HP Backup Navigator

Software Version: 9.21

HP Backup Navigator 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.

HP Backup Navigator supports multitenant Data Protector environment and can provide reports also for tenants, if you define them. A tenant is a group of users, usually related to one customer or department, who share Data Protector resources. Each tenant is represented by the dedicated Data Protector elements, such as cells, backup specification groups, backup specifications, or clients.

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

- Multitenant environments support

HP Backup Navigator features

- You can select the Data Protector cells or tenants[1], from which you want to receive the input data for your reports.

- You can use a remote agent to collect data from the Data Protector cells that cannot be directly accessed from HP Backup Navigator.

- 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.

---

[1]For some reports, selecting tenants is not applicable.

HP Backup Navigator web user interface

Figure 1: HP Backup Navigator web user interface
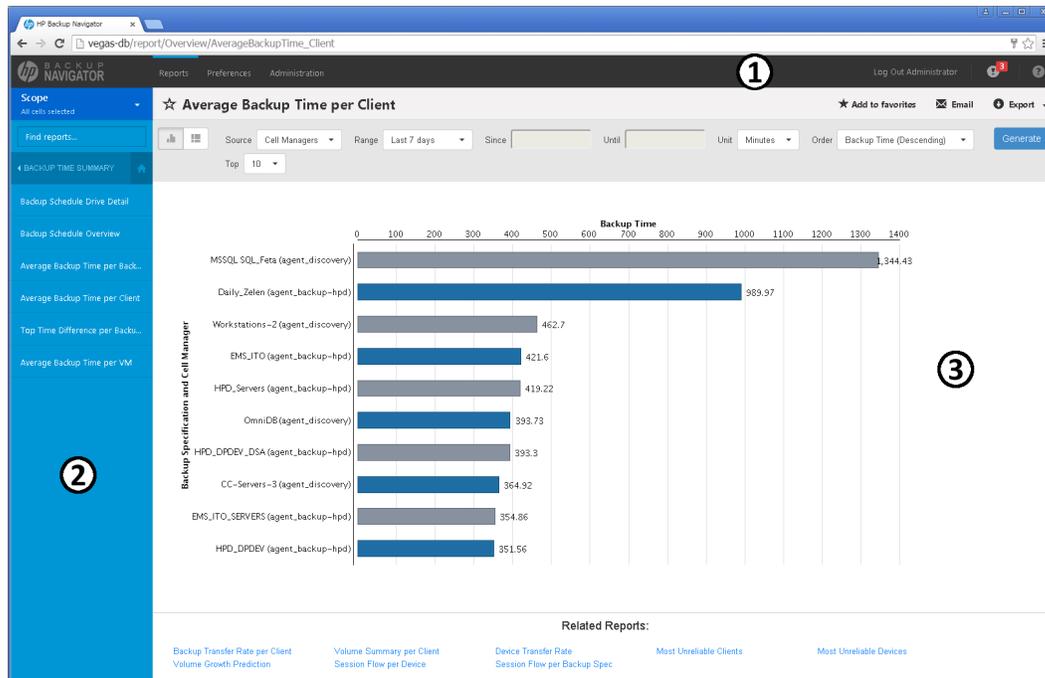
1   Menu Bar

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, view events and configure event monitors, configure your mail server and logging settings, view your database settings, and manage your tenants and tenant groups (discover, import, and maintain them).

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. The About dialog provides information on the HP Backup Navigator current version.

- **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 remote agent system**

  If you want to collect data from the Data Protector cells, which you cannot or due to any reasons do not want to access from HP Backup Navigator, you can use a HP Backup Navigator remote agent to access such cells. You can as many remote agents, as you need. HP Backup Navigator remote agent collects data from the Data Protector cells and provides it to HP Backup Navigator through HTTPS protocol.

- **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
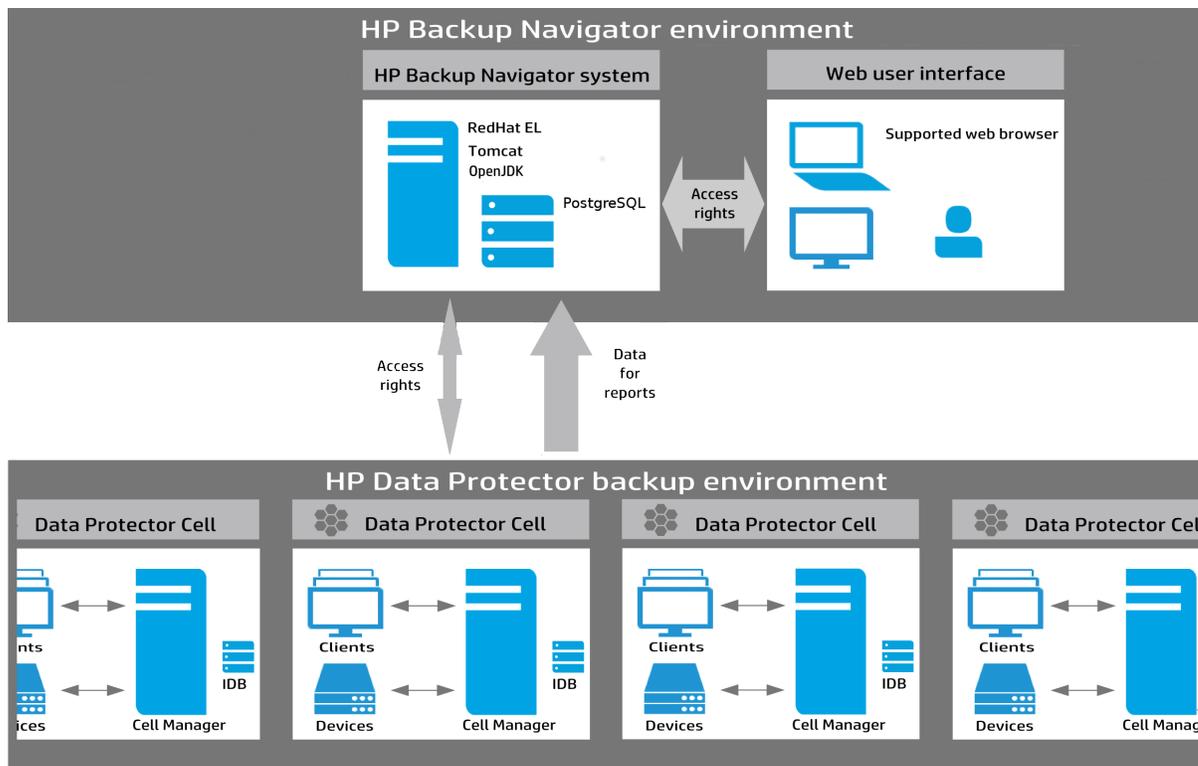
Prerequisites

Before installing HP Backup Navigator, consider the following:

HP Backup Navigator system prerequisites

- One of the following operating systems:

  - Red Hat Enterprise Linux 6.4-6.6 (Basic Server installation type)

    For the installation and configuration instructions, see "Installing and Configuring Red Hat Enterprise Linux" on page 88.

  - SUSE Linux Enterprise 11

    For the installation and configuration instructions, see the Linux documentation.

- System requirements

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

- JDK 1.7

  JDK 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 JDK" on page 98.

- 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 98.

- PostgreSQL 9.4

  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 102.

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

HP Backup Navigator remote agent

- One of the following operating systems:

  - Red Hat Enterprise Linux 6.4-6.6 (Basic Server installation type)

  - SUSE Linux Enterprise 11

- JDK 1.7

Data Protector environment

- HP Backup Navigator can be used with Data Protector versions 7.xx, 8.00-8.12, 9.00-9.04.

- 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, respective HP Backup Navigator remote agent system, or both 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 18.

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 22.

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 JDK). 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 95, "Installing and configuring Tomcat" on page 98, and "Installing and configuring PostgreSQL" on page 102.

Prerequisites

- Red Hat Enterprise Linux or SUSE Enterprise Linux operating system is installed and configured.

- 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`:

JDK 1.7:

Download the `jdk-7u79-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:

- On RHEL 6.4-6-6:

  Download the following packages to your system from
  http://yum.postgresql.org/9.4/redhat/rhel-6-x86_64/repoview/postgresqldbserver94.group.html:

  ```
  postgresql94
  postgresql94-contrib
  postgresql94-libs
  postgresql94-server
  ```

  Download the `uuid-1.6.1-10.el6.x86_64.rpm` package to your system 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-42.el6.x86_64.rpm

- On SUSE, download the following packages to your system:

  `libpq5` from http://download.opensuse.org/repositories/server:/database:/postgresql/SLE_11_SP4/x86_64/libpq5-9.4.4-2.1.x86_64.rpm

  `postgresql-init` from
  http://download.opensuse.org/repositories/server:/database:/postgresql/SLE_11_SP4/noarch/postgresql-init-9.4-46.1.noarch.rpm

  `postgresql94` from
  http://download.opensuse.org/repositories/server:/database:/postgresql/SLE_11_SP4/x86_64/postgresql94-9.4.4-2.1.x86_64.rpm

`postgresql94-contrib` from
http://download.opensuse.org/repositories/server:/database:/postgresql/SLE_11_SP4/x86_
64/postgresql94-contrib-9.4.4-2.1.x86_64.rpm

`postgresql94-server` from
http://download.opensuse.org/repositories/server:/database:/postgresql/SLE_11_SP4/x86_
64/postgresql94-server-9.4.4-2.1.x86_64.rpm

- If you want to check the rpm signature of the HP Backup Navigator installation package, import the following public key:

```
# rpm --import 0x75E1FF78
```

To check, whether the key is successfully imported, run the following command:

```
# rpm -qi gpg-pubkey-75e1ff78-*
```

Steps

1. Insert and mount the HP Backup Navigator installation DVD-ROM or mount the ISO image directly.

   > **Note:** If you want to verify the rpm signature of the HP Backup Navigator installation package, run the following command:
   >
   > ```
   > # rpm --checksig -v hp-backup-navigator-9.21.el6.x86_64.rpm
   > ```

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

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

3. The script starts the installation and configuration of HP Backup Navigator and prerequisite software, such as, JDK, 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 12.)

   - the database name

Figure 3: Database setup page

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:

Enter your username

Password:

Enter your password

Confirm password:

Confirm your password

Create new user

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 shorten 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 earlier version. The upgrade procedure depends on the database you use with your HP Backup Navigator (MariaDB with HP Backup Navigator 8.xx or PostgreSQL with HP Backup Navigator 9.xx):

- "Upgrading from HP Backup Navigator 9.xx" below.

- "Upgrading from HP Backup Navigator 8.xx" below.

> **Important:** After upgrading HP Backup Navigator to a new version, you also need to upgrade your HP Backup Navigator licenses to a new format. See "Upgrading licenses to a new format" on page 38

Upgrading from HP Backup Navigator 9.xx

Steps

1. Insert and mount the HP Backup Navigator installation DVD-ROM or mount the ISO image directly.

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

   # rpm -Uvh hp-backup-navigator-9.21.el6.x86_64

   As soon as the upgrade procedure is completed successfully, upgrade your HP Backup Navigator licenses to a new format. See "Upgrading licenses to a new format" on page 38. Then, you can start using the application.

Upgrading from HP Backup Navigator 8.xx

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:

- On RHEL 6.4-6.6:

  Download the following packages from http://yum.postgresql.org/9.4/redhat/rhel-6-x86_
  64/repoview/postgresqldbserver94.group.html:

  ```
  postgresql94
  postgresql94-contrib
  postgresql94-libs
  postgresql94-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-42.el6.x86_64.rpm

- On SUSE, download the following packages to your system:

  `libpq5` from http://download.opensuse.org/repositories/server:/database:/postgresql/SLE_11_
  SP4/x86_64/libpq5-9.4.4-2.1.x86_64.rpm

  `postgresql-init` from
  http://download.opensuse.org/repositories/server:/database:/postgresql/SLE_11_
  SP4/noarch/postgresql-init-9.4-46.1.noarch.rpm

  `postgresql94` from
  http://download.opensuse.org/repositories/server:/database:/postgresql/SLE_11_SP4/x86_
  64/postgresql94-9.4.4-2.1.x86_64.rpm

  `postgresql94-contrib` from
  http://download.opensuse.org/repositories/server:/database:/postgresql/SLE_11_SP4/x86_
  64/postgresql94-contrib-9.4.4-2.1.x86_64.rpm

  `postgresql94-server` from
  http://download.opensuse.org/repositories/server:/database:/postgresql/SLE_11_SP4/x86_
  64/postgresql94-server-9.4.4-2.1.x86_64.rpm

JDK 1.7:

Download the `jdk-7u79-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. Insert and mount the HP Backup Navigator installation DVD-ROM or mount the ISO image
   directly.

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

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

3. The script starts and 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.

4. The script 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.

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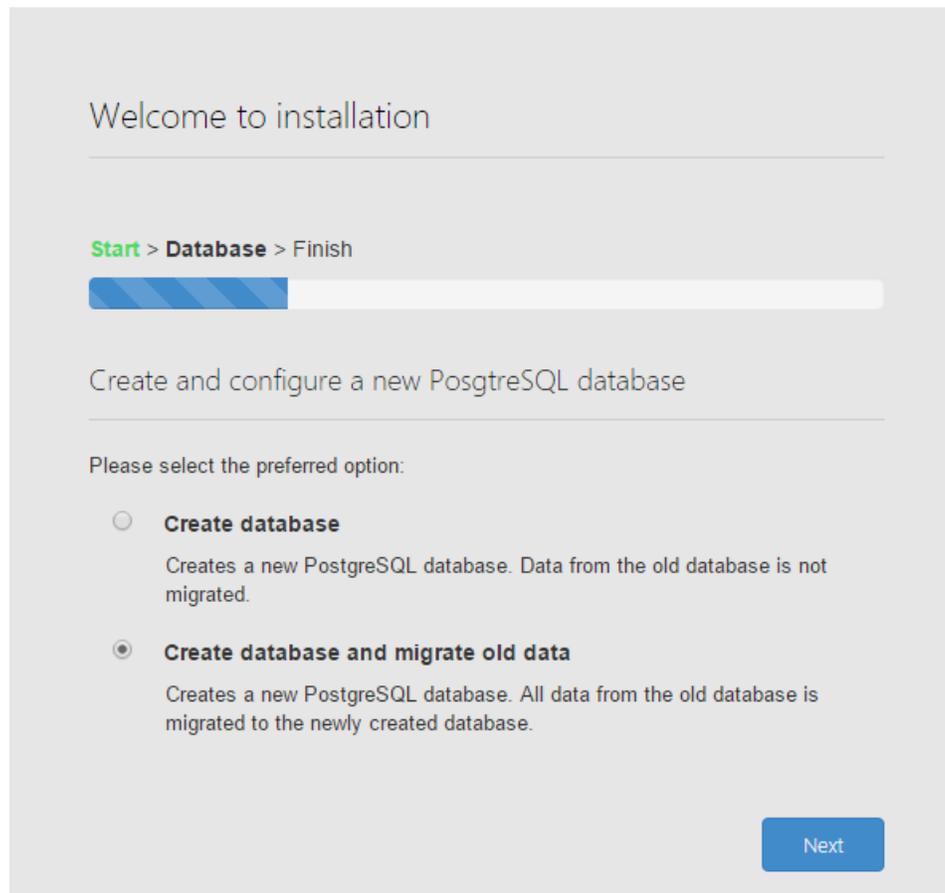
      To create a new PostgreSQL database without migrating data from the old database.

    - **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

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, upgrade your HP Backup Navigator licenses to a new format. See "Upgrading licenses to a new format" on page 38. Then, you can start using the application.

Chapter 4: Removing HP Backup Navigator

To remove HP Backup Navigator, run the following command:

```
# rpm -e hp-backup-navigator-9.21.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.

The following types of the HP Backup Navigator licenses exist:

- Standard 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 source data that was backed up within a full backup session and is still protected. This source data should reside on the Cell Managers monitored by HP Backup Navigator. If the capacity of your backup environment grows, you should buy additional licenses.

- Lite HP Backup Navigator 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.

- Lite to Standard upgrade HP Backup Navigator licenses provide upgrade of lite licenses to the capacity based. The upgraded licenses can be used in the backup environments with the multiple Cell Manager and cover the capacity of 10 TB. If your needs exceed this capacity, you can buy additional standard licenses.

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" on the next page.

2. Request and obtain licenses from the web licensing portal. See "Requesting and retrieving licenses" on page 35.

3. Activate the licenses to start using HP Backup Navigator. See "Activating licenses" on page 36.

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 36.

5. If you use an HP Backup Navigator lite license and 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 37.

6. If you want to migrate all or a part of your HP Backup Navigator licenses to another system,

first deactivate them on the original system. See "Deactivating licenses" on page 37.

7. If you upgraded HP Backup Navigator from an earlier release, upgrade your licenses to a new format. For instructions, see "Upgrading licenses to a new format" on page 38.

8. You can always verify the licensing related information. See "Verifying licenses" on page 39.

Configuring license requests

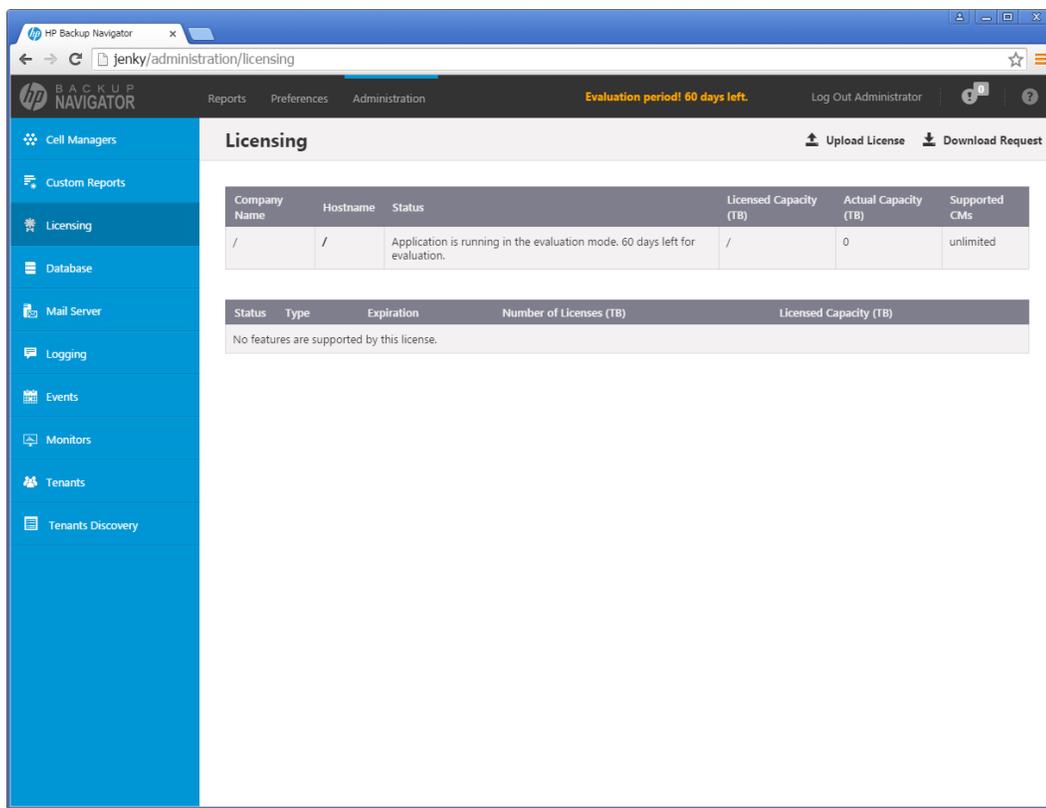To obtain your HP Backup Navigator licenses, you should submit a request form to the web licensing portal.

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.dat` license request file:
>
> ```
> VER=2.0
> CN= myCompany
> PID=dpnavigator
> ND=computer.company.com
> ```

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**.

   b. Select **Standard**, **Lite**, or **Lite to Standard upgrade** license type. For HP Backup Navigator standard license type, 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 file `dpnavigator_licact_new.dat` attached.

> Example of the `dpnavigator_licact_new.dat` license file:
>
> ```
> VER=2.0
> CN=myCompany
> PID=dpnavigator
> ND=computer.company.com
> BEGINBLOCK
> ```

```
TYP=standardlicense
EXP=0.0.0
NL=5
ENDBLOCK
SIG=A5357DE94EE9734
```

5. Save the license 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 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 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 43.

Adding new licenses

Add new licenses for your grown backup environment.

Prerequisite

You use licenses introduced with HP Backup Navigator 9.20. If you upgraded HP Backup Navigator from an earlier release, also upgrade your licenses. For instructions, see "Upgrading licenses to a new format" on page 38.

Steps

1. Buy as many HP Backup Navigator licenses as you need in addition to the licenses you already use.

2. Perform the licensing procedures to obtain and activate the HP Backup Navigator licenses you bought in addition to the existing ones. Perform the following tasks:

    a. "Configuring license requests" on page 34.

    b. "Requesting and retrieving licenses" on page 35.

    c. "Activating licenses" on the previous page.

Upgrading HP Backup Navigator lite licenses

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

Prerequisites

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

- You created a license request for an upgrade license. See "Configuring license requests" on page 34.

Steps

1. Connect to the web licensing portal at: http://hp-licensing.comtrade.com

2. Sign in to the web licensing portal.

3. Click the **License Activation** link and then enter the entitlement order number in the text box. Click **Next**.

4. Select **HP Backup Navigator**, the **Lite to Standard upgrade** license type, and browse for the license request file. Click **Send request**.

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

5. Activate the upgrade license on the HP Backup Navigator system. See "Activating licenses" on the previous page.

   The License property page will list both licenses, lite and upgrade. These licenses cover the capacity of 10 TB and can be used for multiple Cell Managers. If your backup environment require more licenses to cover the protected capacity, you can buy additional standard licenses, see "Adding new licenses" on the previous page.

Deactivating licenses

You can deactivate all or some of your licenses, if you want to activate and use them on other systems. For example, when you migrate HP Backup Navigator to another system and should consequently migrate the related licenses. Or, if you use more than one HP Backup Navigator servers and want to change the license distribution between them (migrate some of the licenses from one system to another).

Note: Product Entitlement Order Number (delivered with the product) will be requested during the license deactivation.

Limitation

You can deactivate licenses of one type (standard or lite) and from one HP Backup Navigator system only.

Steps

1. Connect to the web licensing portal at: http://hp-licensing.comtrade.com

2. Sign in to the web licensing portal.

3. Click the **License Deactivation** link and follow the instructions to complete the procedure. During the deactivation procedure, you select whether you want to deactivate all licenses from one node or only a part of your licenses.

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

4. In the HP Backup Navigator GUI, update the licensing related information, as described in the following procedure: "Activating licenses" on page 36.

   The licenses are kept in the license pool until you decide to activate and use them.

Upgrading licenses to a new format

If you upgraded HP Backup Navigator from an earlier version, you also need to upgrade your old HP Backup Navigator licenses to a new format.

Note: Product Entitlement Order Number (delivered with the product) will be requested during the license deactivation.

Steps

1. Deactivate all the HP Backup Navigator licenses you currently use. See "Deactivating licenses" on the previous page.

2. Perform the licensing procedures to obtain and activate the HP Backup Navigator licenses in a new format. Perform the following tasks:

   a. "Configuring license requests" on page 34.

   b. "Requesting and retrieving licenses" on page 35.
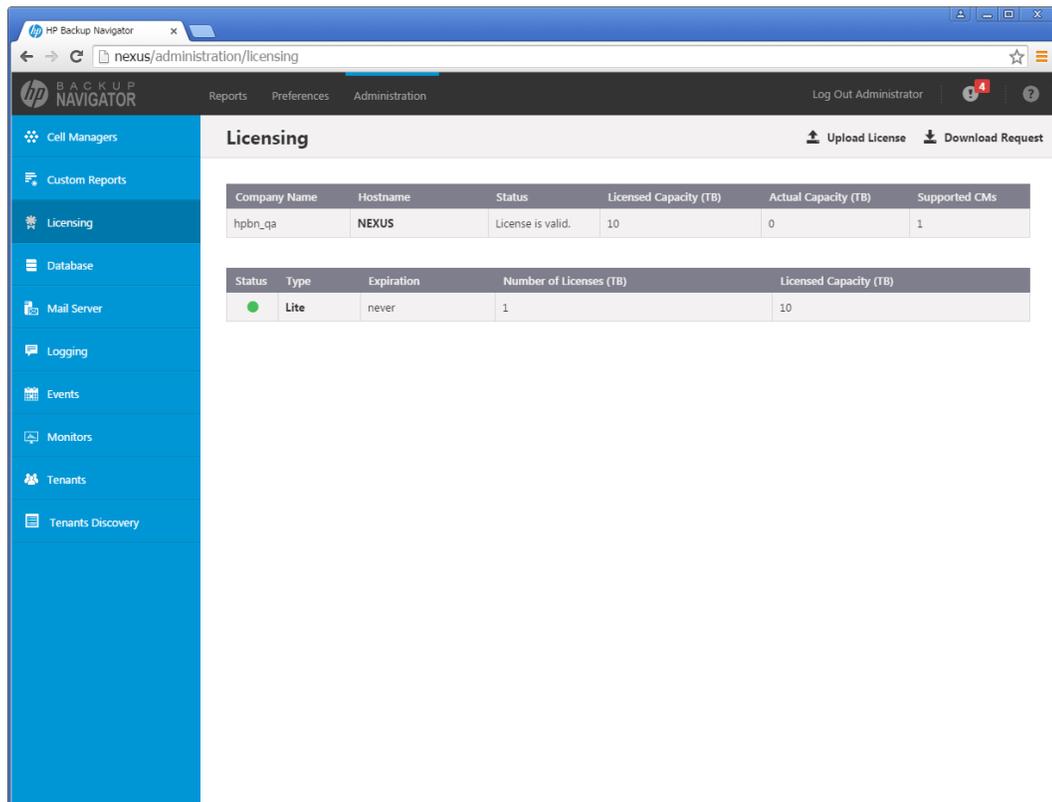
   c. "Activating licenses" on page 36.

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 current licensing related information is displayed:

- company name

- hostname

- status

- licensed capacity

- actual capacity

- number of the Cell Managers covered by the current licensing

- list of all purchased licenses with their properties

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 43.

- Start the HP Backup Navigator remote agent to collect data from the remote Cell Managers (Cell Managers that cannot be directly accessed from HP Backup Navigator). See "Starting remote agent" on page 45.

- To be able to receive emails from the HP Backup Navigator, configure the mail server. See "Configuring mail server" on page 46.

- To create and handle the custom reports, perform the following tasks:

  - "Creating custom reports" on page 47.

  - "Downloading custom reports" on page 49.

  - "Uploading custom reports" on page 49.

- See the recommendations on the HP Backup Navigator database maintenance in "Maintaining database" on page 49.

- To view the HP Backup Navigator event log, see "Viewing events" on page 52.

- To trigger notifications on specific events, configure the related monitors. See "Creating and using monitors" on page 52.

- To be able to generate reports based on the tenant related data, see "Managing tenants and tenant groups" on page 53.

- To analyze and troubleshoot potential problems and provide an appropriate input to the HP Backup Navigator support, see "HP Backup Navigator logging" on page 62.

Selecting cells

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

Prerequisites

- Ensure that the hostnames of your HP Backup Navigator system and HP Backup Navigator remote agent systems, are defined as a fully qualified domain name (FQDN). For details, see the operating system documentation.

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

- Export the `OB2PORTRANGE` variable by adding the `export` line in the `ob2portrange.sh` file on your HP Backup Navigator system and HP Backup Navigator remote agent systems, and then run the `ob2portrange.sh` file:
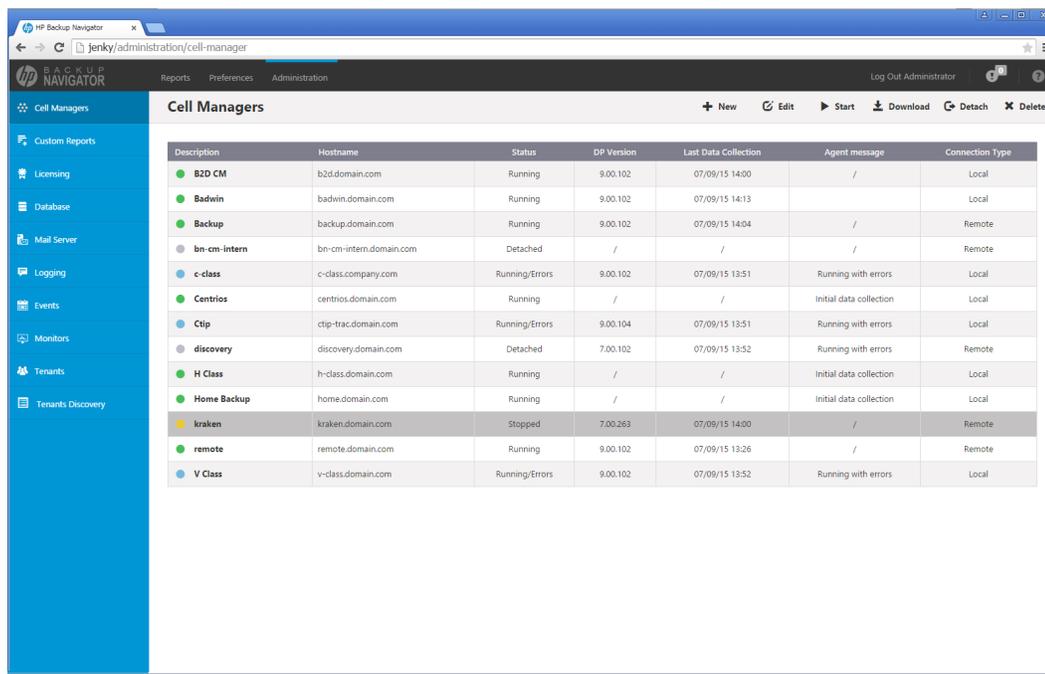
```
# vi /etc/profile.d/ob2portrange.sh
# export OB2PORTRANGE="start_port-end_port"
# source /etc/profile.d/ob2portrange.sh
```

Where *start_port:end_port* is a port range available for communication with the Data Protector Cell Managers.

Steps

1. Select the **Administration** context.

2. In the Navigation Pane, click **Cell Managers**.

   Figure 8: Adding new Cell Managers

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 12.

   ▪ 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. Specify the connection type. Select **Local** or **Remote** for the Cell Managers that cannot be directly accessed from HP Backup Navigator.

7. 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
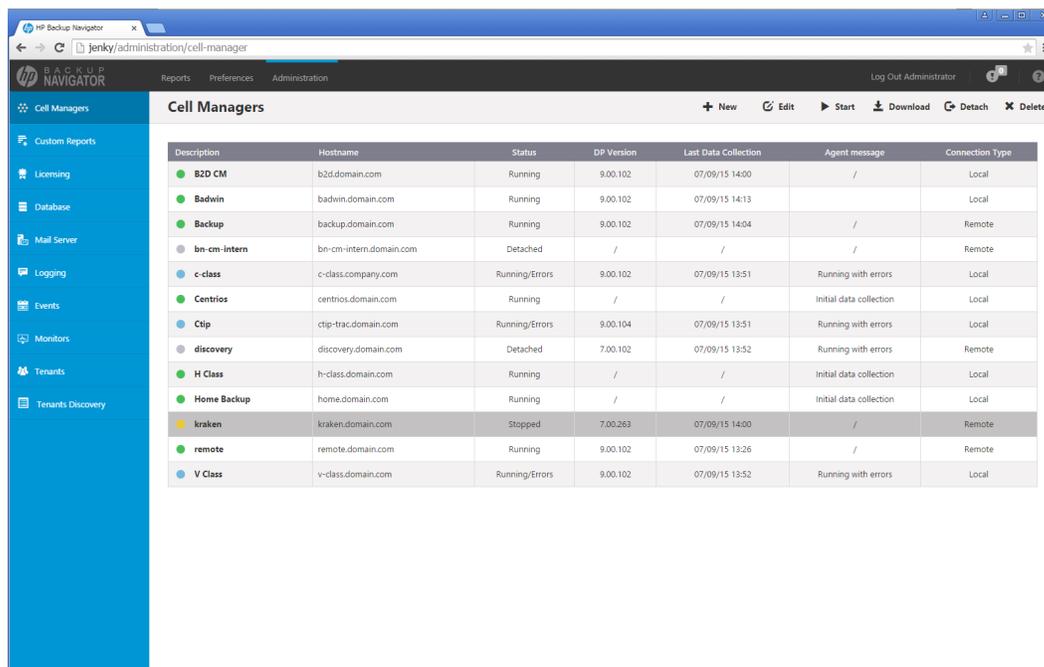
You can change the Cell Manager settings or status by clicking on it and selecting one of the following actions:

- **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.

- **Download**: Download package for the HP Backup Navigator remote agent installation. Applicable for the remote Cell Managers.

- **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.

Starting remote agent

You need to start a remote agent only if you want to collect data from the remote Cell Managers (the Cell Managers that cannot be directly accessed from HP Backup Navigator).

Steps

1. Select the **Administration** context.

2. In the Navigation Pane, click **Cell Managers**.

3. From the list of the Cell Managers, select the remote Cell Managers, from which you will collect data using the remote agent. In the Tool bar of the Results Area, click **Download**.

    > **Note:** The command provided in this window will be used on a remote system to start the remote agent.

4. In the Download Remote Agent window, click **Download** to download the remote agent package (`RemoteAgent.tar.gz`).

5. Transfer `RemoteAgent.tar.gz` to the remote Cell Manager or another system, from which you can access the remote Cell Manager.

6. On a target system, create a directory for the remote agent:

    `# mkdir /opt/hpbn-agent`

7. Unpack the content of the `RemoteAgent.tar.gz` package and copy it to the respective directories as follows:

    `# tar xzf RemoteAgent.tar.gz -C /opt/hpbn-agent`

    `# mkdir /opt/omni/lib/nls/C`

    `# cp /opt/hpbn-agent/omni.cat /opt/omni/lib/nls/C`

    `# chmod a+r /opt/omni/lib/nls/C/omni.cat`

    `# chmod a+x /opt/hpbn-agent/libae_64bit.so /opt/hpbn-agent/libBrandChg_`
    `64bit.so /opt/hpbn-agent/libde_64bit.so /opt/hpbn-agent/libdc_64bit.so`
    `/opt/hpbn-agent/util_cmd /opt/hpbn-agent/RemoteAgentService.jar`

    `# chmod a+r /opt/hpbn-agent/omni.cat`

    `# echo /opt/hpbn-agent > /etc/ld.so.conf.d/remote_agent.conf`

8. Run the command provided in the Download Remote Agent window to start data collection by the remote agent.

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
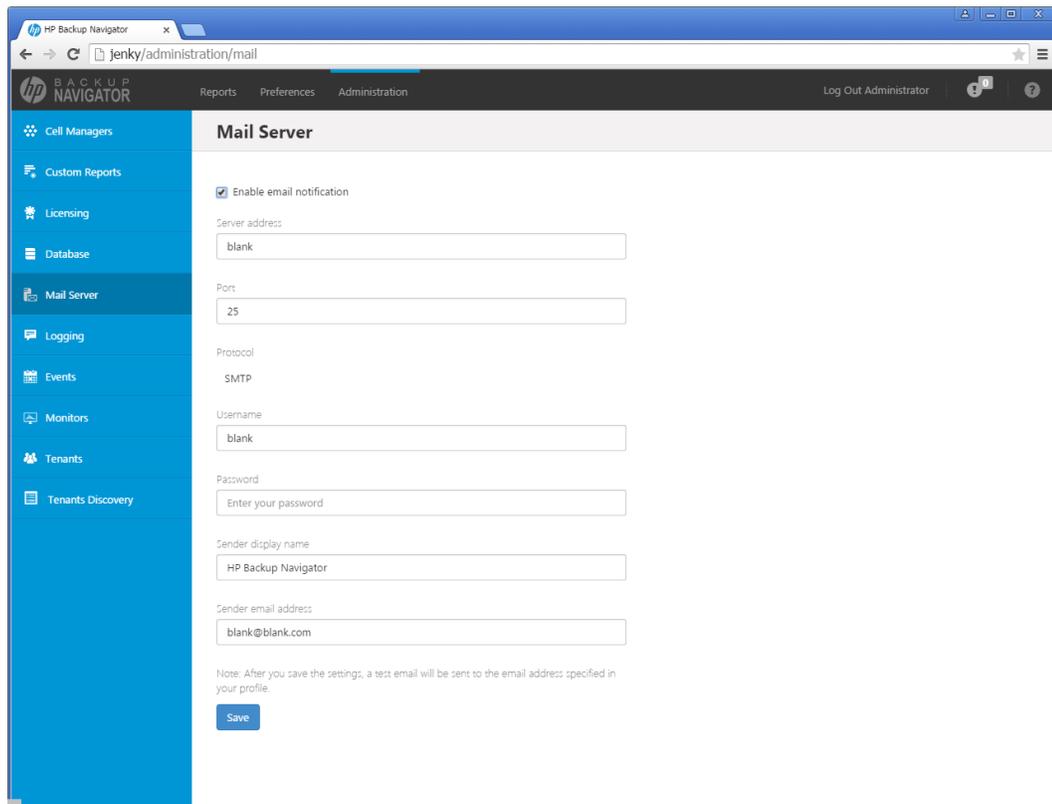
3. In the Results Area, select **Enable email notification**.

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
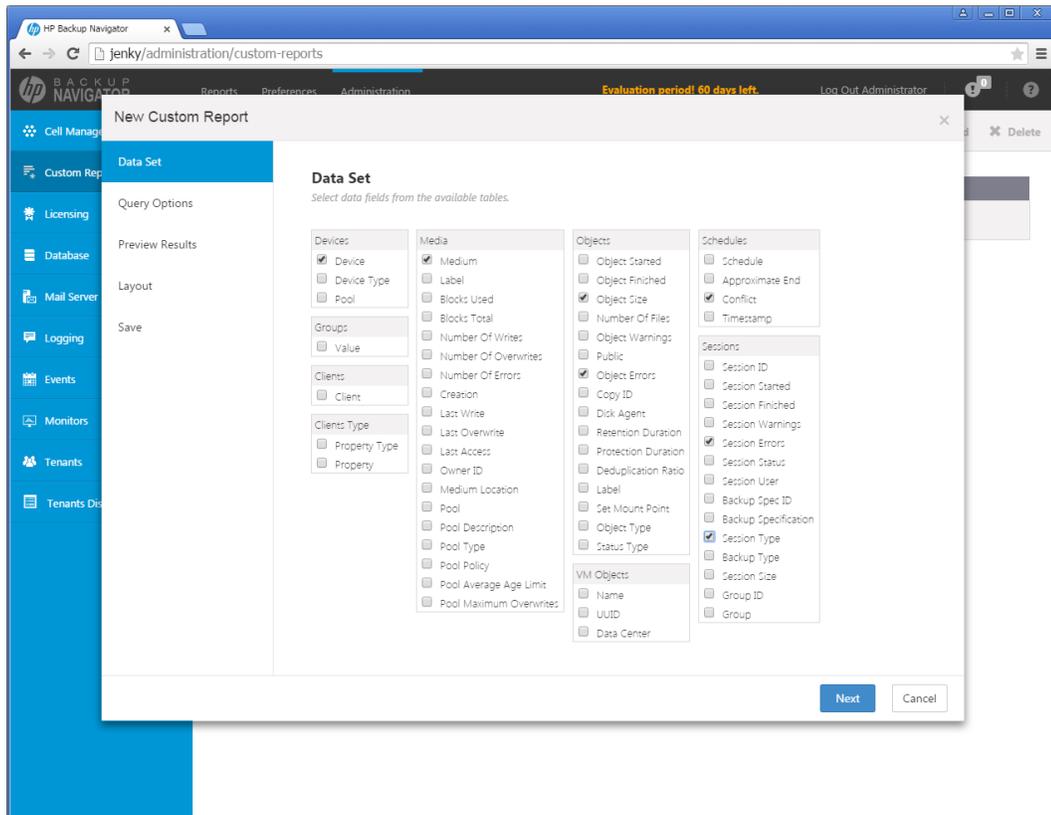
Click **Next**.

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" below.

- Changing the database configuration settings. See "Changing configuration" on the next page.

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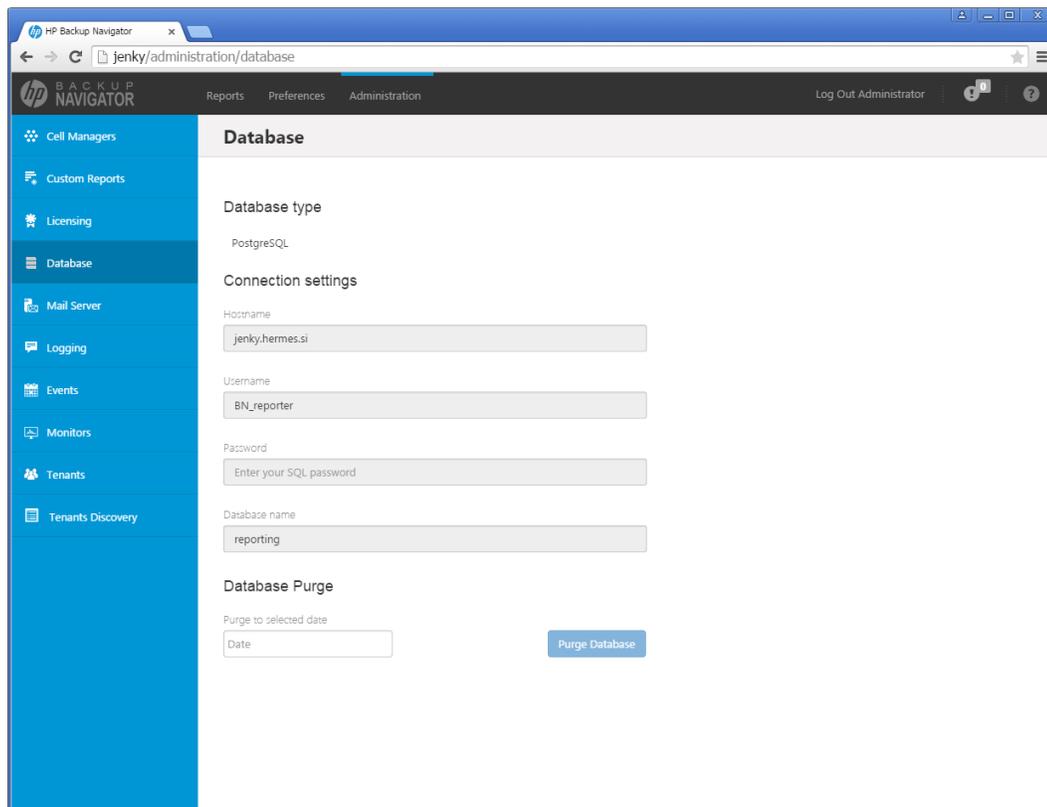
3. In the Purge Database window, select to purge all cells or specify the cells you want to purge. Click **Purge** and then click **Confirm**.

   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 16.

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 43.

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

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.

Managing tenants and tenant groups

A tenant is a group of users, usually related to one customer or department, who share Data Protector resources. Each tenant is represented by the dedicated Data Protector elements, such as cells, backup specification groups, backup specifications, or clients.

Tenants are logical organizational structures and they cannot be specifically defined in the Data Protector environment. However, a good Data Protector practice is to follow naming conventions to structure your backup environment in a logical order. You can use certain tenant related prefixes or postfixes with tenant names in the names of backup groups, backup specifications, or clients to easily recognize to which tenant these elements belong. For the recommendations on the naming conventions, see "Tenants naming conventions" on the next page.

Before you can generate reports based on the tenants related data, you should discover, which tenants already exist in the Data Protector environment, and add them to the HP Backup Navigator. Perform the following tasks:

- Define one or more rules (depending on the approach you use to identify your tenants) to be able to discover tenants in the Data Protector environment. See "Discovering tenants" on page 55.

- Import tenants from the Data Protector environment using the created discovery rules. See "Importing tenants" on page 58.

- You can add new tenants and tenant groups and add tenants to tenant groups. See "Creating tenants" on page 59 and "Creating tenant groups" on page 61.

Tenants naming conventions

You can use the following approach to name the elements of your backup environment to be able to discover tenants:

- If you allocate one or more cells per one tenant, you can discover such tenants without using naming conventions.

- If you use one or more backup groups per one tenant:

  - For one backup group per tenant configuration, use the tenant ID (tenant name) as a backup group name. For example, if you have tenants Customer1, Customer2, and Customer3, name backup groups as follows: `customer1`, `customer2`, and `customer3`. Ensure, that names of the backup specifications from such group contain the parent backup group name.

  - For multiple backup groups per tenant configuration, use the tenant ID (tenant name) as a part of the backup group name delimited with one of the supported characters (for example, "_" (underscore)). If a tenant owns backup groups in different cells, ensure that the tenant ID is unique across the related cells.

    For example, if you have tenants Customer1 and Customer2, name your backup groups as follows: `customer1_backupgroup1`, `customer1_backupgroup2`, `customer1_backupgroup3`, `customer2_backupgroup1`, and `customer2_backupgroup2`.

- If you use several backup specifications per one tenant:

  Ensure, that the backup specification names contain the tenant ID (tenant name) and the backup group name delimited with one of the supported characters (for example, "_" (underscore)). If a tenant owns backup specifications in different cells, ensure that the tenant ID is unique across the related cells.

  For example, if you have tenants Customer1 and Customer2, name your backup specifications as follows: `customer1_backupgroup1_full`, `customer1_backupgroup1_incr`, `customer1_backupgroup1_sap`, `customer2_backupgroup1_full`, and `customer2_backupgroup1_incr`.

- If you allocate one or more clients per tenant:

  Use the tenant ID (tenant name) as a part of the client name or as a prefix of the client delimited with one of the supported characters (for example, "_" (underscore)). If tenants own clients in different cells, ensure that the tenant ID is unique across the related cells. For example, if you have tenants Customer1 and Customer2 with two clients each, name the clients as follows: `customer1_host1.com`, `customer1_host2.com`, `customer2_host3.com`, and `customer2_host4.com`.

> **Note:** Using delimiters in the tenant makes the tenant discovery easier. Without delimiters, you need to create regular expressions to identify tenant IDs.

Discovering tenants

Before you can generate reports for specific tenants, you should first create a tenant discovery rule for discovering tenants in your Data Protector backup environment.

Prerequisites

- You use tenant naming conventions in your Data Protector backup environment.

- You added the Data Protector cells that you want to use for tenant discovery to the HP Backup Navigator environment.

Considerations

- You can use one discovery rule to discover multiple tenants, if you use the same approach to identify them.

- You can use a Data Protector cell in one discovery rule only. If multiple tenants share one cell, you can use one discovery rule for them and then use this rule to import different tenants.

- When you add a new Data Protector cell to the HP Backup Navigator environment and you want to collect tenant related reports from it, add this cell to an existing discovery rule, or create a new discovery rule for this cell.

- You cannot use the same tenant ID in different rules and for different tenant types (backup specification, backup groups, or clients).

Steps

1. Select the **Administration** context.

2. In the Navigation Pane, click **Tenants Discovery**.

3. In the Tool bar of the Results Area, click **New**.

4. In the New Discovery Rule wizard, enter a tenant discovery rule name and description. Click **Next**.

5. Select the cells you want to use for this tenant discovery rule. Click **Next**.

6. Specify the discovery rule you want to use for this tenant discovery. In the Tenant elements drop-down list, select the Data Protector element you allocate for the tenants you want to discover. In the Expression type drop-down list, select **Split** (if you use characters to delimit a tenant ID in the respective element name) or **Regular expression**. In the Expression input text

box, specify one of the following:

- For the **Split** expression type, specify the character you use as a tenant ID delimiter (for example. "_", underscore).

  If you do not specify any delimiter, all the elements specified in the Group drop-down list will be discovered.

Figure 14: Creating discovery rule using Split expression type
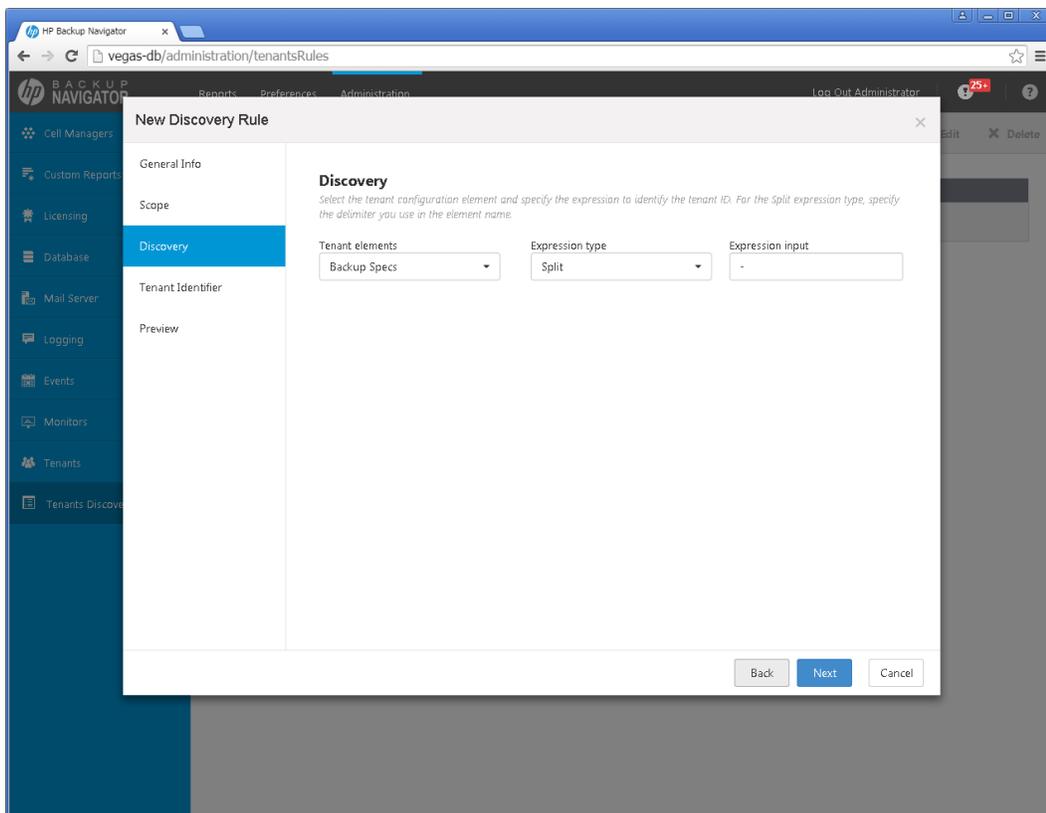
- For the **Regular expression** expression type, specify the regular expression using Java syntax.

Example of the regular expression

To specify the first three characters as a tenant ID, use the expression: $(\verb|^|.\{0,3\})$.

Figure 15: Creating discovery rule using Regular expression
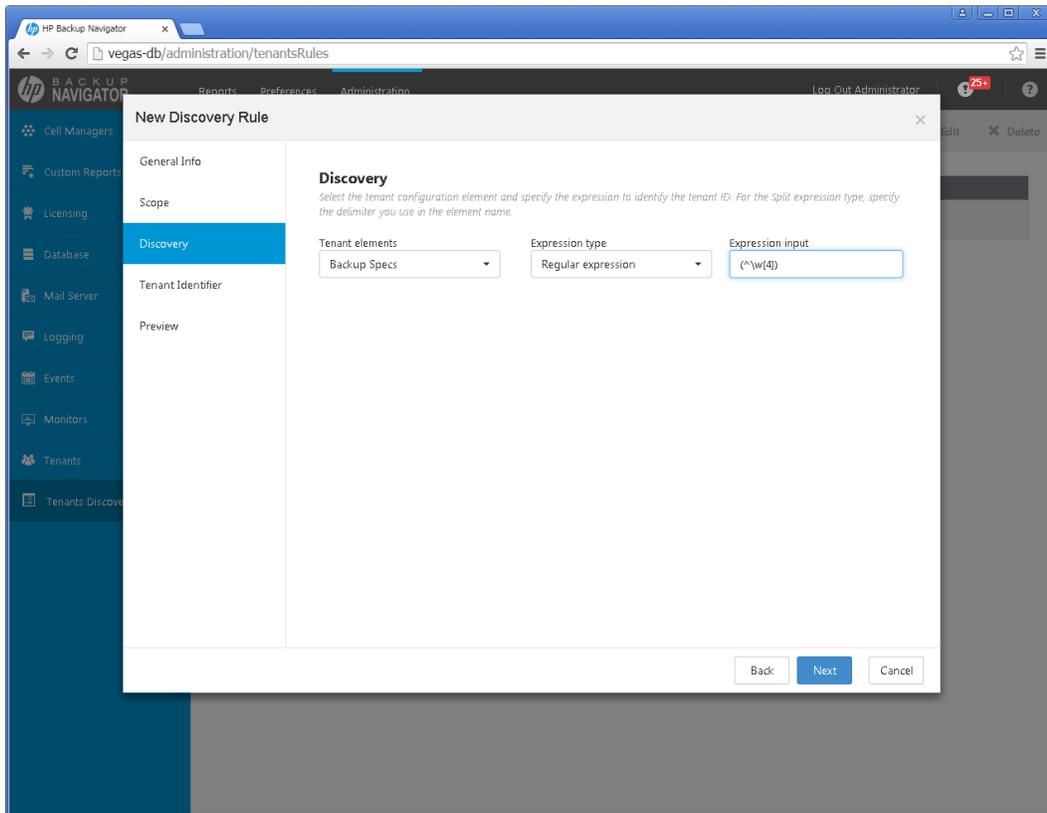
Click **Next**.

7. In the Tenant Identifier page, a list of the discovered tenant elements displays. If you split the elements names and more than one potential tenant ID is recognized, a table lists all potential tenant IDs. Select the column with the tenant ID you specified and in the column header drop-down list, select **Tenant ID**, other column headers will contain `Ignore`. Click **Next**.

Figure 16: Selecting Tenant identifier in the tenant name
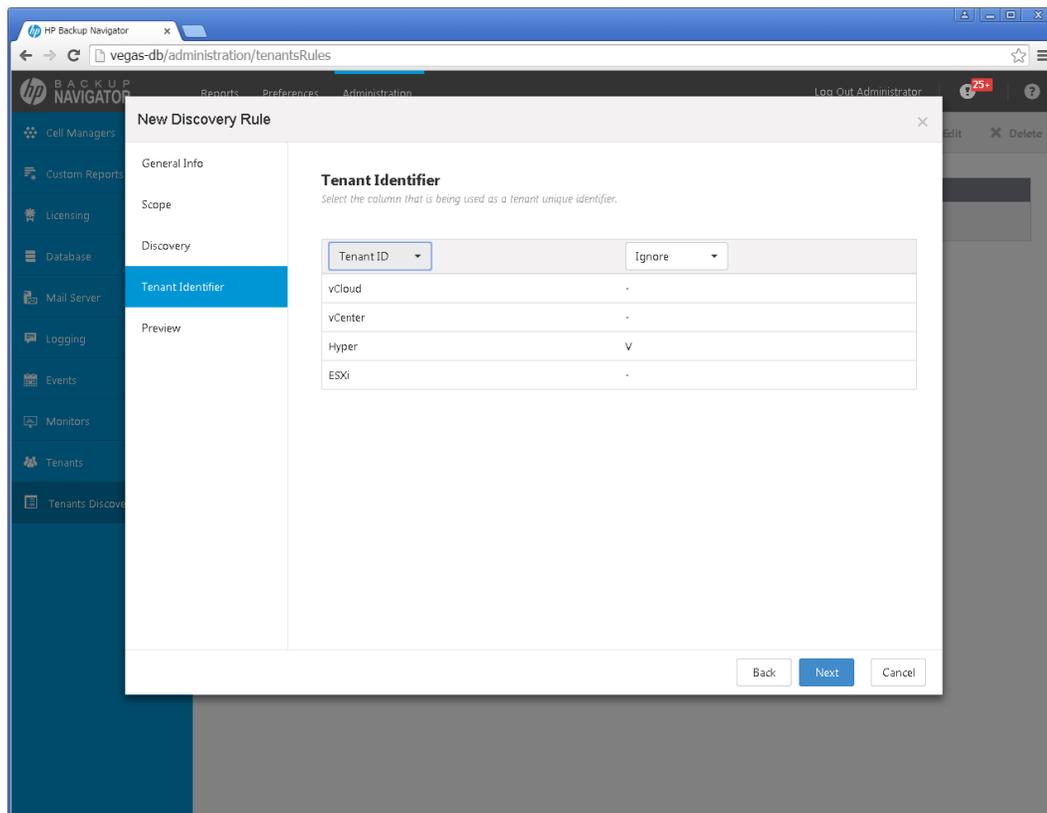
8. The Preview page lists the discovered tenants. You can preview the list of tenants and the content of each tenant by clicking **Preview** while hovering over it. Click **Finish** to save the tenant discovery rule.

   A newly created tenant discovery rule is added to the discovery rules list in the Tenants Discovery page.

Importing tenants

After you created a rule for the tenants discovery and discovered tenants, you can add them to the HP Backup Navigator environment. Use the import functionality, when you add the tenants for the first time and when you add a great number of tenants. If you want to add one or a small number of tenants, see "Creating tenants" on the next page.

Steps

1. Select the **Administration** context.

2. In the Navigation Pane, click **Tenants**.

3. In the Tool bar of the Results Area, click **Import**.

4. In the Import tenant wizard, select a tenant discovery rule. Click **Next**.

5. In the Preview page, view a list of tenants you will import. Click **Download CSV** to download a `tenants.csv` file with a list of tenants you want to import and save it on your system. Fill in the tenants related information (organization, location, e-mail, and so on) and then upload the updated file to the HP Backup Navigator by clicking **Upload**. Then click **Finish**.

Figure 17: Importing tenants
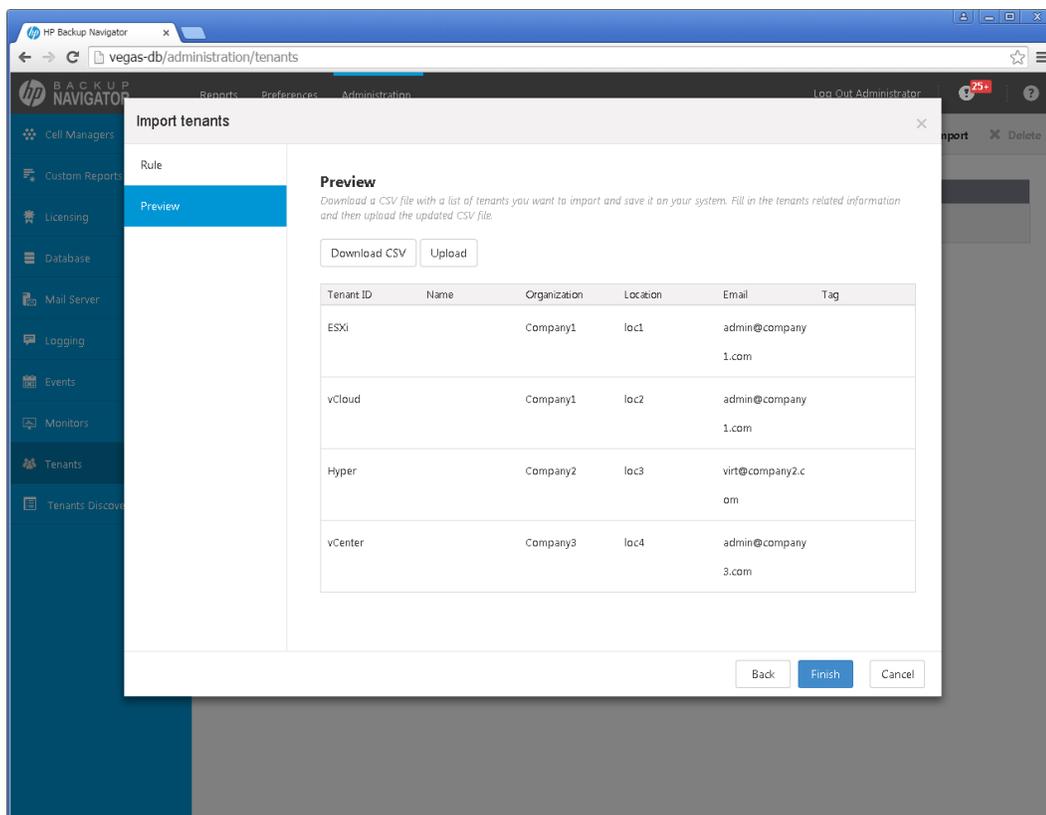
> **Note:** You can delete the `tenants.csv` file from your system after uploading it to HP Backup Navigator.

Creating tenants

You can add one or more tenants using the existing tenants discovery rule or your custom definition.

Steps

1. Select the **Administration** context.

2. In the Navigation Pane, click **Tenants**.

3. In the Tool bar of the Results Area, click **New**.

4. In the New tenant wizard, select **New tenant**. Click **Next**.

5. In the Discovery rule page, select **Discovery rule** and the existing tenants discovery rule from the drop-down list, if you want to use the existing rule for creating a tenant. If you want to use your custom definition to create a new tenant, select **Custom definition**. Click **Next**.

Figure 18: Creating new tenants with custom definition
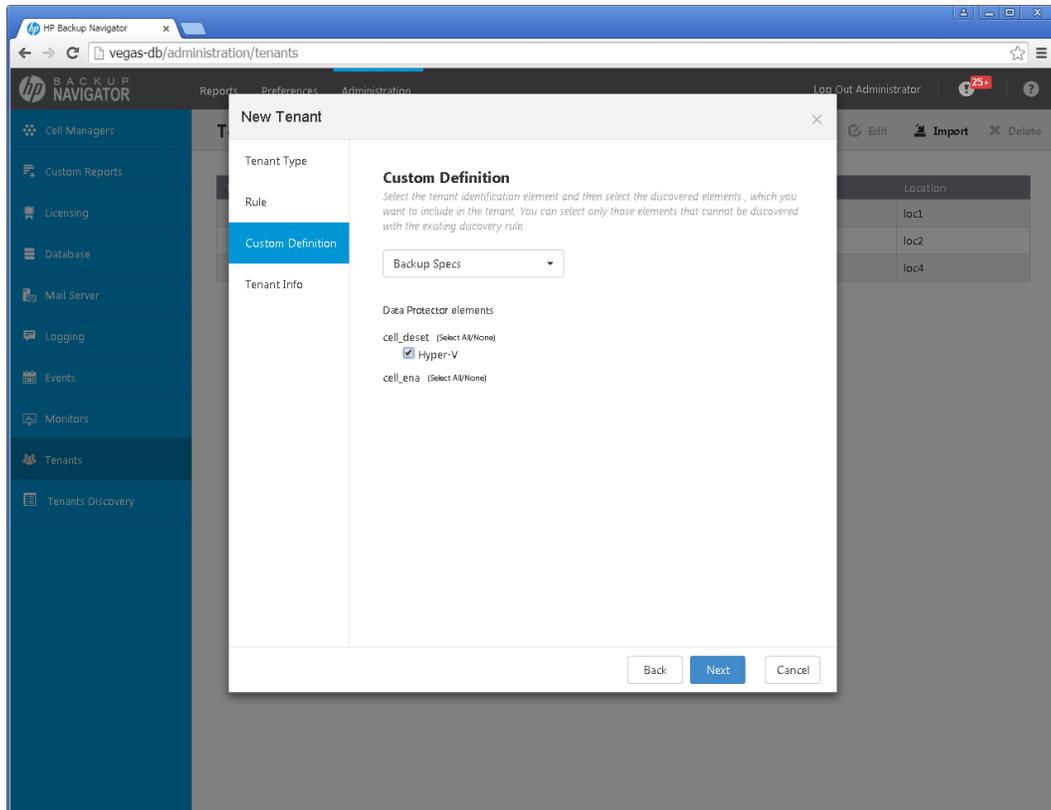
6. If you use custom definition, in the Custom Definition page, select the Data Protector element identifying a new tenant, then select the discovered elements, which you want to include in the tenant.

> **Note:** The list includes only those elements that cannot be discovered with the existing discovery rules.

Click **Next**.

7. In the Tenant Info page, provide the tenant related information in the input text boxes. You can add a new tenant to an existing tenant group by selecting a tenant group name from the Tenant group drop-down list. Click **Finish**.

The newly created tenant is added to the tenants list. It is also added to the Scope settings and is visible in the Navigation Pane. You can later add it to a tenant group, edit its properties, or delete it.

Creating tenant groups

You can group multiple tenants that share some common characteristics (for example, location) by creating a tenant group.

Steps

1. Select the **Administration** context.

2. In the Navigation Pane, click **Tenants**.

3. In the Tool bar of the Results Area, click **New**.

4. In the New tenant wizard, select **Tenant group**. Click **Next**.

Figure 19: Creating tenant group
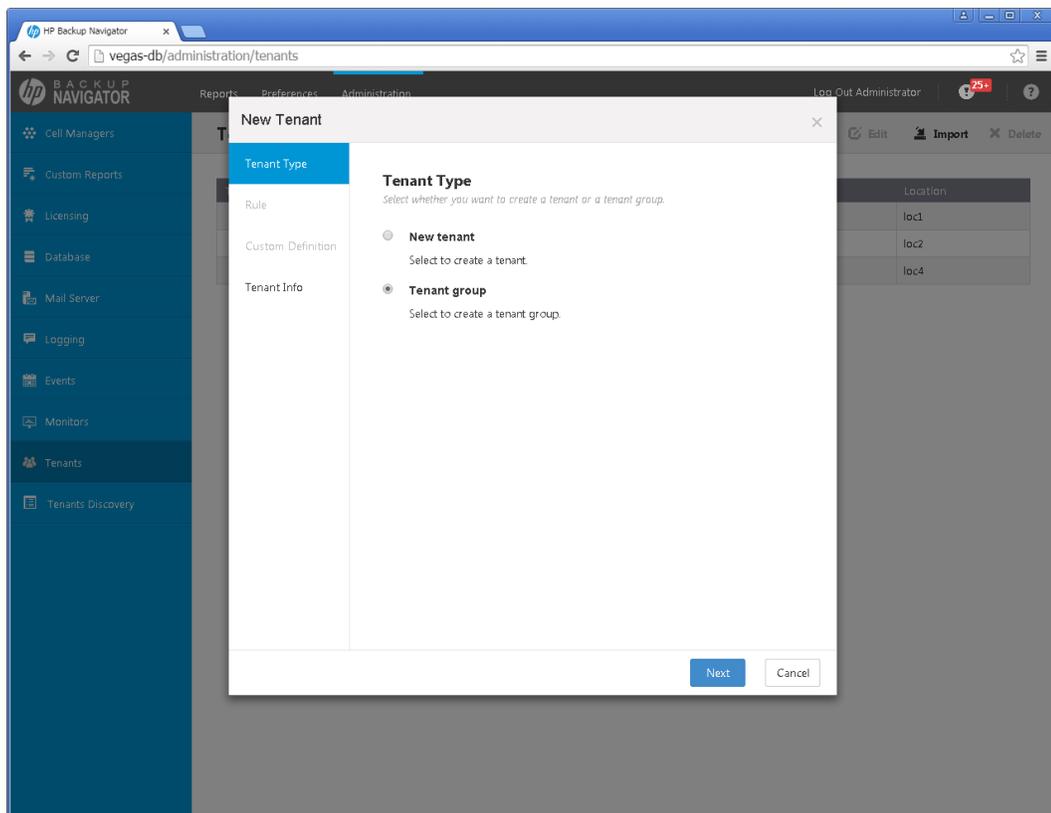
5. In the Tenant Info page, provide the tenant group related information in the input text boxes. Select the tenants that will be the members of the group. Click **Finish**.

The newly created tenant group is added to the tenants list. It is also added to the Scope settings and is visible in the Navigation Pane. You can later add it to a parent tenant group, add new tenants to it, edit its properties, or delete it.

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 20: Logging settings
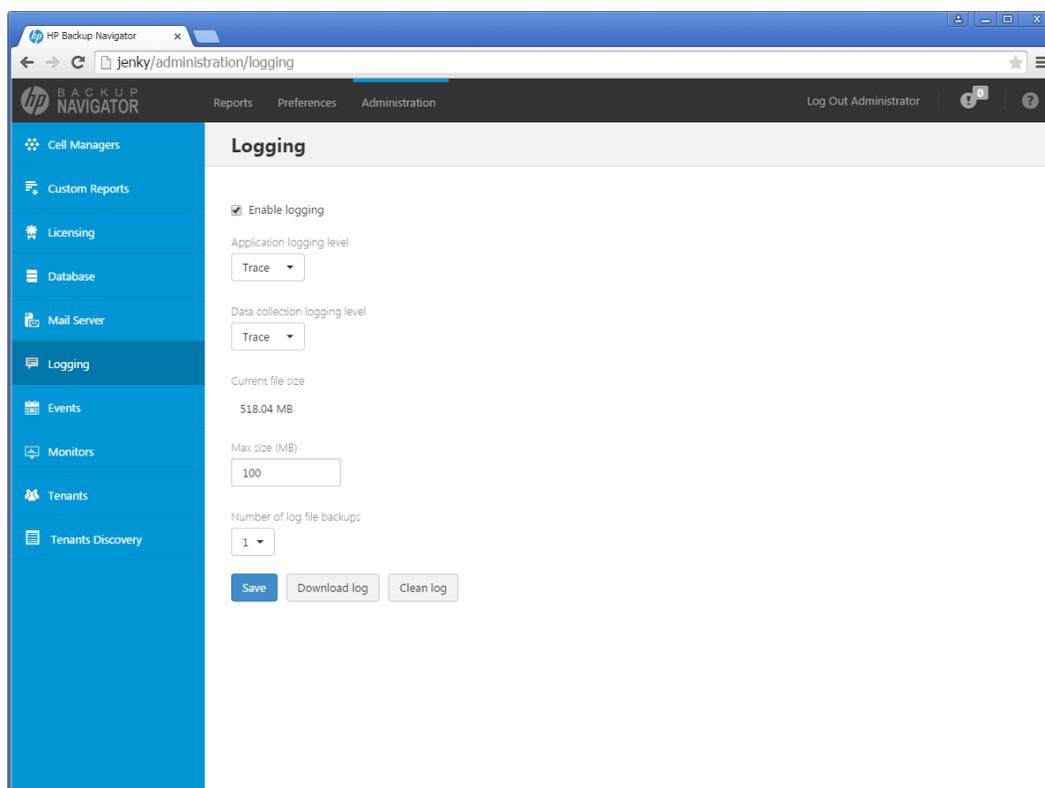
4. Set logging levels for application related operations and data collection operations. Modify other fields according to your needs.

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 tenants, 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 69.

- "Capacity" on page 69.

- "Performance" on page 73.

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 73.

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 B2D Devices	Shows all backup to disk devices that are configured for use with Data Protector.
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 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.

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.[1]
Backup Schedule Overview	Shows the backup schedule for the configured backup specifications and the eventual conflicting backup sessions.[2]
Average Backup Time per Backup Spec	Shows an average duration of the backup session for a particular backup specification.
Average Backup Time per Client	Shows an average duration of the backup session on a particular client.
Top Time Difference per Backup Spec	Shows the biggest time difference that occurs when running backups using the same backup specification.

[1]Information on sessions scheduled with the Data Protector Advanced Scheduler is not included.
[2]Information on sessions scheduled with the Data Protector Advanced Scheduler is not included.

Backup Time Summary	
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 unsuccessful sessions 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 clients and virtual machines in your backup environment, both protected and not protected.
Virtual Vs Physical Environment	Shows how the number of physical clients and virtual machines changes in your backup environment.

VM Infrastructure	
VMs per Hypervisor Type	Shows the percentage of virtual machines distribution between the hypervisor types (VMware and Hyper-V).
VMs in Time Period	Shows how the number of virtual machines of different hypervisor types (VMware and Hyper-V) changes in your backup environment.
VMs per Datacenter	Shows the distribution of the VMware virtual machines between datacenters.
VMs per Hypervisor Host	Shows the distribution of virtual machines between host machines.

VM Session Summary	
VM Backup Status Overview	Shows a number of sessions performed on virtual machines and their statuses.
VM Backup Session Success	Shows the percentage of successful (completed without errors) and unsuccessful backup sessions for the virtual environment.
VMs Without Backup	Shows a number of virtual machines that are not being backed up.

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 backup devices that are used for sessions.

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.
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 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.
Protected Capacity	Shows an amount of space on the media that are protected from being overwritten.
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.

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 Capacity	
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 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 (DCBF), Serverless Integrations Binary Files (SIBF), and Session Messages Binary Files (SMBF).

[1]Information 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.
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.
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.
CDB Capacity Growth	Shows the size changes of the Data Protector CDB and of the records it contains.
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 machines backup volume between datacenters.
Volume Summary per Hypervisor Host	Shows the distribution of virtual machines backup volume between host machines.
Volume Summary per VM	Shows an amount of the data backed up on a particular virtual machine.
VM Backup Capacity	Shows an amount 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.

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 IBD.
Licenses	Shows health status for the Data Protector licenses availability on the Cell Manager.
List of Sessions	Shows all finished sessions and their properties.
List of Backup Spec Objects	Shows all backup objects specified in a particular backup specification and their properties.

Lists	
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 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" below.

- "Creating and editing filters" on page 76.

- "Generating reports" on page 77.

- "Adding reports to favorites" on page 77.

- "Subscribing to reports" on page 77.

- "Exporting reports" on page 79.

- "Sending reports by email" on page 79.

- "Using drill-down functionality" on page 79.

You can update your HP Backup Navigator profile, as described in "Configuring user profiles" on page 81. If you want to set your region or specify the date format, see "Configuring region settings" on page 82.

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 21: Configuring dashboard layout
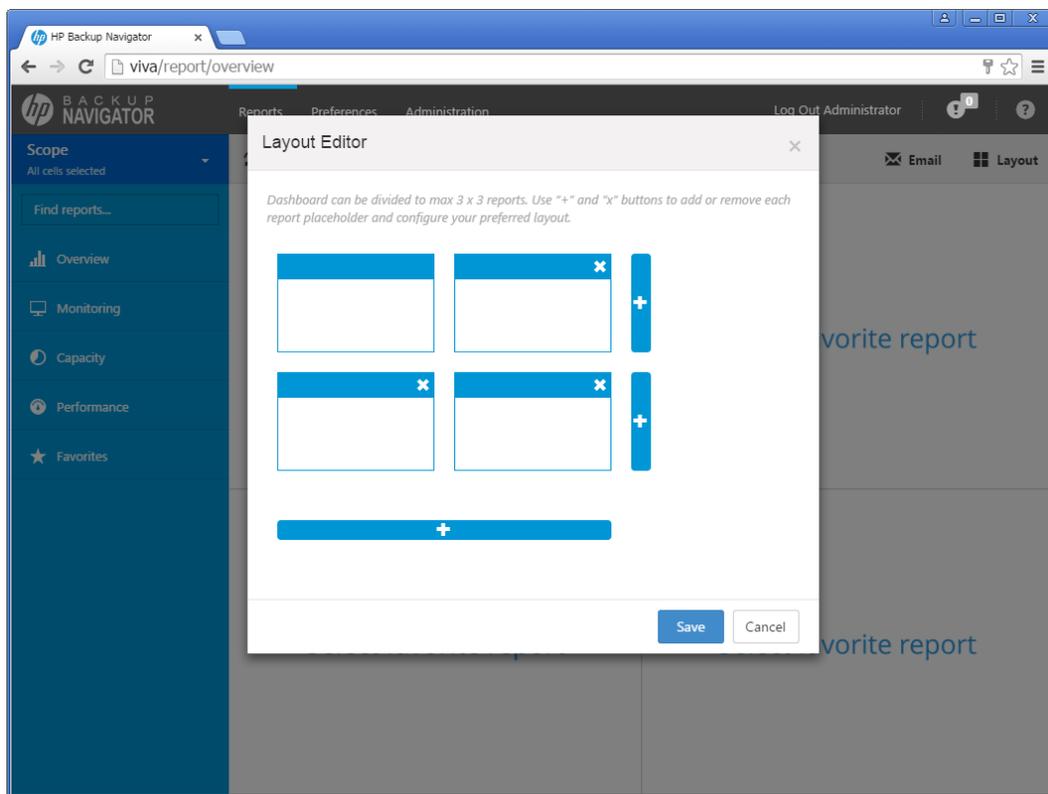
You can select three reports per row and three reports per column at most.

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 22: Configuring filters
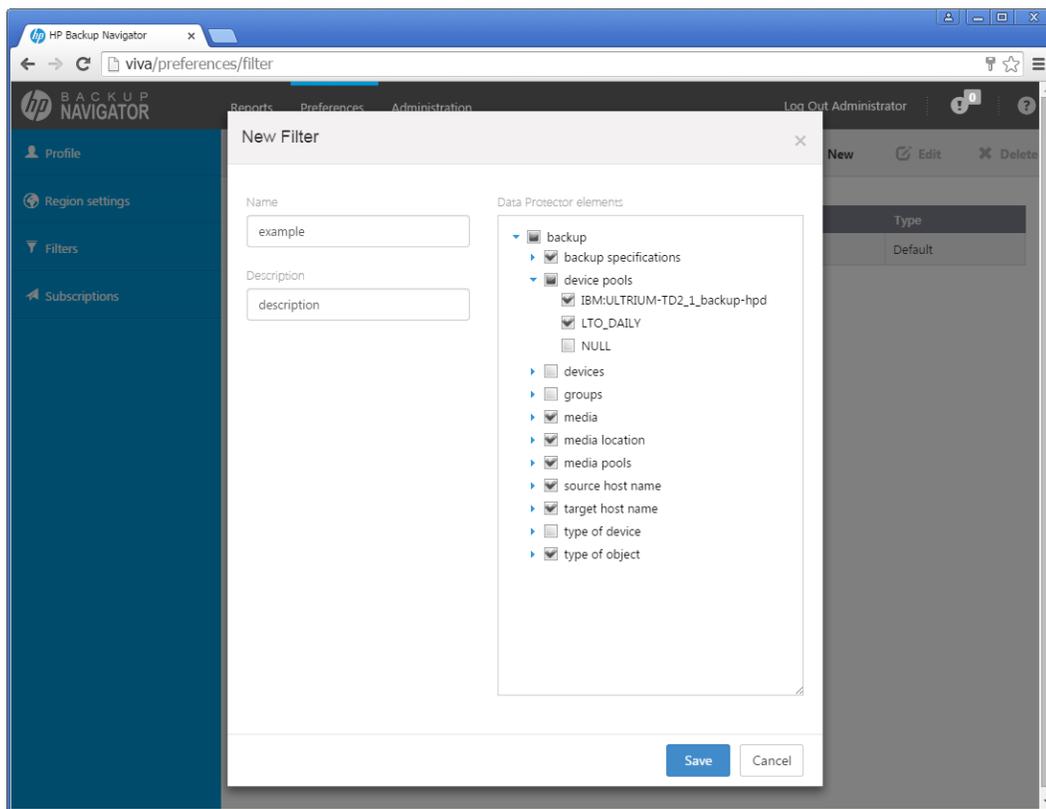
5. Click **Create filter**. The new filter is visible in the Navigation Pane.

   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 the select **Cells**, **Filters**, or **Tenants**.

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 23: Subscribing to reports
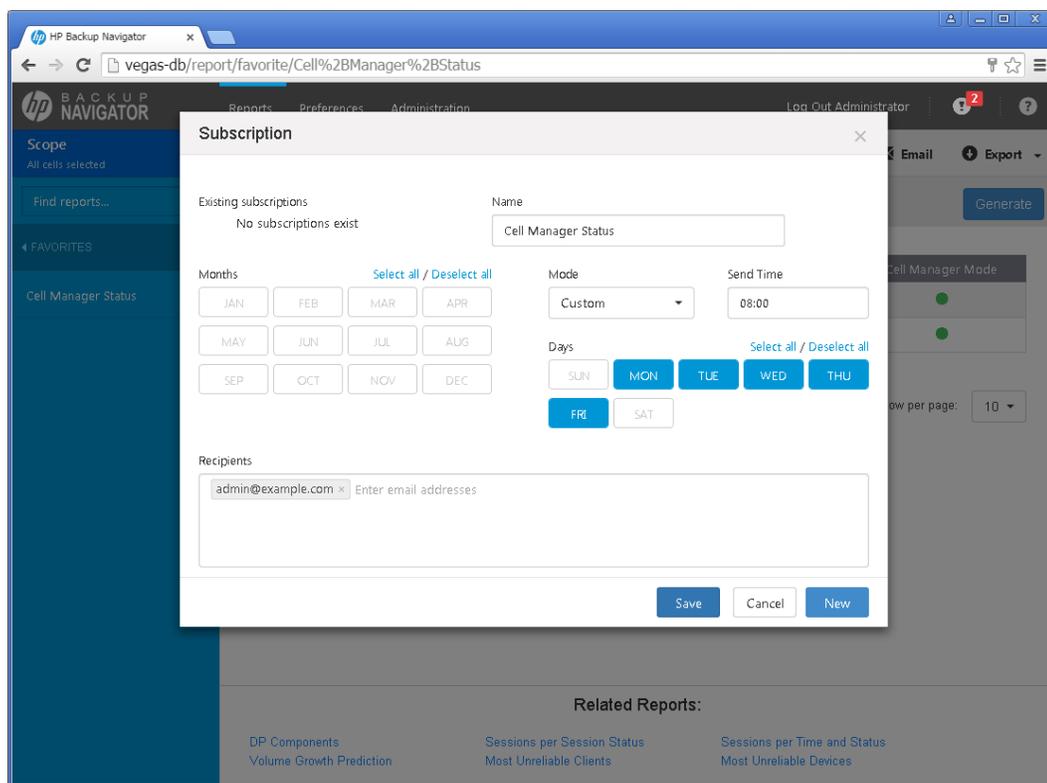
   ■ Enter a subscription name.

   ■ 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 24: Drill-down reports
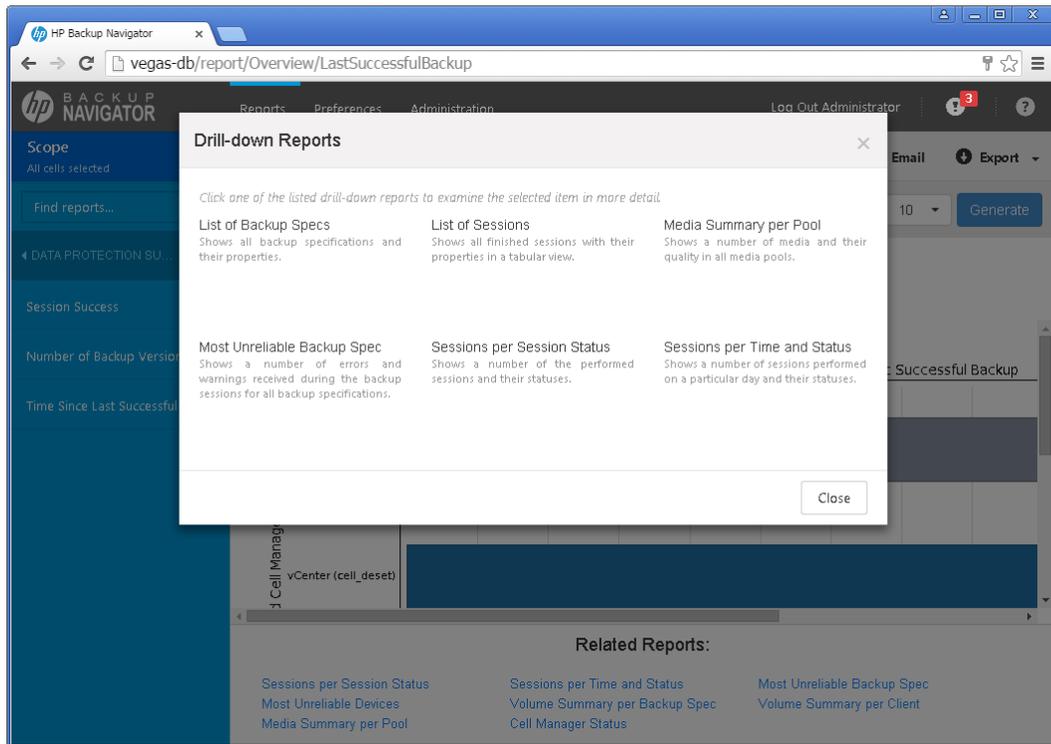
4. In the pop-up window, click one of the available drill-down reports to examine your report data in more detail.

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 an 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.

Chapter 8: Troubleshooting

If you encounter problems when using HP Backup Navigator, you can often solve them yourself. This chapter is intended to help you.

Before you report the problem to the HP Customer Support Service, ensure that:

- You are not running into known limitations that cannot currently be overcome. For specific information on HP Backup Navigator limitations and recommendations, as well as known problems, see the *HP Backup Navigator Release Notes*.

- Your problem is not related to third-party hardware or software. In this case, contact the respective vendor for support.

- You have appropriate prerequisite software installed and configured according to the instructions provided in this guide.

- The system is not running low in space.

How to troubleshoot

When a problem occurs, you can try to solve it by yourself. If you do not succeed in eliminating a problem, prepare all the relevant information for HP Customer Support Service, and send this data to them.

- On how to recognize a problem, see "How to recognize a problem" below.

- On how to perform general checks to determine the cause of a problem and try to resolve it, see "General checks" on the next page and "Log files" on page 86.

- On how to collect necessary data to send it to HP Customer Support Service, see "Collecting data for HP Customer Support" on page 87.

How to recognize a problem

You usually recognize a problem in HP Backup Navigator, when you cannot perform some tasks or some tasks are performed with errors. You can also get information on possible errors from the following sources:

- HP Backup Navigator event log

  Errors on HP Backup Navigator related operations are reported to the event log. To view the event log, see "Viewing events" on page 52.

- Cell Managers properties

For some problems, the error messages are issued and can be seen in the Cell Managers property page as Agent messages. The following error messages are available:

- `Networking issue`: HP Backup Navigator cannot connect to the Cell Manager. Usually occurs, when network is not properly configured, or during the configuration, the following networks specific configuration was not considered: firewall port range, enabled security on the Cell Manager, use of encrypted mode on the Cell Manager. Ensure, that all network-related prerequisites are met. If the problem persists, perform the network related checks described in "General checks" below.

- `CM connection issue`: HP Backup Navigator cannot communicate with the Cell Manager. Ensure, that the hostname and INET port of the Cell Manager that causes errors are correct. If they are not, delete this Cell Manager from the list and then add it with the correct values. For instructions, see "Administration Tasks" on page 41. Otherwise, perform the communication related checks described in "General checks" below.

- `Database problem`: HP Backup Navigator database is not available. Ensure that the specified database settings are correct. To view and change the database settings, in the HP Backup Navigator GUI, click **Administration -> Cell Managers -> Edit**.

- `General exception`: The error occurred at unexpected time. Check the `agent_core.log` file and search logs marked `FATAL` and then find this problem details in `agent_util_cmd.log`. For information on log files, see "Log files" on page 86.

General checks

Perform the following checks to determine and resolve the problem:

1. Verify installation

   If you installed HP Backup Navigator using the automatic installation script, check, if any errors were reported in the `/var/log/HPBackup_navigator_install.log` file. If you used manual installation, you should manually verify, if all HP Backup Navigator prerequisites were installed and configured correctly.

2. Verify configuration

   Check, if any errors occurred during the database or user configuration were reported to the HP Backup Navigator log files. Depending on whether you installed or upgraded HP Backup Navigator, the errors were reported to the `install.log` or `upgrade.log` file located in the `/opt/dpa-ext/logs` directory.

3. Verify HP Backup Navigator functionality

   If you have problems with using HP Backup Navigator, check the following:

   - The database server is up and running and the connection to the database server is established properly.

- The scope of the cells selected for reports is not empty. Check this in the HP Backup Navigator GUI by clicking **Reports -> Scope**. If there is no cell selected for reports or the scope is empty, select the cells you want to get reports for or add the cells to the scope respectively. See .

- The initial data collection is finished. Check this in the HP Backup Navigator GUI by clicking **Administration -> Cell Managers**. In the Cell Managers settings table, check, if the Agent messages column contains the `Initial data collection` message. Wait until the initial data collection is finished.

4. Verify network configuration

   - Hostname resolution

     For successful communication, HP Backup Navigator needs to resolve the Data Protector Cell Managers and vice versa by the fully qualified domain names (FQDN). Resolving a host means that one host can interpret the FQDN of another host and determine its IP address. Use the `ping` command with the FQDN to verify the hostname resolution on the Cell Manager (to this Cell Manager and to the HP Backup Navigator system) and on the HP Backup Navigator system (to the Cell Manager and to this HP Backup Navigator system).

     To check, whether HP Backup Navigator resolves the Data Protector Cell Manager hostname, run the following command on the HP Backup Navigator host:

     `# wget hostname:port`

     Where `hostname` is the Cell Manager name, as it is specified in HP Backup Navigator; `port` is the Cell Manager port (by default, `5555`).

   - Firewall

     To verify, whether the firewall causes problems, turn it off and wait for the next data collection. If the problem persists, turn on the firewall and continue with your investigation. If the problem is eliminated, ensure, that the firewall port range is the same as in the `omnirc` file on the Cell Manager. For example:

     i. On the HP Backup Navigator system, run:

        `# iptables -L INPUT -n -v`

     ii. Ensure, that the entry with a specified port range is as follows:

        `0 0 ACCEPT tcp -- * * 0.0.0.0/0 0.0.0.0/0 state NEW tcp dpts:XXXX:YYYY`

        Where *XXXX*:*YYYY* is a port range.

   - Port range

On the HP Backup Navigator system, verify that the `OB2PORTRANGE` environment variable value is the same as in the `omnirc` file on the Cell Manager:

 # echo $OB2PORTRANGE

If the value is different, update it:

**# echo "export OB2PORTRANGE=\"*XXXXX-YYYYY*\"" >>
/etc/profile.d/ob2portrange.sh
source /etc/profile.d/ob2portrange.sh**

5. Verify communication with the Data Protector Cell Manager

   ▪ Check the connection from HP Backup Navigator to the Data Protector Cell Manager. On HP Backup Navigator, run:

   # ping *CellManager_hostname*

   ▪ Check the connection from the Data Protector Cell Manager to HP Backup Navigator. On the Cell Manager, run:

   # ping *BackupNavigator_hostname*

   ▪ Check that Data Protector Cell Manager is up and running. Run:

   # omnisv –status

   If any of the services is not active, restart the Data Protector services:

   # omnisv –stop

   # omnisv –start

   ▪ If `allow_hosts` and `deny_hosts` lists are enabled on the Cell Manager, add HP Backup Navigator to the `allow_hosts` list. For detailed instructions, see the Data Protector documentation.

   ▪ If the Cell Manager is running in an encrypted mode, add the HP Backup Navigator system to the Security Exceptions list on the respective Cell Manager to allow non-encrypted communication. For instructions, see the Data Protector documentation.

Log files

Inspecting HP Backup Navigator log files can help you determine the problem.

Most of the HP Backup Navigator log files are located at `/opt/dpa-ext/logs`, the log file created during the automatic installation is located at `/var/log/`.

The table below describes the Data Protector log files:

Log file	Description
`agent_core.log`	Contains high-level overview of the data collection operations.
`agent_util_cmd.log`	Contains detailed information on the data collection operations.
`cron_logs.log`	Contains information on data calculation, subscription, and dashboard refresh related operations.
`event.log`	Contains information on the events occurred in HP Backup Navigator.
`full_app.log`	Contains all operations performed in HP Backup Navigator besides those written to `event.log`, `cron_logs.log`, and the agent related logs.
`report.log`	Contains information on the generated HP Backup Navigator reports.
`sts.log`	Contains operating system related information collected during initial installation. This information is mainly intended for the support organization.
`install.log`	Contains information on the initial configuration of the database and user accounts after the HP Backup Navigator installation.
`upgrade.log`	Contains information on the initial configuration of the database and user accounts after the HP Backup Navigator upgrade.
`HPBackup_navigator_install.log`	Contains information on the HP Backup Navigator installation, when using the HP Backup Navigator installation script.

Collecting data for HP Customer Support

Collect the relevant data about the problem and send it to the HP Customer Support Service:

- Description of your problem and of your environment.

- Collected log files. See "HP Backup Navigator logging" on page 62.

- Information about the Cell Managers you collect data from: operating system and Data Protector version.

- Debug logs from the Cell Manager. For instructions on collecting the debug logs, see the Data Protector documentation.

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 (`.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 25: RHEL installation

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

Figure 26: Device type selection
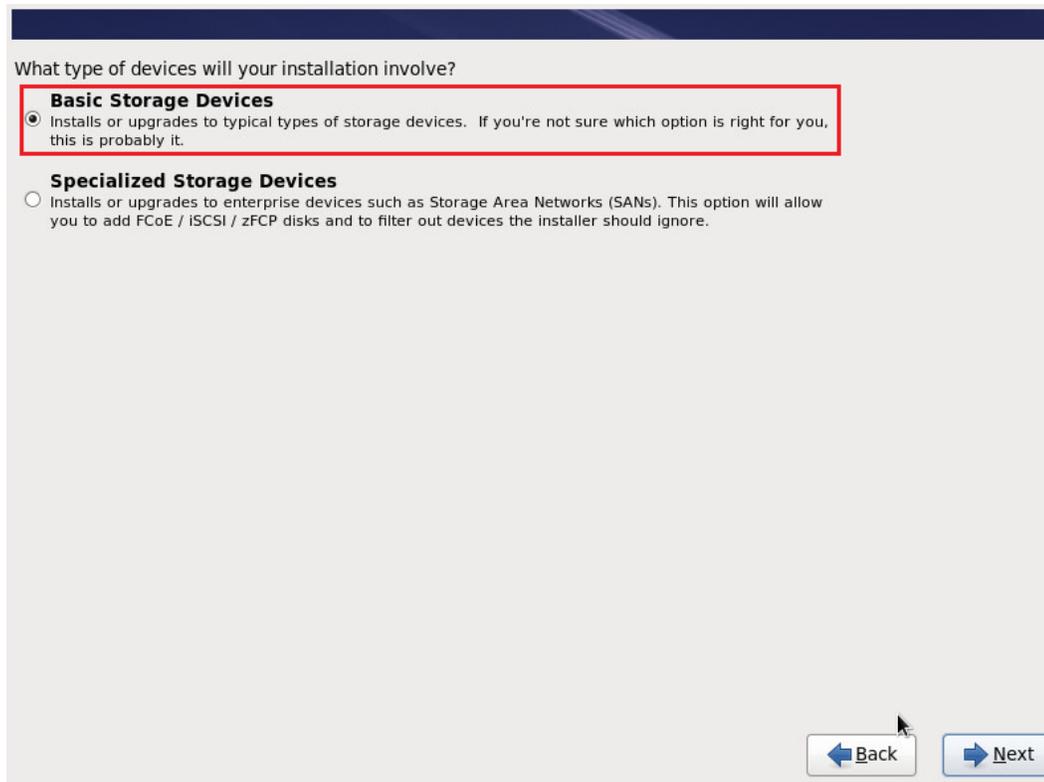
5. Enter the hostname. Click **Configure Network**.

Figure 27: Network configuration
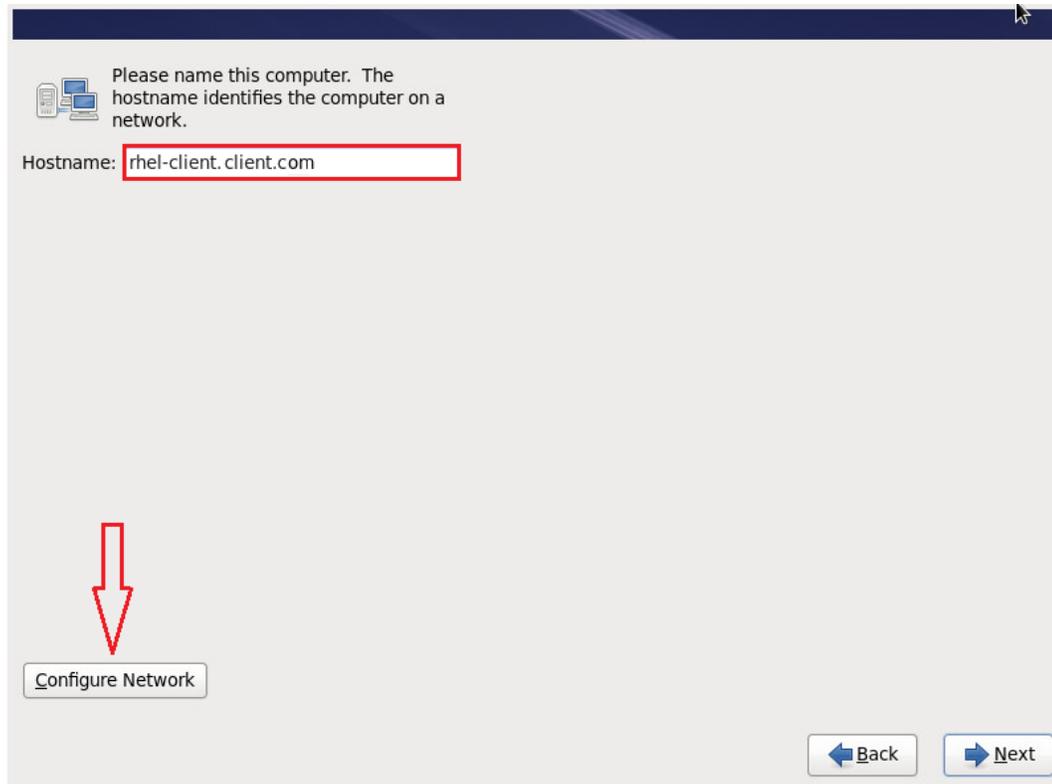
Under IPv4 Settings add Address, DNS Servers and domain (you can specify these settings after installation, but it is recommended that you configure network in this step). Click **OK**.

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 28: Installation type selection
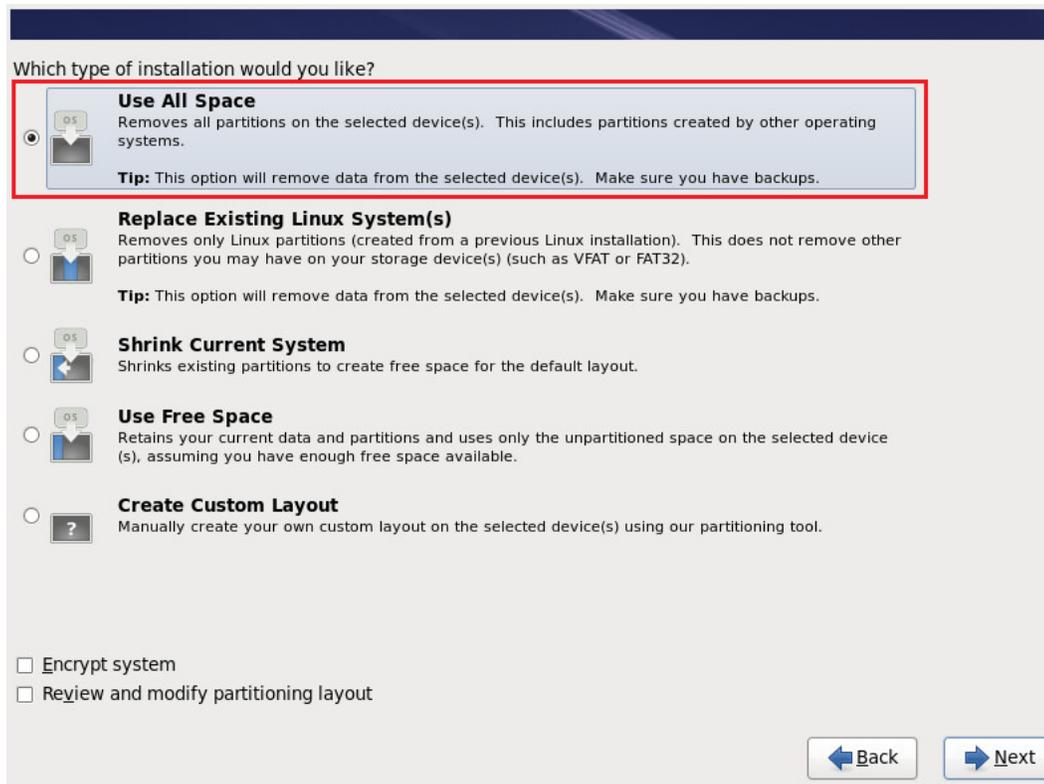
9. Select **Basic Server** software set. You can install basic server with or without GUI:

   - If you do not want to install GUI, select **Customize later**. Click **Next**.The installation process starts.

Figure 29: Installation without GUI

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

Figure 30: Installation with additional software selection
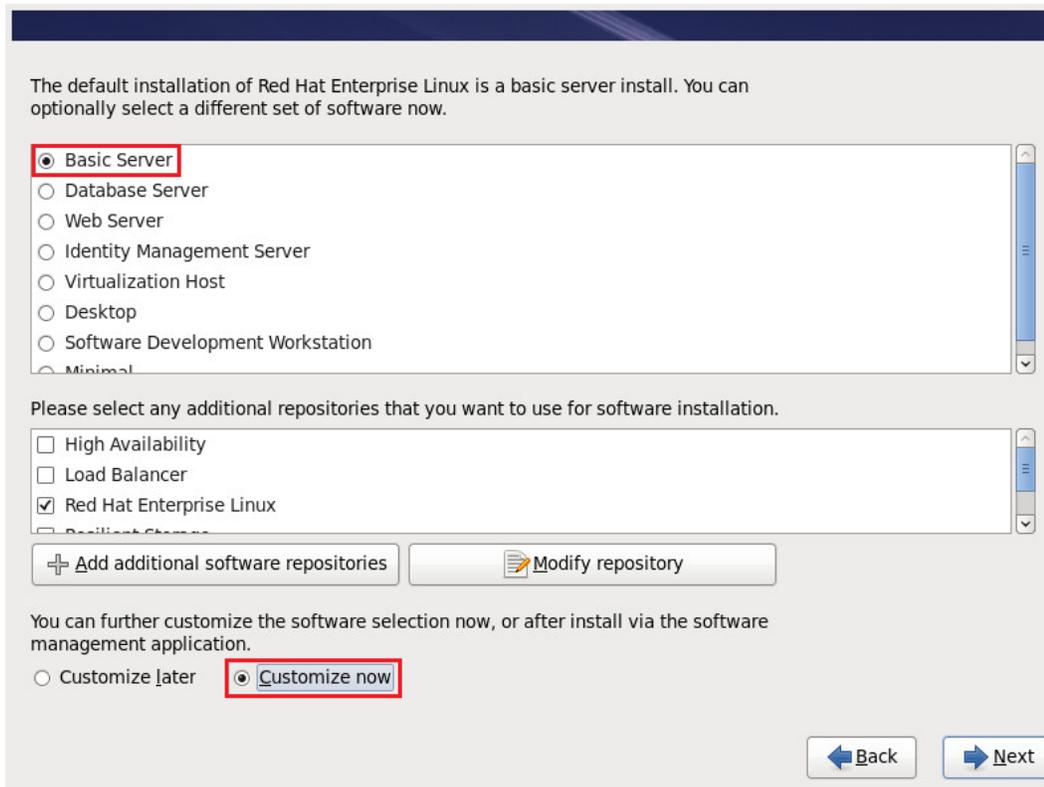
Important: When specifying additional packages, don't select PostgreSQL Database Client and PostgreSQL Database Server under Databases section.

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

Figure 31: Software selection for GUI installation
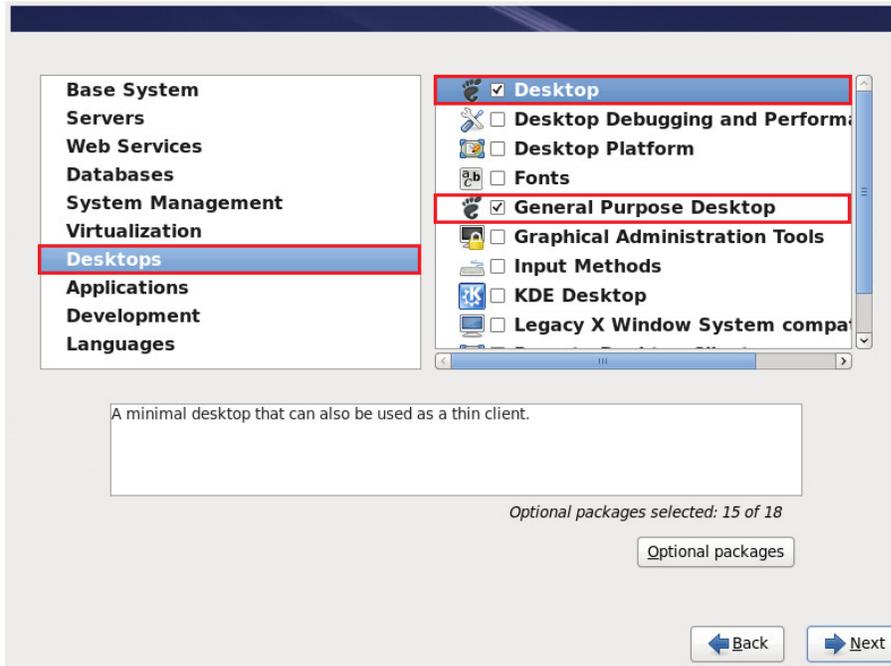
ii. In the left panel, select **Applications**. In the right panel, select the **Graphical Administration Tools** package.

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 16. If you want to install and configure the prerequisite software manually, see "Installing and Configuring Prerequisite Software" on page 95.

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 16.

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 JDK, see "Installing JDK" on page 98.

3. To install and configure Apache Tomcat, see "Installing and configuring Tomcat" on page 98.

4. To install and configure PostgreSQL, see "Installing and configuring PostgreSQL" on page 102.

After installing and configuring all prerequisite software, install HP Backup Navigator. See "Running HP Backup Navigator installation package" on page 107.

Configuring firewall and network

After you complete the operating system 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 system. The procedures are different for the RHEL and SUSE operating systems:

- To configure firewall and network on RHEL, see "Configuring firewall and network on RHEL" on the next page.

- To configure firewall and network on SUSE, see "Configuring firewall and network on SUSE" on page 97.

Configuring firewall and network on RHEL

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 32: 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*

Configuring firewall and network on SUSE

Steps

1. Open the firewall configuration file:

   # vi /etc/sysconfig/SuSEfirewall2

2. Change the FW_CUSTOMRULES variable as follows:

   FW_CUSTOMRULES="/etc/sysconfig/scripts/SuSEfirewall2-custom"

3. In the firewall custom rules configuration file, add the following lines to the fw_custom_

before_port_handling() function:

 # vi /etc/sysconfig/SuSEfirewall2-custom

```
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport 80 -j ACCEPT
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport 8080 -j ACCEPT
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport 5432 -j ACCEPT
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport start_port:end_
port -j ACCEPT
```

4. Restart the firewall:

 # service SuSEfirewall2_setup restart

Installing JDK

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

Steps

1. Download the `jdk-7u79-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 JDK by running the following command:

   # rpm –ivh jdk-7u79-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:

      ```
      # Generated by HP Backup Navigator installation script
      export JAVA_HOME=/usr/java/jdk1.7.0_79
      export PATH=$PATH:$JAVA_HOME/bin"
      ```

   c. Run the profile file:

      # source /etc/profile.d/java.sh

Installing and configuring Tomcat

After you installed and configured JDK, 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/v7.0.64/bin/apache-tomcat-7.0.64.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. Untar the package:

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

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

   `# ln –s /opt/apache-tomcat-7.0.xx /opt/apache-tomcat`

6. 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 33: Example of the catalina.sh file

7. Add the `CATALINA_PID` variable in the `catalina.sh` file at the beginning (after the first comments):

   # vi /opt/apache-tomcat/bin/catalina.sh
   # CATALINA_PID="/var/run/tomcat.pid"

8. Start Apache Tomcat:

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

   The output should look like this:

Figure 34: Example of the catalina.sh file output

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

The following page should open:

Figure 35: Apache Tomcat page

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

a. Copy the `tomcat` file:

On RHEL: **# cp /opt/dpa-ext/bninit/tomcat_rhel /etc/init.d/tomcat**

On SUSE: **# cp /opt/dpa-ext/bninit/tomcat_suse /etc/init.d/tomcat**

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

 # chmod 755 tomcat /etc/init.d/tomcat

c. Add the script to the startup services:

 # chkconfig --add tomcat

d. 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 9.4 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 16.
>
> 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 105.

Prerequisites

- On RHEL 6.4-6.6, 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-42.el6.x86_

64.rpm

    ii. Run: `rpm -Uvh openssl-1.0.1e-42.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-42.el6.x86_64.rpm`

  ii. Run: `rpm -Uvh openssl-1.0.1e-42.el6.x86_64.rpm`

- On SUSE, make sure, that the `libpq5-9.4.4-2.1.x86_64.rpm` package is installed on your system. You can download and install it as follows:

  - Without access to internet:

    i. Download the `libpq5` package to you system from:
    http://download.opensuse.org/repositories/server:/database:/postgresql/SLE_11_SP4/x86_64/libpq5-9.4.4-2.1.x86_64.rpm

    ii. Run: `rpm –ivh libpq5-9.4.4-2.1.x86_64.rpm`

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

    Run: `zypper install libpq5`

  - With access to internet without using the `zypper` command:

    i. From the `/tmp` directory run: `wget http://download.opensuse.org/repositories/server:/database:/postgresql/SLE_11_SP4/x86_64/libpq5-9.4.4-2.1.x86_64.rpm`

    ii. Run: `rpm –ivh libpq5-9.4.4-2.1.x86_64.rpm`

Installing PostgreSQL on a system without access to internet

Note: Some steps in this procedure are different on RHEL and SUSE.

Steps

1. Navigate to the `/tmp` directory:

   `# cd /tmp`

2. Depending on your operating system, do one of the following:

   - On RHEL, download the following packages from the PostgreSQL web page:
     http://yum.postgresql.org/9.3/redhat/rhel-6-x86_
     64/repoview/postgresqldbserver94.group.html

     ```
     postgresql94
     postgresql94-contrib
     postgresql94-libs
     postgresql94-server
     ```

   - On SUSE, download the following packages to your system:

     `postgresql-init` from
     http://download.opensuse.org/repositories/server:/database:/postgresql/SLE_11_
     SP4/noarch/postgresql-init-9.4-46.1.noarch.rpm

     `postgresql94` from
     http://download.opensuse.org/repositories/server:/database:/postgresql/SLE_11_
     SP4/x86_64/postgresql94-9.4.4-2.1.x86_64.rpm

     `postgresql94-contrib` from
     http://download.opensuse.org/repositories/server:/database:/postgresql/SLE_11_
     SP4/x86_64/postgresql94-contrib-9.4.4-2.1.x86_64.rpm

     `postgresql94-server` from
     http://download.opensuse.org/repositories/server:/database:/postgresql/SLE_11_
     SP4/x86_64/postgresql94-server-9.4.4-2.1.x86_64.rpm

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

   `# mv filename /tmp`

4. Install PostgreSQL packages.

   On SUSE, run: `# rpm –ivh postgresql-init-9.4-46.1.noarch.rpm`

   On RHEL and SUSE, run: `# sudo rpm –ivh postgresql94-*`

5. On SUSE, create the `/var/run/postgresql` directory if does not exist and grant it permissions:

   `# mkdir /var/run/postgresql`

```
# chown –R postgres:postgres /var/run/postgresql
```

6. Initialize the database:

   On RHEL: `# service postgresql-9.4 initdb`

   On SUSE: `# service postgresql start`

7. On RHEL, start the service:

   `# service postgresql-9.4 start`

Installing PostgreSQL on a system with access to internet

Note: Some steps in this procedure are different on RHEL and SUSE.

Steps

1. Install the PostgreSQL repository:

   On RHEL: `# yum install http://yum.postgresql.org/9.4/redhat/rhel-6-x86_64/pgdg-redhat94-9.4-1.noarch.rpm`

   On SUSE: `# zypper addrepo http://download.opensuse.org/repositories/server:/database:/postgresql/SLE_11_SP4/server:database:postgresql.repo`

2. Install PostgreSQL:

   On RHEL: `# yum install postgresql94-server postgresql94-contrib`

   On SUSE: `# zypper install postgresql94 postgresql94-libs postgresql94-contrib postgresql94-server`

3. On SUSE, create the /var/run/postgresql directory if does not exist and grant it permissions:

   `# mkdir /var/run/postgresql`

   `# chown –R postgres:postgres /var/run/postgresql`

4. Initialize the database:

   On RHEL: `# service postgresql-9.4 initdb`

   On SUSE: `# service postgresql start`

5. On RHEL, start the service:

   ```
   # service postgresql-9.4 start
   ```

Configuring PostgreSQL

After you installed PostgreSQL, perform the necessary configuration steps.

Steps

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

   On RHEL:

   ```
   chkconfig postgresql-9.4 on
   chkconfig --list postgresql-9.4
   postgresql-9.4 0:off 1:off 2:on 3:on 4:on 5:on 6:off
   ```

   On SUSE:

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

2. Add users:

   ```
   sudo -u 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:

      On RHEL: **# vi /var/lib/pgsql/9.4/data/pg_hba.conf**

      On SUSE: **# vi /var/lib/pgsql/data/pg_hba.conf**

      `host all all all md5`

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

      # vi ~/.pgpass

      `hostname:port:*:db_username:db_password`

   c. Provide the necessary connection permissions:

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

4. Allow the TCP/IP connections to the database:

```
# vi /var/lib/pgsql/data/postgresql.conf
```

```
# listen_addresses='' -> listen_addresses='*'
```

5. On SUSE, increase the maximum number of connections to the database:

```
# vi /var/lib/pgsql/data/postgresql.conf
```

```
# max_connection=100 -> max_connection=250
```

6. After you performed the configuration tasks, restart service:

On RHEL: `# service postgresql-9.4 restart`

On SUSE: `# service postgresql restart`

Running HP Backup Navigator installation package

You can install or upgrade HP Backup Navigator.

If you want to check the rpm signature of the HP Backup Navigator installation package, import the following public key:

`# rpm --import 0x75E1FF78`

To check, whether the key is successfully imported, run the following command:

`# rpm -qi gpg-pubkey-75e1ff78-*`

Steps

1. Insert and mount the HP Backup Navigator installation DVD-ROM or mount the ISO image directly.

> **Note:** If you want to verify the rpm signature of the HP Backup Navigator installation package, run the following command:
>
> `# rpm --checksig -v hp-backup-navigator-9.21.el6.x86_64.rpm`

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

To install: `# rpm –ivh hp-backup-navigator-9.21.el6.x86_64.rpm`

To upgrade: **# rpm –Uvh hp-backup-navigator-9.21.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 .

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).

T

tenant

A tenant is a group of users, usually related to one customer or department, who share Data Protector resources. Each tenant is represented by the dedicated Data Protector elements, such as cells, backup specification groups, backup specifications, or 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 HP Backup Navigator User's guide (Backup Navigator 9.21)

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.