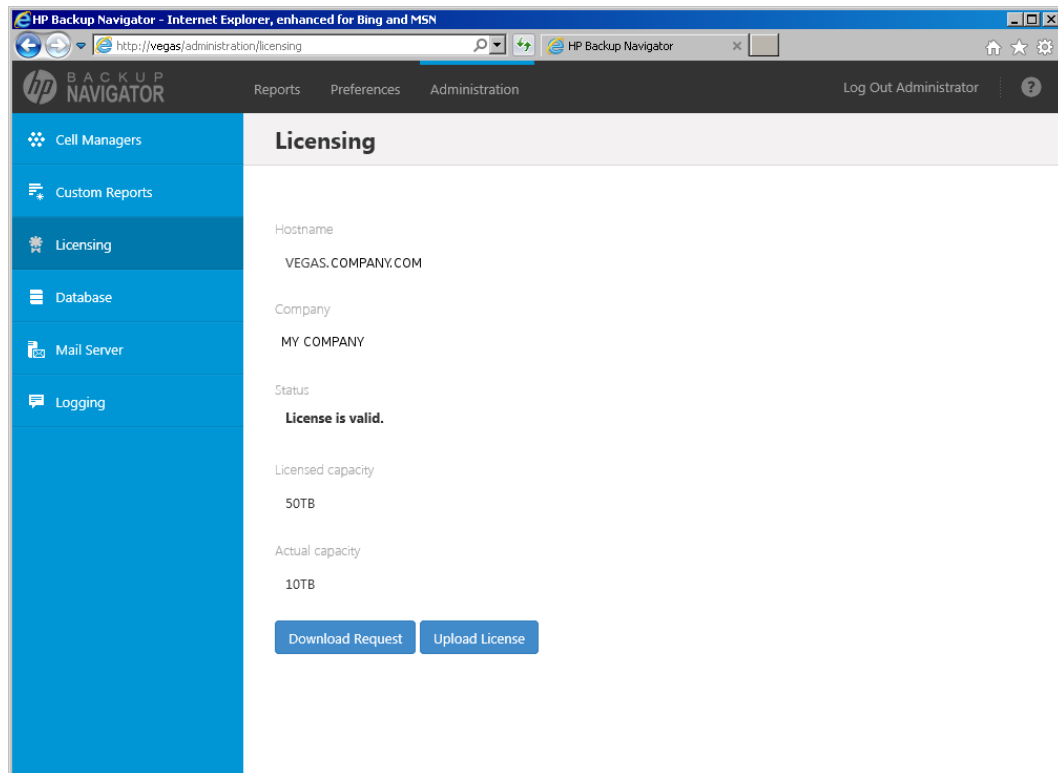
Verifying licenses

You can check the licensing related information at any time.

Steps

1. Select the **Administration** context.
2. In the Navigation Pane, click **Licensing**.

Figure 7: Licensing information



The following licensing related information is displayed:

- hostname
- company name
- validity
- status
- licensed capacity
- actual capacity

Chapter 6: Administration Tasks

This chapter is intended for HP Backup Navigator administrators.

Before you can start using the HP Backup Navigator functionality, perform the following administration and configuration tasks in the HP Backup Navigator web user interface:

- To start collecting input data from Data Protector cells, add these cells to the HP Backup Navigator list. For a detailed procedure, see ["Selecting cells" below](#).
- After you selected the Data Protector cells to collect data for your reports, you can update cells settings and perform other related tasks. For more information, see ["Administering cells" on page 37](#).
- To be able to receive emails from the HP Backup Navigator, configure the mail server. See ["Configuring mail server" on page 38](#).
- To create and handle the custom reports, perform the following tasks:
 - ["Creating custom reports" on page 39](#).
 - ["Downloading custom reports" on page 40](#).
 - ["Uploading custom reports" on page 41](#).
- See the recommendations on the HP Backup Navigator database maintenance in ["Maintaining database" on page 41](#).
- To view the HP Backup Navigator event log, see ["Viewing events" on page 44](#).
- To trigger notifications on specific events, configure the related monitors. See ["Creating and using monitors" on page 44](#).
- To analyze and troubleshoot potential problems and provide an appropriate input to the HP Backup Navigator support, see ["HP Backup Navigator logging" on page 45](#).

Selecting cells

Select a new Data Protector cell to collect the input data for your reports from it.

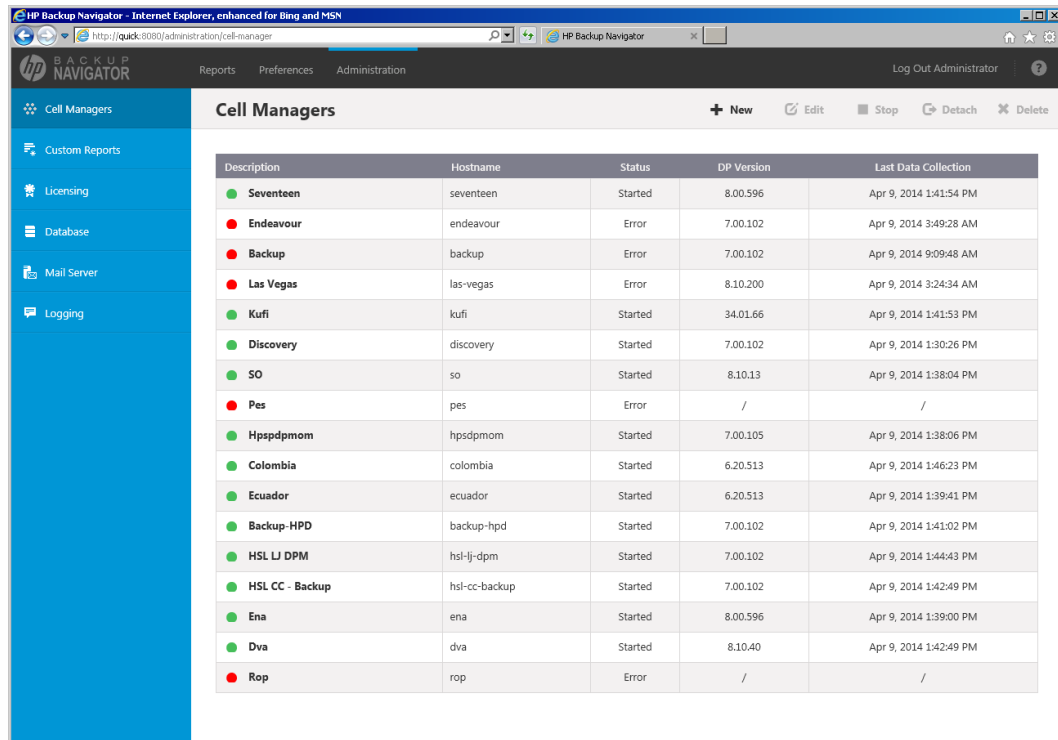
Prerequisite

To be able to access the data of the newly selected Data Protector cell, add your HP Backup Navigator system to the Data Protector Admin user group on the respective Cell Manager. The system is recognized by the hostname or IP address.

Steps

1. Select the **Administration** context.
2. In the Navigation Pane, click **Cell Managers**.

Figure 8: Adding new Cell Managers



Description	Hostname	Status	DP Version	Last Data Collection
Seventeen	seventeen	Started	8.00.596	Apr 9, 2014 1:41:54 PM
Endeavour	endeavour	Error	7.00.102	Apr 9, 2014 3:49:28 AM
Backup	backup	Error	7.00.102	Apr 9, 2014 9:09:48 AM
Las Vegas	las-vegas	Error	8.10.200	Apr 9, 2014 3:24:34 AM
Kufi	kufi	Started	34.01.66	Apr 9, 2014 1:41:53 PM
Discovery	discovery	Started	7.00.102	Apr 9, 2014 1:30:26 PM
SO	so	Started	8.10.13	Apr 9, 2014 1:38:04 PM
Pes	pes	Error	/	/
Hpsdpdmom	hpsdpdmom	Started	7.00.105	Apr 9, 2014 1:38:06 PM
Colombia	colombia	Started	6.20.513	Apr 9, 2014 1:46:23 PM
Ecuador	ecuador	Started	6.20.513	Apr 9, 2014 1:39:41 PM
Backup-HPD	backup-hpd	Started	7.00.102	Apr 9, 2014 1:41:02 PM
HSL LJ DPM	hsl-lj-dpm	Started	7.00.102	Apr 9, 2014 1:44:43 PM
HSL CC - Backup	hsl-cc-backup	Started	7.00.102	Apr 9, 2014 1:42:49 PM
Ena	ena	Started	8.00.596	Apr 9, 2014 1:39:00 PM
Dva	dva	Started	8.10.40	Apr 9, 2014 1:42:49 PM
Rop	rop	Error	/	/

3. In the Tool bar of the Results Area, click **New**.
4. In the New Cell Manager dialog box, enter a Cell Manager hostname or its IP address, INET port (by default, 5555) and a description.
5. Configure the database of the new cell by specifying the following:
 - the hostname of the system where the database resides
 - the port of the system where the database resides (by default, 5432)
 - the user name and the password of the PostgreSQL admin user with the SUPERUSER permissions. (See instructions on how to create such user account in ["Installation and Configuration" on page 10.](#))
 - the database name

The maximum number of characters for the database name is 25, including the prefix `cell_` provided by default. Note, that you can delete the prefix.

- the date from which on you want to collect the data for your reports
- the time interval in which you want to collect the changed input data for your reports (for example, every 10 minutes)

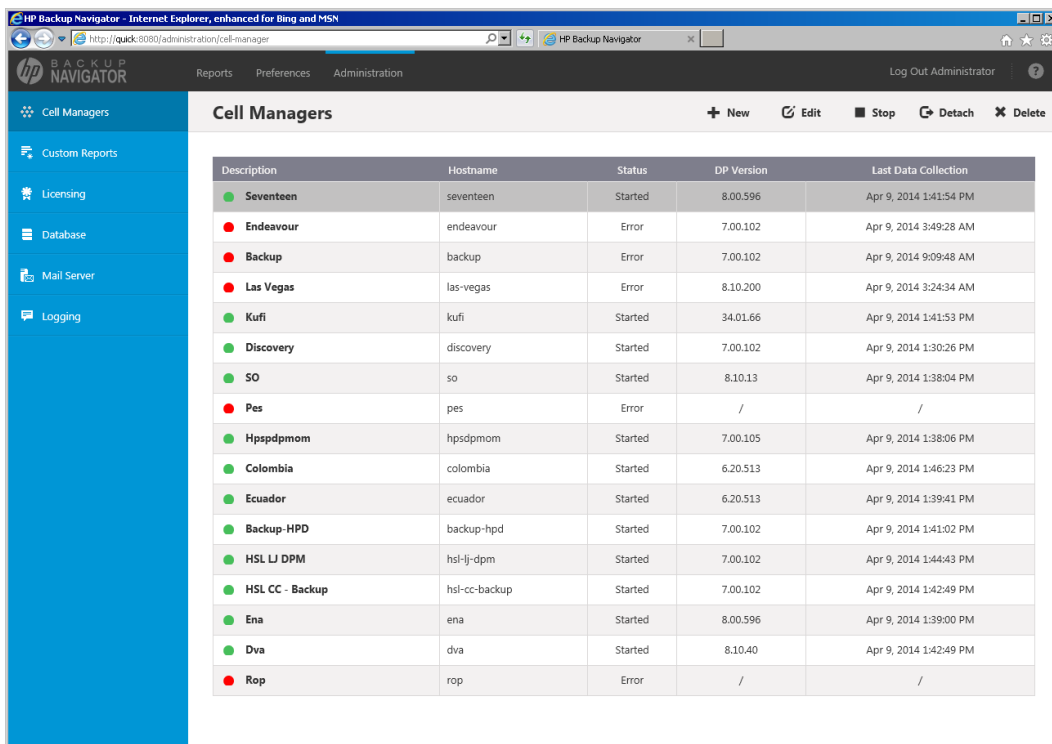
6. Click **Save**. A new cell is added to Scope settings and is visible in the Navigation Pane.

You can always update your settings later.

Administering cells

After you selected the Data Protector cells to collect data for your reports, they are listed in the Cell Managers window of the Administration context.

Figure 9: Administering cells



The screenshot shows the HP Backup Navigator interface in Internet Explorer. The left navigation pane includes links for Cell Managers, Custom Reports, Licensing, Database, Mail Server, and Logging. The main area is titled 'Cell Managers' and contains a table with the following data:

Description	Hostname	Status	DP Version	Last Data Collection
Seventeen	seventeen	Started	8.00.596	Apr 9, 2014 1:41:54 PM
Endeavour	endeavour	Error	7.00.102	Apr 9, 2014 3:49:28 AM
Backup	backup	Error	7.00.102	Apr 9, 2014 9:09:48 AM
Las Vegas	las-vegas	Error	8.10.200	Apr 9, 2014 3:24:34 AM
Kufi	kufi	Started	34.01.66	Apr 9, 2014 1:41:53 PM
Discovery	discovery	Started	7.00.102	Apr 9, 2014 1:30:26 PM
SO	so	Started	8.10.13	Apr 9, 2014 1:38:04 PM
Pes	pes	Error	/	/
Hpsdpmmom	hpsdpmmom	Started	7.00.105	Apr 9, 2014 1:38:06 PM
Colombia	colombia	Started	6.20.513	Apr 9, 2014 1:46:23 PM
Ecuador	ecuador	Started	6.20.513	Apr 9, 2014 1:39:41 PM
Backup-HPD	backup-hpd	Started	7.00.102	Apr 9, 2014 1:41:02 PM
HSL LJ DPM	hsl-lj-dpm	Started	7.00.102	Apr 9, 2014 1:44:43 PM
HSL CC - Backup	hsl-cc-backup	Started	7.00.102	Apr 9, 2014 1:42:49 PM
Ena	ena	Started	8.00.596	Apr 9, 2014 1:39:00 PM
Dva	dva	Started	8.10.40	Apr 9, 2014 1:42:49 PM
Rop	rop	Error	/	/

You can change the Cell Manager settings or status by clicking on it and selecting one of the following actions:

- **Edit:** Change the Cell Manager and database settings.

Important: If you moved the database to a new server or performed any other database configuration changes that affect the HP Backup Navigator functionality, make the necessary database settings updates on every related Cell Manager.

- **Stop/Start:** Pause data collection from the selected cell by stopping it, when you temporarily do not need to include its data to your reports. When stopped, the cell is still present in the scope and in the reports. Start data collection from the selected cell, when you need this data for your reports.
- **Detach/Attach:** Pause data collection from the selected cell by detaching it, when you want to have an access to the collected data in the database, but do not need to include this data to your reports. When detached, the cell is not visible in the scope and in the reports. Attach the selected cell and then start data collection from it, when you need its data for your reports.
- **Delete:** Delete the selected cell from the HP Backup Navigator list. The database of this cell with all previously collected data is deleted. You can always add this cell to the list later. Note, that a filter that contains only this cell, will be also deleted.

Configuring mail server

Configure your mail server to be able to receive emails.

Steps

1. Select the **Administration** context.
2. In the Navigation Pane, click **Mail Server**.

Figure 10: Configuring Mail Server

The screenshot shows the HP Backup Navigator web interface in Internet Explorer. The browser address bar shows 'http://quick.00802 administrator@mail'. The page has a navigation pane on the left with options: Cell Managers, Custom Reports, Licensing, Database, Mail Server (selected), and Logging. The main content area is titled 'Mail Server' and contains the following configuration fields:

- ☒ Enable email notification
- Server address:
- Port:
- Protocol:
- Username:
- Password:
- Sender display name:
- Sender email address:

Below the fields, there is a note: 'Note: After you save the settings, a test email will be sent to the email address specified in your profile.' and a 'Save' button.

3. In the Results Area, select **Enable email notification**.
4. Enter the web address of the server, which you want to use for sending emails.
5. Enter the server port, username, and password.
6. Enter the sender's display name and email address (mandatory).
7. Click **Save**. A test email is sent to the specified email address.

You can always change these settings later.

Creating custom reports

Create a custom report to collect and analyze data of your choice.

Requirement

To create and manage custom reports, knowledge of the MS SQL database is required. For more information on the MS SQL database, see the related documentation.

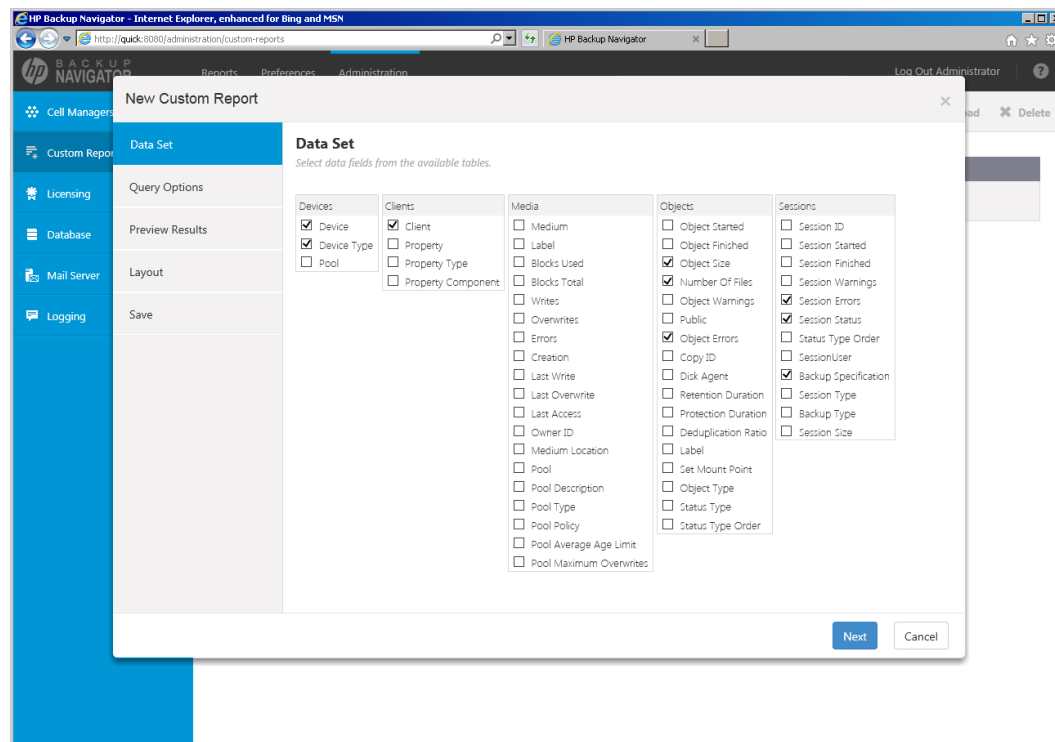
Limitation

You cannot specify the preferred unit values in the custom reports, the default Data Protector values are used.

Steps

1. Select the **Administration** context.
2. In the Navigation Pane, click **Custom Reports**.
3. In the Results Area, click **New**. The New Custom Report wizard opens.
4. In the Data Set window, specify the parameters for the input data that you want to see in your report. The parameters are grouped by a subject of the report: devices, clients, media, backup objects, and sessions. The input data is collected and arranged in the report tables, each column representing the specified parameter.

Figure 11: Configuring custom reports



Click **Next**.

5. In the Query Options window, specify the Aggregate and Group By options for each column selected in step 4. Specify the sorting ,limit, and other options for your report. Click **Next**.
6. In the Preview Result window, verify whether the query you specified meets your requirements and click **Run** to preview the report.
7. In the Layout window, select a presentation type of your report. Select **Table**, if you want to view your report as a table. Select **Chart**, if you want to view your report in graphical presentation *and* a table.

Specify X and Y axis for a chart. Click **Next**.

8. Name your report and optionally add a description. Select the report category and the report subcategory where you want to place your report. Click **Finish**.

The report is added to the selected report subcategory in the Navigation Pane. You can edit your report later.

Downloading custom reports

Save a custom report to a preferred location to be able to upload it later to another server. You can share the saved custom reports between different HP Backup Navigator environments later.

Steps

1. Select the **Administration** context.
2. In the Navigation Pane, click **Custom Reports**.
3. In the Results Area, select the custom report that you want to download.
4. In the Tool bar of the Results Area, click **Download**.
5. Save the report as a ZIP file in a specified location.

Uploading custom reports

Upload a report created on a different HP Backup Navigator server.

Steps

1. Select the **Administration** context.
2. In the Navigation Pane, click **Custom Reports**.
3. In the Tool bar of the Results Area, click **Upload**.
4. In the Upload Custom Report window, name your report and browse for the report file that you want to upload. select the report category and subcategory where you want to place the uploaded report.
5. Click **Upload**.
6. When the upload process is finished, close the dialog box. The report is added to the selected report subcategory.

Maintaining database

Ensure regular backups, archiving, and clean-up of the HP Backup Navigator database. Be prepared to a potential recovery. For the related procedures, see the PostgreSQL documentation.

You can use pgAdmin GUI to administer PostgreSQL. You can download this tool from:

<http://www.pgadmin.org/download/>

To view the database settings in the web user interface, see "[Viewing database settings](#)" on the [next page](#).

You can perform the following database maintenance tasks in the HP Backup Navigator:

- Purging the database. See "[Purging database](#)" on the [next page](#).
- Changing the database configuration settings. See "[Changing configuration](#)" on [page 43](#).

Viewing database settings

You can view the database settings information.

Steps

1. Select the **Administration** context.
2. In the Navigation Pane, click **Database**. The database settings information is displayed. To change these settings perform the procedure described in ["Maintaining database" on the previous page](#).

Purging database

You can use the HP Backup Navigator GUI to clean up the database.

Steps

1. Select the **Administration** context.
2. In the Navigation Pane, click **Database**. The database settings information is displayed. Under Database Purge, specify the date, up to which you want to purge the HP Backup Navigator database and then click **Purge Database**.

Figure 12: Database settings

The screenshot shows the HP Backup Navigator web interface in Internet Explorer. The browser's address bar shows the URL <http://jenky/administration/database>. The HP Backup Navigator logo is in the top left, and navigation links for Reports, Preferences, and Administration are in the top center. A 'Log Out Administrator' link is in the top right. A left-hand menu contains links to Cell Managers, Custom Reports, Licensing, Database (which is highlighted), Mail Server, Logging, Events, and Monitors. The main content area is titled 'Database' and contains the following sections:

- Database type:** A dropdown menu showing 'MySQL'.
- Connection settings:**
 - Hostname:** A text input field containing 'jenky'.
 - Username:** A text input field containing 'reporter'.
 - Password:** A text input field with the placeholder text 'Enter your SQL password'.
 - Database name:** A text input field containing 'reporting'.
- Database Purge:**
 - Purge to selected date:** A text input field with the placeholder text 'Date'.
 - Purge Database:** A blue button.

3. In the Purge Database window, select to purge all cells or specify the cells you want to purge. Click **Purge** and then click **Confirm**.

During the database cleanup, the data older than the specified date is deleted.

Changing configuration

If you want to move the database to a new server or perform any other database configuration changes, make necessary updates to the database settings.

Steps

1. Log in to the HP Backup Navigator system with the installation administrator's user account that you were provided during the installation procedure. This account is saved in the `/opt/dpa-ext/conf/admin.properties` file. The database setup window opens.
2. Follow the setup wizard as described in ["Installation procedure" on page 14](#).

If you moved the database to a new server or performed any other database configuration changes that could affect the HP Backup Navigator functionality, make the necessary database settings updates on every related Cell Manager. See ["Administering cells" on page 37](#).

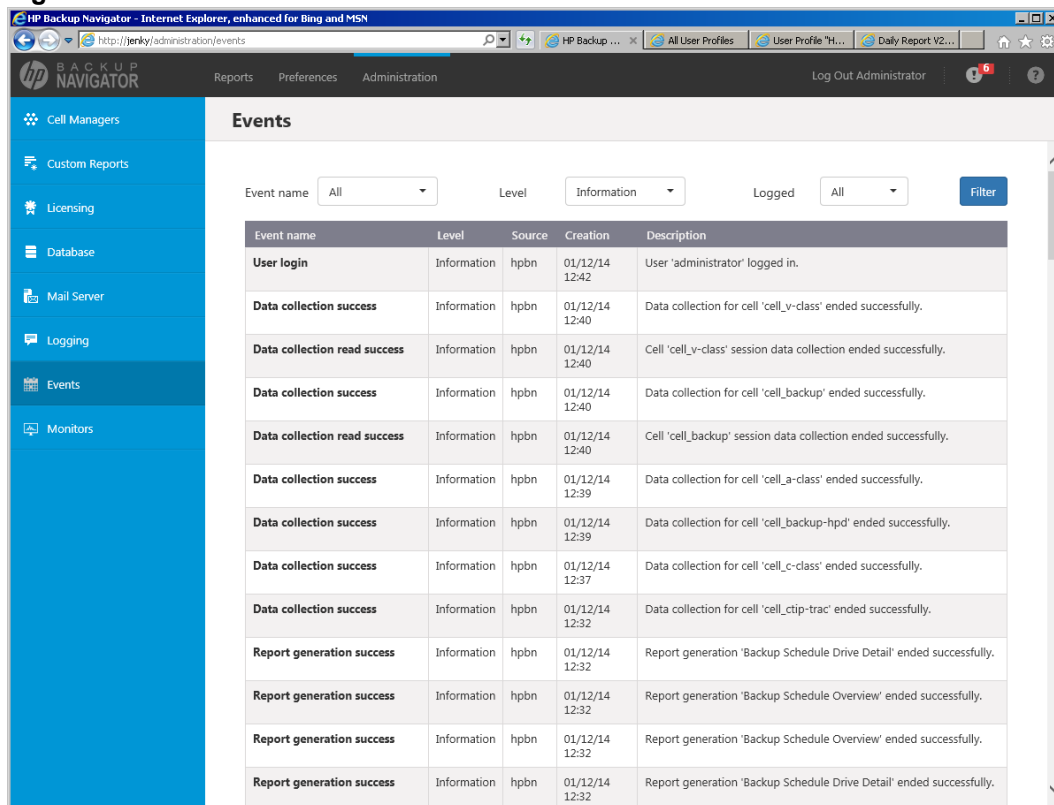
Viewing events

You can view the events occurred in HP Backup Navigator.

Steps

1. Select the **Administration** context.
2. In the Navigation Pane, click **Events**. A table with the HP Backup Navigator events displays. You can filter and sort table by name, severity level, and timeframe. To apply the specified filter, click **Filter**.
3. To view the specific event details, double click on it.

Figure 13: Events list



Event name	Level	Source	Creation	Description
User login	Information	hpbm	01/12/14 12:42	User 'administrator' logged in.
Data collection success	Information	hpbm	01/12/14 12:40	Data collection for cell 'cell_v-class' ended successfully.
Data collection read success	Information	hpbm	01/12/14 12:40	Cell 'cell_v-class' session data collection ended successfully.
Data collection success	Information	hpbm	01/12/14 12:40	Data collection for cell 'cell_backup' ended successfully.
Data collection read success	Information	hpbm	01/12/14 12:40	Cell 'cell_backup' session data collection ended successfully.
Data collection success	Information	hpbm	01/12/14 12:39	Data collection for cell 'cell_a-class' ended successfully.
Data collection success	Information	hpbm	01/12/14 12:39	Data collection for cell 'cell_backup-hpd' ended successfully.
Data collection success	Information	hpbm	01/12/14 12:37	Data collection for cell 'cell_c-class' ended successfully.
Data collection success	Information	hpbm	01/12/14 12:32	Data collection for cell 'cell_ctip-trac' ended successfully.
Report generation success	Information	hpbm	01/12/14 12:32	Report generation 'Backup Schedule Drive Detail' ended successfully.
Report generation success	Information	hpbm	01/12/14 12:32	Report generation 'Backup Schedule Overview' ended successfully.
Report generation success	Information	hpbm	01/12/14 12:32	Report generation 'Backup Schedule Overview' ended successfully.
Report generation success	Information	hpbm	01/12/14 12:32	Report generation 'Backup Schedule Drive Detail' ended successfully.

Creating and using monitors

To get notifications on the specific events, you can create HP Backup Navigator monitors.

Steps

1. Select the **Administration** context.
2. In the Navigation Pane, click **Monitors**.
3. In the Results Area, click **New**. The New Monitor wizard opens.
4. In the General info window, specify the monitor name and description. Click **Next**.
5. In the Events window, select one or more events, for which you want to get notifications. For each event, select the severity level (**Information**, **Warning**, **Error**, **Critical**, or **Alert**) and specify one or more conditions (by clicking **Add Condition**) to trigger the monitor. Click **Next**.
6. In the Actions window, select one of the following actions, which should be triggered in case of the specified event:
 - **Send email**: Select this action, if you want to be notified about the event by email.
 - **Run action script**: Select this action, if you want to run a script in the case of the specified event. Type in the script or program name in the Program/script text box.
 - **Trigger event**: Select this action, if you want to be notified about the specified event of a higher severity level (**Error**, **Critical**, or **Alert**) by alarm. A notification appears in the HP Backup Navigator GUI tool bar next to the Notification icon ("!"). You can view the corresponding event by clicking the **Notification** icon.

Click **Finish**.

The newly created monitor appears on the monitors list. You can enable or disable monitors.

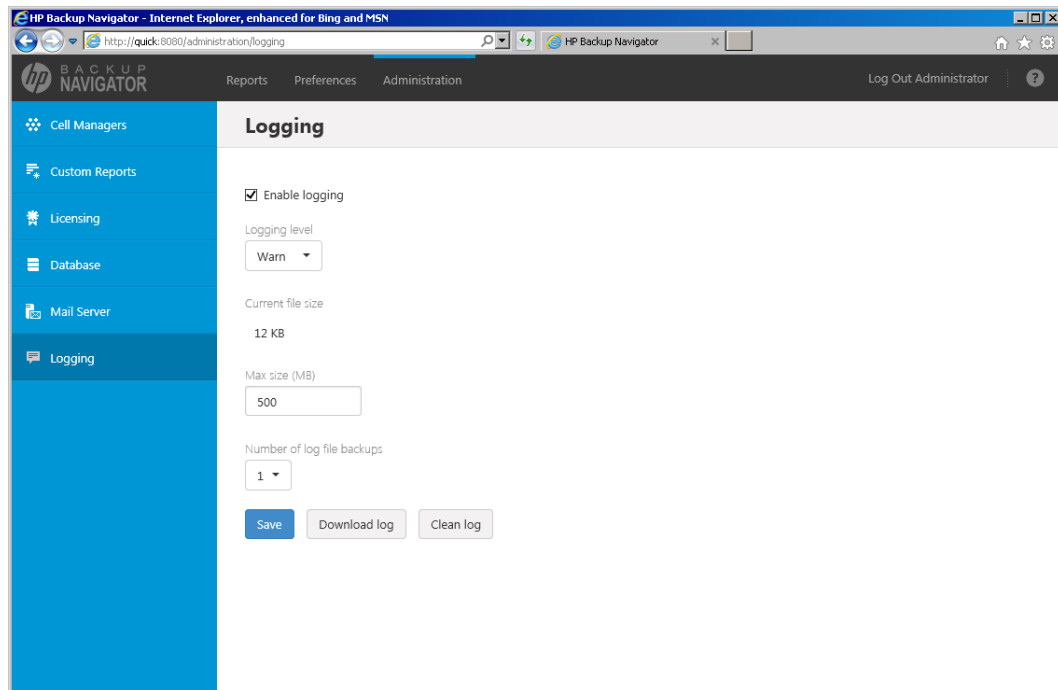
HP Backup Navigator logging

Configure logging to analyze and troubleshoot the entire HP Backup Navigator operation and the reporting functionality.

Steps

1. Select the **Administration** context.
2. In the Navigation Pane, click **Logging**.
3. Select **Enable logging**.

Figure 14: Logging settings



4. Modify the desired fields.
5. Click **Save**.
6. If you want to view the log file, click **Download log**. If you do not need data from the current log file, click **Clean log**.

You can always change these settings later.

Chapter 7: About Reports

The key HP Backup Navigator feature is a visual presentation of complex data. To achieve a comprehensive and precise input data presentation and visualization and to deliver the desired information clearly and effectively, HP Backup Navigator provides a set of predefined reports and tools that help to tailor the reports to meet your needs.

Reports visualization and delivery

All reports can be viewed in a dashboard area of the HP Backup Navigator user interface. Reports can be presented as a table with an access to all input data or as a chart to visualize this data. The following report chart types are used to visualize the selected reports: column chart, bar chart, pie chart, line chart, or area chart.

Besides viewing reports in the web browser, HP Backup Navigator enables you to subscribe to reports to receive them automatically by email at a specified time, as well as to export them to a wide variety of formats, including PDF, XLSX, CSV, DOCX, PPTX, and HTML. You can choose the format that provides you with the most convenient way of exploring reports.

Reports exploration

To easily gain insight into the data used for a specific report and to enhance reporting and analysis capabilities, the following is available:

Table view: You have an option to view all the data used for generating a report as a table. In the table, you can sort values in the columns according to the available parameters.

Related reports: Majority of the reports contain references to other reports with the related content. A related report is a logical report in the sequence and is presented on the same scope as the original report.

Drill-down functionality: You can examine report data in more detail by using the drill-down functionality. Navigate from the report of your interest to the connected reports, each time with deeper insight into the data, and discover the data you need.

Scope: To ensure that your reports contain only the data that you currently require for your specific purposes, you can limit a scope of your reports only to certain Data Protector cells or to certain groups of the IDB data (for example, devices, device pools, media, media pools, clients).

Reports and report categories

The predefined set of reports covers all aspects of the Data Protector functionality. Reports are logically divided into four main categories, each containing subcategories. Depending on the information about your backup environment that you want to retrieve, you can choose a report from the following report categories:

- ["Overview" below](#).
- ["Monitoring" on page 52](#).
- ["Capacity" on page 52](#).
- ["Performance" on page 56](#).

Each report can be adjusted to your needs by specifying additional parameters, which are specific for each report, such as a time interval, sorting order, units, and similar. You can set a report as your favorite to access it quicker later on and to be able to subscribe to it. Administrators can create custom reports that are based on the collected data. If you set filters for the input data, only the data from the selected cells and specified data groups is considered.

Some reports cannot be accessed from the Navigation Pane, they are dependent on other reports and can be accessed only when using the drill-down functionality:

["Drill-down reports" on page 56](#).

Overview

Overview reports summarize data on your backup environment.

Infrastructure Summary	
Cell Manager Status	Shows health statuses that can be retrieved from a Cell Manager for the following objects: Cell Manager services, IDB, licenses (whether Data Protector licenses are available on the Cell Manager), agent status (whether data can be collected from the Cell Manager), Cell Manager mode.
Operating Systems Overview	Shows which operating systems exist and the number of clients running on these operating systems.
DP Components	Shows a list and a number of the installed Data Protector components.
Backup Spec Overview	Shows a number of the backup specifications of a particular object type (Filesystem, IDB, client backup, and so on).

Infrastructure Summary	
Clients Without Backup Spec	Shows a number of clients for which no backup specification is created and consequently they are not being backed up.

Sessions Summary	
Sessions per Session Status	Shows a number of the performed sessions and their statuses.
Sessions per Time and Status	Shows a number of sessions performed on a particular day and their statuses.
Sessions per Session Type	Shows a number of the performed sessions and the session type, such as, backup, consolidation, copy, media management, replication, and restore.
Sessions per Backup Object	Shows a number of sessions and their statuses for all backup object types (for example, Filesystem, IDB, Oracle, MS SQL, and so on).
Sessions per Client	Shows a number of sessions performed on a particular client and their statuses.
Session Flow per Client	Shows the backup sessions duration for all clients.
Session Flow per Backup Spec	Shows the backup sessions duration and statuses for all backup specifications.
Sessions per Data Location	Shows the backup sessions for the selected data source (Backup specification, Hostname, Session ID) and the selected data location (Device, Media, Media Location, Media Pool).

Data Protection Summary	
Session Success	Shows the percentage of successful (completed without errors) and unsuccessful backup sessions.
Number of Backup Versions	Shows a number of performed backups of a particular backup type (Full, Incremental, Differential, and Transaction Log backup) for all backup specifications.
Time Since Last Successful Backup	Shows the time passed since the last successful backup for all backup specifications.

Devices Summary	
List of Devices	Shows all devices that are configured for use with Data Protector.
List of Drives	Shows all backup drives and their properties.
List of Not Utilized Devices	Shows all devices that are configured for use with Data Protector, but were not used so far.
Device Utilization	Shows the changing percentage of the device utilization for all devices.
Session Flow per Device	Shows the backup sessions duration for all devices.
Session Flow per Drive	Shows the backup sessions duration for all drives.

Media Summary	
Media Pool Changes	Shows the changes in number of media in media pools.
Media Summary per Pool	Shows a number of media and their quality (Good, Fair, and Poor) in all media pools.
Media Quality Summary	Shows a number of errors and overwrites on all media.
Most Unreliable Media	Shows a number of errors that occurred on a particular medium. Most unreliable media are those with the highest number of errors.

Backup Time Summary	
Backup Schedule Drive Detail	Shows the backup schedule for drives specified for the scheduled backup sessions and the related backup specifications. If a conflict in the drive usage is recognized (the same drive is specified for the simultaneous backup sessions), an additional bar shows such conflict.
Backup Schedule Overview	Shows the backup schedule for the configured backup specifications and the eventual conflicting backup sessions.
Average Backup Time per Backup Spec	Shows an average duration of the backup session for a particular backup specification.
Average Backup Time per Device	Shows an average duration of the backup session on a particular device.
Average Backup Time per Client	Shows an average duration of the backup session on a particular client.

Backup Time Summary	
Average Backup Time per Medium	Shows an average duration of the write operation (backup) on a particular medium.
Top Time Difference per Backup Spec	Shows the biggest time difference that occurs when running backups using the same backup specification.
Average Backup Time per VM	Shows an average duration of the backup session on a particular virtual machine. It can help you to figure out, on which virtual machines a backup takes more time.

Errors Summary	
Most Unreliable Clients	Shows a number of errors and warnings that occurred on a particular client. Most unreliable clients are those with the highest number of errors.
Most Unreliable Devices	Shows a number of errors and warnings that occurred on a particular device. Most unreliable devices are those with the highest number of errors.
Most Unreliable Backup Specs	Shows a number of errors and warnings that occurred for a particular backup specification. Most unreliable backup specifications are those with the highest number of errors.
Most Unreliable Media	Shows a number of errors that occurred on a particular medium. Most unreliable media are those with the highest number of errors.
Backup Spec Errors Timeline	Shows a number of errors and warnings that occurred using a particular backup specification in a timeline.
Device Errors Timeline	Shows a number of errors and warnings that occurred on a particular device in a timeline.
Client Errors Timeline	Shows a number of errors and warnings that occurred on a particular client in a timeline.
Media Errors Timeline	Shows a number of errors and warnings that occurred on a particular medium in a timeline.
Most Unreliable VMs	Shows a number of failed session that occurred on a particular virtual machine. Most unreliable virtual machines are those with the highest number of the failed sessions.

VM Infrastructure	
VMs Vs Physical Clients	Shows the percentage of the physical and virtual clients in your backup environment that are protected.

VM Infrastructure	
Virtual Vs Physical Environment	Shows how the number of physical and virtual clients changes in your backup environment.
VMs per Hypervisor Type	Shows the percentage of virtual clients distribution between the hypervisor types (VMware and Hyper-V).
VMs in Time Period	Shows how the number of virtual clients of different hypervisor types (VMware and Hyper-V) changes in your backup environment.
VMs per Datacenter	Shows the distribution of the VMware virtual clients between datacenters.
VMs per Hypervisor Host	Shows the distribution of virtual clients between host machines, featuring the host machine hypervisor type and location.

Monitoring

Monitoring reports display data on currently running sessions and active devices.

Monitoring Reports	
Sessions in Progress	Shows the currently running sessions, the sessions start time, estimated finish time, and statuses.
Active Devices	Shows the backup devices that are currently used for the running sessions, the sessions start time, estimated finish time, and statuses.
Devices Overview	Shows a list of queuing backup devices.

Capacity

Capacity reports provide information on the amount of the backed up data, available space on media and in the IDB, and compression rates when using the deduplication technology. This helps you to diagnose capacity trends and improve future planning.

Backup Capacity	
Volume Summary per Backup Spec	Shows an amount of the backed up data for a particular backup specification.
Volume Growth Prediction	Shows a growth of the backed up data for a particular backup specification. It also provides an estimated amount of the backed up data for the future.

Backup Capacity	
Volume Summary per Client	Shows an amount of the data backed up on a particular client.
Volume Summary per Device	Shows a transfer size of the backed up data for a particular device.
Volume Summary per Media Pool	Shows an amount of the data written to a particular media pool.
Volume Summary per Medium	Shows an amount of the data written to a particular medium.
Volume Summary per Backup Object	Shows an amount of the backed up data depending on the backup object type (for example, Filesystem, IDB, Oracle, SQL, Virtual Environment, and so on.)
Top Backup Volume Changes	Shows the biggest growth of the backed up data for the same backup specification for full and incremental backups.

Media Capacity	
Media Pool Capacity	Shows an amount of space available for storing the backed up data in all media pools. The amount of used and free space is indicated.
Data Protection Expiration	Shows an amount of space on the media that are protected from being overwritten. It also provides information, whether the data protection is permanent or will expire after a period of time.
Media Protection Per Cell	Shows an amount of space on the media that are protected from being overwritten.

Dedupe Capacity	
Dedupe Rate per Backup Spec	Shows an amount of the data that is backed up and compressed using a deduplication technology and the original size of this data for all backup specifications.
Dedupe Savings per Backup Spec	Shows an amount of space on media that was saved by using a deduplication technology during backup for all backup specifications.
Dedupe Rate Timeline per Backup Spec	Shows an amount of the data that is backed up and compressed using a deduplication technology and the original size of this data for all backup specifications in a timeline.

Dedupe Capacity	
Dedupe Rate per Client	Shows an amount of the data that is backed up and compressed using a deduplication technology and the original size of this data on all clients.
Dedupe Savings per Client	Shows an amount of space on media that was saved by using a deduplication technology during backup on all clients.
Dedupe Rate Timeline per Client	Shows an amount of the data that is backed up and compressed using a deduplication technology and the original size of this data on all clients in a timeline.
Dedupe Rate per Device	Shows an amount of the data that is backed up and compressed using a deduplication technology and the original size of this data on all backup devices.
Dedupe Savings per Device	Shows an amount of space on media that was saved by using a deduplication technology during backup for all backup devices.
Dedupe Rate Timeline per Device	Shows an amount of the data that is backed up and compressed using a deduplication technology and the original size of this data on all backup devices in a timeline.
Dedupe Rate Prediction	Shows an amount of the data that is backed up and compressed using a deduplication technology and the original size of this data for all backup specifications as well as an estimated amount of the backed up data within the future timeframe. It also provides information on the device capacity ¹ .

IDB Capacity	
IDB Capacity Summary	Shows the current size of the Data Protector IDB and the size of each of the IDB parts, such as Media Management Database (MMDB), Catalog Database (CDB), Detail Catalog Binary Files (DCDB), Serverless Integrations Binary Files (SIBF), and Session Messages Binary Files (SMBF).
IDB Capacity Growth	Shows the size changes of the Data Protector IDB and each of its parts, such as MMDB, CDB, DCDB, SIBF, and SMBF.

¹Information on the StoreOnce device capacity is available with Data Protector 9.02 and newer versions.

IDB Capacity	
CDB Capacity Summary	Shows the current size of the Data Protector CDB and of the records it contains, such as sessions (backup, restore, object copy, object consolidation, object verification, and media management), backed up objects, their versions and object copies, positions of backed up objects on media, and filenames of the backed up files.
CDB Capacity Growth	Shows the size changes of the Data Protector CDB and of the records it contains.
MMDB Capacity Summary	Shows the current size of the Data Protector MMDB and of the records it contains, such as, devices, stores, cartridges, compounds, pools, and media.
MMDB Capacity Growth	Shows the size changes of the Data Protector MMDB and of the records it contains.

VM Capacity	
Volume Summary of VMs Vs Physical Clients	Shows the percentage of the virtual machines backup volume compared to the physical clients backup volume in your environment.
Volume Summary per Hypervisor Type	Shows the percentage of hypervisor types (VMware and Hyper-V) in the virtual environment backup volume.
Volume Summary per Datacenter	Shows the distribution of the VMware virtual clients backup volume between datacenters.
Volume Summary per Hypervisor Host	Shows the distribution of virtual clients backup volume between host machines, featuring the host machine hypervisor type and location.
Volume Summary per VM	Shows an amount of the data backed up on a particular virtual machine.
VM Backup Capacity	Shows a growth of the data backed up in the virtual environment.
VM Backup Capacity per Hypervisor Type	Shows volume changes of the data backed up in the virtual environment for each hypervisor type (VMware and Hyper-V).
VM Backup Capacity per Datacenter	Shows volume changes of the data backed up in the VMware virtual environment for each datacenter.

Performance

Performance reports provide information on device and media performance as well as on different aspects of the data transfer rate during the sessions.

Client Performance	
Backup Transfer Rate per Backup Spec	Shows a data transfer rate during the backup sessions for all backup specifications.
Backup Transfer Rate per Client	Shows a data transfer rate during the backup sessions on all clients.
Copy Transfer Rate	Shows a data transfer rate during the copy sessions on all clients.
Restore Transfer Rate	Shows a data transfer rate during the restore sessions on all clients.

Device Performance	
Device Transfer Rate	Shows a minimum, maximum, and average data transfer rate on all devices.
Media Transfer Rate	Shows a data transfer rate during the backup sessions on all media.

Drill-down reports

These reports can be accessed only when you use the drill-down functionality. Therefore, they provide only information related to the selection in the parent report. The reports are available only in a tabular view.

Lists	
Cell Manager Services	Shows a list of the Data Protector services running on the Cell Manager and their health statuses.
Agent Status	Shows health status for collecting data from the Cell Manager (agent status) and the following information on this Cell Manager: Data Protector version, Cell Manager mode, capacity, and other properties.
IDB Health	Shows health status for the Data Protector IDB.
Licenses	Shows health status for the Data Protector licenses availability on the Cell Manager.
List of Sessions	Shows all finished sessions and their properties.

Lists	
List of Backup Spec Objects	Shows all backup objects specified in a particular backup specification and their properties.
List of Objects	Shows all backed up objects and their properties.
Session Output	Shows a report for a particular session. It contains messages on session flow, statistics, status, and results. In case of errors, it also provides error messages.
List of Backup Specs	Shows all backup specifications and their properties.
List of Devices	Shows all backup devices and their properties.
List of Drives	Shows all backup drives and their properties.
List of Clients	Shows all clients and their properties.
List of Media Pools	Shows all media pools and their properties.
List of Media	Shows all media and their properties.
List of VMs	Shows all virtual machines and their properties.

How to manage reports

This chapter provides short instructions on how to use the predefined reports and how to adjust reports presentation.

You can log in to the HP Backup Navigator system with your Windows session credentials. You can use the HP Backup Navigator functionality if your account is recognized as a Data Protector administrator. The available reports contain data collected from the Cell Managers, where your user account is added to the Admin user group. You can perform the following tasks:

- ["Configuring dashboard layout" on the next page.](#)
- ["Creating and editing filters" on page 59.](#)
- ["Generating reports" on page 60.](#)
- ["Adding reports to favorites" on page 60.](#)
- ["Subscribing to reports" on page 60.](#)
- ["Exporting reports" on page 62.](#)
- ["Sending reports by email" on page 62.](#)
- ["Using drill-down functionality" on page 62.](#)

You can update your HP Backup Navigator profile, as described in ["Configuring user profiles" on page 64](#). If you want to set your region or specify the date format, see ["Configuring region settings" on page 65](#).

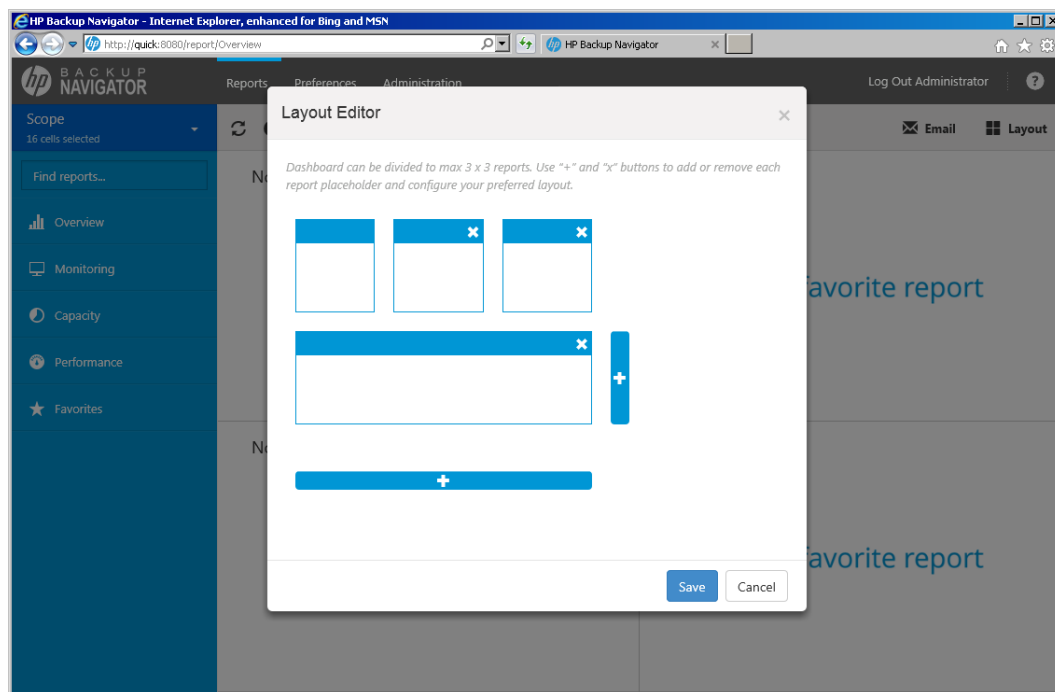
Configuring dashboard layout

Adjust the dashboard layout for each report category to your needs.

Steps

1. Select the **Reports** context.
2. In the Navigation Pane, select the report category (**Overview**, **Monitoring**, **Capacity**, **Performance**), for which you want to configure the dashboard layout.
3. In the Results Area, the default dashboard layout is displayed.
4. In the Tool Bar, click **Layout**. The Layout Editor opens.
5. In the Layout Editor, click **+** to increase or **x** to reduce the number of the displayed reports in the dashboard for the selected category.

Figure 15: Configuring dashboard layout



You can select three reports per row and three reports per column at most.

6. Click **Save** to save your settings.

You can always change your settings later.

Note: To select the reports that are displayed each time you open the dashboard of a certain report category, click an arrow on the top of the individual report frame.

Creating and editing filters

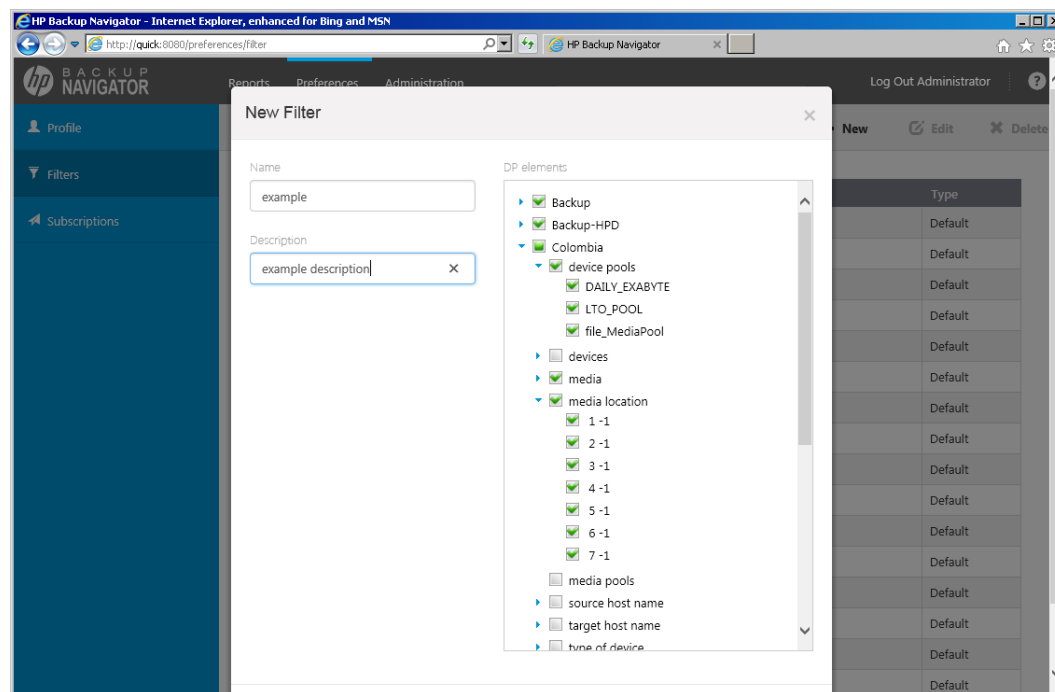
Create a filter to limit the input data for your reports. The input data is information on your Data Protector backup environment received from the Data Protector IDB and stored in the HP Backup Navigator database in a similar way.

Steps

1. Select the **Preferences** context.
2. In the Navigation Pane, click **Filters**.
3. In the Tool bar of the Results Area, click **New**.
4. In the New filter dialog box, name your filter and enter its description.

From the available Data Protector cells, select the input data for your reports. You can select the entire cell to collect all data stored in the IDB or only a specific group of the IDB data (for example, devices, device pools, media, and so on). Any number of cells and groups of the IDB data can be selected. The selection represents your new filter.

Figure 16: Configuring filters



5. Click **Create filter**. The new filter is visible in the Navigation Pane.

To edit a filter, click the desired filter, change the filter selection and apply your changes.

Generating reports

Update a report with the current data from the HP Backup Navigator database.

Steps

1. Select the **Reports** context.
2. In the Navigation Pane, click **Scope**, and then select **Cells** or **Filters**.
3. Select cells or filters to limit your input data, and then click **Apply**.
4. In the Navigation Pane, select the report category and then navigate to the report that you want to generate. You can also search for it by using **Find reports**. The selected report is displayed in the Results Area.
5. In the Tool Bar of the Results Area, specify available parameters according to your needs and then click **Generate**.

You can view the report in a chart or in a table format.

Adding reports to favorites

Add a report to your favorites to access it quicker next time when you need it, to be able to subscribe to it, and to view it within the specified scope and parameters set.

Steps

1. Select the **Reports** context.
2. In the Navigation Pane, select the report category and then the report that you want to add as your favorite. The selected report is displayed in the Results Area.
3. Change the report parameters according to your interest and click **Generate**.
4. In the Tool Bar, click **Add to favorites**.
5. In the Favorites dialog box, you can enter a name for your favorite report or leave its predefined name.
6. Click **Save favorite**. The report is added to Favorites in the Navigation Pane.

A report is saved with the parameters that were defined when you saved it to favorites. You can edit or remove your favorite report later.

Subscribing to reports

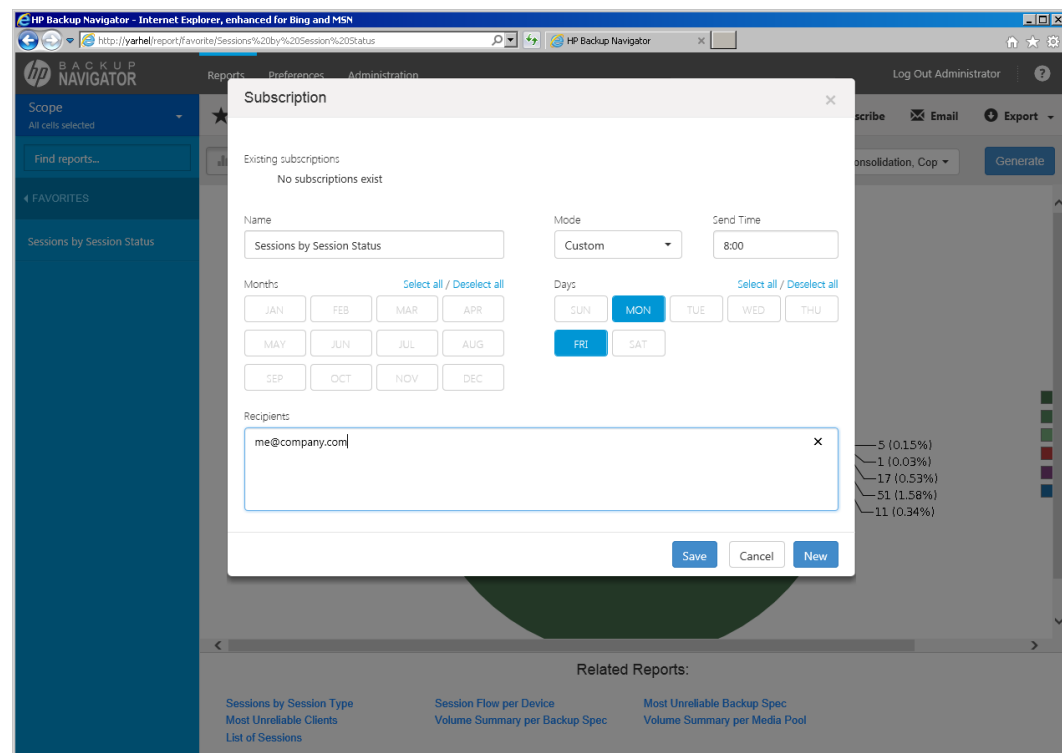
Subscribe to a report to receive it regularly by email.

Note: You can subscribe only to the report, that you previously added to your favorites. The report you subscribe to has the same scope and parameters as the favorite report.

Steps

1. Select the **Reports** context.
2. In the Navigation Pane, under Favorites, select the report, to which you want to subscribe. The selected report is displayed in the Results Area.
3. In the Tool Bar, click **Subscribe**.

Figure 17: Subscribing to reports



- Enter a subscription name.
 - Specify time, select months of a year, and days of a week.
 - Enter one or more email addresses, or a mailing list.
4. Click **Save**. Your subscription is added. To review it, select the **Preferences** context and then click **Subscriptions** in the Navigation Pane.

You can always update your subscriptions later.

Exporting reports

Export a report to various formats.

Steps

1. Select the **Reports** context.
2. In the Navigation Pane, select the report that you want to export to one of the available formats. The selected report is displayed in the Results Area.
3. In the Tool Bar, click **Export**.
4. Select the desired format (**PDF**, **XLSX**, **CSV**, **DOCX**, **PPTX**, **HTML**) to download and view the report.

Sending reports by email

Send a report by email to one or more recipients.

Steps

1. Select the **Reports** context.
2. In the Navigation Pane, select the report that you want to send by email. The selected report is displayed in the Results Area.
3. In the Tool Bar, click **Email**.
4. Enter a subject and recipients email addresses.
5. Click **Send**.

You can also send all reports displayed in the dashboard.

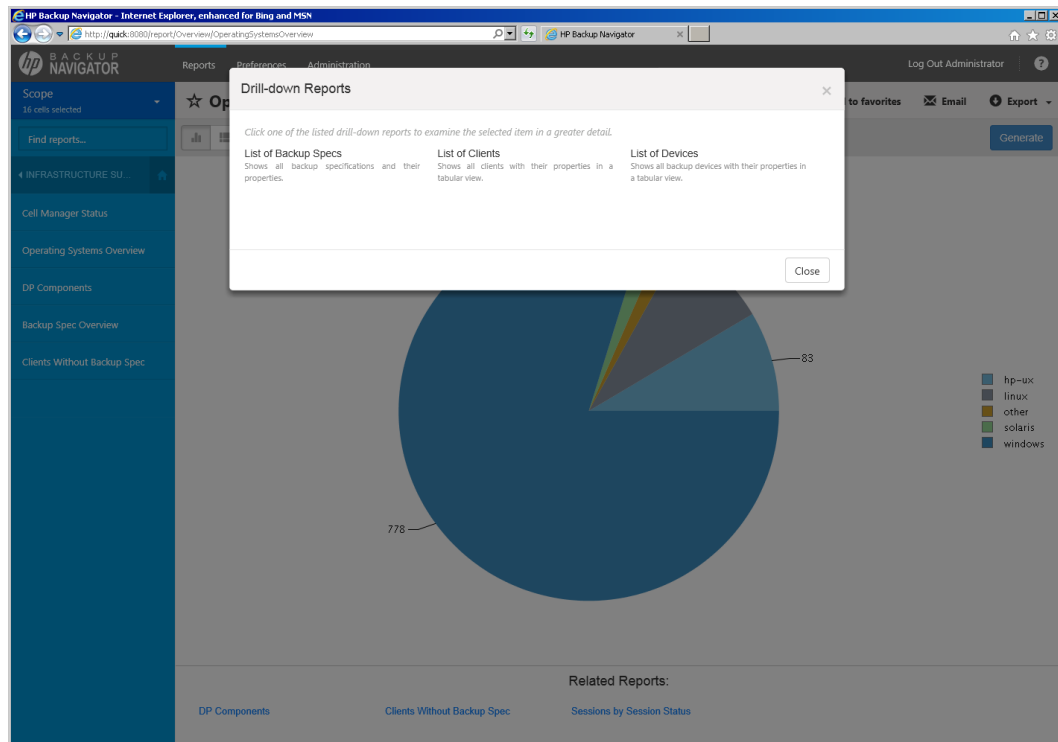
Using drill-down functionality

Examine your report data in a more detail by using the drill-down functionality. You can find out the reason for deviated or error behavior in your environment.

Steps

1. Select the **Reports** context.
2. In the Navigation Pane, select the report category and then the report that you want to examine. The selected report is displayed in the Results Area.
3. Click an item of your interest inside the graphical report view.

Figure 18: Drill-down reports



4. In the pop-up window, click one of the available drill-down reports to examine your report data in more detail.
5. Continue to drill down the consequent reports to get the data of your interest.

Example of using drill down 1

This example describes, how to find out, what are the reasons of the failed sessions.

Steps

1. Select the **Reports** context.
2. In the Navigation Pane, select **Overview > Sessions Summary > Sessions by Session Status**.
3. In the Results Area, click on the pie chart sector, which represents failed session. A window with links to the available drill-down reports pops up.
4. In the pop-up window, click **Most Unreliable Backup Spec**.
5. Select a backup specification with the highest number of errors and click on the bar area of this backup specification, which represent errors.
6. In the pop-up window, click **List of Sessions**.

7. Select the backup session that you want to examine and click on it.
8. In the pop-up window, click **Session Output**. A session report opens.
9. Examine the messages in the session report to find out the reason of the session failure.

Example of using drill down 2

This example describes, how to identify the location of the most unreliable medium that will be soon released from protection and can be used for writing data to it again.

Steps

1. Select the **Reports** context.
2. In the Navigation Pane, select **Capacity > Media Capacity > Data Protection Expiration**.
3. In the Results Area, click on the bar, which represents the media where data protection will expire soon. A window with links to the available drill-down reports pops up.
4. In the pop-up window, click **Media Summary per Pool**.
5. Select the media pool that contains media of the poor quality and click on the part of the bar, which represents media pools of the poorest quality.
6. In the pop-up window, click **Media Quality Summary**.
7. Select the medium with the highest number of errors, overwrites, or both and click on the corresponding bar.
8. In the pop-up window, click **Most Unreliable Media**.
9. Select the medium with the highest number of errors and click on the corresponding bar.
10. In the pop-up window, click **List of Media**.
11. Examine the media properties to identify the location.

Configuring user profiles

Configure your profile as a HP Backup Navigator user.

Steps

1. Select the **Preferences** context.
2. In the Navigation Pane, click **Profile**.

3. Modify the desired fields.
4. Click **Save**.

You can always change these settings later.

Configuring region settings

You can specify your region settings and or change the date format.

Steps

1. Select the **Preferences** context.
2. In the Navigation Pane, click **Region settings**.
3. Select your region and date format.
4. Click **Save**.

You can always change these settings later.

Appendix A: Installing and Configuring Red Hat Enterprise Linux

This section provides installation and configuration instructions for the RHEL operating system, which is a prerequisite for the HP Backup Navigator installation. For the more up-to-date and detailed instructions than those provided in this section, or non-standard installations, see the documentation supplied with the RHEL.

Steps

1. Download Red Hat Enterprise Linux 6.4 or 6.5 (.iso file) from Software & Download Center at: <https://access.redhat.com/download>
2. Mount the .iso file.
3. Select **Install or upgrade an existing system**.

Figure 19: RHEL installation



4. Select **Basic Storage Devices**. Click **Next**.

Figure 20: Device type selection

What type of devices will your installation involve?

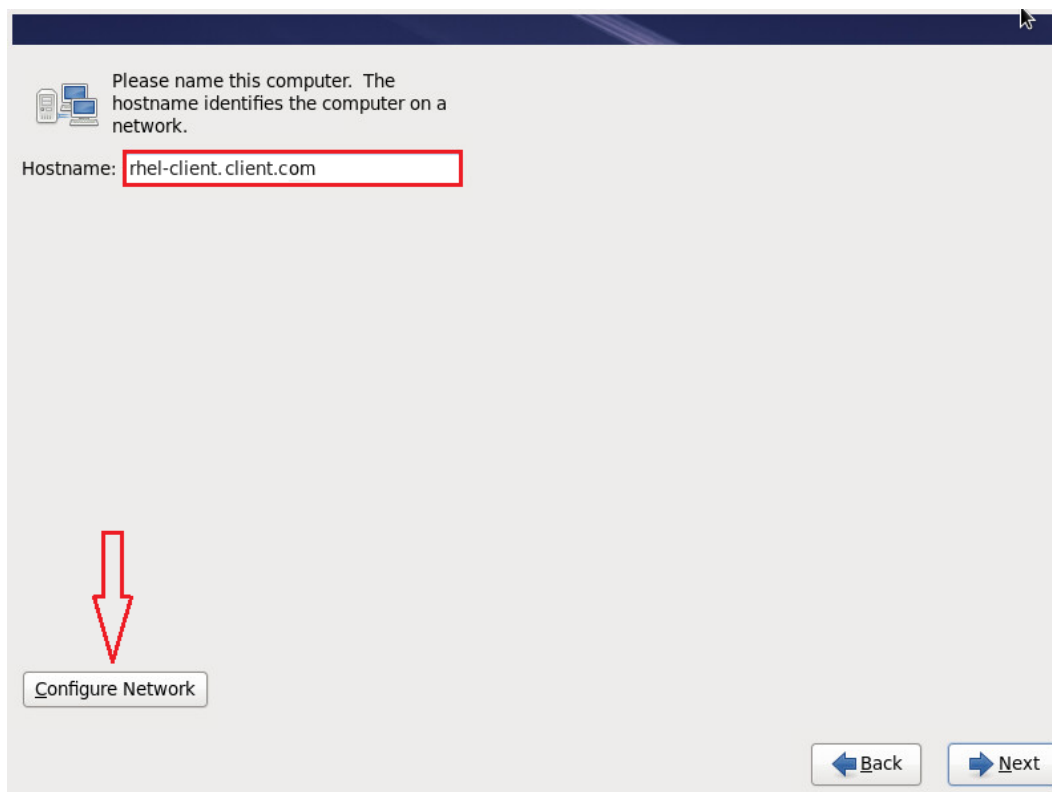
☒ **Basic Storage Devices**
Installs or upgrades to typical types of storage devices. If you're not sure which option is right for you, this is probably it.

☐ **Specialized Storage Devices**
Installs or upgrades to enterprise devices such as Storage Area Networks (SANs). This option will allow you to add FCoE / iSCSI / zFCP disks and to filter out devices the installer should ignore.

Back Next

5. Enter the hostname. Click **Configure Network**.

Figure 21: Network configuration



Under IPv4 Settings add Address, DNS Servers and domain (you can specify these settings after installation, but it is recommended that you configure network in this step). Click **OK**.

Click **Next**.

6. Specify your time zone. Click **Next**.
7. Enter and confirm the password for the root user. Click **Next**.

8. Select the **Use All Space** installation type. Click **Next**.

Figure 22: Installation type selection

Which type of installation would you like?

☒ **Use All Space**
Removes all partitions on the selected device(s). This includes partitions created by other operating systems.
Tip: This option will remove data from the selected device(s). Make sure you have backups.

☐ **Replace Existing Linux System(s)**
Removes only Linux partitions (created from a previous Linux installation). This does not remove other partitions you may have on your storage device(s) (such as VFAT or FAT32).
Tip: This option will remove data from the selected device(s). Make sure you have backups.

☐ **Shrink Current System**
Shrinks existing partitions to create free space for the default layout.

☐ **Use Free Space**
Retains your current data and partitions and uses only the unpartitioned space on the selected device(s), assuming you have enough free space available.

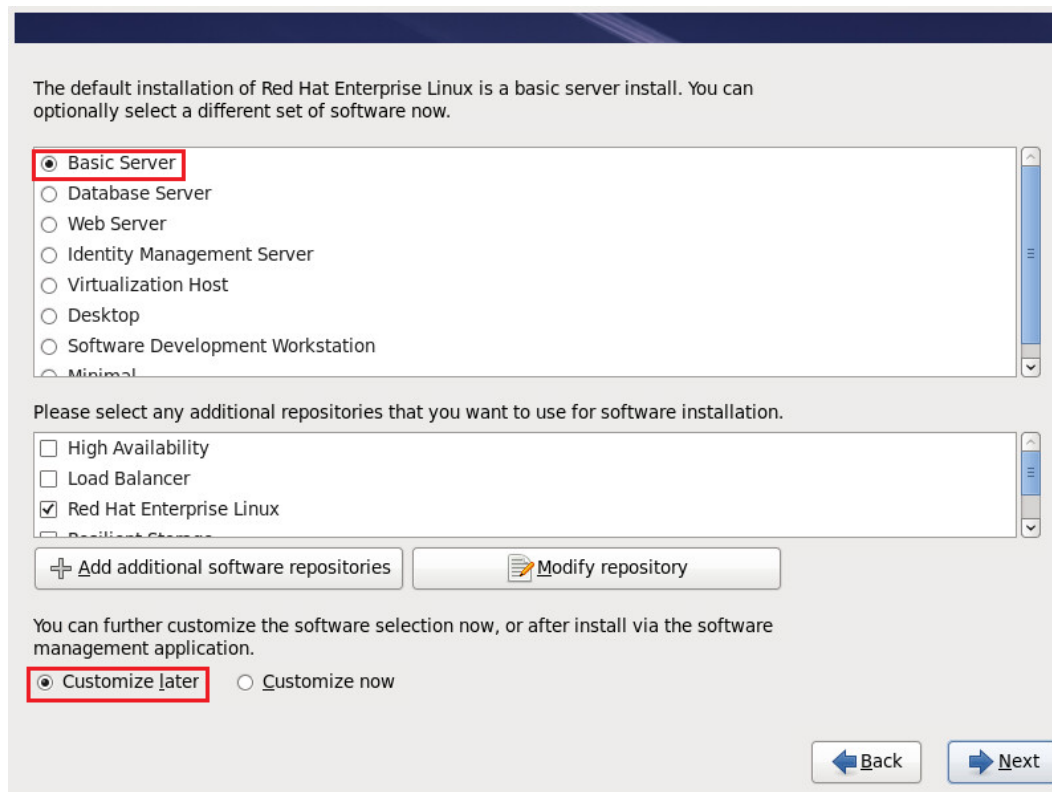
☐ **Create Custom Layout**
Manually create your own custom layout on the selected device(s) using our partitioning tool.

☐ **E**ncrypt system
☐ **R**eview and modify partitioning layout

[Back](#) [Next](#)

9. Select **Basic Server** software set. You can install basic server with or without GUI:
 - If you do not want to install GUI, select **Customize later**. Click **Next**. The installation process starts.

Figure 23: Installation without GUI



The default installation of Red Hat Enterprise Linux is a basic server install. You can optionally select a different set of software now.

☒ Basic Server

☐ Database Server

☐ Web Server

☐ Identity Management Server

☐ Virtualization Host

☐ Desktop

☐ Software Development Workstation

☐ Minimal

Please select any additional repositories that you want to use for software installation.

☐ High Availability

☐ Load Balancer

☒ Red Hat Enterprise Linux

☐ Resilient Storage

You can further customize the software selection now, or after install via the software management application.

☒ Customize later

☐ Customize now

- If you want to install GUI packages, select **Customize now**. Click **Next** to open the customization window.

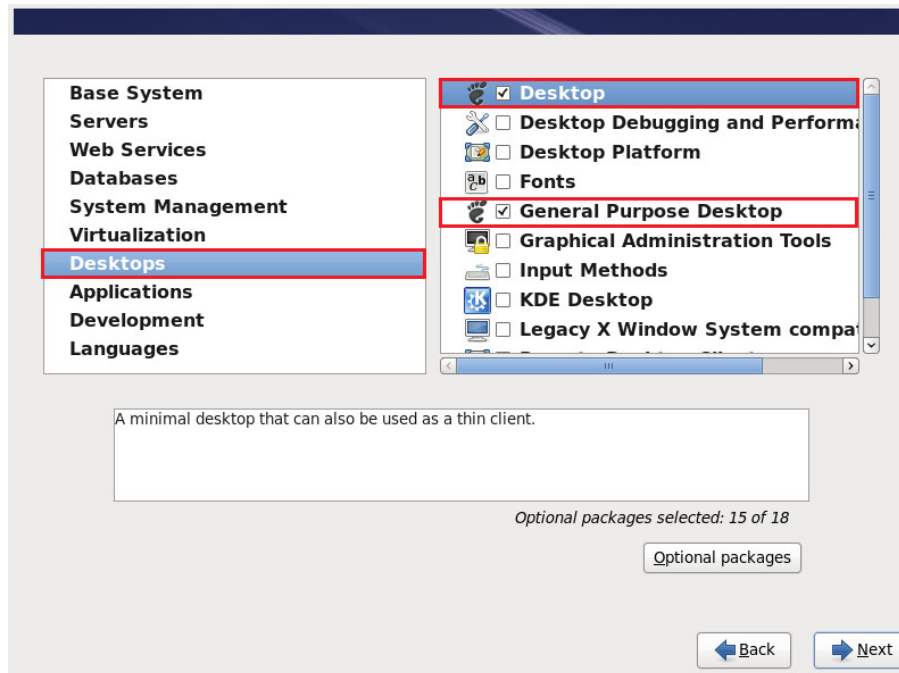
Figure 24: Installation with additional software selection

The screenshot shows the 'Software Selection' window during the Red Hat Enterprise Linux installation. At the top, it states: 'The default installation of Red Hat Enterprise Linux is a basic server install. You can optionally select a different set of software now.' Below this is a list of installation profiles with radio buttons. 'Basic Server' is selected and highlighted with a red box. Other options include Database Server, Web Server, Identity Management Server, Virtualization Host, Desktop, Software Development Workstation, and Minimal. Below the list, it says: 'Please select any additional repositories that you want to use for software installation.' There are checkboxes for High Availability, Load Balancer, Red Hat Enterprise Linux (which is checked), and Resilient Storage. Below the checkboxes are two buttons: '+ Add additional software repositories' and 'Modify repository'. Further down, it says: 'You can further customize the software selection now, or after install via the software management application.' There are two radio buttons: 'Customize later' and 'Customize now'. 'Customize now' is selected and highlighted with a red box. At the bottom right are 'Back' and 'Next' buttons.

Important: When specifying additional packages, don't select PostgreSQL Database Client and PostgreSQL Database Server under Databases section.

- i. In the left panel, select **Desktops**. In the right panel, select the **Desktop** and **Graphical Administration Tools** packages.

Figure 25: Software selection for GUI installation



- ii. In the left panel, select **Applications**. In the right panel, select the **Graphical Administration Tools** package.

Click **Next**. The installation process starts.

10. After the installation process is finished, click **Reboot**.

After you installed RHEL, you can continue with the HP Backup Navigator installation. To install and configure all prerequisite software and HP Backup Navigator using the installation script (recommended), see ["Installation procedure" on page 14](#). If you want to install and configure the prerequisite software manually, see ["Installing and Configuring Prerequisite Software" on page 73](#).

Appendix B: Installing and Configuring Prerequisite Software

This section provides installation and configuration instructions for the software products that are prerequisites for the HP Backup Navigator installation. For the more up-to-date and detailed instructions than those provided in this section, or non-standard installations, see the documentation supplied with the related products.

Note: The installation and configuration procedures described in this chapter can be performed automatically by using the HP Backup Navigator installation script. For the automatic installation procedure, see ["Installation procedure" on page 14](#).

To prepare the system for the HP Backup Navigator installation, make sure that the following software is installed and configured:

1. To configure firewall and network, see ["Configuring firewall and network" below](#).
2. To install OpenJDK, see ["Installing OpenJDK" on page 75](#).
3. To install and configure Apache Tomcat, see ["Installing and configuring Tomcat" on page 75](#).
4. To install and configure PostgreSQL, see ["Installing and configuring PostgreSQL" on page 80](#).

After installing and configuring all prerequisite software, install HP Backup Navigator. See ["Running HP Backup Navigator installation package" on page 83](#).

Configuring firewall and network

After you complete with Red Hat Enterprise Linux installation, set the port range for communication of the HP Backup Navigator with the web user interface system, database server, and the Data Protector Cell Managers on the newly installed RHEL system.

Steps

1. Open the `iptables` file:

```
# vi /etc/sysconfig/iptables
```
2. Configure ports by adding the following lines in the `iptables` file:

Note: By default, Apache Tomcat uses port 80 or 8080 and PostgreSQL uses port 5432. If, in your environment, other ports are used, add these ports to the `iptables` file.

```
-A INPUT -m state --state NEW -m tcp -p tcp --dport 80 -j ACCEPT
-A INPUT -m state --state NEW -m tcp -p tcp --dport 8080 -j ACCEPT
-A INPUT -m state --state NEW -m tcp -p tcp --dport 5432 -j ACCEPT
-A INPUT -m state --state NEW -m tcp -p tcp --dport start_port:end_port -j
ACCEPT
```

Where *start_port:end_port* is a port range available for communication with the Data Protector Cell Managers. You should check the port range of each Cell Manager, from which you want to get data for your reports and open the same port range on the HP Backup Navigator. The default port range is the following:

- **Windows 7, Windows Server 2008, Windows Server 2012:** 49152 - 65535
- **Windows Server 2003:** 1025 - 5000
- **HP-UX and Linux:** 32768 - 61000

If the default settings were changed, you should specify the port range as in the `OB2PORTRANGE` and `OB2PORTRANGESPEC` omnirc options. Open the omnirc file and search for the `OB2PORTRANGE` and `OB2PORTRANGESPEC` options. The location of the omnirc file on the Data Protector Cell Manager is the following:

- **Windows 7, Windows Server 2008, Windows Server 2012:** *Data_Protector_program_data\omnirc*
- **Windows Server 2003:** *Data_Protector_home\omnirc*
- **HP-UX and Linux:** */opt/omni/.omnirc*

The `iptables` file should look like this:

Figure 26: Example of the iptables file

```
# Firewall configuration written by system-config-firewall
# Manual customization of this file is not recommended.
*filter
:INPUT ACCEPT [0:0]
:FORWARD ACCEPT [0:0]
:OUTPUT ACCEPT [0:0]
-A INPUT -m state --state ESTABLISHED,RELATED -j ACCEPT
-A INPUT -p icmp -j ACCEPT
-A INPUT -i lo -j ACCEPT
-A INPUT -m state --state NEW -m tcp -p tcp --dport 22 -j ACCEPT
-A INPUT -m state --state NEW -m tcp -p tcp --dport 80 -j ACCEPT
-A INPUT -m state --state NEW -m tcp -p tcp --dport 8080 -j ACCEPT
-A INPUT -m state --state NEW -m tcp -p tcp --dport 3306 -j ACCEPT
-A INPUT -m state --state NEW -m tcp -p tcp --dport 50000:51000 -j ACCEPT
-A INPUT -j REJECT --reject-with icmp-host-prohibited
-A FORWARD -j REJECT --reject-with icmp-host-prohibited
COMMIT
```

3. Restart the `iptables` service:

```
# service iptables restart
```

4. If you want to connect to the host via PuTTY or a similar utility, make the following configuration change:

```
# vi /etc/sysconfig/network-scripts/ifcfg-eth0  
# ONBOOT=yes
```

5. Verify the ports and network configuration by running the `ping` command from this host to another and backward:

```
# ping -c 5 hostname
```

Installing OpenJDK

After you configured firewall and networks on the RHEL system, you can install and configure OpenJDK.

Steps

1. Download the `jdk-7u67-linux-x64.rpm` installation package from:
<http://www.oracle.com/technetwork/java/javase/downloads/jdk7-downloads-1880260.html>

If a newer version is available, select a newer version number.

2. Install OpenJDK by running the following command:

```
# rpm -ivh jdk-7u67-linux-x64.rpm
```

3. Set the `JAVA_HOME` variable as follows:

- a. Create the `java.sh` profile file:

```
# vi /etc/profile.d/java.sh
```

- b. Add the following line in file:

```
export PATH=$PATH:/usr/java/jdk1.7.0_67/bin
```

- c. Run the profile file:

```
# sh /etc/profile
```

Installing and configuring Tomcat

After you installed and configured OpenJDK, you can install Tomcat.

Steps

1. Navigate to the /tmp directory:

```
# cd /tmp
```

2. Download Tomcat 7.x from the Core Binary distribution (tar.gz file) at:
<http://tomcat.apache.org/download-70.cgi>

If you do not have access to the internet on the HP Backup Navigator system, make sure, that you download Apache Tomcat packages for the installation and save them in the /tmp directory.

You can also download Tomcat from the terminal by running the `wget` command. For example:

```
# wget http://www.apache.si/tomcat/tomcat-7/v7.0.55/bin/apache-tomcat-7.0.55.tar.gz
```

If a newer version is available, change the version number in this command.

3. Make sure that the `apache-tomcat-7.0.xx.tar.gz` package is in the /tmp directory:

```
# mv filename /tmp
```

4. Navigate to the /opt directory:

```
# cd /opt
```

5. Untar the package:

```
# tar -xvf /tmp/apache-tomcat-7.0.xx.tar.gz
```

6. Create a soft link from the unpacked Tomcat directory to /opt/apache-tomcat. For example:

```
# ln -s /opt/apache-tomcat-7.0.55 /opt/apache-tomcat
```

7. Make sure, that the `JAVA_OPTS` settings in the `/opt/apache-tomcat/bin/catalina.sh` file are set as follows:

```
# cd /opt/apache-tomcat/bin
# vi catalina.sh
JAVA_OPTS="-Djava.awt.headless=true -Dfile.encoding=UTF-8 -server -Xmsm -Xmxm
-XX:PermSize=m -XX:MaxPermSize=m -XX:+DisableExplicitGC"
```

Set the `JAVA_OPTS` parameters based on 70% of all memory size of you virtual or physical machine.

You can place the `JAVA_OPTS` variable at the beginning (after the first comments) or at the end of `catalina.sh`.

Example:

The memory size of machine is 2GB:

70% of 2000MB = 1400MB

Xmx=980m (70% of 1400MB)

Xms=980m (70% of 1400MB)

XX:PermSize=560m (40% of 1400MB)

XX:MaxPermSize=560m (40% of 1400MB)

```
JAVA_OPTS="-Djava.awt.headless=true -Dfile.encoding=UTF-8 -server -Xms980m -Xmx980m -XX:PermSize=560m -XX:MaxPermSize=560m -XX:+DisableExplicitGC"
```

Figure 27: Example of the catalina.sh file

```
# JPDA_TRANSPORT (Optional) JPDA transport used when the "jpda start"
#                  command is executed. The default is "dt_socket".
#
# JPDA_ADDRESS    (Optional) Java runtime options used when the "jpda start"
#                  command is executed. The default is 8000.
#
# JPDA_SUSPEND    (Optional) Java runtime options used when the "jpda start"
#                  command is executed. Specifies whether JVM should suspend
#                  execution immediately after startup. Default is "n".
#
# JPDA_OPTS       (Optional) Java runtime options used when the "jpda start"
#                  command is executed. If used, JPDA_TRANSPORT, JPDA_ADDRESS,
#                  and JPDA_SUSPEND are ignored. Thus, all required jpda
#                  options MUST be specified. The default is:
#
#                  -agentlib:jdwp=transport=$JPDA_TRANSPORT,
#                  address=$JPDA_ADDRESS,server=y,suspend=$JPDA_SUSPEND
#
# CATALINA_PID    (Optional) Path of the file which should contains the pid
#                  of the catalina startup java process, when start (fork) is
#                  used
#
# LOGGING_CONFIG  (Optional) Override Tomcat's logging config file
#                  Example (all one line)
#                  LOGGING_CONFIG="-Djava.util.logging.config.file=$CATALINA_BASE/conf/logging.properties"
#
# LOGGING_MANAGER (Optional) Override Tomcat's logging manager
#                  Example (all one line)
#                  LOGGING_MANAGER="-Djava.util.logging.manager=org.apache.juli.ClassLoaderLogManager"
#
# $Id: catalina.sh 1515929 2013-08-20 19:11:24Z markt $
#-----
JAVA_OPTS="-Djava.awt.headless=true -Dfile.encoding=UTF-8 -server -Xms3536m -Xmx3536m -XX:PermSize=1524m -XX:MaxPermSize=1524m -XX:+DisableExplicitGC"

# OS specific support. $var _must_ be set to either true or false.
cygwin=false
darwin=false
os400=false
case "$(uname)" in
  CYGWIN*) cygwin=true;;
  Darwin*) darwin=true;;
  OS400*) os400=true;;
  *)
esac
```

8. Start Apache Tomcat:

```
# /opt/apache-tomcat/bin/startup.sh
```

The output should look like this:

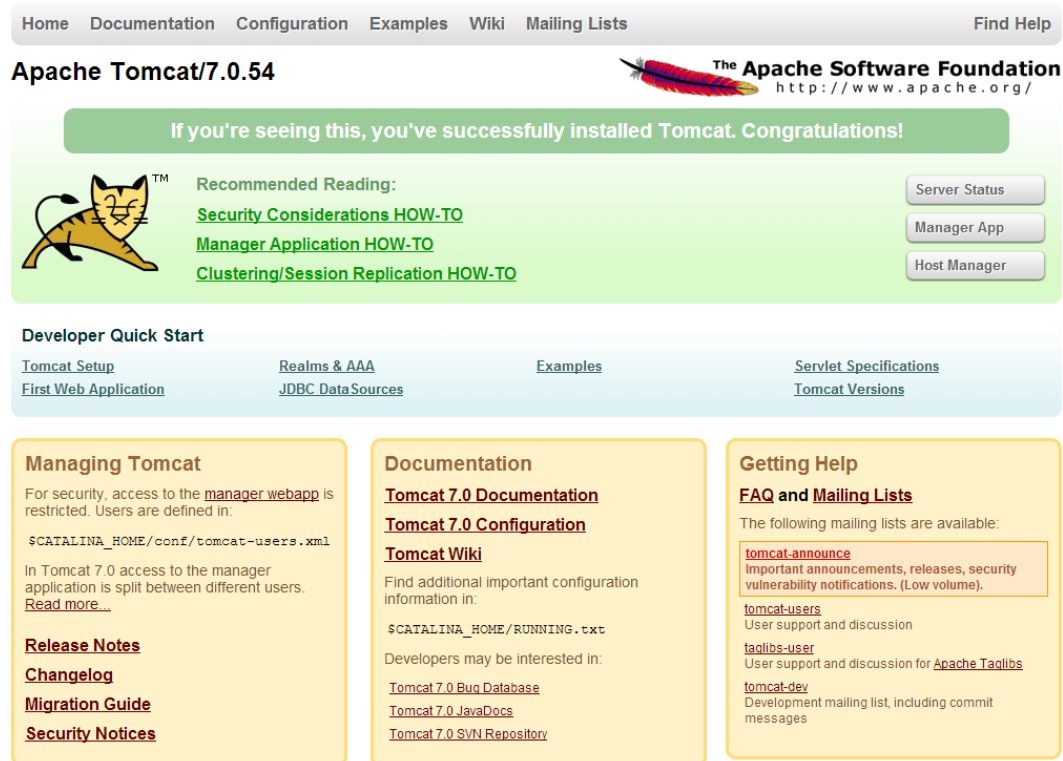
Figure 28: Example of the catalina.sh file output

```
Using CATALINA_BASE:   /opt/apache-tomcat
Using CATALINA_HOME:   /opt/apache-tomcat
Using CATALINA_TMPDIR: /opt/apache-tomcat/temp
Using JRE_HOME:        /usr
Using CLASSPATH:       /opt/apache-tomcat/bin/bootstrap.jar:/opt/apache-tomcat/bin/tomcat-juli.jar
Tomcat started.
```

9. Check if Apache Tomcat is running. Open your browser and type: *hostname*

The following page should open:

Figure 29: Apache Tomcat page



10. If you want to start Apache Tomcat automatically after reboot, perform the following steps:

a. Navigate to the `/etc/init.d` directory:

```
# cd /etc/init.d
```

b. Create a file named `tomcat`:

```
# vi tomcat
```

c. Copy the following code to the `tomcat` file and save it:

```
#!/bin/sh
# chkconfig: 2345 80 20
# Description: Tomcat Server basic start/shutdown/restart/status script
TOMCAT_HOME=/opt/apache-tomcat/bin
START_TOMCAT=/opt/apache-tomcat/bin/startup.sh
STOP_TOMCAT=/opt/apache-tomcat/bin/shutdown.sh
start() {
    java_proc=$(pidof java)
    if [ -n "$java_proc" ]; then
        echo "Tomcat is already running!"
    else
```

```

    ${START_TOMCAT}
fi
}
stop() {
    java_proc=$(pidof java)
    if [ -n "$java_proc" ]; then
        echo "Stopping Tomcat..."
        kill -9 $java_proc
    else
        echo "Tomcat is not running!"
    fi
}
restart() {
    java_proc=$(pidof java)
    if [ -n "$java_proc" ]; then
        echo "Stopping Tomcat..."
        kill -9 $java_proc
        echo
        echo "Starting Tomcat..."
        sleep 2
    fi
    ${START_TOMCAT}
}
status() {
    java_proc=$(pidof java)
    if [ -n "$java_proc" ]; then
        echo "Tomcat service is running!"
    else
        echo "Tomcat service is not running!"
    fi
}
case "$1" in
    start)
        start
        ;;
    stop)
        stop
        ;;
    restart)
        restart
        ;;
    status)
        status
        ;;
    *)
        echo "Usage: $0 {start|stop|restart|status}"
        esac
    exit 0

```

- d. Update the file permissions to make it executable by any user:

```
# chmod 755 tomcat
```

- e. Add the script to the startup services:

```
# chkconfig --add tomcat
```

- f. Check that the script is added to the startup services:

```
# chkconfig --list tomcat
```

You can use the following commands with the `tomcat` service:

- To start Tomcat: `# service tomcat start`
- To stop Tomcat: `# service tomcat stop`
- To restart Tomcat: `# service tomcat restart`
- To check the Tomcat status: `# service tomcat status`

Installing and configuring PostgreSQL

Install and configure PostgreSQL 9.3 or later version to use it as an internal database for the HP Backup Navigator functionality.

Note: Use the HP Backup Navigator installation script to install and configure PostgreSQL on the same system with HP Backup Navigator. See "[Installation procedure](#)" on page 14.

Use this procedure, if you want to perform manual installation and configuration on the same system with HP Backup Navigator.

Depending on whether the system where you want to install PostgreSQL has access to the internet or not, select one of the following procedures:

- "[Installing PostgreSQL on a system without access to internet](#)" on the next page.
- "[Installing PostgreSQL on a system with access to internet](#)" on page 82.

Prerequisites

- Make sure, that the `uuid-1.6.1-10.el6.x86_64.rpm` package is installed on your system. You can download and install it as follows:
 - a. Download the `uuid-1.6.1-10.el6.x86_64.rpm` package from:
http://mirror.centos.org/centos/6/os/x86_64/Packages/uuid-1.6.1-10.el6.x86_64.rpm

- b. Install the `uuid` package on your system:

```
# rpm -ivh uuid-1.6.1-10.el6.x86_64.rpm
```

- On RHEL 6.4, make sure, that the `openssl` package version is 1.0.1 or higher. To check the current version, run: `rpm -qa | grep openssl`

To upgrade the `openssl` to version 1.0.1 do one of the following:

- Without access to internet:

- i. Download the `openssl` package to your system from:

http://mirror.centos.org/centos/6/os/x86_64/Packages/openssl-1.0.1e-30.el6.x86_64.rpm

- ii. Run: `rpm -Uvh openssl-1.0.1e-30.el6.x86_64.rpm`

- With access to internet using the `yum` command:

Run: `yum upgrade openssl`

- With access to internet without the `yum` command:

- i. From the `/tmp` directory, run:• # `wget`

`http://mirror.centos.org/centos/6/os/x86_64/Packages/openssl-1.0.1e-30.el6.x86_64.rpm`

- ii. Run: `rpm -Uvh openssl-1.0.1e-30.el6.x86_64.rpm`

Installing PostgreSQL on a system without access to internet

Steps

1. Navigate to the `/tmp` directory:

```
# cd /tmp
```

2. Download the following packages from the PostgreSQL web page:

http://yum.postgresql.org/9.3/redhat/rhel-6-x86_64/repoview/postgresqldbserver93.group.html

If a newer version is available,select a newer version number.

```
postgresql93
postgresql93-contrib
postgresql93-libs
postgresql93-server
```

3. Make sure that all packages are in the /tmp directory. Use the following command:

```
# mv filename /tmp
```

4. Install PostgreSQL packages:

```
# sudo rpm -ivh postgresql93-*
```

5. Initialize the database:

```
# service postgresql-9.3 initdb
```

6. Start the service:

```
# service postgresql-9.3 start
```

Installing PostgreSQL on a system with access to internet

Steps

1. Install the PostgreSQL repository:

```
# yum install http://yum.postgresql.org/9.3/redhat/rhel-6-x86_64/pgdg-redhat93-9.3-1.noarch.rpm
```

2. Install PostgreSQL:

```
# yum install postgresql93-server postgresql93-contrib
```

3. Start the service:

```
# service postgresql-9.3 start
```

Configuring PostgreSQL

After you installed PostgreSQL, perform the necessary configuration steps.

Steps

1. Configure the automatic postgresql-9.3 service start-up:

```
chkconfig postgresql-9.3 on  
chkconfig --list postgresql-9.3  
postgresql-9.3 0:off 1:off 2:on 3:on 4:on 5:on 6:off
```

2. Add users:

```
su - postgres
psql
CREATE ROLE db_username SUPERUSER LOGIN CREATEROLE CREATEDB PASSWORD 'db_
password';
```

3. Ensure the remote and local database connection permissions:

- a. Open the `pg_hba.conf` file and add the following lines under # IPv4 local connection section:

```
# vi /var/lib/pgsql/9.3/data/pg_hba.conf

host all all all md5
host all all host_ip_address/CIDR_mask md5
```

where *CIDR_mask* is an integer between 0 and 32 (IPv4) or 128 (IPv6) inclusive that specifies the number of significant bits in the mask.

- b. Create a new file (`pgpass`) and add the following line:

```
# vi ~/.pgpass

hostname:port:database_name:db_username:db_password
```

- c. Provide the necessary connection permissions:

```
# chmod 0600 ~/.pgpass
```

3. Allow the TCP/IP connections to the database. In the `/var/lib/pgsql/9.3/data/postgresql.conf` file, search for line `listen_addresses=''` and change it to `listen_addresses='*'`.
4. After you performed the configuration tasks, restart service:

```
# service postgresql-9.3 restart
```

Running HP Backup Navigator installation package

You can install or upgrade HP Backup Navigator.

Steps

1. Depending on the format of your HP Backup Navigator installation, do one of the following:
 - Insert and mount the HP Backup Navigator installation DVD-ROM or mount the ISO image directly.
 - Untar the `hp-backup-navigator-8.01.tar` installation package to a temporary directory,

for example, /tmp:

```
# tar -xvf /tmp/hp-backup-navigator-9.00.tar
```

2. In the command-line console, run the following command:

To install: # rpm -ivh hp-backup-navigator-9.00.el6.x86_64.rpm

To upgrade: # rpm -uvh hp-backup-navigator-9.00.el6.x86_64.rpm

3. You are provided with the user name (admin) and password (randomized, unique) for the first login to the HP Backup Navigator web application.

To continue with the HP Backup Navigator installation, see ["Configuring HP Backup Navigator" on page 16](#).

Glossary

D

drill down

You can examine report data in more detail by using the drill-down functionality. Navigate from the report of your interest to the connected reports, each time with deeper insight into the data, and discover the data you need.

F

filter

You can limit the data received from the Data Protector environment by selecting the entire cell to collect all data stored in the IDB or only a specific group of the IDB data (for example, devices, device pools, media, and so on). Any number of cells and groups of the IDB data can be selected.

H

HP Backup Navigator database

A standalone database that contains the HP Backup Navigator functionality related data, the data collected from the Data Protector sessions, and the Data Protector cell infrastructure related data. HP Backup Navigator has an established connection to the database.

HP Backup Navigator system

A system where HP Backup Navigator resides. HP Backup Navigator processes the data collected in the Data Protector environment and presents it as specific reports in the web user interface.

HP Backup Navigator web user interface

A system with a web browser, from which you access HP Backup Navigator. The web user interface also provides administration tools to adjust the environment to your needs. HP Backup Navigator web user interface has an established connection to the HP Backup Navigator system.

I

input data

Information on your Data Protector backup environment received from the Data Protector IDB and stored in the HP Backup Navigator database in a similar way.

S

scope

To ensure that your reports contain only the data that you currently require for your specific purposes, you can limit a scope of your reports only to certain cells or to certain groups of the IDB data (for example, devices, device pools, media, media pools, clients).

We appreciate your feedback!

If you have comments about this document, you can [contact the documentation team](#) by email. If an email client is configured on this system, click the link above and an email window opens with the following information in the subject line:

Feedback on User's Guide (Backup Navigator 9.00)

Just add your feedback to the email and click send.

If no email client is available, copy the information above to a new message in a web mail client, and send your feedback to AutonomyTPFeedback@hp.com.