Deploying IBM Spectrum Protect
Version 8.1.2 backup-archive clients

IBM

Contents

Chapter 1. Scheduling the deployment of backup-archive client updates

You can schedule the automatic deployment of software updates for IBM Spectrum Protect™ backup-archive clients.

The deployment feature can simultaneously update one or more backup-archive clients. You configure deployment from the IBM Spectrum Protect server administrative command line. The configuration process includes downloading and importing deployment packages and scheduling installation. When the schedule runs, files from the deployment package on the IBM Spectrum Protect server are copied to the client system. The `postnschedulecmd` command runs and the client is upgraded.

Before you start the client deployment, review the restrictions, requirements, and other information about the client deployment process.

Restrictions:
- To schedule deployment of a backup-archive client at Version 8.1.2 or later by using the command line, you must use the procedure that is described in this document. You cannot use the procedure that was available in IBM Spectrum Protect releases earlier than V8.1.2.
- The Windows cluster services environment is not supported.
- Do not schedule automatic client deployments to systems that have any of the following applications installed on them:
  - IBM Spectrum Protect for Virtual Environments
  - IBM Spectrum Protect for Databases
  - IBM Spectrum Protect for Mail
  - IBM Spectrum Protect for Enterprise Resource Planning

Client requirements

To use the deployment feature, the backup-archive clients must meet the following requirements:
- The backup-archive client must be at V6.4.3 or later.
- The client computer must have the minimum free disk space as shown in "Server and client disk space requirements" on page 4.
- The `passwordaccess` option must be set to **generate**.

  To store the password, a user must log on from the local workstation one time to provide the password. If the client automatic deployment process cannot find the node password, the following events occur:
  - The deployment process does not start.
  - A warning message is logged in the `setup.log` file.

    The messages that can be logged during deployment are similar to the following examples:

    ```
    Sun 06/18/2017 10:16:04.35 The deployclient.bat script is started.
    Sun 06/18/2017 10:16:04.37 deployclient.bat is removing the deployment
      manager and temporary files possibly left from the previous installation.
    Sun 06/18/2017 10:17:10.53 WARNING: Still waiting for the result of query
    ```

```
system information.
Ensure that "PASSWORDACCESS GENERATE" is set in the client options file
and that a connection to the server can be made without being prompted
for a password.
```

If you see these errors and the passwordaccess option is set to **GENERATE**, the errors are probably caused by a network problem and the client cannot be reached. On Windows clients, there might also be a problem with the digital rights management subkey. The digital rights management key is in the following registry location:

```
HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Control\BackupRestore\
FilesNotToBackup\DRM
```

– The **dsmc query systeminfo** command is left running.

– Because the deployment process cannot start, no messages are sent to the server.

• 32-bit backup-archive clients are not supported. If the deployment manager detects a 32-bit backup-archive client on a 64-bit operating system, it upgrades the client to the 64-bit version.

• Because the client is deployed from the server as a scheduled task, the client scheduler must be running.

• The client system must be running and the client must have connected to the IBM Spectrum Protect server at least once.

• The automatic client deployment feature stops and restarts scheduler and client acceptor processes on the client, but it does not stop or restart any client operations, such as a backup or a restore. It is possible that in-process client operations might be affected during an automatic deployment. To prevent an automatic deployment from interfering with client operations, schedule automatic client deployments to occur when it is not likely that the client is running a backup, restore, archive, or retrieve operation.

• The client is deployed as a post-schedule operating system command; scheduled operating system commands must be enabled on the client.

Tip: If a command is specified by the postnschedulecmd option in the client options file (dsm.opt), the command is overridden by the deployment script. If a command is specified by the preschedulecmd option, that command is run. To avoid unexpected conflicts with the deployment task, suppress the preschedulecmd option by specifying the following option in the schedule definition:

```
-preschedulecmd=''
```

For Windows clients, the following additional requirements must be met:

• The client scheduler must be started as a Windows service and not from the command line. To minimize the chance of a restart, the deployment manager shuts down the scheduler service before the new client is installed, and restarts the scheduler service after the installation. If the scheduler is not run as a Windows service, a restart is required when the client is deployed.

• The command-line version of the Windows registry utility (reg.exe) is required. This tool is generally installed as part of the operating system installation on supported Windows operating systems.

How the `autodeploy` client option can affect deployment of Windows clients

The `autodeploy` client option is used to conditionally enable automatic client deployment. By default, the `autodeploy` option is enabled, and the client workstation is restarted if required.

To prevent automatic deployment if a system restart is required, specify the `autodeploy noreboot` option in the schedule definition or the client options file. If the deployment manager cannot detect the restart requirement, for example, if client processes are started by a script, the update is installed and you must manually restart the client system.

The `autodeploy` option can be set in the following places:
* On a schedule definition on the IBM Spectrum Protect server. Schedule definitions that deploy client software updates have an `action=deploy` statement. On those schedules, you can include the `autodeploy` option as part of the command that you include on the **–postnschedulecmd** statement.
* On the client node, in an options file that is associated with the client scheduler or client acceptor. The deployment manager detects options files that are associated with the scheduler or client acceptor. If multiple scheduler or client acceptor processes are running on the same computer at the same time, and the processes use different options files, the deployment manager uses the `autodeploy` option value that is set in one of the options files.
* On the client in the client options file (`dsm.opt`). The `autodeploy` option that is set in the client options file overrides any other `autodeploy` setting.

To turn off automatic client deployment, add **autodeploy no** to the client options file.

For more information about the `autodeploy` client option, see Autodeploy.

Simultaneous client deployment by different deployment managers is not allowed

The backup-archive client software cannot be updated by different IBM Spectrum Protect deployment managers at the same time.

On Windows client systems, a lock file is created on each client to prevent a client from being updated by different deployment managers at the same time. Before a deployment begins, the deployment manager searches for the lock file on the client system. If the file exists and is less than 24 hours old, the deployment is canceled. If the lock file is more than 24 hours old or does not exist, the deployment is started. The lock file is deleted when the deployment completes. If the deployment manager fails to delete the lock file, you can manually delete it from the client disk. The lock file is in the following directory: *installation_directory*\..\ `IBM_ANR_WIN\mutext.txt`

On UNIX and Linux client systems, a semaphore is used to prevent a client from being updated by different deployment managers at the same time. The semaphore expires 24 hours from the last client deployment. New clients cannot be deployed until the semaphore expires.

Server and client disk space requirements

The server must have enough disk space for the packages that you download.
Each client must have enough disk space for the files that are deployed to it.

Server disk space requirements

The server system must meet the following disk space requirements for the
deployment packages:

Table 1. Disk space required for deployment packages

Client platform	Total required disk space
IBM AIX®	150 MB
Solaris x86_64	125 MB
Linux on Power Systems™ (little endian)	100 MB
Linux x86_64	125 MB
Linux on System z®	100 MB
Mac OS X	150 MB
Windows	100 MB

Client disk space requirements

The client system must meet the following disk space requirements for the update
installation files:

Table 2. Disk space required for backup-archive client files

Client platform	Total required disk space
AIX	1.5 GB
Solaris x86_64	1.2 GB
Linux on Power Systems (little endian)	350 MB
Linux x86_64	950 MB
Linux on System z	350 MB
Mac OS X	200 MB
Windows	2 GB

The amount of disk space also depends on whether you plan to keep multiple
packages for different platforms and versions at the same time and the retention
value that you set for the packages. For example, the packages for AIX and
Windows require a total of 3.5 GB of disk space. If the AIX and Windows packages
for the previous and current product version are kept on the server, a total of 7 GB
of disk space is required.

To free space, you can delete packages that are no longer required and then
download and re-import them if they are required.

Automatic deployment terminology

You must understand the terminology that is used before you configure the IBM Spectrum Protect servers for automatic deployment.

The following table lists the terminology that you must be familiar with.

Table 3. Automatic deployment terminology

Term	Definition
Deployment packages or exported packages	Two deployment packages are required for each upgrade: • A package that contains the deployment manager files • A package that contains the client upgrade files The packages are also called exported packages and have a `.exp` extension.
Import location	The directory on the IBM Spectrum Protect server where the deployment packages are placed after they are downloaded from the FTP site.
Storage pool media	The storage volumes on the IBM Spectrum Protect server where deployment packages are stored after they are imported from the import location.
Policy settings	The policy domain on the IBM Spectrum Protect server that is used for deployment operations.

Configuring the server for backup-archive client automatic deployments

Configure the IBM Spectrum Protect server to prepare the client nodes for automatic deployment.

Before you begin

Ensure that your administrator ID has the following authority levels:
- You must have SYSTEM privileges on the server to issue the deployment commands that are used to configure and import the deployment packages.
- To schedule a backup-archive client deployment for a client node, you must have SYSTEM privileges or DOMAIN privileges on the domain that the client node belongs to.

You can review the automatic deployment terminology to help you complete the configuration.

Procedure

To configure the server for automatic deployment, complete the following steps:
1. Log on to the IBM Spectrum Protect server from the administrative command line.
2. Define an import location by completing the following steps:
   a. Create a directory on the IBM Spectrum Protect server where the deployment packages can be stored. The location must be accessible by the IBM Spectrum Protect server instance user ID.

b. Define the `ibm_deploy_client_import` device class:

```
define devclass ibm_deploy_client_import devtype=file
directory=import_directory
```

where *import_directory* is the fully qualified path to the directory that you created in Step 2a.

Restriction: Do not use this device class to create a storage pool.

3. Define the storage pool media by completing the following steps:

a. Create a directory that will contain the server volumes after the deployment packages are imported. The directory must be accessible by the server instance user.

b. Define a FILE storage pool by issuing the following two commands:

```
define devclass deploy_devclass_name devtype=file dir=deploy_pkg_dir
```

```
define stgpool stgpool_name deploy_devclass_name maxscr=max_number
```

where:
- *deploy_devclass_name* is the name of the device class.
- *deploy_pkg_dir* is the name of the directory for the device class.
- *stgpool_name* is the name of the storage pool.
- *max_number* is the maximum number of scratch volumes that can be used to store the client import packages. To determine the total amount of available space, multiply the *max_number* value by the *MAXSIZE* setting for the storage pool.

Tip: To use a DISK storage pool instead, issue the following command:

```
define volume stgpool_name deploy_pkg_dir/volume1.dsm
format=volume_size_in_MB
```

4. Define the policy domain by completing the following steps:

a. Create and configure the domain by issuing the following commands:

```
define domain ibm_deploy_client
```

```
define policyset ibm_deploy_client ibm_deploy_client
```

```
define mgmtclass ibm_deploy_client ibm_deploy_client ibm_deploy_client
```

b. Create the copy group by issuing the following command:

```
define copygroup ibm_deploy_client ibm_deploy_client ibm_deploy_client
standard type=archive destination=stgpool_name retver=retention_value
```

where *retention_value* sets the retention time for the package. You can set the value to `NOLimit` or to a number of days. If you set the value to `NOLimit`, the server retains the package forever.

c. Assign a default management class to the policy set by issuing the following commands:

```
assign defmgmtclass ibm_deploy_client ibm_deploy_client ibm_deploy_client
```

```
activate policyset ibm_deploy_client ibm_deploy_client
```

If an error message is shown saying that a backup copy group does not exist, you can safely ignore this error.

5. Determine if a high-level and low-level address are specified for the server by completing the following steps:

a. Issue the following command:

```
query status
```

   b. Verify that the correct values are specified for the following settings:
- *Server host name or IP address*
- *Server TCP/IP port number*

If the correct values are not specified, issue the following commands:

```
set serverhladdress server.serveraddress.com
```

```
set serverlladdress tcp_port
```

where:
- *server.serveraddress.com* is the server IP address or host name of the IBM Spectrum Protect server.
- *tcp_port* is the port number of the IBM Spectrum Protect server. The default is 1500.

What to do next

Download the deployment packages for the version and operating system of your choice. For more information about the available packages, see "Downloading the deployment packages."

If you previously downloaded the deployment packages, import them to the IBM Spectrum Protect server. For more information about importing the deployment packages, see "Importing the client deployment package" on page 8.

Downloading the deployment packages

You must download the deployment packages before you can use the automatic deployment feature.

Before you begin

Before you download the deployment packages, ensure that you configured the server by following the instructions in "Configuring the server for backup-archive client automatic deployments" on page 5.

About this task

Two deployment packages are required for each upgrade. One package contains the deployment manager files. The second package contains the files that are used to upgrade the backup-archive client.

Procedure

Download the Version 8.1.2 deployment packages from the FTP site by completing the following steps:

1. Identify the deployment packages that are needed for each supported platform:

Table 4. Supported client platforms and deployment packages

Platform	Deployment manager package	Client upgrade package
AIX	Updatemanager-AIX.exp	8.1.2.0-TIV-TSMBAC-AIX.exp

Table 4. Supported client platforms and deployment packages (continued)

Platform	Deployment manager package	Client upgrade package
Solaris x86_64	Updatemanager-SolarisX86.exp	8.1.2.0-TIV-TSMBAC-SolarisX86.exp
Linux on Power Systems (little endian)	Updatemanager-LinuxPLE.exp	8.1.2.0-TIV-TSMBAC-LinuxPLE.exp
Linux x86_64	Updatemanager-LinuxX86.exp	8.1.2.0-TIV-TSMBAC-LinuxX86.exp
Linux on System z	Updatemanager-LinuxS390.exp	8.1.2.0-TIV-TSMBAC-LinuxS390.exp
Mac OS X	Updatemanager-Mac.exp	8.1.2.0-TIV-TSMBAC-Mac.exp
Windows	Updatemanager-Windows64.exp	8.1.2.0-TIV-TSMBAC-WinX64.exp

Tip: For product releases after V8.1.2.0, locate the required deployment packages by version and platform on the FTP site: https://ftp.software.ibm.com/storage/tivoli-storage-management/maintenance/client/updatemgr/.

2. For each required platform, download the deployment manager and client upgrade packages and save them to the directory that is referenced by the `IBM_DEPLOY_CLIENT_IMPORT` device class that you defined in Configuring the server for backup-archive client automatic deployments.

What to do next

Import the deployment packages to the IBM Spectrum Protect server by following the instructions in "Importing the client deployment package."

Importing the client deployment package

You must import the deployment manager package and the client upgrade package to the IBM Spectrum Protect server for the deployment files to be available to the backup-archive clients.

Before you begin

Ensure that you completed the following steps before you import the deployment packages:
- You configured the server for automatic deployment.
- You downloaded the deployment packages from the FTP site, as described in .
- You placed the deployment packages in the directory that is referenced by the `IBM_DEPLOY_CLIENT_IMPORT` device class.

Procedure

Import each package by issuing the following **IMPORT** commands:

```
import node * filedata=archive mergefilespace=yes
devclass=ibm_deploy_client_import volumenames=deployment__manager_package.exp
```

```
import node * filedata=archive mergefilespace=yes
devclass=ibm_deploy_client_import volumenames=upgrade_package.exp
```

where ***deployment__manager_package*.exp** is the name of a deployment manager package that you downloaded and ***upgrade_package*.exp** is the name of a client upgrade package.
You must issue a separate command for each package.

Tip: To monitor progress, issue the `QUERY PROCESS` command.

Results

Verify that the packages are in a location that the server can access. Issue the following command:

```
select * from archives where node_name like 'IBM_DEPLOY_CLIENT%'
```

What to do next

Define a client schedule for each required platform to automatically upgrade the backup-archive clients. Complete the steps in one of the following sections:

- "Defining a deployment schedule for clients on AIX, Linux, or Solaris systems"
- "Defining a deployment schedule for clients on Mac OS X systems" on page 12
- "Defining a deployment schedule for clients on Windows systems" on page 14

Related tasks:

"Configuring the server for backup-archive client automatic deployments" on page 5
Configure the IBM Spectrum Protect server to prepare the client nodes for automatic deployment.

"Downloading the deployment packages" on page 7
You must download the deployment packages before you can use the automatic deployment feature.

Defining a deployment schedule for clients on AIX, Linux, or Solaris systems

You can define a schedule to upgrade the backup-archive client software on AIX, Linux, or Solaris systems.

Before you begin

Before you define a schedule for automatic deployment, verify that you completed the following steps:

- You configured the server for automatic deployment.
- You imported the deployment packages to the server.
- You verified that the clients that you want to upgrade meet the minimum disk space requirements.

Tip: A sample command is provided at the end of this topic. You can copy and paste this command, changing the variables as needed to match your configuration.

Procedure

To schedule an automatic deployment, complete the following steps:

1. Identify the retrieve location and package identifier to use in the **DEFINE SCHEDULE** command:

Table 5. Retrieve locations and package identifiers

Platform	Retrieve location	Package identifier
AIX	/deploymngr/client/AIX/ PPC/deploy/*	DEPLOY_8120_AIX_PPC
Solaris x86_64	/deploymngr/client/ Solaris/X86/deploy/*	DEPLOY_8120_Solaris_X86
Linux on Power Systems (little endian)	/deploymngr/client/Linux/ PLE/deploy/*	DEPLOY_8120_Linux_PLE
Linux x86_64	/deploymngr/client/Linux/ X86/deploy/*	DEPLOY_8120_Linux_X86
Linux on System z	/deploymngr/client/Linux/ S390/deploy/*	DEPLOY_8120_Linux_S390

Tip: For later product versions, change the version number in the package identifier to the desired level.

2. Define a schedule for automatic deployment by issuing the **DEFINE SCHEDULE** command from the IBM Spectrum Protect administrative command line. Use no spaces before or after the number sign (#) or the greater than character (>):

```
define schedule domain_name schedule_name action=deploy
description=schedule_description
duration=60 durunits=minutes perunits=onetime
objects="retrieve_location target_directory/IBM_ANR_UNX/"
options="-fromnode=IBM_DEPLOY_CLIENT_UNX
-postnschedulecmd='target_directory/IBM_ANR_UNX/deploy/deployclient.sh>
target_directory/IBM_ANR_UNX/deploy/ui
#de=package_identifier#sc=schedule_name#do=domain_name#srvinfo2=TBD'
-preschedulecmd='' -sub=yes -replace=all"
startdate=begin_schedule_window_date starttime=begin_schedule_window
```

where:

- *domain_name* is the domain that the client nodes are defined to.
- *schedule_name* is the name of the schedule that you want to define.
- *retrieve_location* is the filespace location on the IBM Spectrum Protect server where the deployment files were imported. Use the value that you obtained in Step 1.
- *target_directory* is the location on the client system where the deployment files will be retrieved. By default, clients are installed in the following directories:
    - AIX: /usr/tivoli/tsm/client
    - Solaris: /opt/tivoli/tsm/client
    - Linux: /opt/tivoli/tsm/client

    If the client is installed in a different location, specify that directory path instead.

    You can also use the /opt/tivoli/tsm/client/ directory based on where you want to temporarily store the deployment files that are retrieved from the server and the deployment processing logs.
- *package_identifier* is the client upgrade package identifier that you obtained in Step 1.
- *begin_schedule_window_date* is the date when deployment is eligible to start. You can specify a future date by using the following format: MM/DD/YYYY. The default is the current date.

- *begin_schedule_window* is the time when deployment is eligible to start. You can specify a time by using the following format: `HH:MM:SS` or specify `NOW` to run the schedule immediately.

3. Associate the client nodes that you want to upgrade with the deployment schedule by issuing the following command:

   ```
   define association domain_name schedule_name node1,node2
   ```

   where **node1** and **node2** are client nodes that you want to associate with the deployment schedule.

   Tip: If the clients are not already assigned to the policy domain, issue the **REGISTER NODE** command before you define the schedule association.

4. Optional: Update the **TARGETLEVEL** value to the level of the deployment package that you downloaded. You can use this parameter to determine whether the client nodes were upgraded to the target level. For example, if you downloaded the package called `8.1.2-SAMPLE-PKG.exp`, issue the following command:

   ```
   update node node_name targetlevel=8.1.2.0
   ```

   where **node_name** is the name of a client node that you associated with the deployment schedule.

   Issue the command for each client node that you associated with the deployment schedule. After completion of the deployment schedule, you can compare the `current version` field to the `target version` field in the output to determine whether the client was successfully upgraded.

Example

To schedule the update of a Linux x86_64 client to Version 8.1.2 on August 18, 2017, at 10:00 AM, issue the following command:

```
define schedule mydomain deploy_sched action=deploy
description=deploy_812_package_to_clients
duration=60 durunits=minutes perunits=onetime
objects="/deploymngr/client/Linux/X86/deploy/*
/opt/tivoli/tsm/client/IBM_ANR_UNX/"
options="-fromnode=IBM_DEPLOY_CLIENT_UNX
-postnschedulecmd='/opt/tivoli/tsm/client/IBM_ANR_UNX/deploy/deployclient.sh>
/opt/tivoli/tsm/client/IBM_ANR_UNX/deploy/ui#de=DEPLOY_8120_Linux_X86
#sc=deploy_sched#do=mydomain#srvinfo2=TBD'-preschedulecmd=''
-sub=yes -replace=all"
startdate=08/18/2017 starttime=10:00:00
```

If you are using the server-prompted scheduling mode, you can immediately deploy the update by changing the **startdate** and **starttime** parameter values as follows:

```
startdate=today starttime=now
```

Defining a deployment schedule for clients on Mac OS X systems

You can define a schedule to upgrade the backup-archive client software on MAC OS X systems.

Before you begin

Before you define a schedule for automatic deployment, verify that you completed the following steps:

- You configured the server for automatic deployment.
- You imported the deployment packages to the server.
- You verified that the clients that you want to upgrade meet the minimum disk space requirements.

Tip: A sample command is provided at the end of this topic. You can copy and paste this command, changing the variables as needed to match your configuration.

Procedure

To schedule an automatic deployment, complete the following steps:

1. Identify the retrieve location and package identifier to use in the **DEFINE SCHEDULE** command:

   Retrieve location
   > /deploymngr/client/MAC/X86/deploy/*

   Package identifier
   > DEPLOY_8120_Mac_X86

   Tip: For later product versions, change the version number in the package identifier to the desired level.

2. Define a schedule for automatic deployment by issuing the **DEFINE SCHEDULE** command from the IBM Spectrum Protect administrative command line. Use no spaces before or after the number sign (#) or the greater than character (>):

   ```
   define schedule domain_name schedule_name action=deploy
   description=schedule_description
   duration=60 durunits=minutes perunits=onetime
   objects="retrieve_location target_directory/IBM_ANR_MAC/"
   options="-fromnode=IBM_DEPLOY_CLIENT_MAC
   -posntschedulecmd='target_directory/IBM_ANR_MAC/deploy/deployclient.sh>
   target_directory/IBM_ANR_MAC/deploy/ui#schedule=schedule_name
   #de=package_identifier#sc=schedule_name#do=domain_name#srvinfo2=TBD'
   -preschedulecmd='' -sub=yes -replace=all"
   startdate=begin_schedule_window_date
   starttime=begin_schedule_window
   ```

   where:

   - *domain_name* is the domain that the client nodes are defined to.
   - *schedule_name* is the name of the schedule that you want to define.
   - *retrieve_location* is the filespace location on the IBM Spectrum Protect server where the deployment files were imported. Use the value that you obtained in Step 1.
   - *target_directory* is the directory where the backup-archive client is installed on the client system. The default installation path is /Library/Application

Support/tivoli/tsm/client/ba/. The relative path to ./IBM_ANR_MAC/ can also be used, for example, ./IBM_ANR_MAC/.

- *package_identifier* is the client upgrade package identifier that you obtained in Step 1.
- *begin_schedule_window_date* is the date when deployment is eligible to start. You can specify a future date by using the following format: MM/DD/YYYY. The default is the current date.
- *begin_schedule_window* is the time when deployment is eligible to start. You can specify a time by using the following format: HH:MM:SS or specify NOW to run the schedule immediately.

3. Associate the client nodes that you want to upgrade with the deployment schedule by issuing the following command:

```
define association domain_name schedule_name node1,node2
```

where *node1* and *node2* are client nodes that you want to associate with the deployment schedule.

Tip: If the clients are not already assigned to the policy domain, issue the **REGISTER NODE** command before you define the schedule association.

4. Optional: Update the **TARGETLEVEL** value to the level of the deployment package that you downloaded. For example, if you downloaded the package called 8.1.2-SAMPLE-PKG.exp, issue the following command:

```
update node node_name targetlevel=8.1.2.0
```

where *node_name* is the name of a client node that you associated with the deployment schedule.

Issue the command for each client node that you associated with the deployment schedule. After completion of the deployment schedule, you can compare the current version field to the target version field in the output to determine whether the client was successfully upgraded.

Example

To schedule the update of a Mac OS client to Version 8.1.2 on August 18, 2017, at 10:00 AM, issue the following command:

```
define schedule mydomain deploy_sched action=deploy
description=deploy_812_package_to_clients
duration=60 durunits=minute perunits=onetime
objects="/deploymngr/client/MAC/X86/deploy/* ./IBM_ANR_MAC/"
options="-FROMNODE=IBM_DEPLOY_CLIENT_MAC
-POSTNSCHEDULECMD='./IBM_ANR_MAC/deploy/deployclient.sh>
./IBM_ANR_MAC/deploy/ui
#sc=deploy_sched#do=mydomain#de=DEPLOY_8120_Mac_X86#srvinfo2=TBD'
-SUB=YES -REPLACE=ALL"
startdate=08/18/2017 starttime=10:00:00
```

If you are using the server-prompted scheduling mode, you can immediately deploy the update by changing the **startdate** and **starttime** parameter values as follows:

```
startdate=today starttime=now
```

Defining a deployment schedule for clients on Windows systems

You can define a schedule to upgrade the backup-archive client software on Windows systems.

Before you begin

Before you define a schedule for automatic deployment, verify that you completed the following steps:
- You configured the server for automatic deployment.
- You imported the deployment packages to the server.
- You verified that the clients that you want to upgrade meet the minimum disk space requirements.

Tip: A sample command is provided at the end of this topic. You can copy and paste this command, changing the variables as needed to match your configuration.

Procedure

To schedule an automatic deployment, complete the following steps:

1. Define a schedule for automatic deployment by issuing the **DEFINE SCHEDULE** command from the IBM Spectrum Protect administrative command line:

   ```
   define schedule domain_name schedule_name action=deploy
   description=schedule_description
   objects="\\IBM_ANR_WIN\C$\DEPLOYMNGR\CLIENT\WINDOWS\X64\DEPLOY\*
   ..\IBM_ANR_WIN\" options="-FROMNODE=IBM_DEPLOY_CLIENT_WIN
   -POSTNSCHEDULECMD='..\IBM_ANR_WIN\deploy\deployclient.bat
   sc=schedule_name do=domain_name
   de=DEPLOY_8120_Windows_X64 autodeploy=noreboot srvinfo=TBD'
   -SUB=YES -REPLACE=ALL" duration=60 durunits=minute PERUnits=onetime
   startdate=begin_schedule_window_date
   starttime=begin_schedule_window
   ```

   where:
   - *domain_name* is the domain that the client nodes are defined to.
   - *schedule_name* is the name of the schedule that you want to define.
   - AUTODEPLOY can be YES, NO, or NOREBOOT. The default is YES.
   - *begin_schedule_window_date* is the date when deployment is eligible to start. You can specify a future date by using the following format: MM/DD/YYYY. The default is the current date.
   - *begin_schedule_window* is the time when deployment is eligible to start. You can specify a time by using the following format: HH:MM:SS or specify NOW to run the schedule immediately.

   Tip: For later product versions, change the version number in the package identifier to the desired level.

   If you use AUTODEPLOY=NOREBOOT in your command, the client system does not restart after the deployment is completed. Restarting can affect any critical applications that are running on the client system. Applications other than IBM Spectrum Protect might not be restarted automatically. In most cases, the installation can be completed without restarting the client system. In rare cases, the deployment manager cannot detect the restart. For example, this can happen if client processes are started from a script. In these cases, the client installation continues, but a manual restart of the client system is required.

Restriction: The following IBM Tivoli Monitoring (ITM) service can prevent deployment from completing successfully:

```
Monitoring Agent for Windows OS - Watchdog
```

If the service is running on the client system, deployment fails with one of the following error messages:

```
Error 13003.The installer has insufficient privileges to access this
directory: C:\ProgramData\IBM\CAP.
```

```
ANS4210E The Deployment Manager failed to install package: 'Backup-Archive
Client'. The Microsoft Installer error code was '1603'
```

For instructions about temporarily disabling this service, see Using Agent Management Services.

2. Associate the client nodes that you want to upgrade with the deployment schedule by issuing the following command:

```
define association domain_name schedule_name node1,node2
```

where *node1* and *node2* are client nodes that you want to associate with the deployment schedule.

Tip: If the clients are not already assigned to the policy domain, issue the **REGISTER NODE** command before you define the schedule association.

3. Optional: Update the **TARGETLEVEL** value to the level of the deployment package that you downloaded. For example, if you downloaded the package called `8.1.2-SAMPLE-PKG.exp`, issue the following command:

```
update node node_name targetlevel=8.1.2.0
```

where *node_name* is the name of a client node that you associated with the deployment schedule.

Issue the command for each client node that you associated with the deployment schedule. After completion of the deployment schedule, you can compare the `current version` field to the `target version` field in the output to determine whether the client was successfully upgraded.

Example

To schedule the update of a Windows client to Version 8.1.2 on August 18, 2017, at 10:00 AM, issue the following command:

```
define schedule mydomain deploy_sched action=deploy
description=deploy_812_package_to_clients
objects="\\IBM_ANR_WIN\C$\DEPLOYMNGR\CLIENT\WINDOWS\X64\DEPLOY\* ..\IBM_ANR_WIN\"
options="-FROMNODE=IBM_DEPLOY_CLIENT_WIN
-POSTNSCHEDULECMD='..\IBM_ANR_WIN\deploy\deployclient.bat
sc=deploy_sched do=mydomain de=DEPLOY_8120_Windows_X64 autodeploy=noreboot
srvinfo=TBD' -SUB=YES -REPLACE=ALL" duration=60 durunits=minute PERUnits=onetime
startdate=08/18/2017 starttime=10:00:00
```

If you are using the server-prompted scheduling mode, you can immediately deploy the update by changing the **startdate** and **starttime** parameter values as follows:

```
startdate=today starttime=now
```

Verifying the deployment status by using the administrative command line

After a deployment schedule runs, you can query the server to determine the success or failure of the client upgrade.

About this task

Issue commands from the IBM Spectrum Protect administrative command line to determine the status of a deployment schedule.

Procedure

To verify the deployment status, take any of the following actions:

- Determine whether the client software was upgraded to the target level by issuing the following command:

```
SELECT DISTINCT N.NODE_NAME, N.TCP_ADDRESS, N.CLIENT_VERSION,
N.CLIENT_RELEASE, N.CLIENT_LEVEL, N.CLIENT_SUBLEVEL,
N.CLIENT_TARGET_VERSION, N.CLIENT_TARGET_RELEASE,
N.CLIENT_TARGET_LEVEL, N.CLIENT_TARGET_SUBLEVEL,
N.PLATFORM_NAME, N.CLIENT_OS_NAME
FROM NODES N, ASSOCIATIONS A, CLIENT_SCHEDULES CS
WHERE N.NODE_NAME=A.NODE_NAME AND A.SCHEDULE_NAME=CS.SCHEDULE_NAME
AND A.SCHEDULE_NAME='deploy_sched' AND CS.ACTION='DEPLOY'
```

where *deploy_sched* is the name of the deployment schedule.

From the following example output, you can see that the current version, release, level, and sublevel do not match that of the target. The software failed to upgrade, or the upgrade is not finished.

```
            NODE_NAME: CNODE1
          TCP_ADDRESS: x.xx.xxx.xxx
       CLIENT_VERSION: 7
       CLIENT_RELEASE: 1
         CLIENT_LEVEL: 6
      CLIENT_SUBLEVEL: 0
CLIENT_TARGET_VERSION: 8
CLIENT_TARGET_RELEASE: 1
  CLIENT_TARGET_LEVEL: 2
CLIENT_TARGET_SUBLEVEL: 0
        PLATFORM_NAME: WinNT
       CLIENT_OS_NAME: WIN:Windows Server 2008 R2
```

- Determine whether any deployment processes are still processing by issuing the following command:

```
SELECT DISTINCT N.NODE_NAME, N.TCP_ADDRESS, N.CLIENT_VERSION,
N.CLIENT_RELEASE, N.CLIENT_LEVEL, N.CLIENT_SUBLEVEL,
N.CLIENT_TARGET_VERSION, N.CLIENT_TARGET_RELEASE,
N.CLIENT_TARGET_LEVEL, N.CLIENT_TARGET_SUBLEVEL,
N.PLATFORM_NAME, N.CLIENT_OS_NAME
FROM NODES N, ASSOCIATIONS A, CLIENT_SCHEDULES CS
WHERE N.NODE_NAME=A.NODE_NAME AND A.SCHEDULE_NAME=CS.SCHEDULE_NAME
AND A.SCHEDULE_NAME='deploy_sched' and PLATFORM_NAME='DeployMgr'
AND CS.ACTION='DEPLOY'
```

where *deploy_sched* is the name of the deployment schedule.

- Retrieve the status for each deployment schedule by completing the following steps:

    1. Query the server for the deployment schedule information by issuing the following command:

```
     SELECT A.NODE_NAME, A.DOMAIN_NAME, A.SCHEDULE_NAME, S.STARTDATE,
     S.STARTTIME FROM ASSOCIATIONS A, CLIENT_SCHEDULES S
     WHERE A.SCHEDULE_NAME=S.SCHEDULE_NAME AND A.DOMAIN_NAME=S.DOMAIN_NAME
     AND S.ACTION='DEPLOY' AND S.STARTDATE>={'timestamp'}
     AND A.SCHEDULE_NAME='deploy_sched'
```

where:

- *timestamp* is in a format like the following example: 2017-09-15 15:04:00
- *deploy_sched* is the name of the deployment schedule

The output is similar to the following example:

```
    NODE_NAME: CNODE1
  DOMAIN_NAME: PARIS
SCHEDULE_NAME: AUTODEPLOY
    STARTDATE: 2017-09-15
    STARTTIME: 15:04:00
```

Tip: You can obtain the start time of the deployment schedule by using the **QUERY SCHEDULE** command.

2. Query the server to obtain the event status for each client node that is associated with the schedule by issuing the following command:

```
SELECT E.SCHEDULED_START, E.ACTUAL_START, E.DOMAIN_NAME,
E.SCHEDULE_NAME, E.NODE_NAME,E.STATUS
FROM EVENTS E, CLIENT_SCHEDULES S
WHERE S.SCHEDULE_NAME=E.SCHEDULE_NAME AND S.DOMAIN_NAME=E.DOMAIN_NAME
AND S.ACTION='DEPLOY' AND E.SCHEDULED_START>={'timestamp'}
AND E.STATUS<>'Future' AND S.SCHEDULE_NAME='deploy_sched'
ORDER BY E.SCHEDULED_START DESC
```

where:

- *timestamp* is in a format like the following example: 2017-09-15 15:04:00
- *deploy_sched* is the name of the deployment schedule

The output is similar to the following example:

```
SCHEDULED_START: 2017-09-15 15:45:53.000000
  ACTUAL_START:
   DOMAIN_NAME: PARIS
 SCHEDULE_NAME: AUTODEPLOY
     NODE_NAME: CNODE1
        STATUS: Pending
```

- Retrieve the messages that were reported from the client nodes during deployment processing.

  If all client events are enabled for the client nodes, the client nodes can send messages that are available in the server activity log. You can use the following **SELECT** statement or you can review the client version and target version from the **QUERY NODE** output to verify that the client software was upgraded.

```
SELECT DISTINCT A.DATE_TIME, A.NODENAME, A.SESSION,
A.DOMAINNAME, A.MSGNO, A.MESSAGE
FROM ACTLOG A, ASSOCIATIONS AC, CLIENT_SCHEDULES CS
WHERE A.NODENAME=AC.NODE_NAME AND CS.SCHEDULE_NAME=AC.SCHEDULE_NAME
AND CS.ACTION='DEPLOY' AND A.DATE_TIME>{'timestamp'}
AND CS.SCHEDULE_NAME='deploy_sched' ORDER BY A.DATE_TIME
```

where:

- *timestamp* is in a format like the following example: 2017-09-15 15:04:00
- *deploy_sched* is the name of the deployment schedule

The output is similar to the following example:

```
   DATE_TIME: 2017-09-15 16:37:53.000000
    NODENAME: CNODE1
     SESSION: 27
  DOMAINNAME: PARIS
       MSGNO: 4956
     MESSAGE: ANE4956I Total number of objects retrieved: 43  (SESSION: 27)


   DATE_TIME: 2017-09-15 16:37:53.000000
    NODENAME: CNODE1
     SESSION: 27
  DOMAINNAME: PARIS
       MSGNO: 4959
     MESSAGE: ANE4959I Total number of objects failed: 0  (SESSION: 27)


   DATE_TIME: 2017-09-15 16:37:53.000000
    NODENAME: CNODE1
     SESSION: 27
  DOMAINNAME: PARIS
       MSGNO: 4961
     MESSAGE: ANE4961I Total number of bytes transferred: 401.94 MB  (SESSION:
              27)


   DATE_TIME: 2017-09-15 16:37:53.000000
    NODENAME: CNODE1
     SESSION: 27
  DOMAINNAME: PARIS
       MSGNO: 4963
     MESSAGE: ANE4963I Data transfer time:         8.84 sec  (SESSION: 27)


   DATE_TIME: 2017-09-15 16:37:53.000000
    NODENAME: CNODE1
     SESSION: 27
  DOMAINNAME: PARIS
       MSGNO: 4964
     MESSAGE: ANE4964I Elapsed processing time:    00:00:14  (SESSION: 27)


   DATE_TIME: 2017-09-15 16:37:53.000000
    NODENAME: CNODE1
     SESSION: 27
  DOMAINNAME: PARIS
       MSGNO: 4966
     MESSAGE: ANE4966I Network data transfer rate:   46,533.80 KB/sec
              (SESSION: 27)


   DATE_TIME: 2017-09-15 16:37:53.000000
    NODENAME: CNODE1
     SESSION: 27
  DOMAINNAME: PARIS
       MSGNO: 4967
     MESSAGE: ANE4967I Aggregate data transfer rate:  27,570.18 KB/sec
              (SESSION: 27)
```

- Review the server activity log to view warning or error messages from the deployment manager on the client system. For information about mapping the schedule status to the deployment manager messages, see "Status messages" on page 21.

Verifying the deployment status by using the Operations Center

You can use the Operations Center to determine whether the backup-archive clients were upgraded.

Procedure

To verify the deployment status by using the Operations Center, take any of the following actions:

- Determine whether the client software was upgraded to the target level:
  1. In the Operations Center menu bar, click **Clients**.
  2. On the Clients page, click the **Version** column name to identify clients that are not at the correct version level. You might have to scroll the table horizontally to see this column.
  3. Optional: You can filter the results by clicking the **Advanced Filter** icon and filtering by server or platform.
- Determine whether any deployment operations are still processing:
  1. In the Operations Center menu bar, click **Clients**.
  2. On the Clients page, click the **Platform** column name to identify clients that have a value of DeployMgr. This column is hidden by default, so you might have to display the column before you can sort it.
  3. Optional: You can filter the results by clicking the **Advanced Filter** icon and filtering by server.
- View the client deployment status:
  1. In the Operations Center menu bar, click **Servers**.
  2. On the Servers page, select a server and click **Details**.
  3. On the server Summary page, click the **Active Tasks** or **Completed Tasks** tab to view deployment-related sessions and messages.
- If the client management services feature is configured, you can retrieve the messages that were reported from client nodes during deployment processing:
  1. In the Operations Center menu bar, click **Clients**.
  2. On the Clients page, select a client, and click **Details**.
  3. On the client Summary page, click the **Diagnosis** tab.
  4. View client log messages from the past 24 hours.

Chapter 2. Troubleshooting client deployment issues

To troubleshoot deployment issues, you can verify the configuration or view additional information about error messages.

Verifying the configuration of automatic deployment on the server

Verify that the IBM Spectrum Protect server is configured to automatically update the backup-archive clients.

Procedure

To verify that the server is configured to manage deployment packages, complete the following steps. Use the administrative command line to issue the commands.

1. Verify that the IBM_DEPLOY_CLIENT_IMPORT device class is defined. Issue the following command:

   `query devclass ibm_deploy_client_import f=d`

2. Verify that the storage pool that you defined is configured to store the deployment packages on the server. Issue the following command:

   `query stgpool `**`stgpool_name`**` f=d`

   where **stgpool_name** is the name of the storage pool.

3. Verify that the archive copy group is defined. Issue the following command:

   `query copygroup ibm_deploy_client ibm_deploy_client ibm_deploy_client type=archive`

4. Verify that the default management class is set to the active policy set. Issue the following command:

   `query policyset ibm_deploy_client f=d`

5. Verify that the schedule is created for the client nodes. Issue the following command:

   `query event `**`domain_name sched_name`**` f=d`

   where **sched_name** is the name of the deployment schedule.

6. Optional: Verify that the **TARGETLEVEL** parameter is set to match the level of the deployment package. Issue the following command:

   `query node `**`node_name`**` f=d`

   where **node_name** is a node that you associated with the deployment schedule.

Status messages

You can determine whether any action is required after the deployment schedule fails by reviewing deployment manager messages in the activity log.

If the client node is configured to send messages to the server, you can see the deployment manager messages in the IBM Spectrum Protect server activity log. Review the following table to map the deployment schedule status to the deployment manager message.

Table 6. Map for schedule status and deployment manager messages

Schedule status	Detailed result	Message from the deployment manager	Reason code description	User action
Success	Success	ANE4300	No action required.	No action required.
Failed	Failed - requires attention	ANE4299 with reason code ANE4210 (Windows)	ANE4210 Installation of client failed with an MSI error code.	Investigate MSI error. Manually uninstall and reinstall the new client.
Failed	Failed - requires attention	ANE4263 with reason code ANE4210 (UNIX/Linux/Mac)	ANE4263 The deployment manager failed to uninstall the backup-archive client.	Review the deployment manager log and trace files on the client workstation for more details about the error. You might have to manually uninstall the client.
Failed	Failed - requires attention	ANE4264 with reason code ANE4210 (UNIX/Linux/Mac)	ANE4264 The deployment manager failed to install the backup-archive client.	Review the deployment manager log and trace files on the client workstation for more details about the error. Manually install the new client after the issue is resolved.
Failed	Failed - requires attention	ANE4207	ANE4207 The Deployment Manager failed to initiate the final connect to the server with the updated BA client.	Log in to the backup-archive client system and review the backup-archive client error log file.
Failed	Failed - requires attention	ANE4242	ANE4242 The setup script encountered a warning or error while retrieving the client package.	Ensure that client packages for all architectures are available on the server. Log in to the backup-archive client system and review the backup-archive client error log file.
Success	Warning - requires attention	ANE4297 with reason code ANE4242 or ANE4212	ANE4242 There was an error retrieving the client package. The upgrade failed. ANE4212 The deployment manager failed to restart the client scheduler or client acceptor daemon.	Ensure that client packages for all architectures are available on the server. Review the backup-archive client error log for more detailed error messages. Resolve any network connection problems between the client and server.
Reboot required	Warning - requires attention	ANE4295 (Windows)	No action required.	Restart the client system.
Stopped	Canceled - not completed	ANE4298 with reason code ANE4274 (UNIX/Linux/Mac)	ANE4274 The deployment manager cannot stop the scheduler or the CAD processes.	Reschedule the client deployment.
Stopped	Canceled - not completed	ANE4298 with reason code ANE4213 (Windows)	ANE4213 The client option `autodeploy=noreboot` was detected. Automatic restart of the client computer is required.	Restart the client system.

Table 6. Map for schedule status and deployment manager messages (continued)

Schedule status	Detailed result	Message from the deployment manager	Reason code description	User action
Stopped	Canceled - not completed	ANE4298 with reason code ANE4220 (Windows)	ANE4220 The deployment manager is unable to determine whether any IBM Spectrum Protect processes are running.	Enable the automatic restart function by setting `autodeploy=yes` in the schedule definition. Restart the client deployment.
Stopped	Canceled - not completed	ANE4298 with reason code ANE4215	ANE4215 The upgrade path is not supported.	See the IBM Spectrum Protect backup-archive client documentation in the IBM Knowledge Center. Reschedule the client deployment.
Stopped	Canceled - not completed	ANE4298 with reason code ANE4248	ANE4248 The client is already at the target level.	No action required.
Stopped	Canceled - not completed	ANE4298 with reason code ANE4260 (UNIX/Linux/Mac)	ANE4260 The installation file system is not writable.	Review the installation file system permissions. It is possible that the current client node runs in a virtualized environment using the client code installed in a shared storage of the physical environment. Reschedule the client deployment with the client node in the physical environment.
Stopped	Canceled - not completed	ANE4298 with reason code ANE4259 (UNIX/Linux/Mac)	ANE4259 The client scheduler is not started as a root user.	Log in with the root user ID and start the client scheduler. Reschedule the client deployment.
Stopped	Canceled - not completed	ANE4298 with reason code ANE4273 (Linux)	ANE4273 The deployment manager detected a journal-based backup (JBB) client on the workstation where it must deploy the backup-archive client.	Uninstall the JBB client and reschedule the backup-archive client deployment.
Stopped	Canceled - not completed	ANE4298 with reason code ANE4276 (UNIX/Linux/Mac)	ANE4276 The deployment manager cannot obtain information about the scheduler or the CAD processes.	Log in to the backup-archive client workstation and review the error log file and the deployment manager error log file.
Stopped	Canceled - not completed	ANE4298 with reason code ANE4271 (UNIX/Linux/Mac)	ANE4271 The deployment package is missing one or more required installation image files.	Ensure that client packages are available on the server. Review the backup-archive client error log file for more detailed error messages.
Stopped	Canceled - not completed	ANE4298 with reason code ANE4232 (Windows)	ANE4232 Windows self-extracting installation image cannot be found.	Review the server activity log or the scheduler log on the client system. Reschedule the client deployment.

Table 6. Map for schedule status and deployment manager messages (continued)

Schedule status	Detailed result	Message from the deployment manager	Reason code description	User action
Stopped	Canceled - not completed	ANE4298 with reason code ANE4206	ANE4206 The deployment manager received an error while extracting from installation image.	Ensure that there is sufficient disk space on the client system. Make sure that all of the Windows self-extracting client images are valid. Reschedule the client deployment.
Stopped	Canceled - not completed	ANE4298 with reason code ANE4253	ANE4253 There was not enough disk space on the client computer.	Allocate the amount of free space that is required for the client software upgrade. Reschedule the client deployment.

Locations for log and trace data for client deployment

When client updates are deployed, the scheduler installs the updated client by running a command that is specified on a `postnschedulecmd` option that is associated with the schedule. The deployment manager writes log and trace data for a deployment operation to the client disk.

The default location of the logs is shown in Table 7.

Table 7. Default log file location

Operating System	Directory
AIX	`/usr/tivoli/tsm/client/IBM_ANR_UNX/PPC/deploy/log`
Solaris x86_64	`/usr/tivoli/tsm/client/IBM_ANR_UNX/X86/deploy/log`
Linux on Power Systems (little endian)	`/opt/tivoli/tsm/client/IBM_ANR_UNX/PPCLE/deploy/log`
Linux x86_64	`/usr/tivoli/tsm/client/IBM_ANR_UNX/X86/deploy/log`
Linux on System z	`/opt/tivoli/tsm/client/IBM_ANR_UNX/390/deploy/log`
Mac OS X	`/Library/Application Support/tivoli/tsm/client/IBM_ANR_MAC/X86/deploy/log`
Windows	`C:\Program Files\Tivoli\TSM\IBM_ANR_WIN\X64\deploy\log`

Log file locations for non-default installation locations for the Windows client
If you did not use the default installation directory when you installed the client, the log and trace data for the deployment operation is still copied to the `IBM_ANR_WIN\X64\deploy\log` folder. This folder is created one directory level up (`../`) from the installed location of the client executable files (`dsm.exe`, `dsmc.exe`, `dsmcad.exe`, and other files).

For example, if you originally installed the client in the `E:\IBM\Tivoli\baclient` directory, the log and trace files that result from the automatic deployment are created in `E:\IBM\Tivoli\IBM_ANR_WIN\X64\deploy\log` directory.

Log file locations for non-default installation locations for other clients

On AIX, Linux, and Solaris clients, when you define a schedule to deploy the client updates, you can specify a non-default retrieval target location. Specifying a non-default retrieval target location changes the location of the log and trace files.

For example, the default retrieval target location for AIX is `/usr/tivoli/tsm/client/`. If you specify `/tmp/tivoli/client` as the target location, the log and trace files are created in the `/tmp/tivoli/client/ IBM_ANR_UNX/IBM_ANR_UNX/PPC/deploy/log` directory.

On the Mac OS X operating system, you cannot change the retrieval target location. The deployment manager's working directory is relative to the working directory of the client scheduler. For example, if the user starts the client scheduler from the `/mydir` directory, the log and trace files are created in the `/mydir/IBM_ANR_UNX/X86/log` directory.

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