

RingStor Enterprise User Manual

Version 7.0

RingStor, Inc.

103 Carnegie Center, Ste 300

Princeton, NJ 08540

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1 Overview

This user manual provides step by step instructions on how to install and manage RingStor Enterprise software suite, version 5.0. This document is also available on the web at <http://www.ringstor.com>.

This document is for installing RingStor cloud components on Windows servers. If you plan to install RingStor cloud components on Linux server, please refer to http://www.ringstor.com/docs/RingStor_User_Manual_Cloud_on_Linux.pdf

1.1 RingStor Data Management

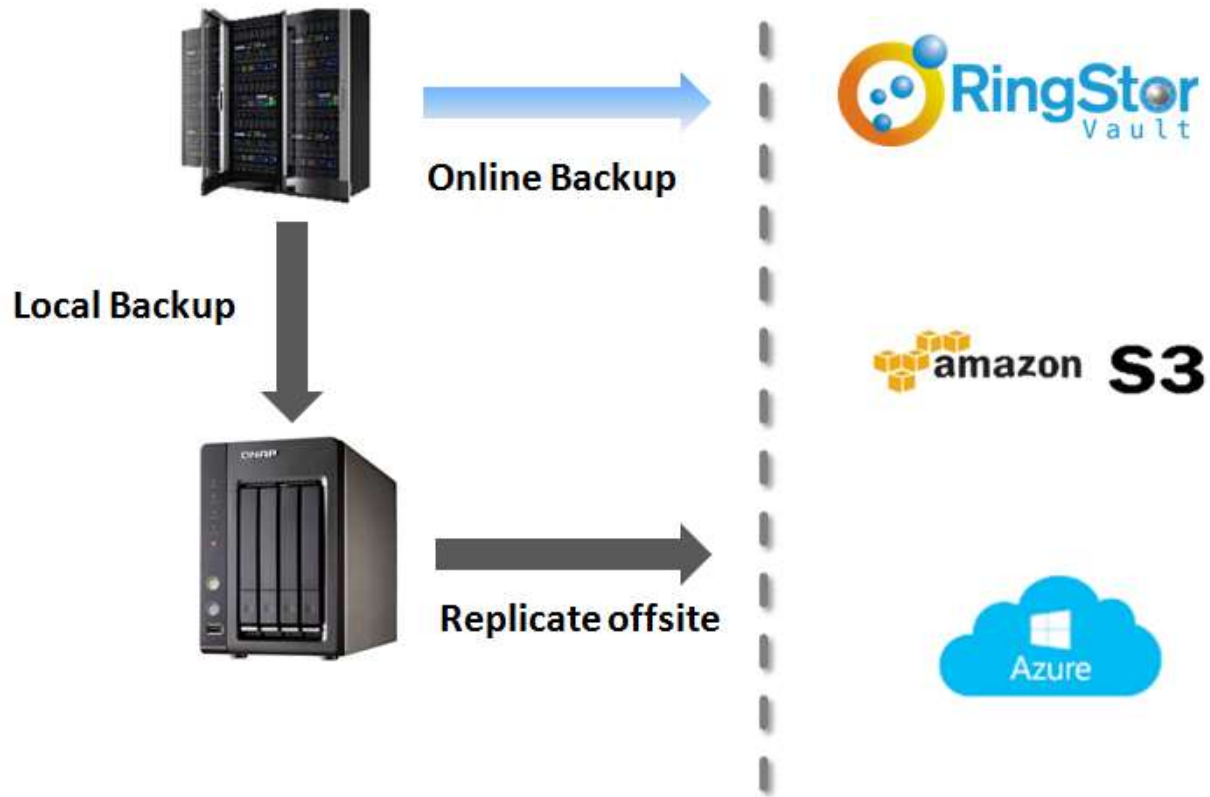
RingStor Enterprise software suite comes with a cloud component and many data agents to support two data management features:

- Data backup and recover
- Data sync

1.1.1 Data Backup and Recover

RingStor Enterprise provides three different ways to backup the data: Online Backup Only, Local Backup Only and Local Backup with Replication.

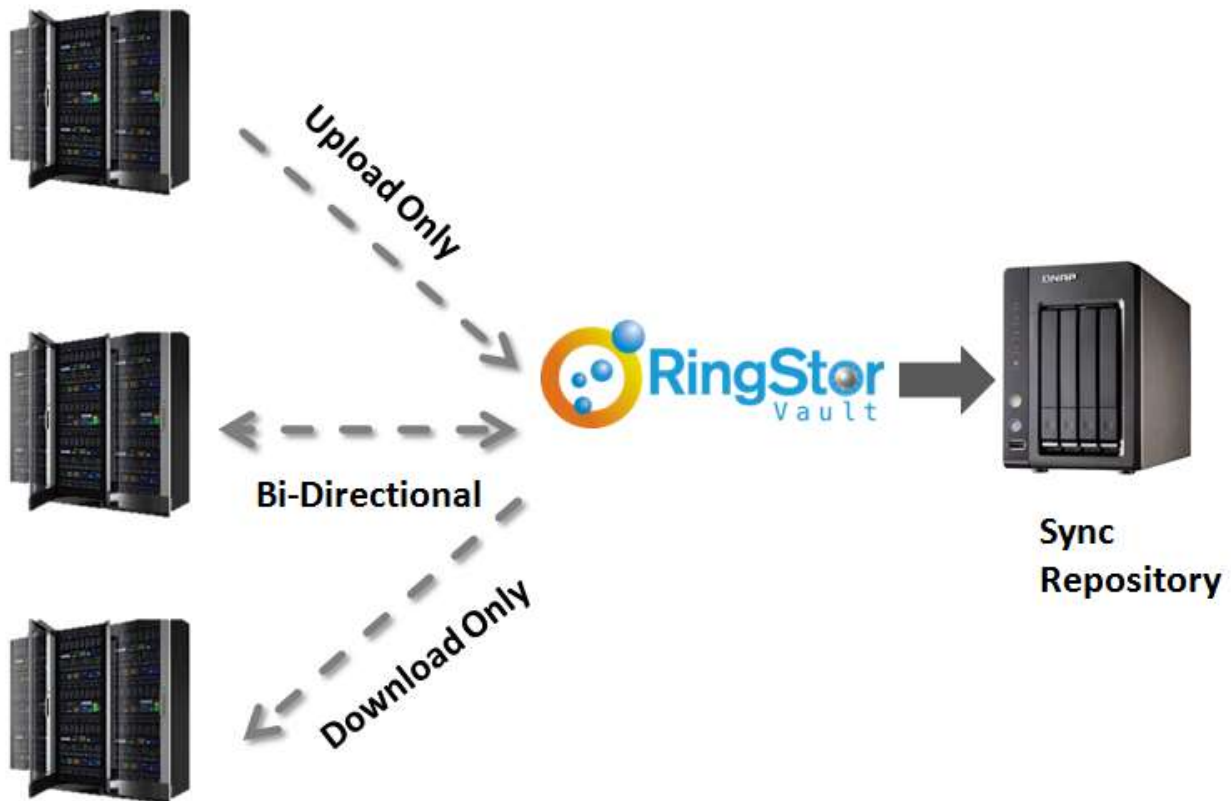
- Online Backup Only: data is transmitted and saved to private cloud storage enabled by RingStor
- Local Backup Only: data is backed up to local storage only
- Local Backup + Replication: data is backed to local storage first, then replicated offsite to the remove storage, as shown in picture below.
- Backup to Amazon S3: data is backed up to Amazon S3 storage directly, File Backup agent only.
- Backup to Microsoft Azure: data is backed up to Microsoft Azure storage directly, File Backup agent only



1.1.2 Data Sync

RingStor Enterprise provides three different sync modes for files across all agents:

- Bi-Directional: data is synced in both ways, most recent copies are kept in all agents
- Upload Only: most recent data is uploaded to sync repository in cloud
- Download Only: Download from sync repository only



Note: Data Sync is not included in trial license.

1.2 RingStor Cloud Structure

RingStor Enterprise comes with two components: Cloud and DataAgents.

The cloud component consists of a Cloud End Point, Cloud Indexer, one or more DataServers and MountPaths as storage.

Cloud End Point - a set of lightweight software that serves as an access point for communication to cloud.

Cloud Indexer - a software service that provides indexing service to cloud.

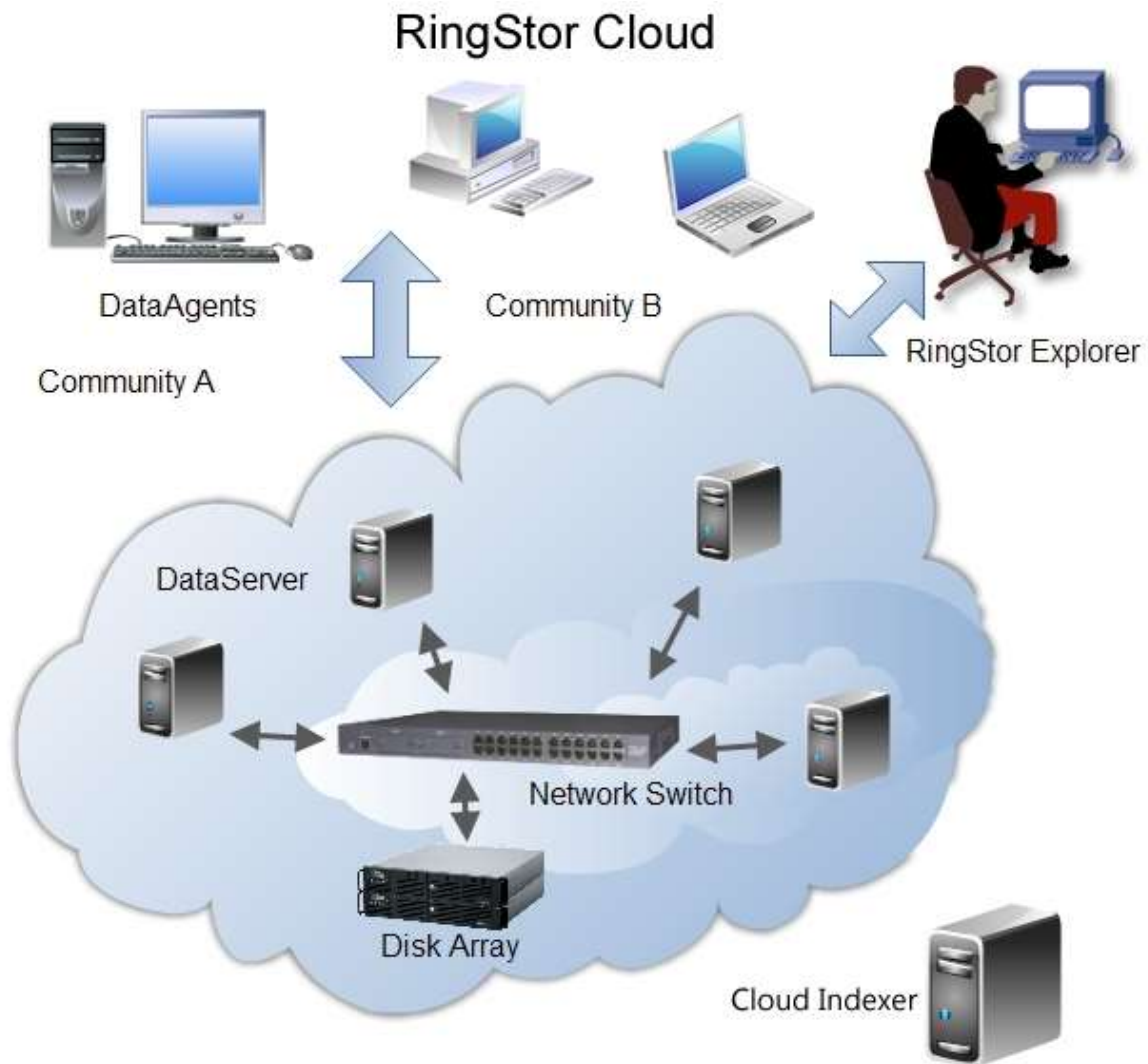
DataServers and MountPaths – inside cloud system provide virtually unlimited capacity, highly scalable and on-demand available storage for applications.

■
DataAgent - a software service running on computers where application data requires protection. In 5.0, DataAgent can backup file on Windows, Linux and Macintosh, Microsoft SQL, MySQL, Microsoft Exchange, and more.

RingStor Explorer - a desktop user interface for administrators to manage all components in RingStor.

For more information about RingStor and its components, please visit on the web at <http://www.ringstor.com>.

An example of RingStor configuration is illustrated below:



1.3 DataAgent

A DataAgent is a suite of software installed on a computer whose application data requires protection. Each application data is supported by an Agent that provides backup service.

Each DataAgent and its agents must be licensed to run in RingStor system. For additional DataAgent or agent license, please go to <http://www.ringstor.com> for details.

1.3.1 File Backup

A File Backup agent can maintain multiple copies at different point of time for same file. File Backup can run in form of one or more full backup, with a number of incremental backups. Files protected under File Backup can be restored to a point of time selected by user.

1.3.2 File Sync

A File Sync agent can continue sync up or down the files in sync repository in the cloud. Only the most recent version of a file is kept in sync repository.

Note, File Sync is not included in trial license.

1.3.3 Bare Metal Backup

A Bare Metal Backup agent takes a snapshot of selected volumes and backup data to image files locally for quick disaster recovery. The image files can also be replicated to RingStor cloud for offsite storage and protection.

1.3.4 SQL Database Backup

A SQL Database Backup agent can maintain multiple copies at different point of time for same database. SQL Database Backup can run in form of full backup, differential backup, transaction log backup and File Level backup. Full database backup must be performed first before any differential or transaction log backup. User can restore either a full backup or select a point of time for restore. File Level backup is used to provide file level copies of database data files and log files.

1.3.5 MySQL Database Backup

A MySQL Database Backup agent can maintain multiple copies at different point of time for same database. MySQL Database Backup can run in form of File Level backup which backs up the exported file from MySQL database.

Permissions must be configured in order for DataAgent to connect to MySQL. Please refer to this doc for help: http://ringstor.com/docs/RingStor_Cloud_MySQL_Backup_Checklist.pdf

1.3.6 Microsoft Exchange Backup

An Exchange Backup agent can maintain multiple copies at different point of time for same Exchange. Exchange Backup runs in form of File Level backup which backs data files, log files for the Exchange.

1.3.7 Microsoft Exchange Mailbox Backup

An Exchange Mailbox Backup agent will backup individual messages in specified Exchange. Customer can browse and select message for restore.

For Microsoft Exchange 2007 or older version, Microsoft Exchange Server MAPI Client and Collaboration Data Objects client library must be installed prior to use RingStor Exchange Mailbox backup. The library can be downloaded from Microsoft web site at:

<https://www.microsoft.com/en-us/download/details.aspx?id=42040>

For Microsoft Exchange 2013 or newer version, Microsoft Outlook must be installed prior to use RingStor Exchange Mailbox backup.

1.3.8 Microsoft Office 365 Mailbox Backup

An Office 365 Mailbox Backup agent will backup individual email messages in specified Office 365 mailbox. Customer can browse and select message for restore.

Permission must be configured in order for one admin account to backup user mailboxes.

Please refer to this doc for help:

http://ringstor.com/docs/RingStor_Cloud_Office_365_Mailbox.pdf

1.3.9 VMware Virtual Machine Backup

A VMware virtual machine backup agent can backup virtual machine instances from VMware ESXi server. Agent can do full backup, keep backup data at DataAgent's local backup folder or Cloud for protection.

To backup virtual machines via ESXi directly, SSH must be enabled, please refer to this doc for help: http://ringstor.com/docs/RingStor_Cloud_VMware_backup_checklist.pdf

1.3.10 Hyper-V Backup

A Hyper-V backup agent can backup Windows Hyper-V virtual machine instance. Agent can do full backup, DataAgent's local backup folder or Cloud for protection.

Windows Server Backup must be installed on Windows server for Hyper-V backup.

1.3.11 OpenStack Backup

An OpenStack backup agent can backup instances in OpenStack. Agent can do full backup, incremental backup.

1.3.12 Oracle Database Backup

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An Oracle Database Backup agent can backup a database in Oracle Database server. Agent can do full backup, incremental backup, and archive logs backup.

2 Cloud Installation on Windows

This section is for installing RingStor cloud components on Windows servers. If you plan to install RingStor cloud components on Linux server, please refer to http://www.ringstor.com/ent/RingStor_User_Manual_Cloud_on_Linux.pdf.

The installation of a complete RingStor Cloud shall follow these steps:

1. The Cloud End Point must be installed first
2. Install Cloud Indexer
3. Install DataServer to the cloud
4. Install RingStor Explorer

RingStor Explorer can be installed on every user's computer to manage RingStor system.

2.1 Installation Preparation

To install, following must be prepared before starting the installation:

1. A domain user account that will be used to run Cloud End Point, Cloud Indexer and DataServer services inside cloud. This domain user account must have full access to the paths specified in 2 and 3 below.
2. A network shared path where the domain user has full access. This network shared path will be used to store index.
3. One or more network shared path where data will be stored. Additional such path can be added after cloud installation is completed.

2.2 Examples in Installation

Following are just examples used in step-by-step installation guide. They are put in place only to help understand how to install RingStor Cloud. Please change the value accordingly during installation.

rswin7 – the Windows box where all components are installed

rsadmin – the administrator to RingStor Cloud system

rsdemo – the Windows user to run RingStor Cloud services, user can be either a local user on Windows box or domain user

[\\rswin7\index](#) - an UNC path where RingStor Cloud index will be saved

[\\192.168.0.106\mountpathnas](#) - an UNC path where backup data inside RingStor Cloud will be saved

taxservicesllc – the administrator to a community created for new client

2.3 Cloud End Point

Cloud End Point can be installed on following platforms:

- Microsoft Windows 7/8/10/2003/2008/2012/2016/2019
- Recommended Memory: 3GB or more

2.3.1 System Requirement

The following third party software must be installed prior to Cloud End Point installation:

- Microsoft .NET Framework 3.5 is required.

You may download .NET framework from microsoft.com at <http://www.microsoft.com/en-us/download/details.aspx?id=21>

- For Cloud End Point installation, a local or remote SQL server must be available to create database repository.

Supported database systems are:

- Microsoft SQL server 2005, 2005 Express, SQL server 2008, 2008 Express, SQL server 2012, 2012 Express

TIP: For Microsoft SQL server system, TCP/IP must be enabled in Client Protocols as shown below:

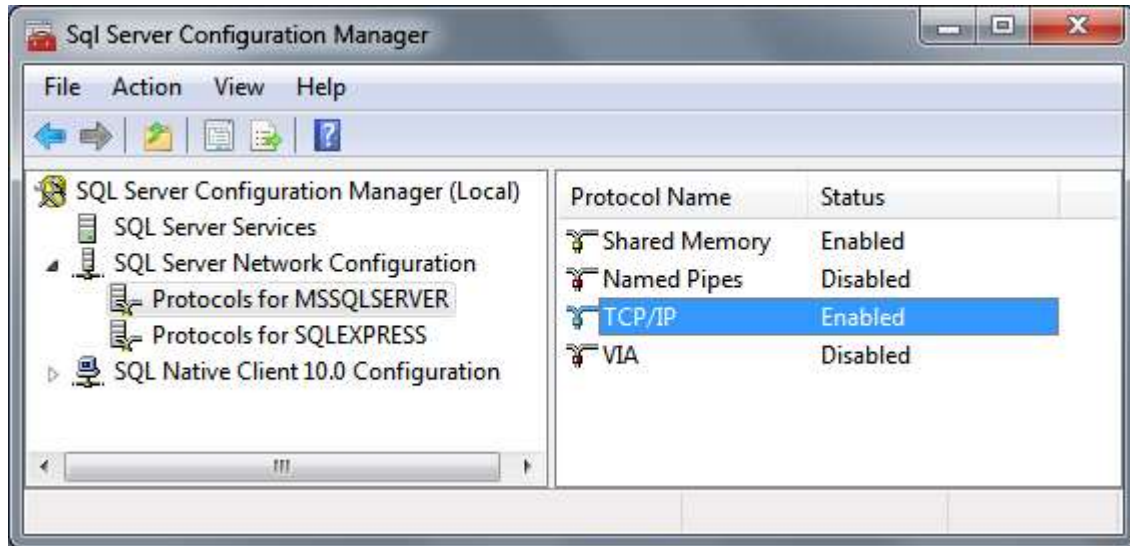


Figure 2.2.1 SQL Server Configuration Manager

2.3.2 Install Cloud End Point

Run Installer

Download proper version of the installation executable from <http://www.ringstor.com>. Run the downloaded executable on the computer to start Cloud End Point installation.

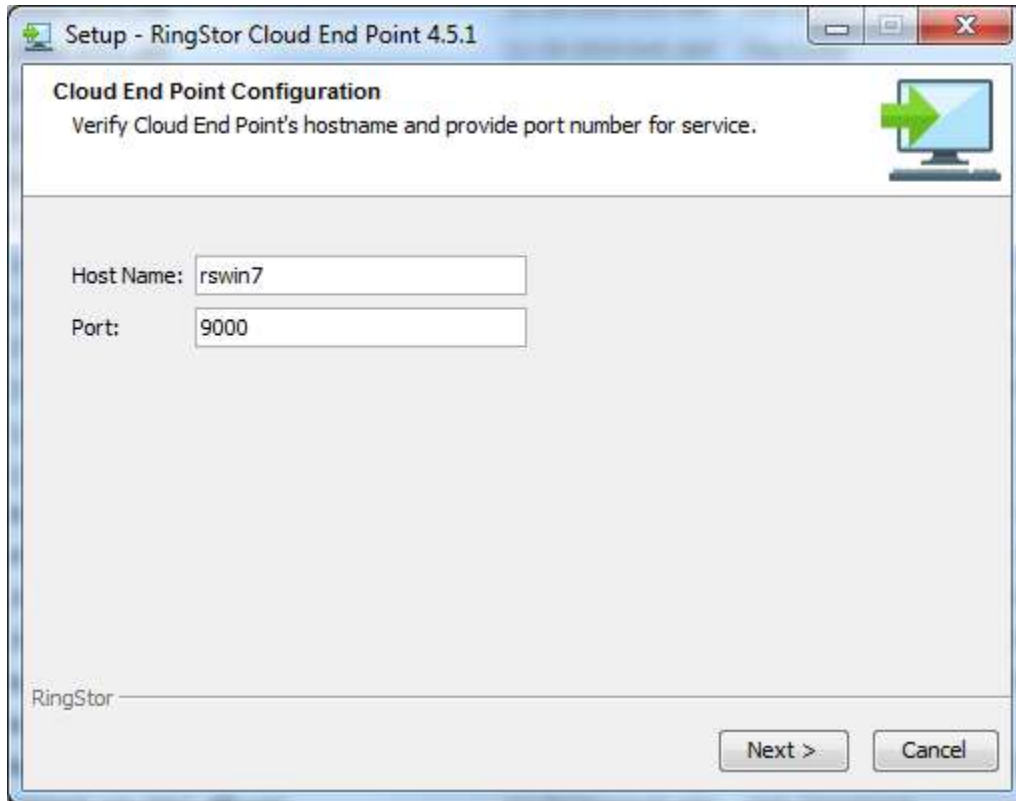
Step 1 - Start Installation

Step 2 - License Agreement

Step 3 – Specify Installation Root Folder

Step 4 – Menu and Shortcut

Step 5 - Cloud End Point hostname and port



The host name will be pre-filled with current computer's hostname or IP. If an IP is provided, the computer must be configured with static IP.

The port is default to 9000, you may change the port.

Cloud End Point service will listen on this port to provide services.

Click Next to continue.

Step 6 – Set up Cloud Administrator



RingStor administrator's username/password must be setup.

RingStor Login Credentials

Administrator Username – provide RingStor administrator's username

Administrator Password: - password for RingStor administrator

Click Next to continue.

Step 7 – Specify Database Repository



A database repository must be provided. RingStor cloud will store system data in this repository.

SQL Server – host name of the computer where SQL server is running

TCP Port – TCP port for the SQL service (see tip on how to find TCP port)

SQL Username – SQL server user account, this account must have permission to create database

SQL Password – password for the user account above

TIP: How to find TCP port for Microsoft SQL service

From SQL Server Configuration Manager (shown in Figure 2.2.1), select SQL instance on the left, make sure TCP/IP is Enabled on the right, then double click to TCP/IP to bring up TCP/IP Properties window (Figure 2.2.2).

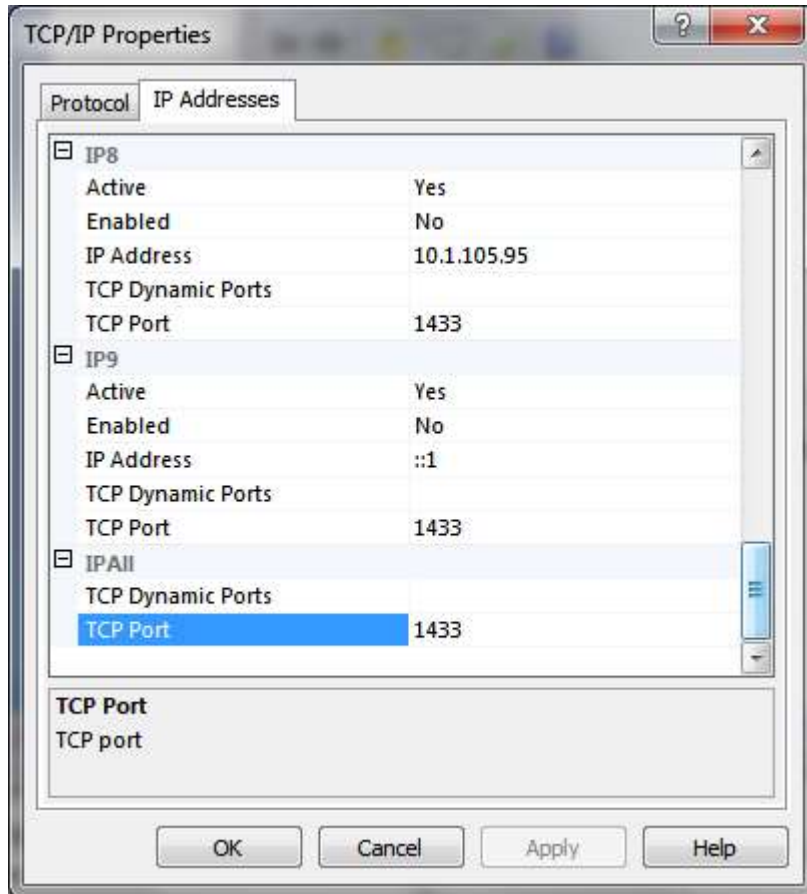


Figure 2.2.2: TCP/IP Property

The IPAll section has TCP Dynamic Ports and TCP Port. Depending on the SQL server settings, only one should have a numeric value. Put this numeric value in TCP Port on this configuration step.

Click Next to continue.

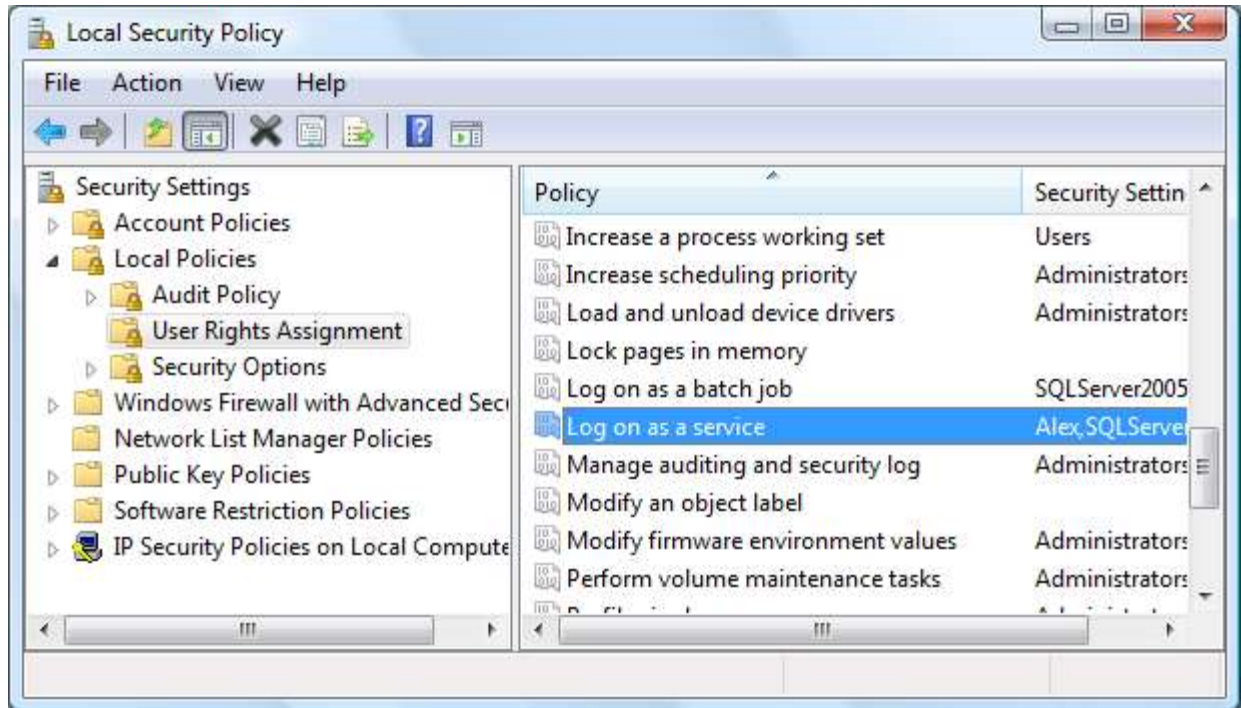
Step 8 – Setup Cloud End Point Service



Cloud End Point service must run under a domain user which has full access to index repository and all MountPaths.

Click Next to continue.

For more information on how to grant Log On As Service permission for the user, open Local Security Policies window. You can access this window from Administrative Tools -> Local Security Policies. On this window, expand Local Policies -> Rights Assignment, find policy "Log On As Service" in right pane, open and verify or add user to this policy group. Following picture shows the Local Security Policy window:



Click Next to start and complete the installation process.

2.4 Cloud Indexer

Cloud Indexer is a required component. It can be installed on following platforms:

- Microsoft Windows 7/8/10/2003/2008/2012/2016/2019
- Recommended Memory: 2GB or more

2.4.1 System Requirement

The following third party software must be installed prior to Cloud End Point installation:

- Microsoft .NET Framework 3.5 is required.

You may download .NET framework from microsoft.com at <http://www.microsoft.com/en-us/download/details.aspx?id=21>

2.4.2 Install Cloud Indexer

Run Installer

Download proper version of the installation executable from <http://www.ringstor.com>. Run the downloaded executable on the computer to start Cloud Indexer installation.

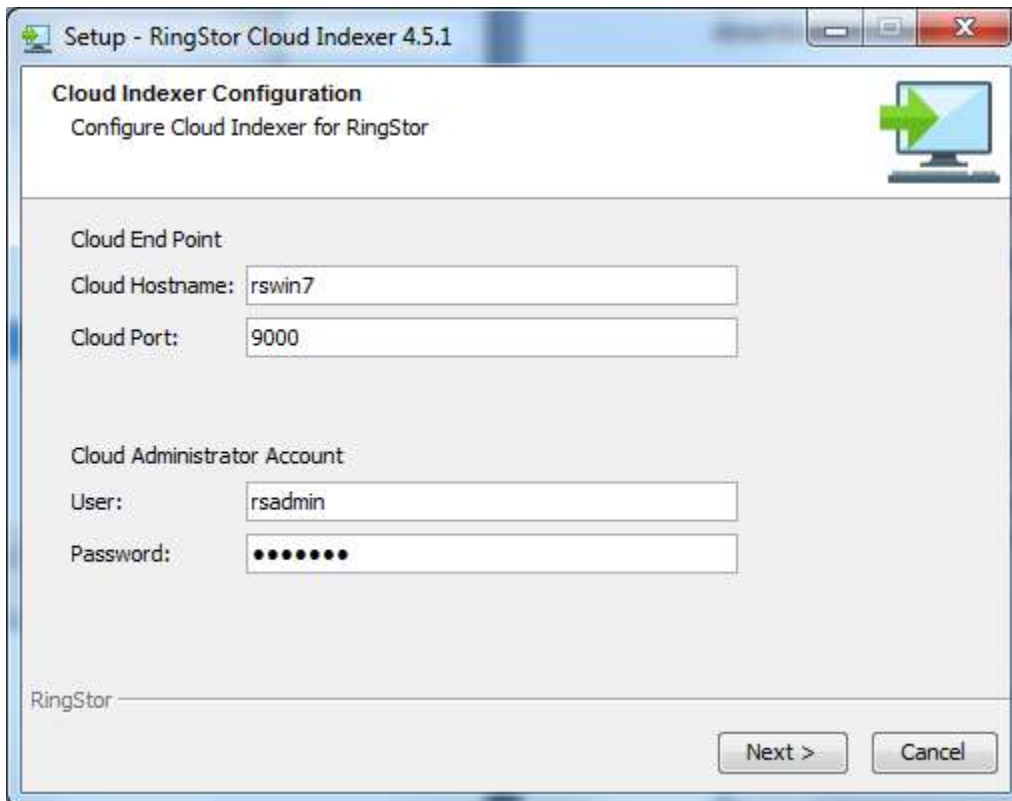
Step 1 - Start Installation

Step 2 - License Agreement

Step 3 – Specify Installation Root Folder

Step 4 – Menu and Shortcut

Step 5 – Provide Cloud info and administrator credentials



The screenshot shows a Windows-style window titled "Setup - RingStor Cloud Indexer 4.5.1". The main content area is titled "Cloud Indexer Configuration" with the subtitle "Configure Cloud Indexer for RingStor". There is a green arrow icon pointing right. The form contains the following fields:

- Cloud End Point
- Cloud Hostname:
- Cloud Port:
- Cloud Administrator Account
- User:
- Password:

At the bottom left is the RingStor logo. At the bottom right are "Next >" and "Cancel" buttons.

Step 6 – Setup Cloud Indexer Service



Cloud Indexer service must run under a domain user which has full access to index repository.

Click Next to start and complete the installation process.

2.5 DataServer

DataServer is the server that resides inside the cloud, registers itself to Cloud End Point upon start, and provides services to DataAgents for data protection, recovery and more. The DataServer can be installed on following platforms:

- Microsoft Windows 7/8/10//2003/2008/2012/2016/2019
- Recommended Memory: 3GB or more

2.5.1 System Requirement

The following third party software must be installed prior to DataServer installation:

- Microsoft .NET Framework 3.5 is required.

You may download .NET framework from microsoft.com at <http://www.microsoft.com/en-us/download/details.aspx?id=21>

2.5.2 Install DataServer

Run Installer

Download proper version of the installation executable from <http://www.ringstor.com>. Run the downloaded executable on the computer to start DataServer installation.

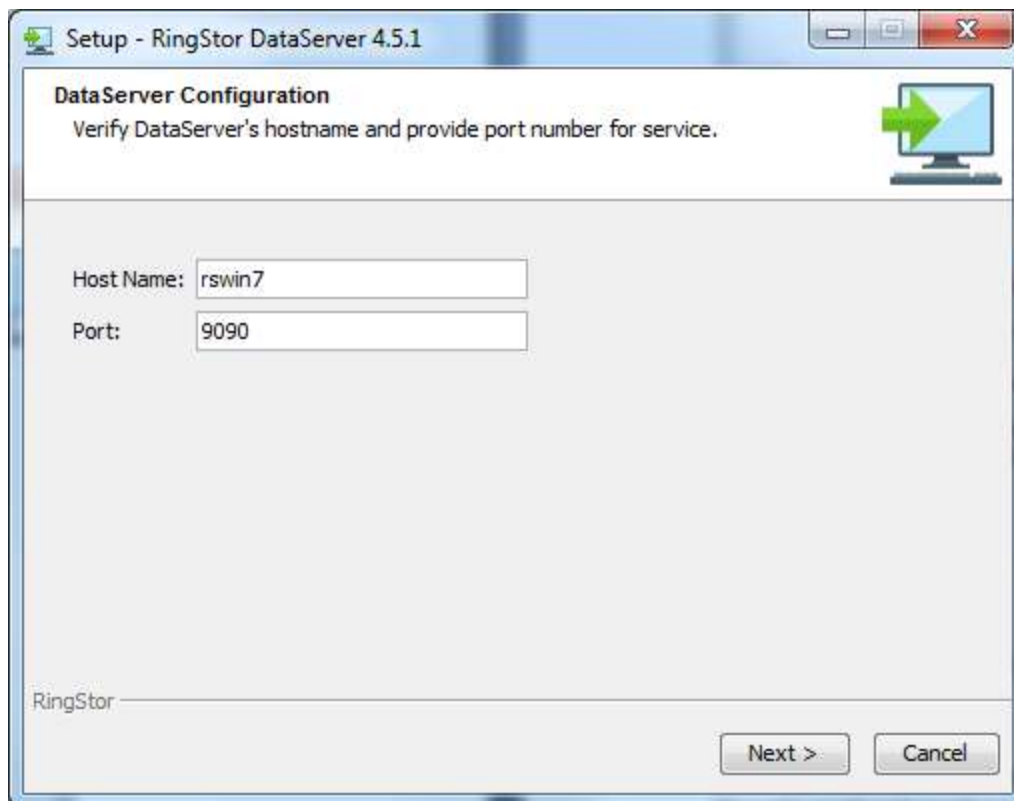
Step 1 - Start Installation

Step 2 - License Agreement

Step 3 – Specify Installation Root Folder

Step 4 – Menu and Shortcut

Step 5 – DataServer hostname and port




The host name will be pre-filled with current computer's hostname or IP. If an IP is provided, the computer must be configured with static IP.

The port is default to 9090, you may change the port.

DataServer service will listen on this port to provide services.

Click Next to continue.

Step 6 – Provide Cloud End Point info



DataServer must connect to the existing Cloud End Point and register itself to become part of RingStor cloud, make sure Cloud End Point is online and provide Cloud End Point settings in this step.

Cloud Hostname: the hostname or IP used when installing Cloud End Point

Cloud Port: the port number that existing Cloud End Point service is listening on.

Cloud/Community Administrator Username: RingStor cloud or community administrator

Administrator Password: RingStor cloud administrator's password

Click Next to continue.

Step 7 –Setup DataServer Service



DataServer service must run under a domain user which has full access to index repository and all MountPaths.

Click Next to start and complete the installation process.

2.6 RingStor Explorer

RingStor Explorer can be installed on following platform:

- Microsoft Windows 7/8/10//2003/2008/2012/2016/2019

2.6.1 System Requirement

The following third party software must be installed prior to RingStor Explorer installation:

- Microsoft .NET Framework 4.5 or higher is required.

You may download .NET framework 4.5 from microsoft.com at <https://www.microsoft.com/en-us/download/details.aspx?id=30653>

2.6.2 Install RingStor Explorer

Run the downloaded executable on the computer to start RingStor Explorer installation.

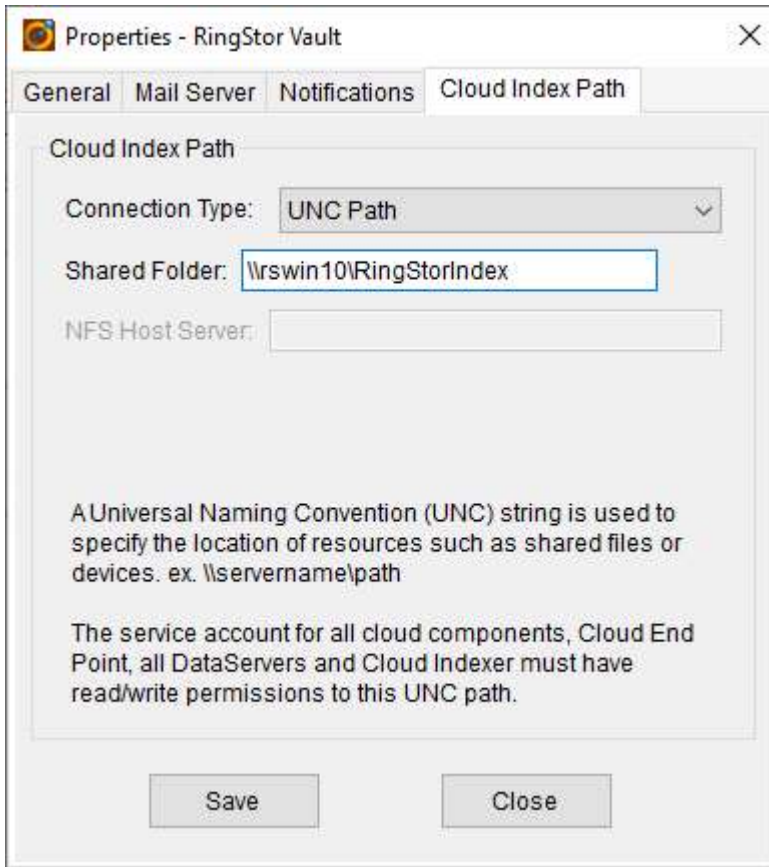
2.7 Configure Cloud

After all cloud components and RingStor Explorer are installed, initial configuration must be performed before backup can run.

2.7.1 Configure Cloud Index Path

Cloud Index Path is used to store cloud side index, this path must be accessible by all cloud components.

To configure the Cloud Index Path, log into RingStor Explorer with cloud administrator account, from top menu System -> Settings -> Cloud Index Path tab, provide UNC path. An example is shown below:



Please note:

1. The service account for Cloud End Point, Cloud Indexer and DataServer(s) must have full access to this Cloud Index Path

2.7.2 Add First MountPath

MountPath is used to store cloud side backup data. At least one MountPath must be online before backup to cloud can run.

To add first MountPath, log into RingStor Explorer with cloud administrator account, from top menu Storage -> Add New MountPath to start.

Detailed instructions are at 8.3 in this document.

3 DataAgent Installation

3.1 DataAgent on Windows

DataAgent can be installed on following platforms:

- Microsoft Windows 7/8/10//2003/2008/2012/2016/2019

3.1.1 System Requirement

The following third party software must be installed prior to Windows DataAgent installation:

- DataAgent on Windows: Microsoft .NET Framework 3.5 is required. You may download .NET framework from microsoft.com at <http://www.microsoft.com/en-us/download/details.aspx?id=21>
- Recommended Memory: 1GB or more

3.1.2 Install DataAgent to RingStor Cloud

NOTE: Before installing DataAgent for a new client, consider to create a community for this client from RingStor Explorer. All DataAgents in same community share default settings such as retention, max file version, etc.

Run Installer

Download proper version of the installation executable from <http://www.ringstor.com>. Run the downloaded executable on the computer to start DataAgent installation.

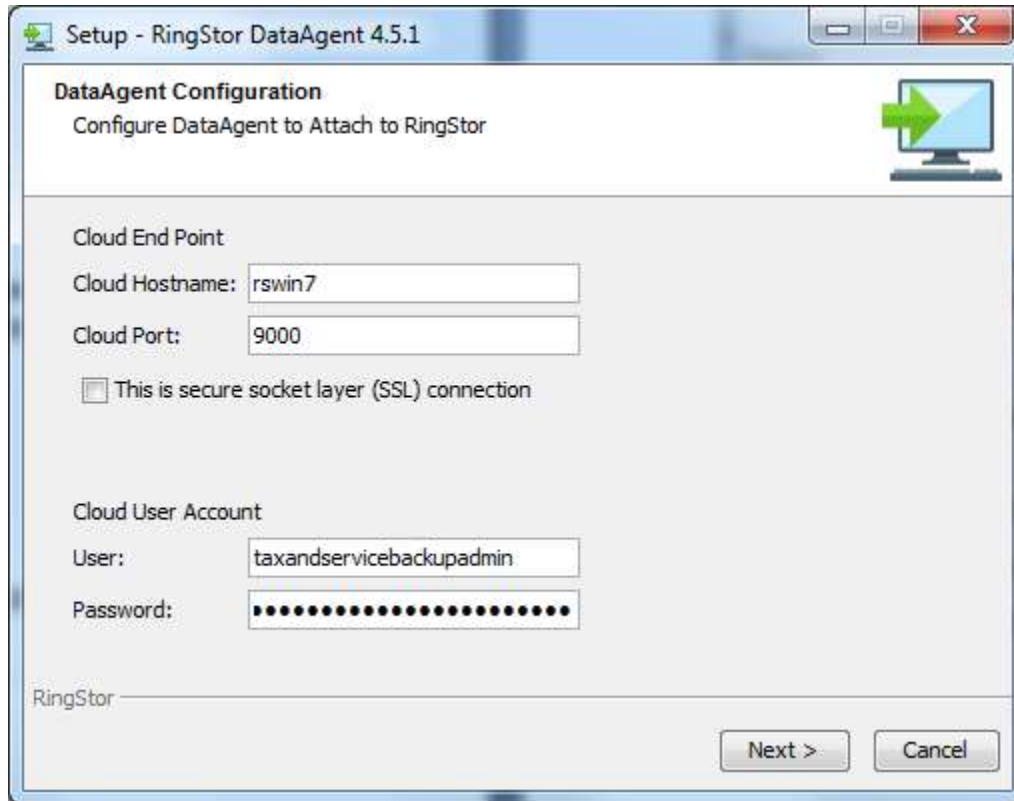
Step 1 – Start Installation

Step 2 – License Agreement

Step 3 – Specify Installation Root Folder

Step 4 – Menu and Shortcut

Step 5 – Register DataAgent to Existing RingStor cloud



RingStor Cloud End Point must be accessible by this DataAgent. RingStor user's username/password must be provided to connect to RingStor cloud.

Cloud End Point:

Cloud Hostname – provide hostname or IP of an online Cloud End Point in existing RingStor cloud

Cloud Port: - the port for the online Cloud End Point above

SSL connection – if the cloud port is SSL port, please check this box.

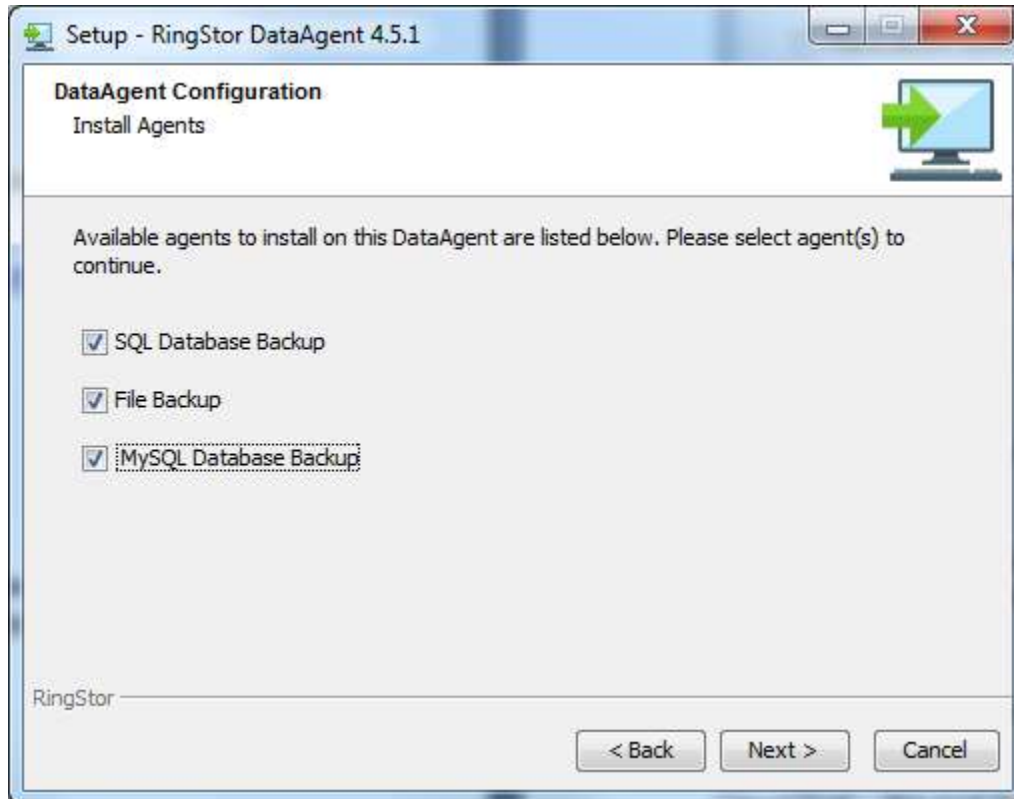
RingStor User Account:

User – provide RingStor user's username that has rights to install the DataAgent

Password: - password for RingStor user

Click Next to continue.

Step 6 – Select Application Agents



Available agents for this DataAgent are displayed and can be selected.

The available agents are based on DataAgent's platform and agents licensed to use on this platform.

Please read **Introduction** section for description of each agent.

Click Next to continue.

Step 7 – Setup DataAgent Service



The domain user account above is NOT RingStor administrator account used in Step 4. Specify if DataAgent service will run under Local System account or a domain user account. For domain user account, please provide account, domain and password.

IMPORTANT NOTE:

1. The domain user account, or Local System, must have read and write permission to all application data configured for protection on this DataAgent.
2. The domain user, if selected, must have Log on as service permission specified in Local Security Policy, please refer to Installation of Cloud End Point service for more information.

Click Next to start and complete the installation process.

3.2 DataAgent on Linux

DataAgent can be installed on following platforms:

- Linux, (Redhat, SUSE, CentOS, Debian, OpenSUSE, etc)
- ChromeBooks

3.2.1 System Requirement

- Recommended Memory: 1GB or more

3.2.2 Install DataAgent to RingStor Cloud

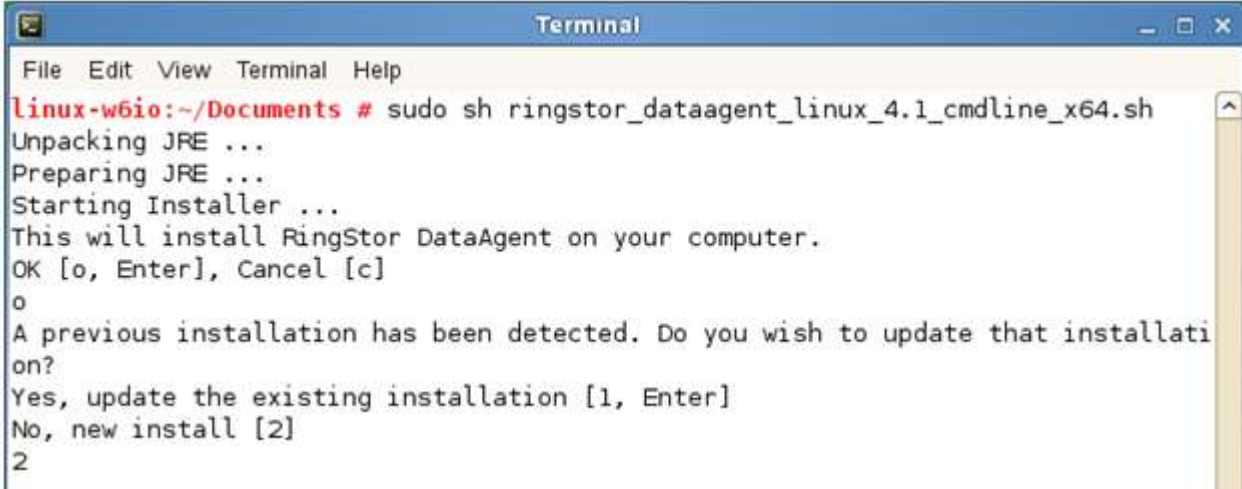
NOTE: Before installing DataAgent for a new client, consider to create a community for this client from RingStor Explorer. All DataAgents in same community share default settings such as retention, max file version, etc.

Run Installer

Download proper version of the installation package from <http://www.ringstor.com>. Run the downloaded executable on the computer to start DataAgent installation.

Step 1 – Start Installation

Open a terminal, start the installation with command:

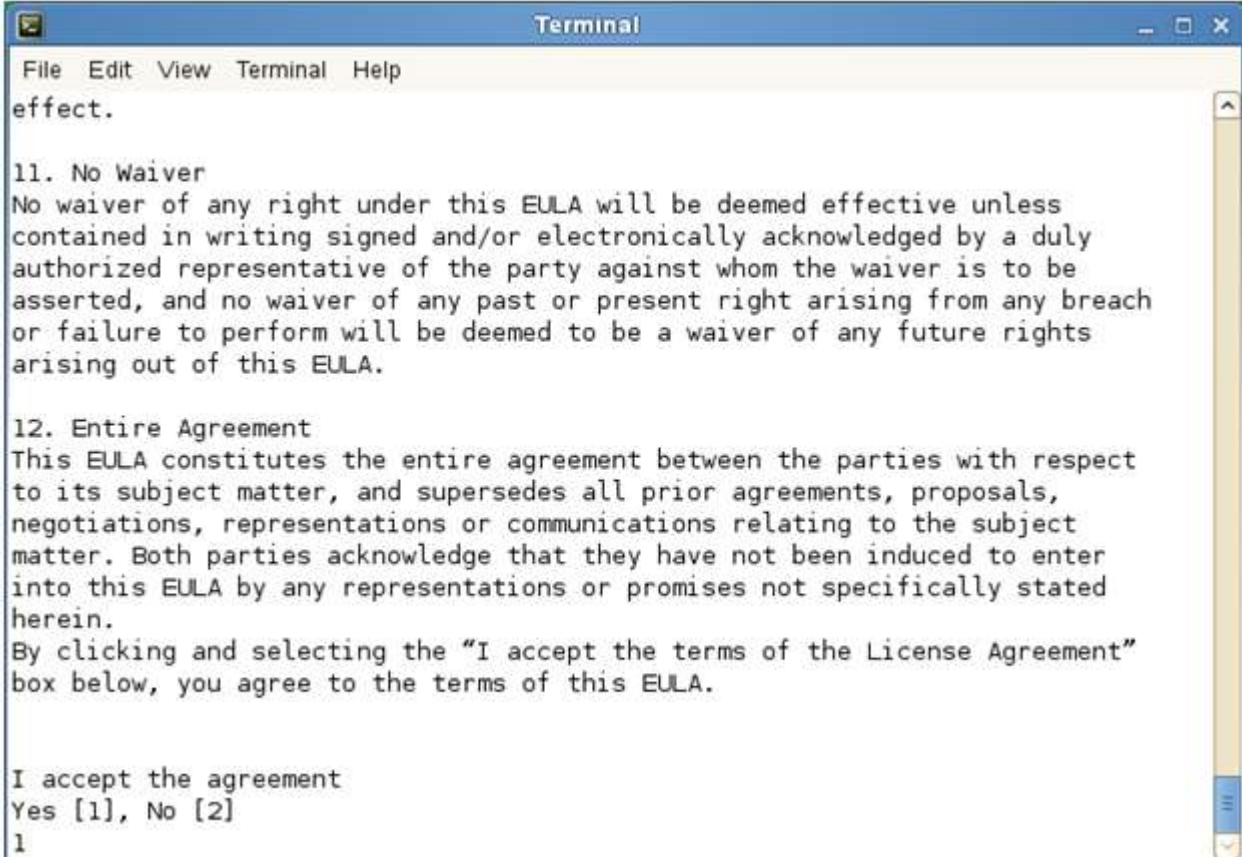


```
Terminal
File Edit View Terminal Help
linux-w6io:~/Documents # sudo sh ringstor_dataagent_linux_4.1_cmdline_x64.sh
Unpacking JRE ...
Preparing JRE ...
Starting Installer ...
This will install RingStor DataAgent on your computer.
OK [o, Enter], Cancel [c]
o
A previous installation has been detected. Do you wish to update that installation?
Yes, update the existing installation [1, Enter]
No, new install [2]
2
```

Install option 1: this will update existing DataAgent

Install option 2: a new install will be performed, existing DataAgent will be uninstalled if found

Step 2 – License Agreement



```
Terminal
File Edit View Terminal Help
effect.

11. No Waiver
No waiver of any right under this EULA will be deemed effective unless
contained in writing signed and/or electronically acknowledged by a duly
authorized representative of the party against whom the waiver is to be
asserted, and no waiver of any past or present right arising from any breach
or failure to perform will be deemed to be a waiver of any future rights
arising out of this EULA.

12. Entire Agreement
This EULA constitutes the entire agreement between the parties with respect
to its subject matter, and supersedes all prior agreements, proposals,
negotiations, representations or communications relating to the subject
matter. Both parties acknowledge that they have not been induced to enter
into this EULA by any representations or promises not specifically stated
herein.
By clicking and selecting the "I accept the terms of the License Agreement"
box below, you agree to the terms of this EULA.

I accept the agreement
Yes [1], No [2]
1
```

Hit Enter to review license agreement, at end of license type 1 to accept license and continue install.

Step 3 – Specify Installation Root Folder



```
I accept the agreement
Yes [1], No [2]
1
Where should RingStor DataAgent be installed?
/usr/ringstor/dataagent
Extracting files...
lib/rt.jar
```

Type in the installation folder, ex. /usr/ringstor/dataagent, hit Enter to continue.

Step 4 – Register DataAgent to Existing RingStor cloud

```
Configure DataAgent to Attach to RingStor
Verify DataAgent's hostname and provide port number for service.
DataAgent Hostname:
[linux-w6io]
localhost
DataAgent Port:
[9091]

Cloud User Account
User:
[taxservicellc]

Password:

Cloud End Point
Cloud Hostname:
[localhost]
rswin7
Cloud Port:
[9000]
```

RingStor Cloud End Point must be accessible by this DataAgent. Cloud user account's username/password must be provided to connect to RingStor cloud.

DataAgent Hostname – review or provide hostname or IP for the DataAgent

DataAgent Port – review or provide local port used by DataAgent service

Cloud User Account – provide user's username that has rights to install the DataAgent. Users with a role of Administrator or DataAgent Operator have the right to install.

Password: - password for user

Cloud End Point:

Cloud Hostname – review or provide hostname or IP of an online Cloud End Point in existing RingStor cloud

Cloud Port: - review or provide the port for the online Cloud End Point above

Hit Enter to continue.

Step 5 – Select User to Run Service

```
Run service under
root user [1, Enter], different user [2]
2
[oracle]
```

If a user must be selected to run the service, type in the user name.

IMPORTANT: for Oracle backup, the user must be provided to run the service, this user must be Oracle SYSDBA and in superuser group.

Step 6 – Select Application Agents

```
Install Agents
Available agents to install on this DataAgent are listed below. Please
select agent(s) to continue.
File Sync?
Yes [y], No [n, Enter]
y
MySQL Database Backup?
Yes [y], No [n, Enter]
y
File Backup?
Yes [y], No [n, Enter]
y
```

Available agents for this DataAgent are listed and can be selected by typing y.

The available agents are based on DataAgent's platform and agents licensed to use on this platform.

Please read **Introduction** section for description of each agent.

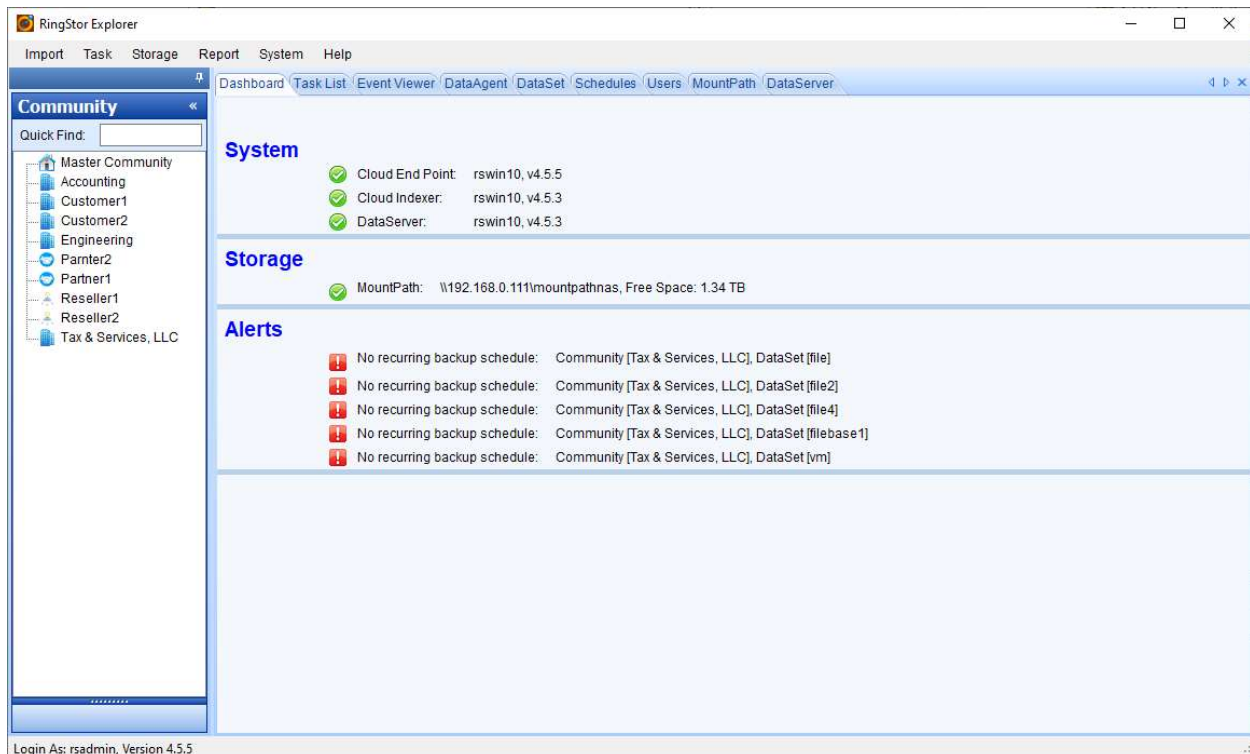
Hit Enter to complete the installation process.

```
DataAgent Configuration Summary
Please review the configuration summary below. Click Cancel to stop
configuration, click Next to start the configuration.
Host Name: localhost
Port: 9091
Cloud End Point
Cloud Hostname: rswin7
Cloud Port: 9000
Cloud User Account
User: taxservicellc
Password: *****
Setup has finished installing RingStor DataAgent on your computer.
Finishing installation...
linux-w6io:~/Documents #
```

4 RingStor Cloud Management Console - RingStor Explorer

RingStor Explorer is a graphic user interface (GUI) to access and manage RingStor system. In this interface, authenticated user can perform following functions:

- View System Status
- View/Manage Communities
- View/Manage DataServers, DataAgents and components installed on them
- View/Manage Schedules
- View/Manage Tasks
- View/Manage Storage
- View/Manage Users
- View/Manage Reports
- View/Manage License



■

The chapter will provide an overview of this GUI, the detailed functions are scattered in subsequent chapters.

Figure above is an example screen shot. The GUI has three major areas, Top Menu, Explorers and Content Tabs.

4.1 Top Menu

Import Menu:

Import Base Line Backup – import base line backup data from local disk into cloud

Import Base Line Sync – import base line sync data from local disk into cloud

Task Menu:

Schedule New Task – use to create a new schedule

Storage Menu:

Add New MountPath – add a new mount path to the cloud

Add New MountPath Pool – add a new mount path pool to the cloud

DataSet Storage Usage – view DataSet storage size and selected size

Storage Usage – check spaces for all MountPath and Backup Data

Report Menu:

Create New Report – create various reports

Open Report – open an existing report

System:

Settings – view system settings

Community License – view community level license

License– show license installed, upgrade license

Help Menu:

Documentation – links to online documents

About RingStor – version info

4.2 Community Explorer

The left navigation pane is Community Explorer.

Click on a community on left, the right side pane will refresh with configuration for selected community in DataAgents, DataSets, Schedules, Users, DataServers and MountPaths tabs. Depending on selected community, some tabs may not show up.

4.3 Task Manager

Current tasks are displayed and can be managed in Task Manager from RingStor Explorer.

Depending on the state of the task, you may manage task by

Resume – resume a task that is either suspended or in wait state

Suspend – suspend a task that is either running or in wait state

Kill – kill a task

Each task goes through different state. Following tables list the possible states:

Scanning – task is scanning files and folders

Running – task is transmitting data

Assembling – task is assembling data blocks into application data

Suspended – task is suspended by user, stop running

Killed – task is killed by user

Failed – task failed

5 Community and Users

5.1 Introduction

Community based data protection, recovery and management provides functions for a multi-tenant cloud backup solution. Community is a self-managed part of RingStor cloud system that the community only sees and manages its own components, DataAgent, users, configurations, etc. Each community possesses own resources and resources are not shared among the communities.



■

The support of community based data protection and recovery within one RingStor cloud system present a great flexibility and manageability to enterprise data center that requires different set of business rules and separate resources for their customers, while the system can be easily managed by the data center via just one simple user interface.

5.2 Community Management

Use RingStor Explorer to create a new community, right click an existing community on left navigation pane, click Add New Community, follow wizard to create a new community:

Left Community Explorer -> Right Click a Community -> Add New Community

Create New Community Wizard

Step 1 – Introduction

Step 2 – Basic Info:

Create New Community [Close]

Provide community info

Community name:

Category: [v]

Parent Community: [v]

Administrator:

Password:

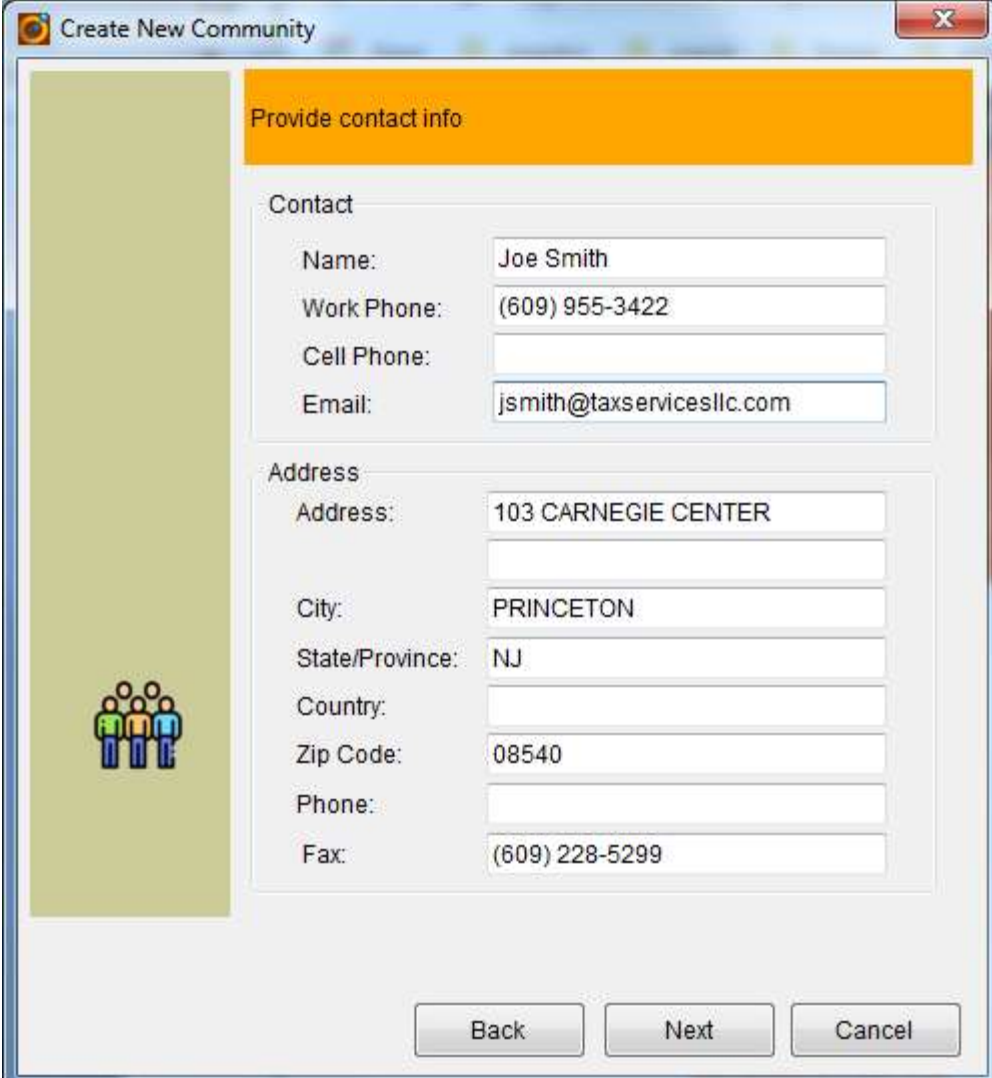
Confirm Password:

Email:

Notes:

Note that the Next button is disabled until you provide the name.

Step 3 – Optional additional info



Create New Community

Provide contact info

Contact

Name: Joe Smith

Work Phone: (609) 955-3422

Cell Phone:

Email: jsmith@taxservicesllc.com

Address

Address: 103 CARNEGIE CENTER

City: PRINCETON

State/Province: NJ

Country:

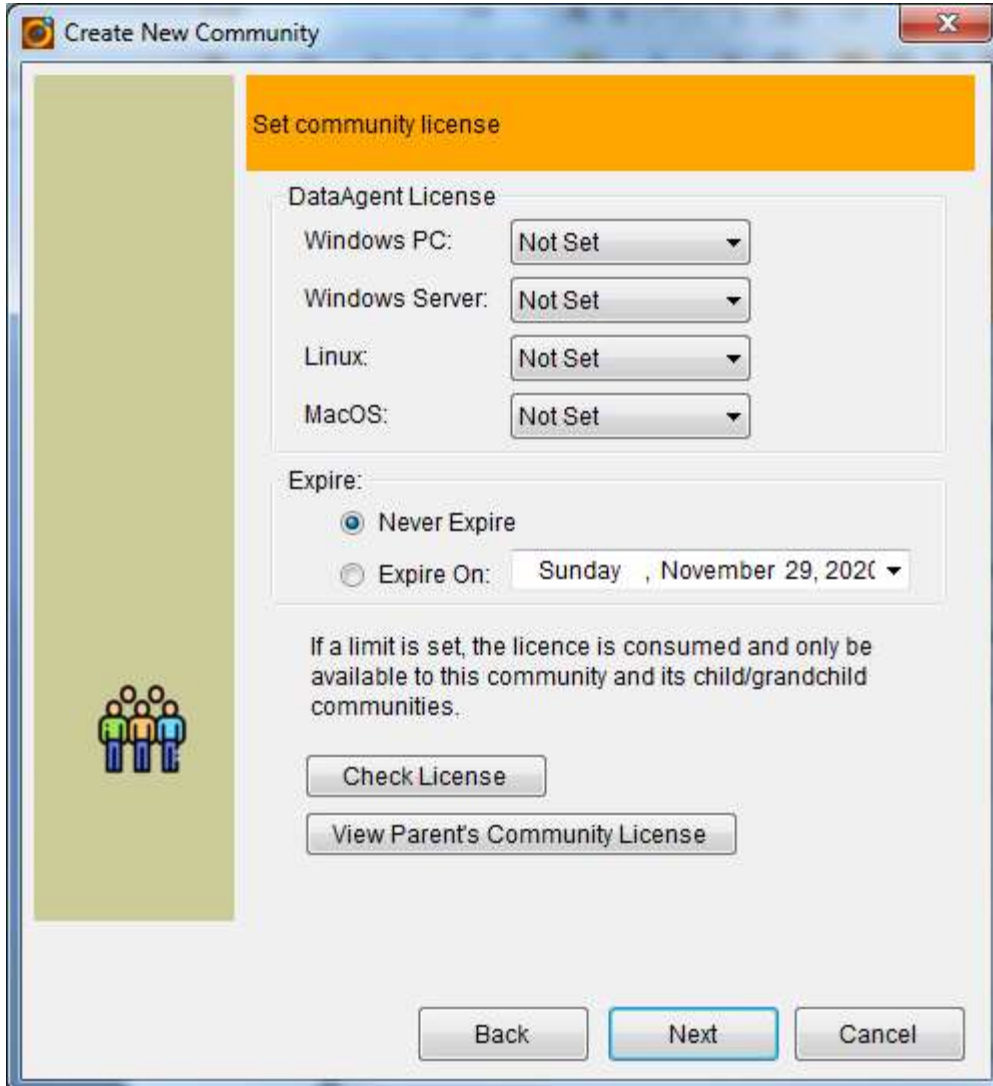
Zip Code: 08540

Phone:

Fax: (609) 228-5299

Back Next Cancel

Step 4 – Set up community level license



The screenshot shows a window titled "Create New Community" with a sub-header "Set community license". On the left is a vertical green bar with a group of four stylized human icons. The main area contains the following fields:

- DataAgent License:**
 - Windows PC: Not Set (dropdown)
 - Windows Server: Not Set (dropdown)
 - Linux: Not Set (dropdown)
 - MacOS: Not Set (dropdown)
- Expire:**
 - Never Expire
 - Expire On: Sunday, November 29, 2020 (dropdown)

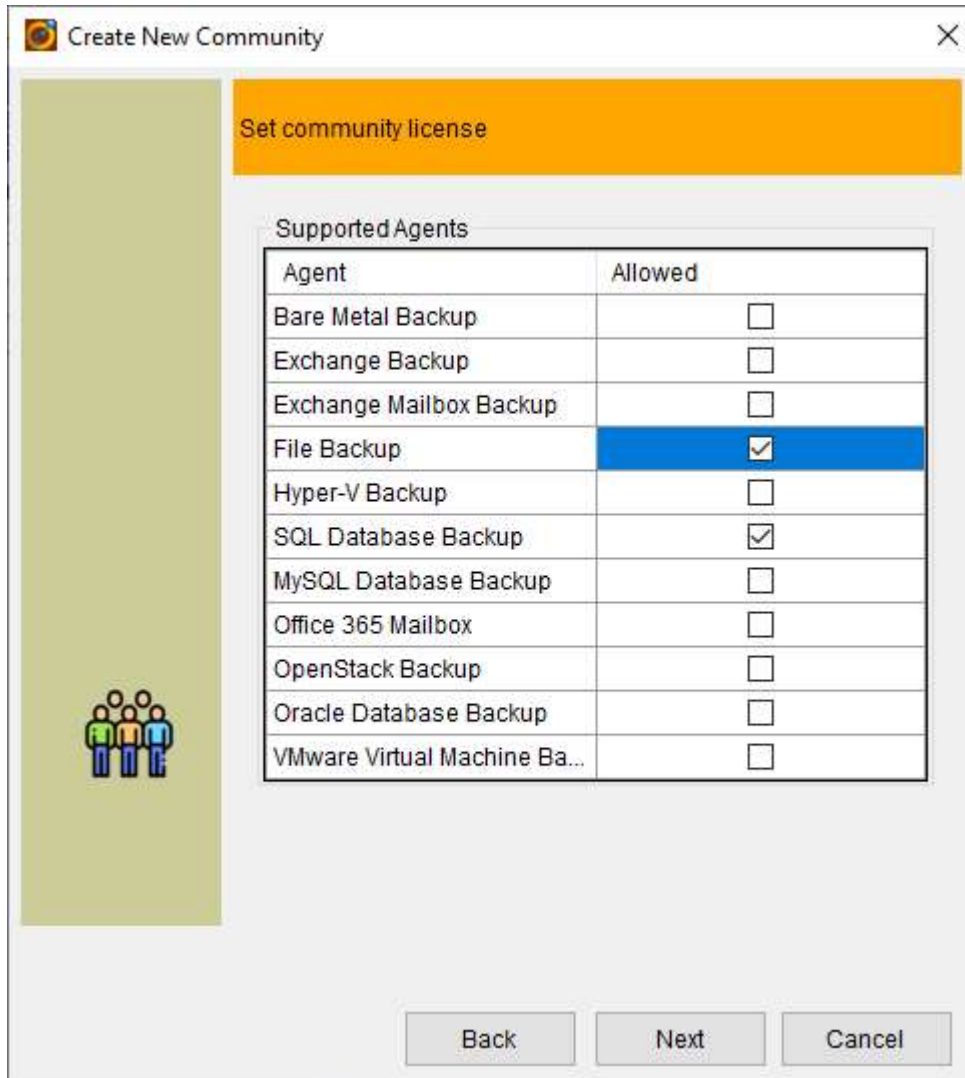
Below the fields is a text block: "If a limit is set, the licence is consumed and only be available to this community and its child/grandchild communities." Below this are two buttons: "Check License" and "View Parent's Community License". At the bottom of the window are three buttons: "Back", "Next" (highlighted with a blue border), and "Cancel".

The community level license is subject to limits of its parent community. The license setup here will also apply to its child/grandchild communities.

Click Check License to validate the license setup

Click View Parent's Community License to review what parent's license is.

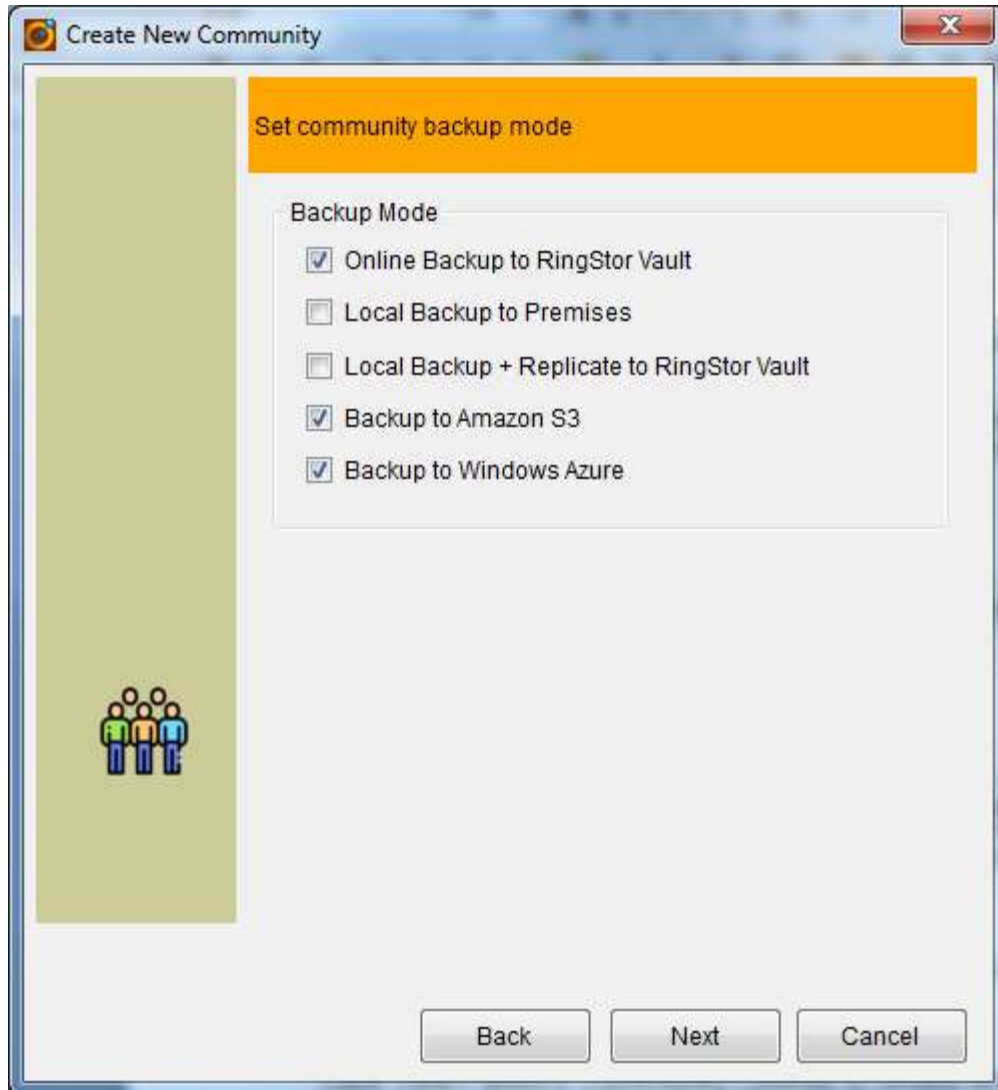
Step 5 – Support Backup Agents



Agent	Allowed
Bare Metal Backup	<input type="checkbox"/>
Exchange Backup	<input type="checkbox"/>
Exchange Mailbox Backup	<input type="checkbox"/>
File Backup	<input checked="" type="checkbox"/>
Hyper-V Backup	<input type="checkbox"/>
SQL Database Backup	<input checked="" type="checkbox"/>
MySQL Database Backup	<input type="checkbox"/>
Office 365 Mailbox	<input type="checkbox"/>
OpenStack Backup	<input type="checkbox"/>
Oracle Database Backup	<input type="checkbox"/>
VMware Virtual Machine Ba...	<input type="checkbox"/>

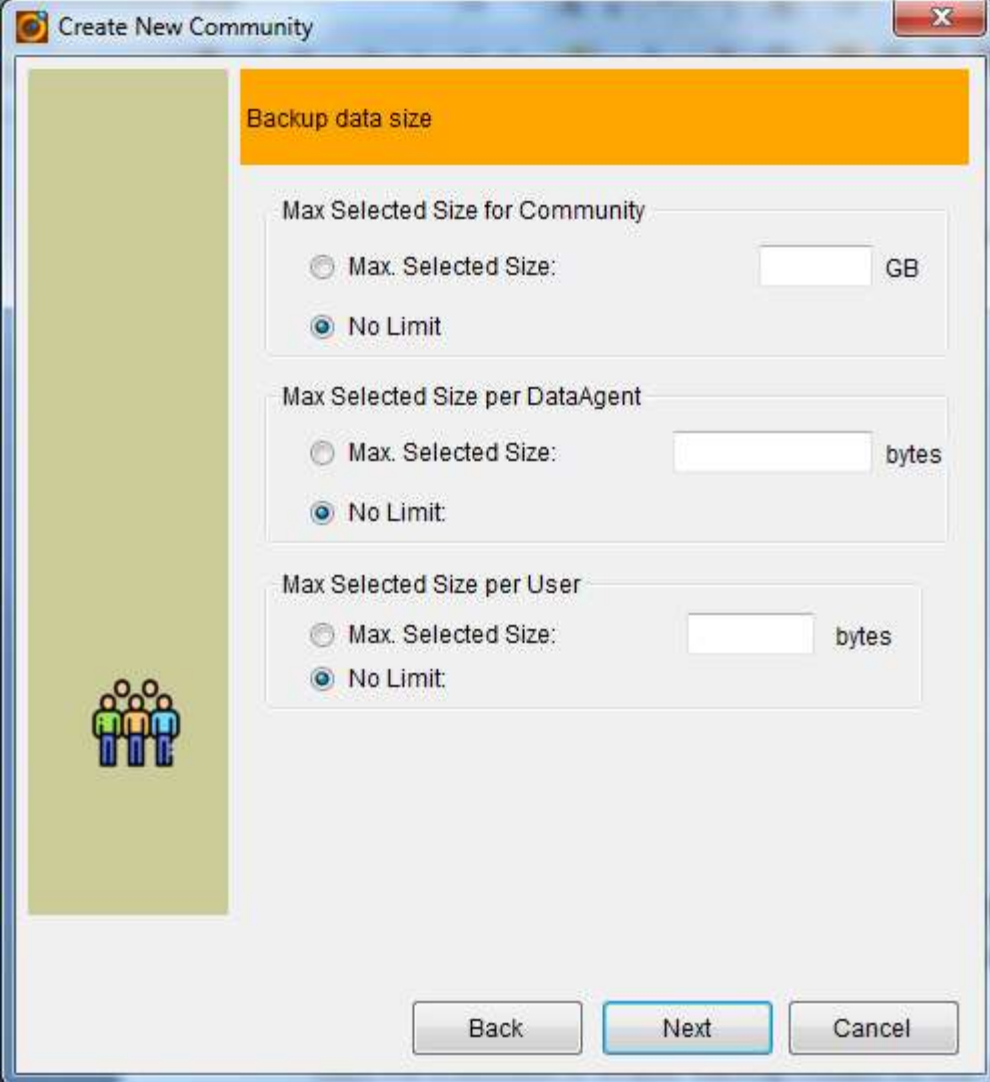
Click the checkbox to enable backup agents for this community and also put limits on its child/grandchild communities.

Step 6 – Specify Backup Modes



Click the checkbox to enable backup modes for this community and also put limits on its child/grandchild communities.

Step 7 – Backup Size Limits



Create New Community

Backup data size

Max Selected Size for Community

Max. Selected Size: GB

No Limit

Max Selected Size per DataAgent

Max. Selected Size: bytes

No Limit

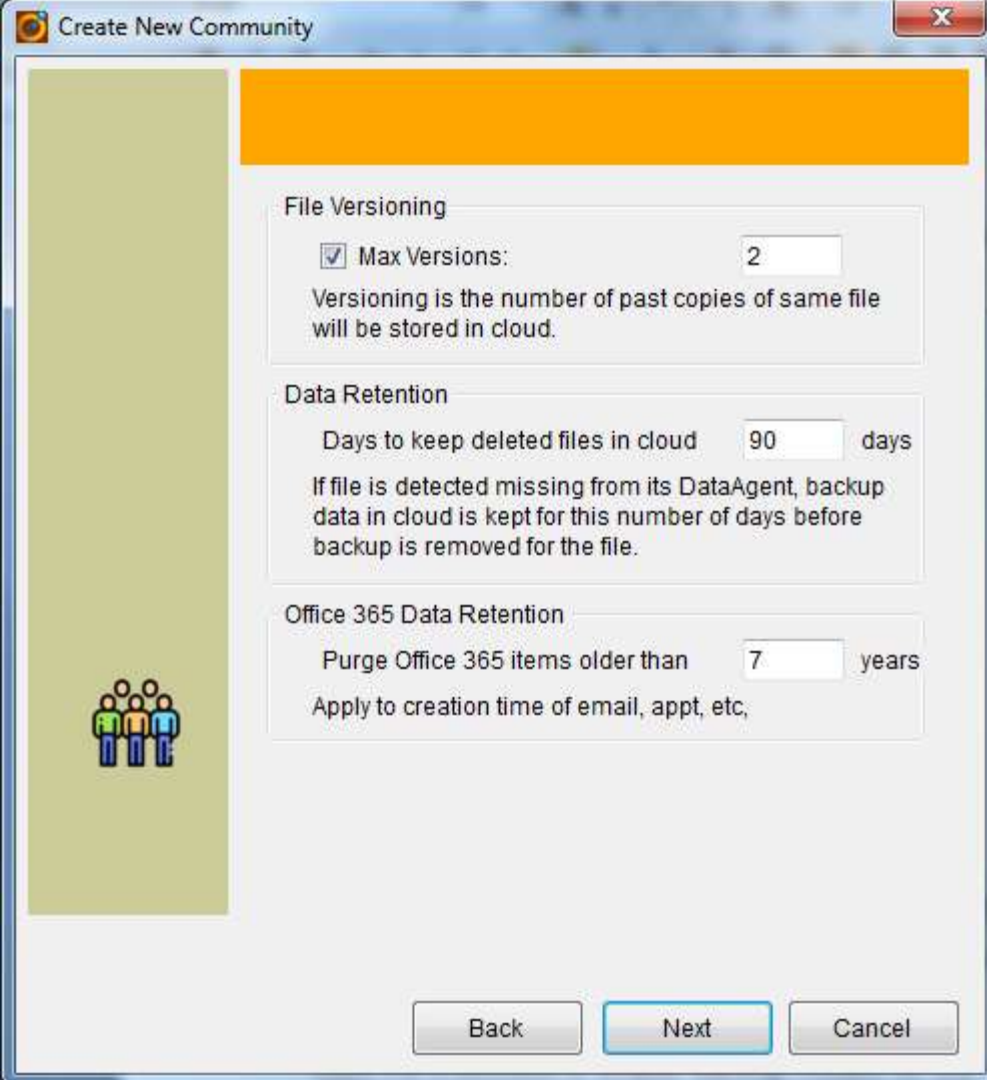
Max Selected Size per User

Max. Selected Size: bytes

No Limit

Back Next Cancel

Step 8 – Data Retention



Create New Community

File Versioning

Max Versions:

Versioning is the number of past copies of same file will be stored in cloud.

Data Retention

Days to keep deleted files in cloud days

If file is detected missing from its DataAgent, backup data in cloud is kept for this number of days before backup is removed for the file.

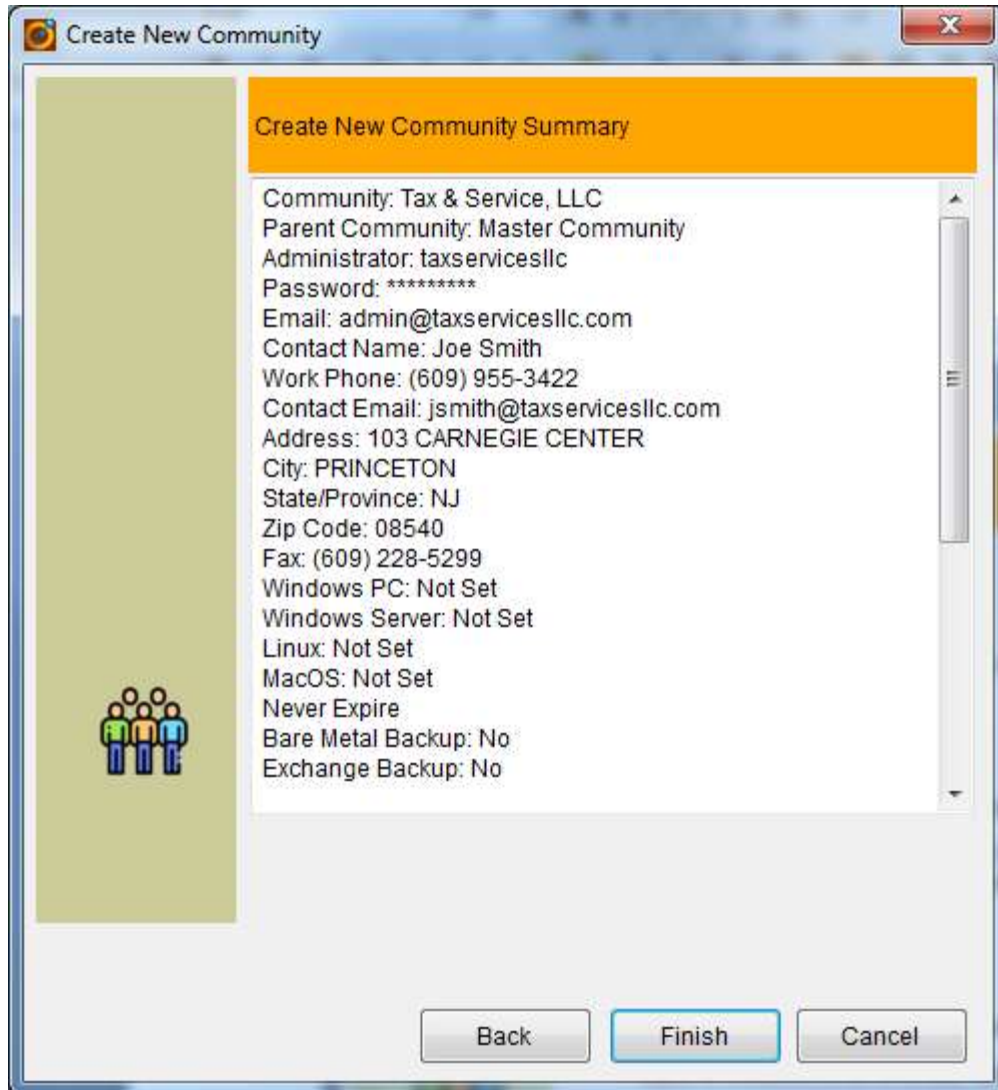
Office 365 Data Retention

Purge Office 365 items older than years

Apply to creation time of email, appt, etc.

Back Next Cancel

Step 9 – Summary



Manage Community

From left navigation pane, right click a community, select Properties to open this community's property window.

Community ✕

General | Data Retention & Capacity | DataAgent License | New DataAgent Rule | Public Cloud Storage | Notifications

Basic Info

ID:

Name:

Category:

Email:

Web Portal:

Notes:

Contact

Name:

Work Phone:

Cell Phone:

Email:

Address

Address:

City:

State/Province:

Country:

Zip Code:

Phone:

Fax:

Web:

Stats

Total Users:	1
Total DataAgents:	2
Total DataSets:	5
Total Select Size:	871.79 MB
Total Storage Size:	881.05 MB
Total Backup Jobs:	22
Last Updated:	6/22/2021

note, the stats is from this community and does not include all its child/grandchild communities.

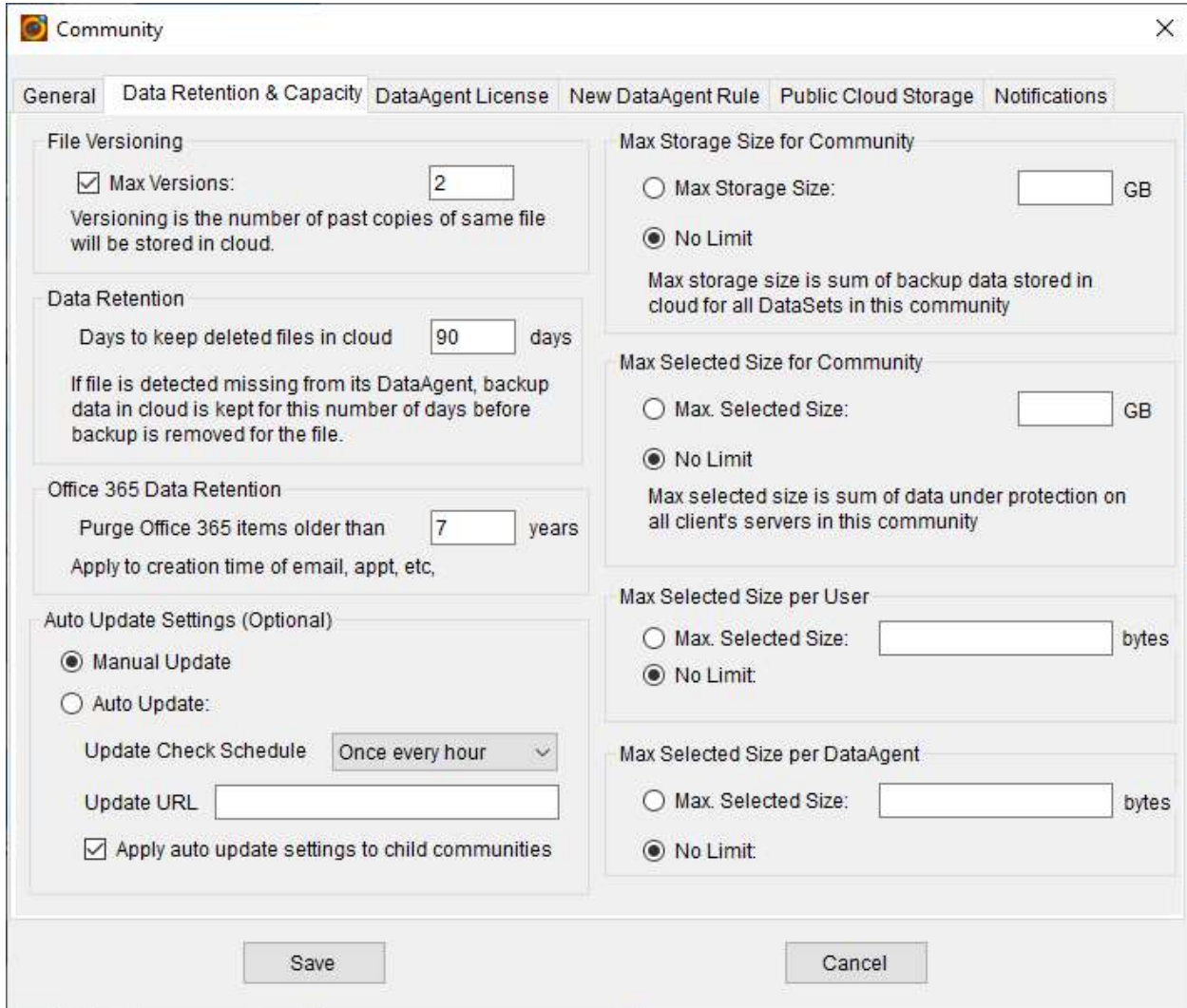
General

Basic Info – provide name and optional description for the new community

Contact & Address – additional info for this community.

Stats – current stats about this community. This stats is updated daily by default.

Retention



The screenshot shows the 'Community' configuration window with the 'Data Retention & Capacity' tab selected. The window contains several sections for configuring backup settings:

- File Versioning:** Includes a checked checkbox for 'Max Versions' with a value of 2. A note states: 'Versioning is the number of past copies of same file will be stored in cloud.'
- Data Retention:** Includes a text input for 'Days to keep deleted files in cloud' set to 90. A note states: 'If file is detected missing from its DataAgent, backup data in cloud is kept for this number of days before backup is removed for the file.'
- Office 365 Data Retention:** Includes a text input for 'Purge Office 365 items older than' set to 7 years. A note states: 'Apply to creation time of email, appt, etc.'
- Auto Update Settings (Optional):** Includes radio buttons for 'Manual Update' (selected) and 'Auto Update:'. Below is a dropdown for 'Update Check Schedule' set to 'Once every hour', a text input for 'Update URL', and a checked checkbox for 'Apply auto update settings to child communities'.
- Max Storage Size for Community:** Includes radio buttons for 'Max Storage Size' (empty input) and 'No Limit' (selected). A note states: 'Max storage size is sum of backup data stored in cloud for all DataSets in this community.'
- Max Selected Size for Community:** Includes radio buttons for 'Max. Selected Size' (empty input) and 'No Limit' (selected). A note states: 'Max selected size is sum of data under protection on all client's servers in this community.'
- Max Selected Size per User:** Includes radio buttons for 'Max. Selected Size' (empty input) and 'No Limit' (selected).
- Max Selected Size per DataAgent:** Includes radio buttons for 'Max. Selected Size' (empty input) and 'No Limit' (selected).

At the bottom of the window are 'Save' and 'Cancel' buttons.

File Versions – Specify how many copies of a file will be retained for user in this community.

Data Retention - Specify how long to keep the backup if source file went missing from its DataAgent.

Office 365 Data Retention – Specify how long to keep messages, calendar items if it went missing from its mailbox.

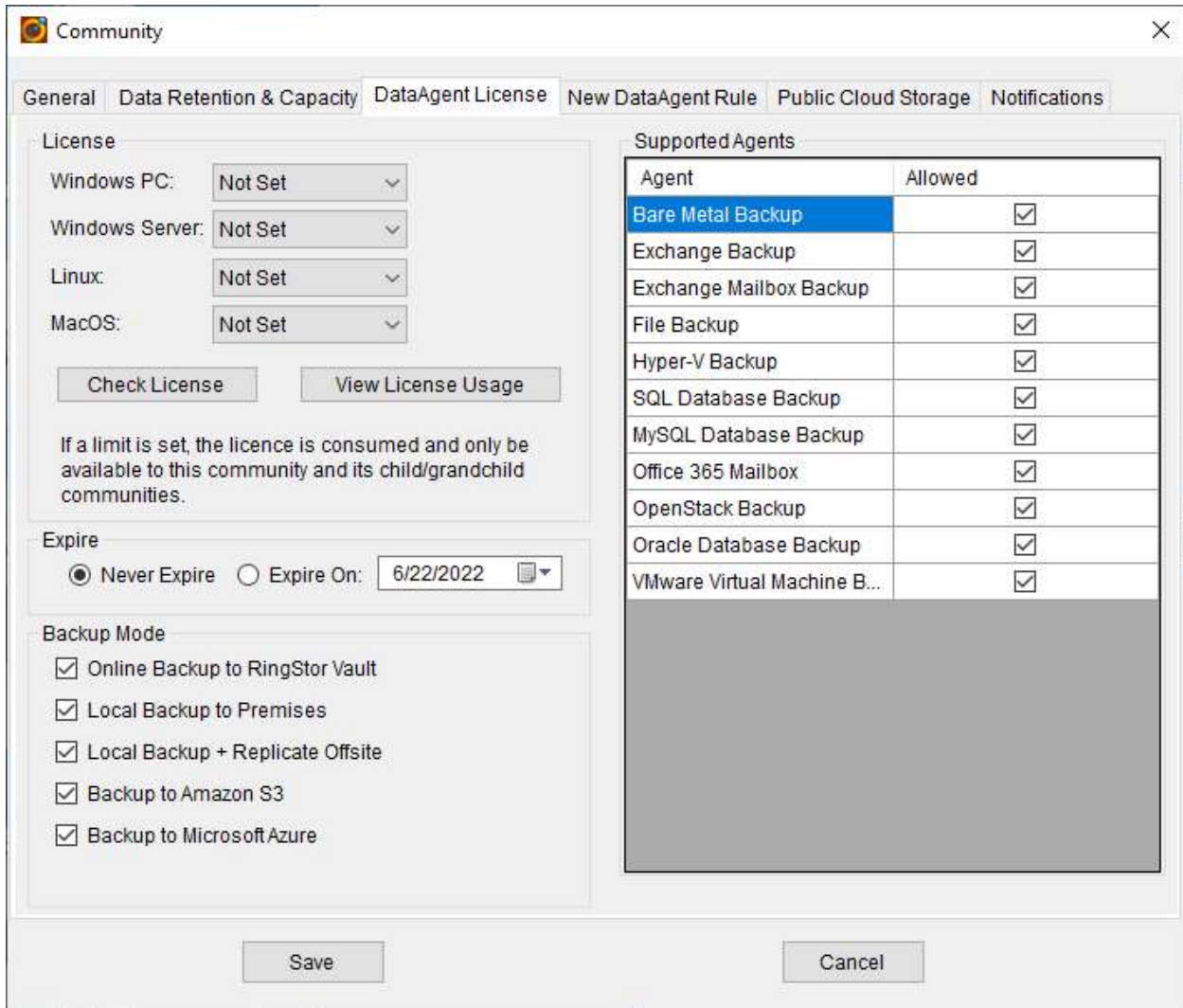
Max Selected Size for Community – Max selected size for this community.

Max Selected Size per DataAgent – Set maximum data that can be backed up per DataAgent.

Max Selected Size per User – Set maximum data that can be backed up per User.

Auto Update – settings for DataAgent auto updates.

DataAgent License

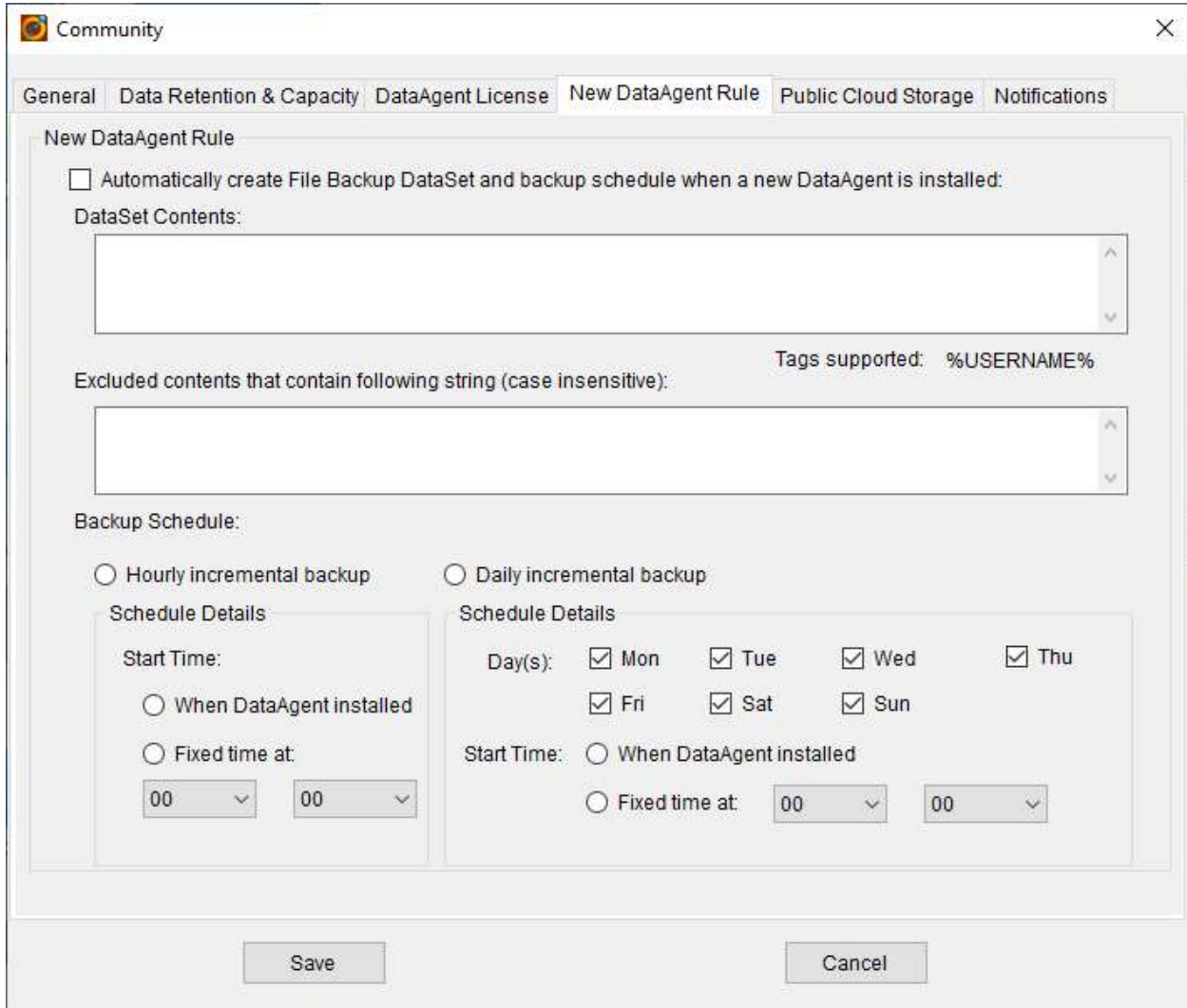


Agent	Allowed
Bare Metal Backup	<input checked="" type="checkbox"/>
Exchange Backup	<input checked="" type="checkbox"/>
Exchange Mailbox Backup	<input checked="" type="checkbox"/>
File Backup	<input checked="" type="checkbox"/>
Hyper-V Backup	<input checked="" type="checkbox"/>
SQL Database Backup	<input checked="" type="checkbox"/>
MySQL Database Backup	<input checked="" type="checkbox"/>
Office 365 Mailbox	<input checked="" type="checkbox"/>
OpenStack Backup	<input checked="" type="checkbox"/>
Oracle Database Backup	<input checked="" type="checkbox"/>
VMware Virtual Machine B...	<input checked="" type="checkbox"/>

Review the DataAgent license for this community.

The DataAgent license can only be modified by parent community's administrator.

New DataAgent Rule



The screenshot shows a window titled "Community" with a close button (X) in the top right corner. Below the title bar is a tabbed interface with the following tabs: "General", "Data Retention & Capacity", "DataAgent License", "New DataAgent Rule" (which is the active tab), "Public Cloud Storage", and "Notifications".

The "New DataAgent Rule" tab contains the following configuration options:

- An unchecked checkbox: "Automatically create File Backup DataSet and backup schedule when a new DataAgent is installed:"
- A text area labeled "DataSet Contents:" with a scroll bar.
- A text area labeled "Excluded contents that contain following string (case insensitive):" with a scroll bar.
- A label "Tags supported: %USERNAME%" next to the "Excluded contents" area.
- Two radio button options for "Backup Schedule":
 - "Hourly incremental backup":
 - Label: "Schedule Details"
 - Field: "Start Time:"
 - Options: "When DataAgent installed", "Fixed time at:"
 - Time selection: Two dropdown menus, both set to "00".
 - "Daily incremental backup":
 - Label: "Schedule Details"
 - Field: "Day(s):" with checkboxes for Mon, Tue, Wed, Thu, Fri, Sat, Sun (all checked).
 - Field: "Start Time:"
 - Options: "When DataAgent installed", "Fixed time at:"
 - Time selection: Two dropdown menus, both set to "00".

At the bottom of the window are two buttons: "Save" and "Cancel".

New DataAgent Rule provides automation to create DataSet and set up backup schedule for a DataAgent when it is installed for first time.

DataSet Contents – Static or template folder/files can be added one per line as DataSet contents. Tags, such as %USERNAME%, is dynamically replaced with real data from the DataAgent.

Excluded Contents – exclude files or folder which has the string provided.

Backup Schedule – create hourly or daily increment backup and set up the schedule start time.


Public Cloud Storage

Community

General | Data Retention & Capacity | DataAgent License | New DataAgent Rule | **Public Cloud Storage** | Notifications

Select a Public Cloud Storage to review settings::

Amazon S3 | Microsoft Azure

 Amazon S3

Use parent community's Amazon S3 settings

Use following Amazon S3 settings for this community

Amazon S3 access keys (access key ID and secret access key) can be located at Access keys section under profile's My Security Credentials in Amazon AWS Management Console.

Access Key ID:

Secret Access Key:

Region:

Allow child communities to use this Amazon S3 storage account

Save Cancel

Public Cloud Storage provides a community level access info to use Amazon S3 or Microsoft Azure for backup. The DataAgent under this community and its child communities will use this settings to store backup to cloud storage.

Notifications

Community
✕

General | Data Retention & Capacity | DataAgent License | New DataAgent Rule | Public Cloud Storage | Notifications

Setup community wide notification:

Task Community Mail Server

Notify when job state changes:

Users

Completed	Failed	Killed	User	Community	Email
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	taxadmin		jsmith@ringstor.com

Emails

Completed	Failed	Killed	Email
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	jsmith@yahoo.com
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Save
Cancel

Notifications provides a community level email alert for job's status. In addition, user can setup community own SMTP mail server.

5.3 User Role

User must log into RingStor system with username and password to access the system via RingStor Explorer. The activity of user is tracked by RingStor and available in User Activity Report.

Users are grouped by roles. Permission to RingStor system is determined by the role user belongs to. There are fixed roles supported in RingStor system.

- Administrator – have permission to access all aspects of the community
- Backup Admin – have permission to manage backups on all DataAgents in the community, plus manage users.
- User – a user allowed to install and manage his/her own DataAgents
- Monitor – a read-only user

5.4 User

A user can belong to one role. The permission of the user is the permission from his/her role.

Creating a new user is a series of steps managed by **Create New User Wizard** accessible from following place within **RingStor Explorer**.

Left Community Explorer -> Right Click a Community -> Add New User

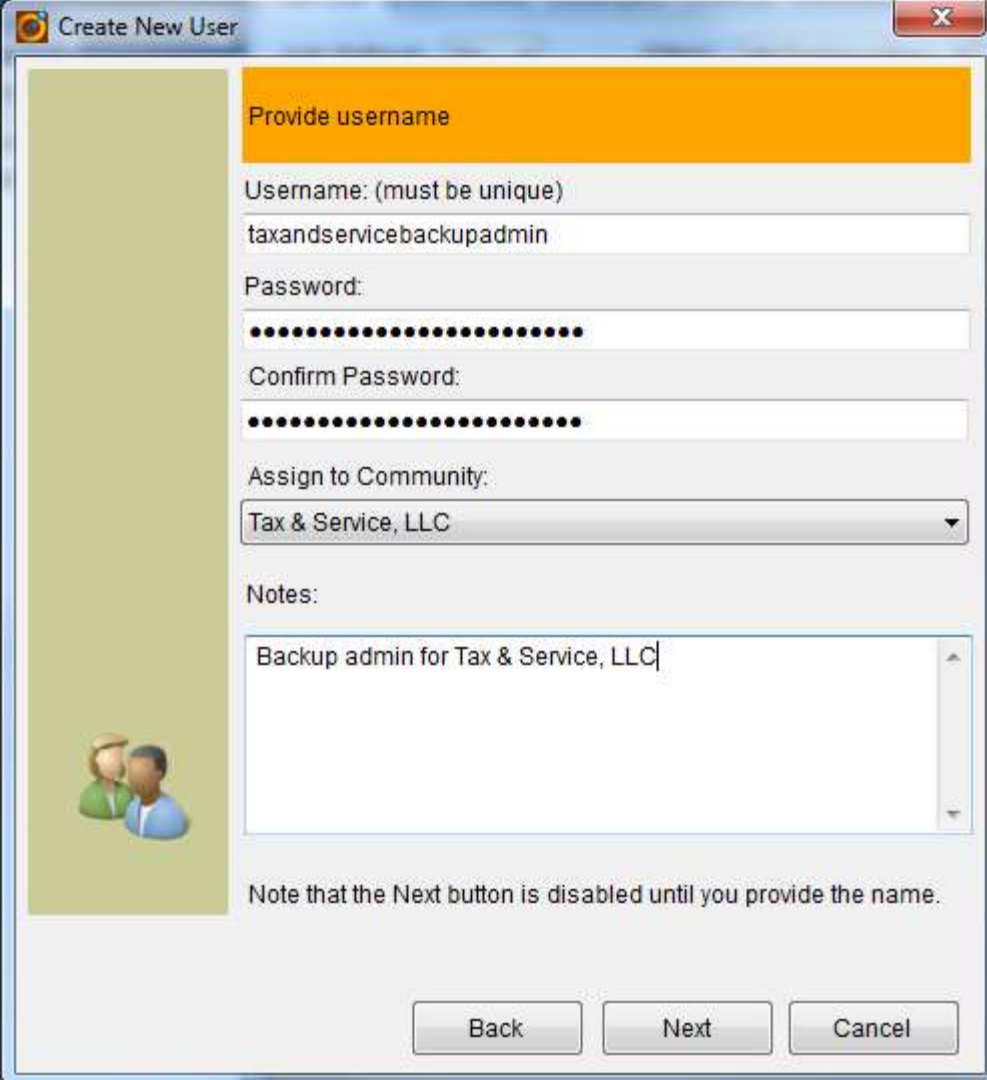
Create New User Wizard

Step 1 – Introduction



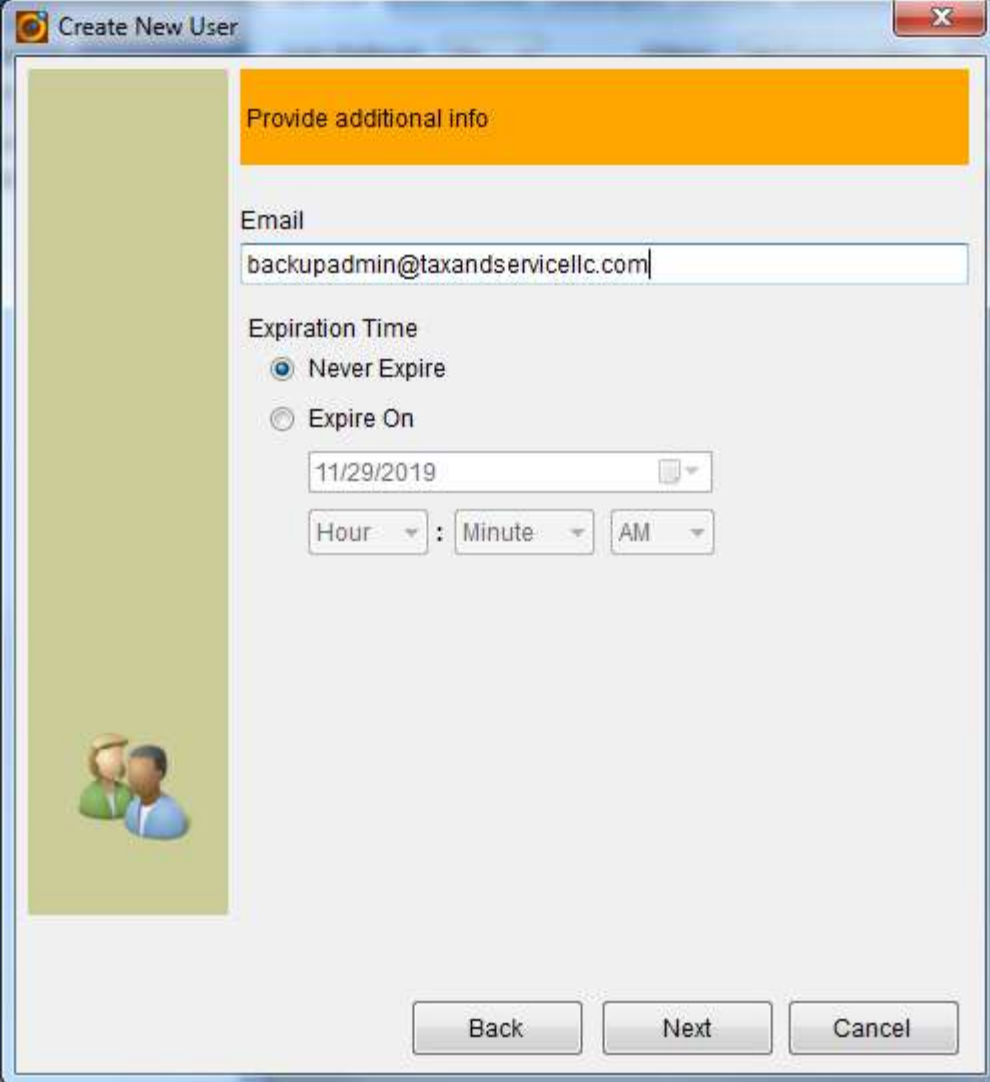
Create a new RingStor user. This user is only applicable to its community.

Step 2. – Username and Password



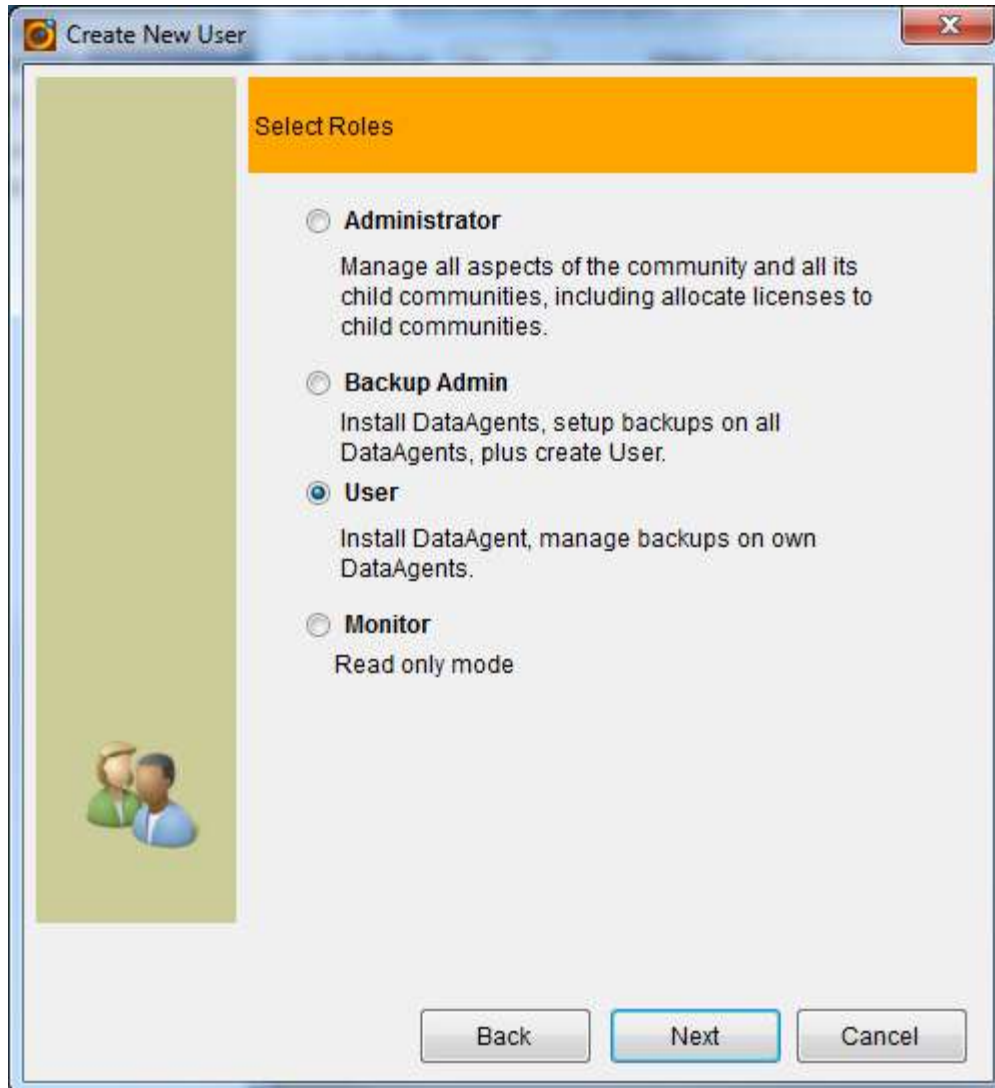
Username must be unique in this community.

Step 3 - Provide email and expiration time

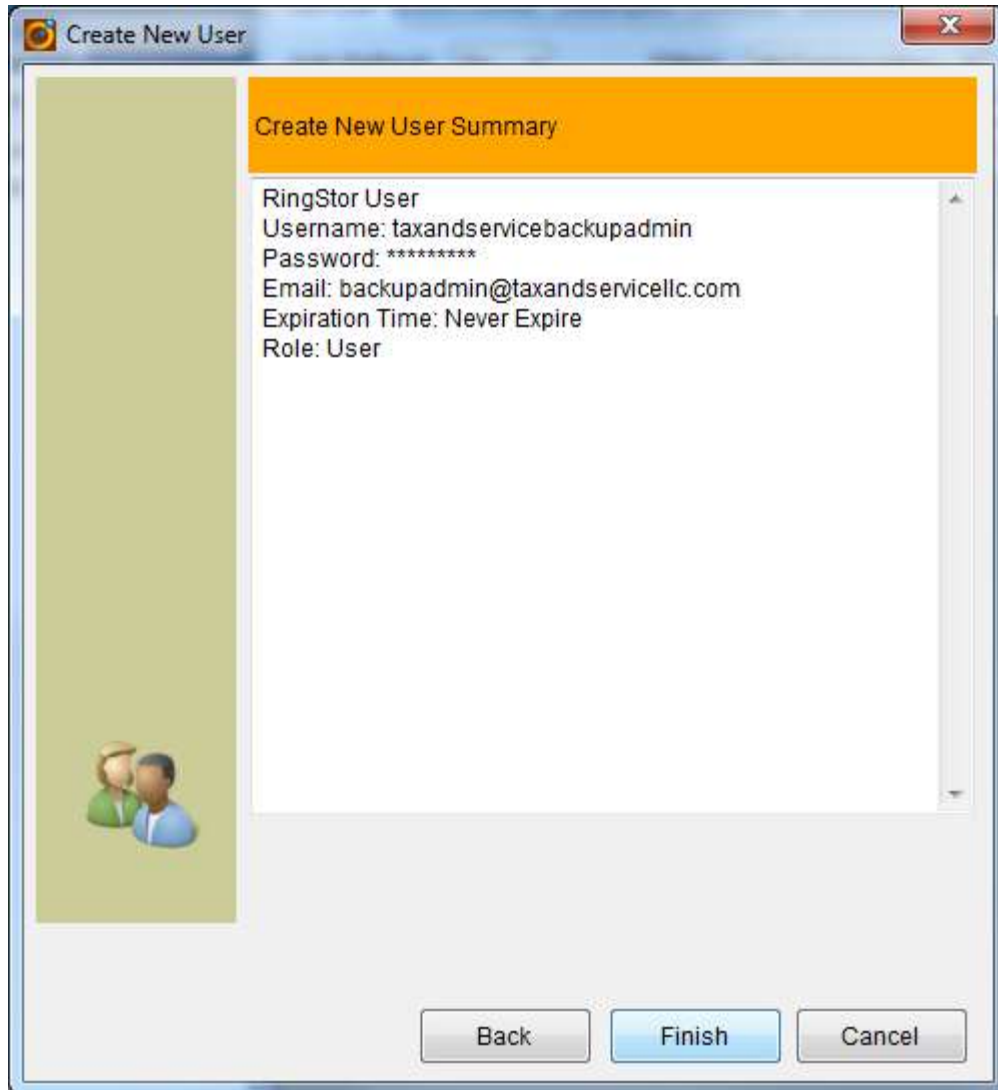


Email is optional field.

Step 4 – Assign role



Step 5 – Summary



Review the user data, click Back to make modification, click Finish to create this user.

6 Data Backup and Recover

6.1 File Backup

File Backup DataSet is a collection of folders and files on DataAgent that require protection. DataSet's protection scheme is supported by its associated agent in section 1.3.

Creation of a DataSet is the first step to implement data protection plan in RingStor. You may start **New DataSet Wizard** from any of following places in **RingStor Explorer**.

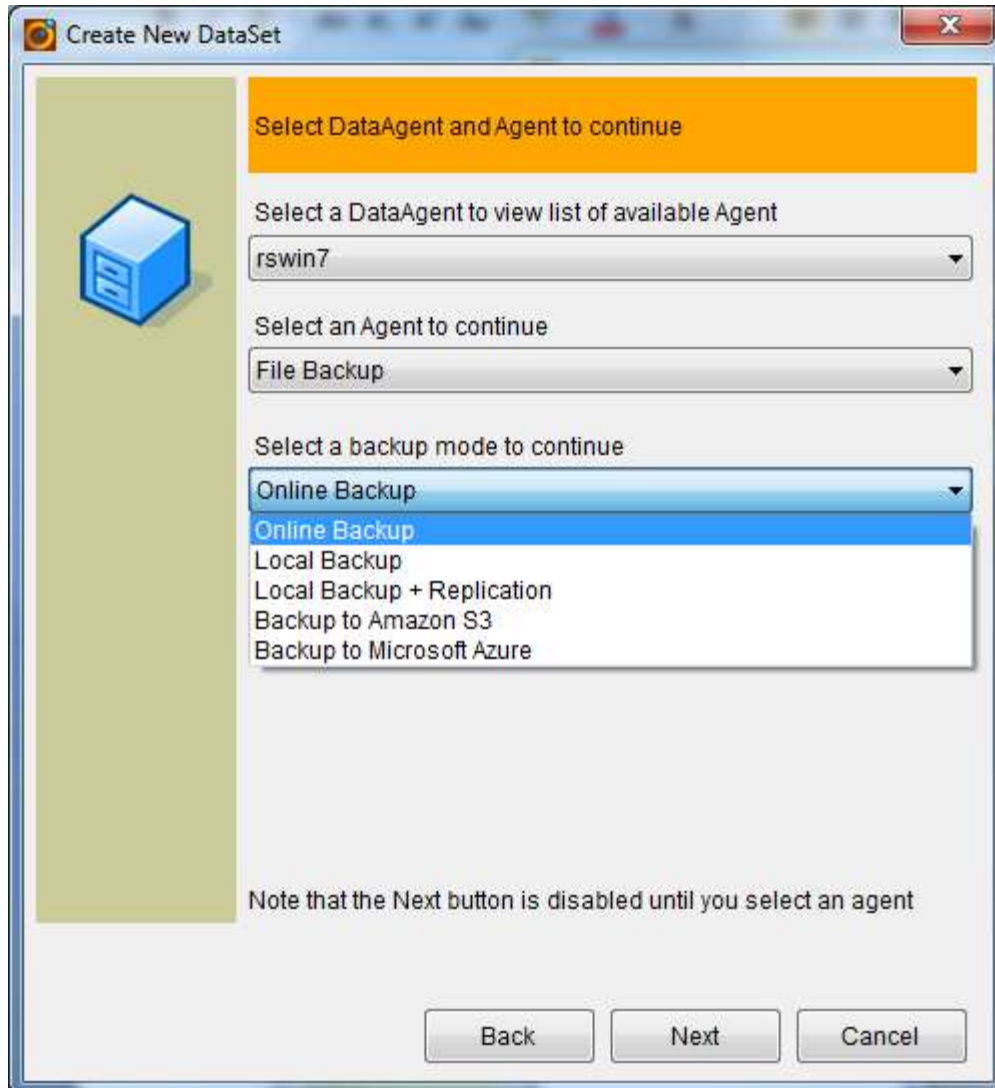
Community Explorer -> DataAgent -> Right Click an Agent -> Create New DataSet

Feature	Comments
Backup Mode	Online Backup to RingStor Vault Local Backup to Premises Local Backup + Replication to RingStor Vault Backup to Amazon S3 Backup to Microsoft Azure
Base Line Backup	Yes
Backup	Full, Incremental

6.1.1 Create DataSet

From RingStor Explorer, select a DataAgent, right click File Backup agent, choose Create New DataSet menu to start the wizard.

Choose DataAgent/Agent:



Select DataAgent, Agent for the DataSet. The available list of Agent is from installed agents on the selected DataAgent.

Select backup mode for this DataSet:

Online Backup: data is transmitted and saved to RingStor Vault storage.

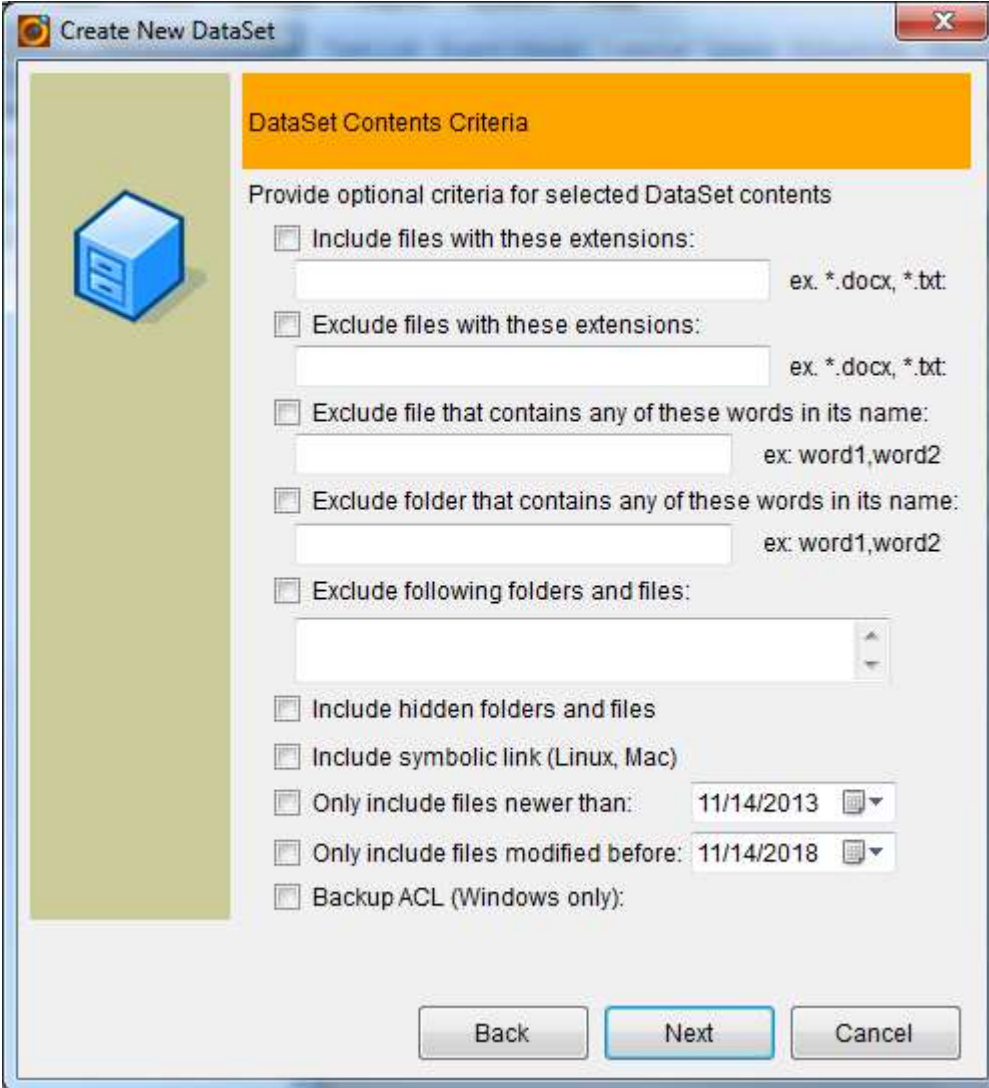
Local Backup: data is backed up to local storage only

Local Backup + Replication: data is backed to local storage first, then replicated offsite to the remote storage.

Backup to Amazon S3: data is backed up to Amazon S3 storage directly, File Backup agent only.

Backup to Microsoft Azure: data is backed up to Microsoft Azure storage directly, File Backup agent only.



At DataSet Contents Criteria, optionally, filters can be added to skip files or folders in the DataSet:



Create New DataSet

DataSet Contents Criteria

Provide optional criteria for selected DataSet contents

- Include files with these extensions:
 ex. *.docx, *.txt
- Exclude files with these extensions:
 ex. *.docx, *.txt
- Exclude file that contains any of these words in its name:
 ex. word1,word2
- Exclude folder that contains any of these words in its name:
 ex. word1,word2
- Exclude following folders and files:
- Include hidden folders and files
- Include symbolic link (Linux, Mac)
- Only include files newer than: 11/14/2013 
- Only include files modified before: 11/14/2018 
- Backup ACL (Windows only):

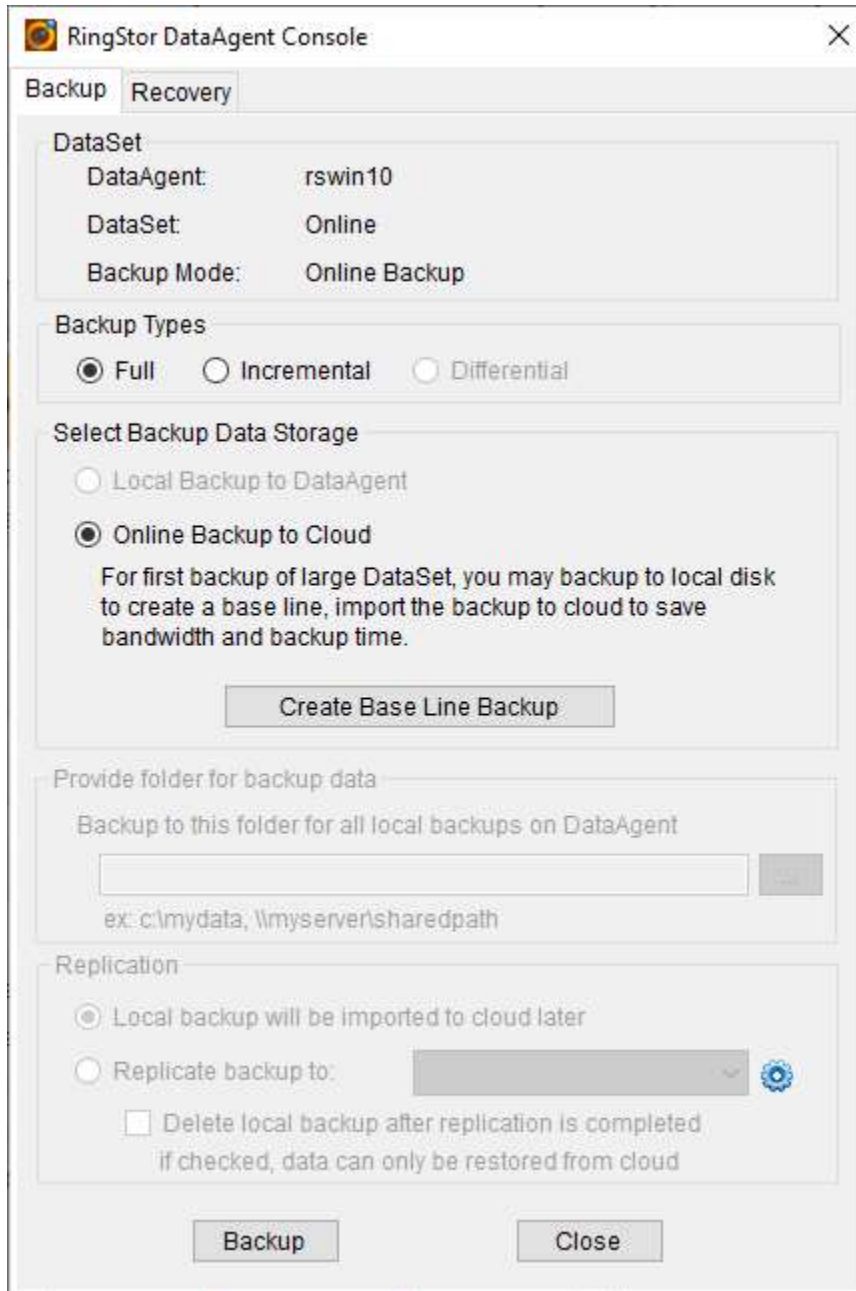
Back Next Cancel

6.1.2 Backup

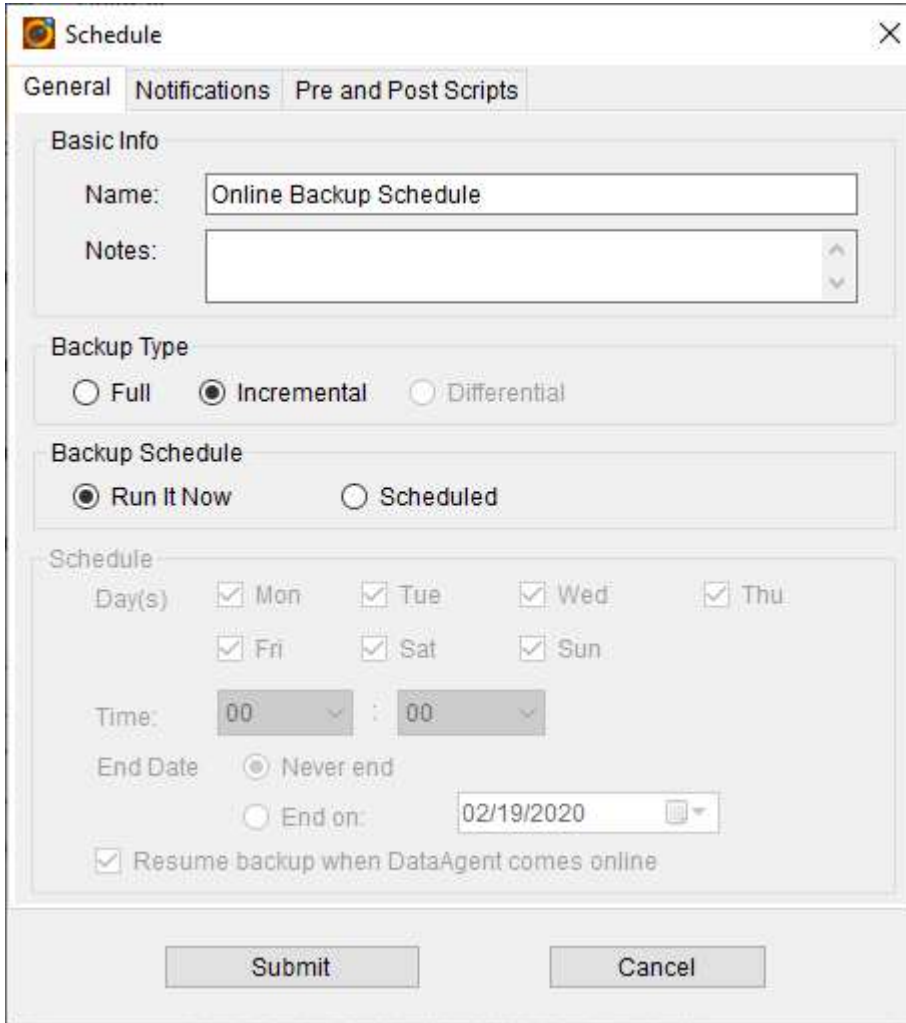
6.1.2.1 Backup DataSets

Backup and Recover window is slightly different depending on backup mode for the DataSet.

The following uses an online backup DataSet as example. From RingStor Explorer, right click the DataSet, open Backup and Recover menu as shown below:



Click Backup button to run the backup on-demand or schedule the backup:



The screenshot shows a 'Schedule' dialog box with the following fields and options:

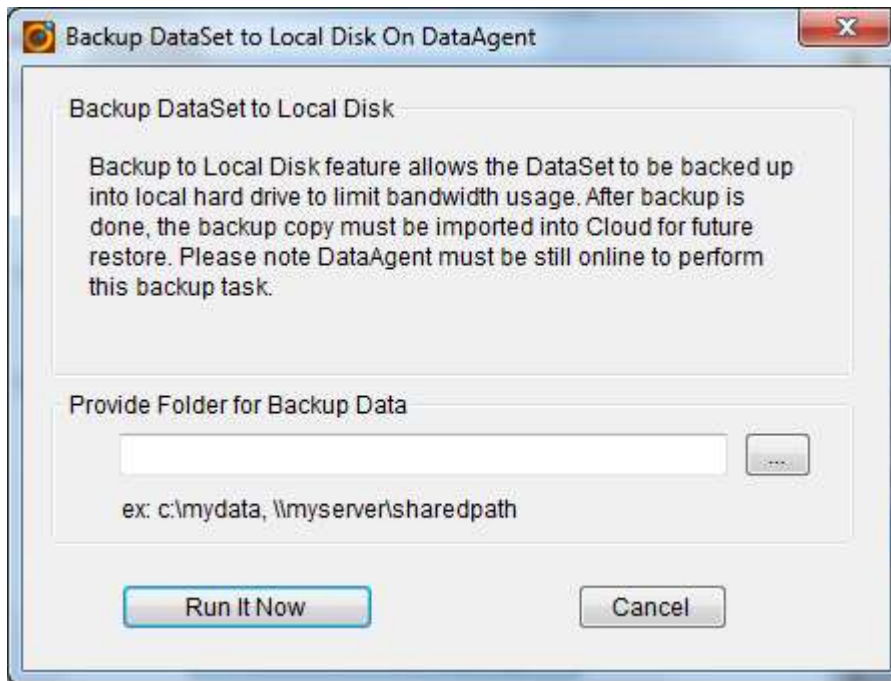
- General** tab is selected.
- Basic Info**: Name: 'Online Backup Schedule', Notes: (empty text area).
- Backup Type**: Full, Incremental, Differential.
- Backup Schedule**: Run It Now, Scheduled.
- Schedule**:
 - Day(s): Mon, Tue, Wed, Thu, Fri, Sat, Sun.
 - Time: 00 : 00.
 - End Date: Never end, End on: 02/19/2020.
 - Resume backup when DataAgent comes online.
- Buttons: Submit, Cancel.

From RingStor Explorer, Task List tab on right pane, verify all backups run to completion with 100% done.

6.1.2.2 Online Backup DataSets via Base Line Backup

Note: In event DataSet is large, first full backup via network is slow. RingStor Cloud can do a base line full backup to a local storage device on DataAgent. At end of base line backup, connect the storage device to a DataServer inside RingStor Cloud to import base line backup.

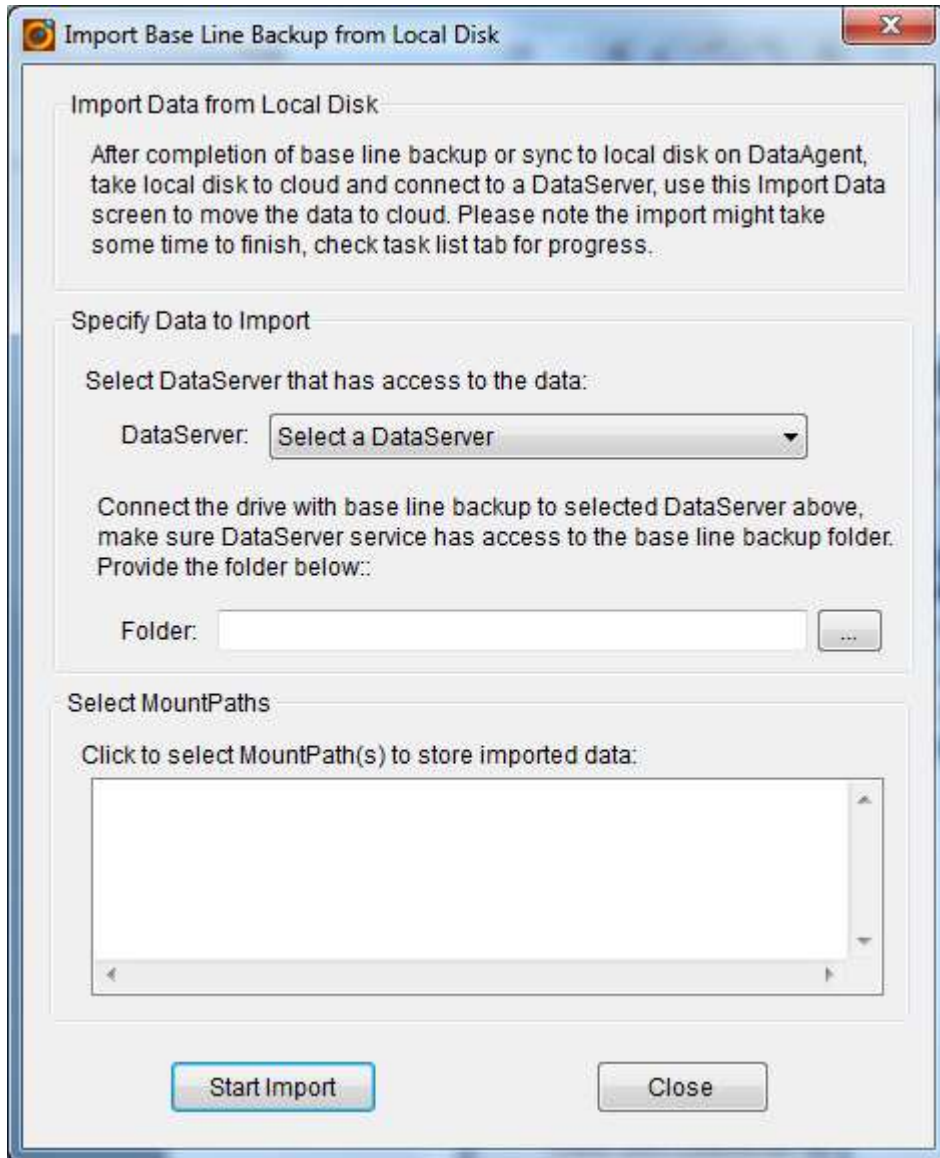
From RingStor Explorer, right click a DataSet, open Backup and Recover menu, select Full backup, click Create Base Line Backup:



Provide folder for backup data, click Run It Now.

From RingStor Explorer, Task List, verify all backups run to completion with 100% done.

From RingStor Explorer, top menu, Import -> Import Base Line Backup. Select a DataServer, provide the folder of the local base line backup, select a MountPath, click Start Import:

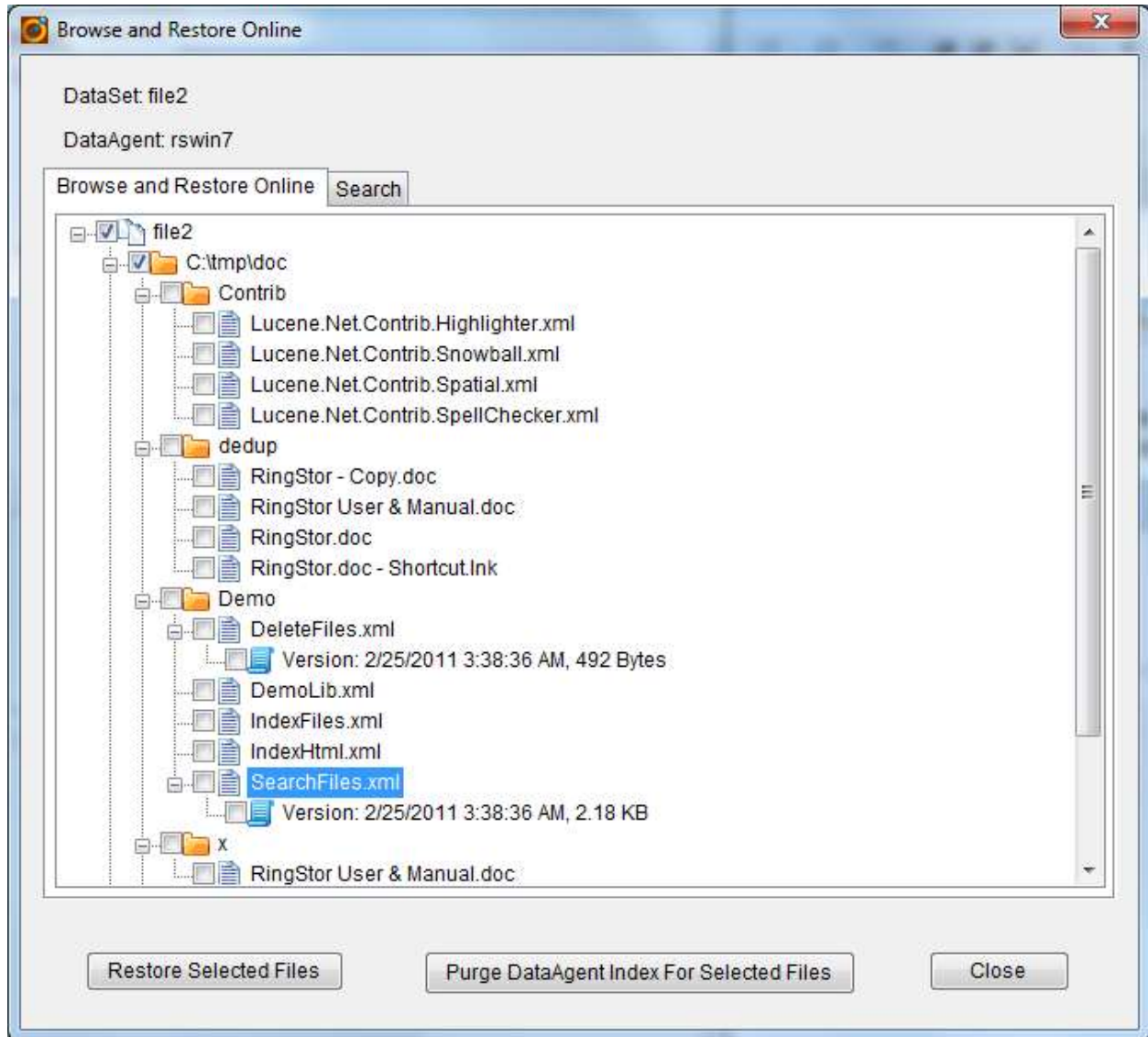


From RingStor Explorer, Task List, verify all data imports run to completion with 100% done.

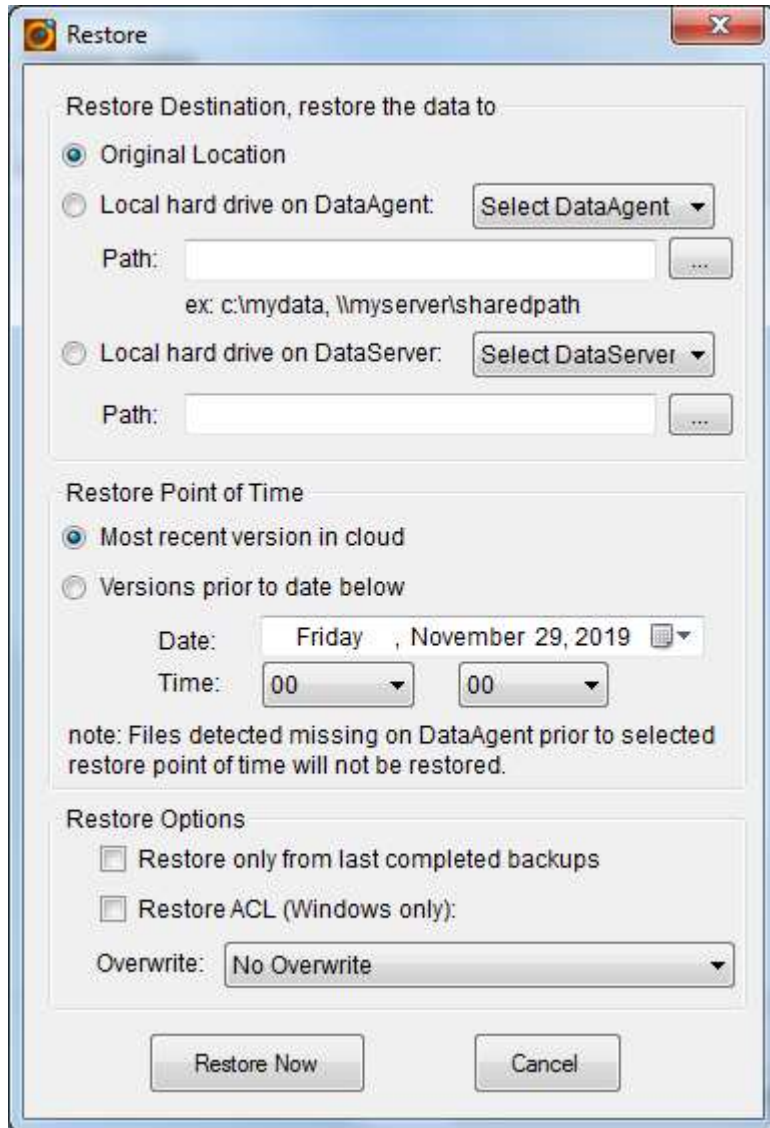
6.1.3 Recovery

6.1.3.1 For Online Backup DataSets:

From Backup and Recover menu for the DataSet, click Recovery tab, select RingStor Cloud in “Browse backup from”, browse the files in backup, select some files and folders, example below:



Click Restore Selected Files:



Choose one restore options

Original Location

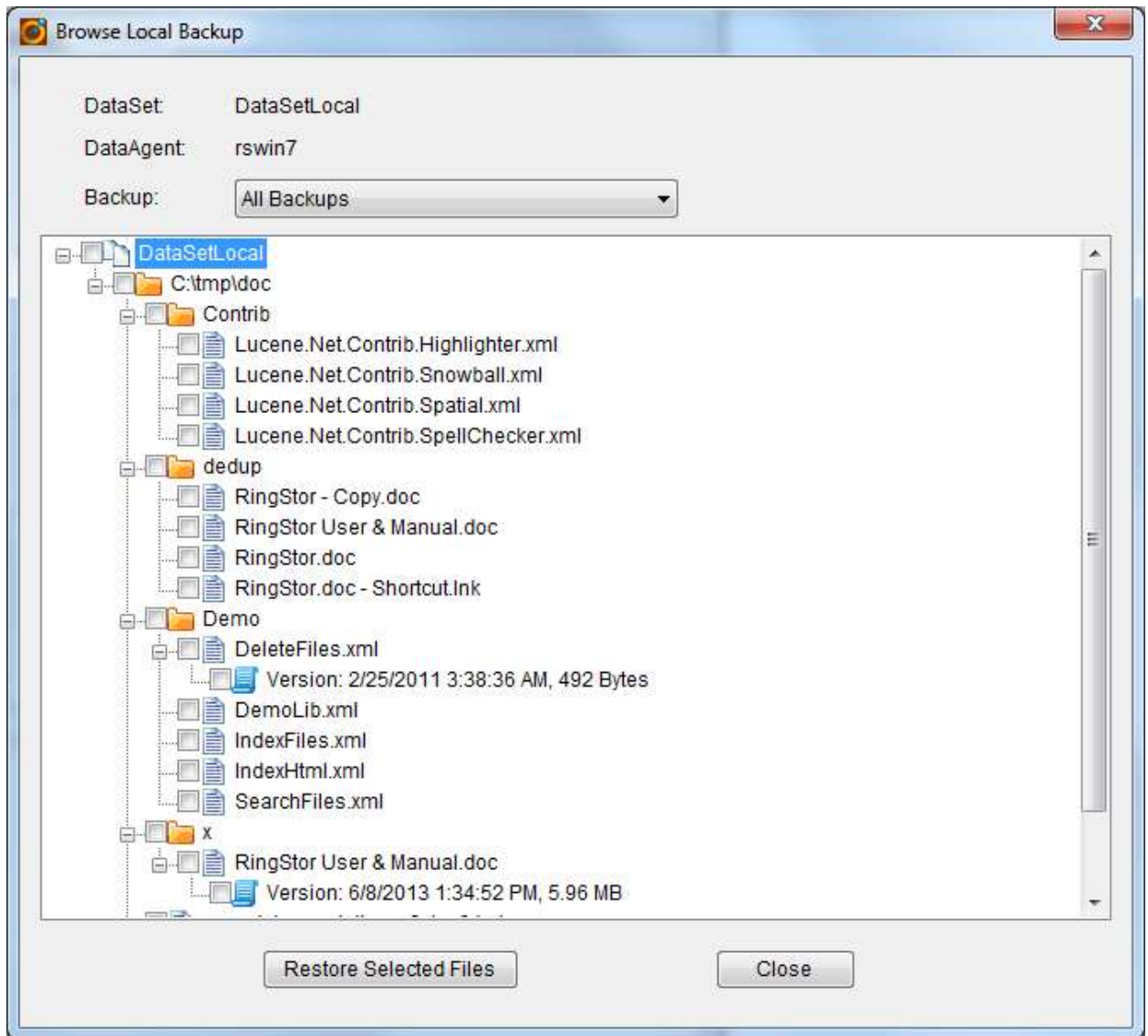
Local hard drive on a DataAgent

Local hard drive on a DataServer

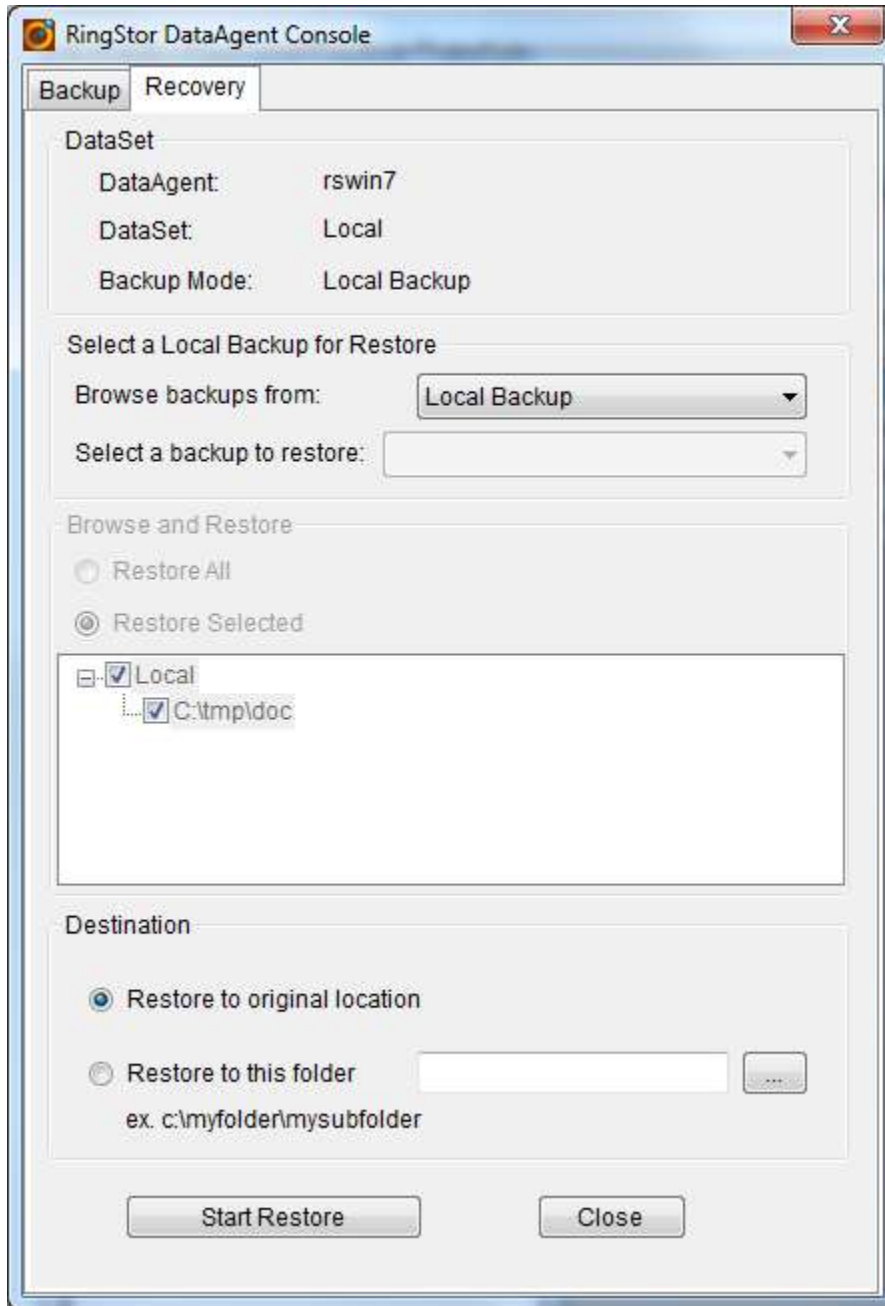
From RingStor Explorer Task List, verify restore runs to completion with 100% done.

6.1.3.2 For Local Backup DataSets

From Backup and Recover menu for the DataSet, click Recovery tab, select Local Backup in “Browse backup from”, browse the files in backup, select some files and folders, example below:



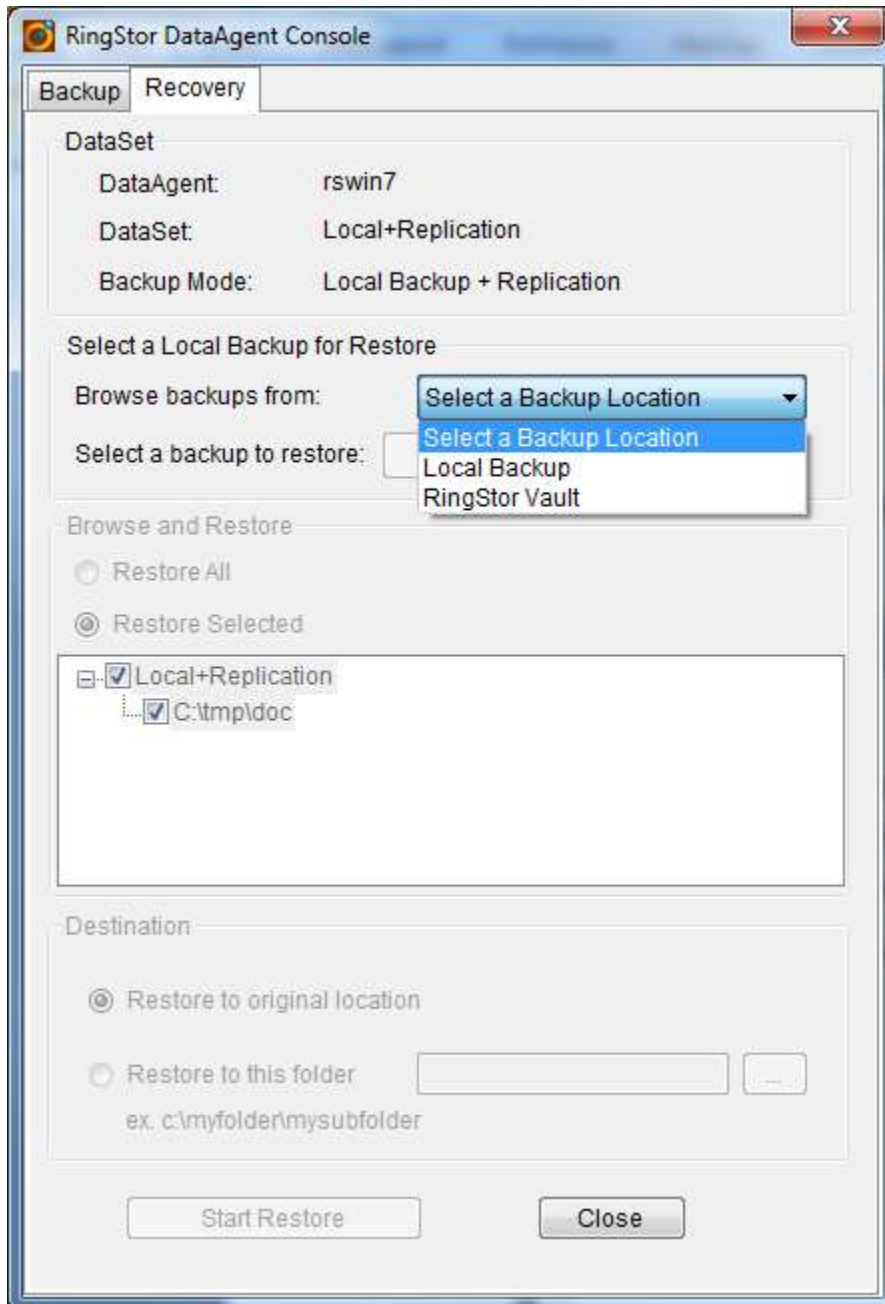
Click Restore Selected Files:



Choose one of the restore options:
Restore to original location
Restore to this folder

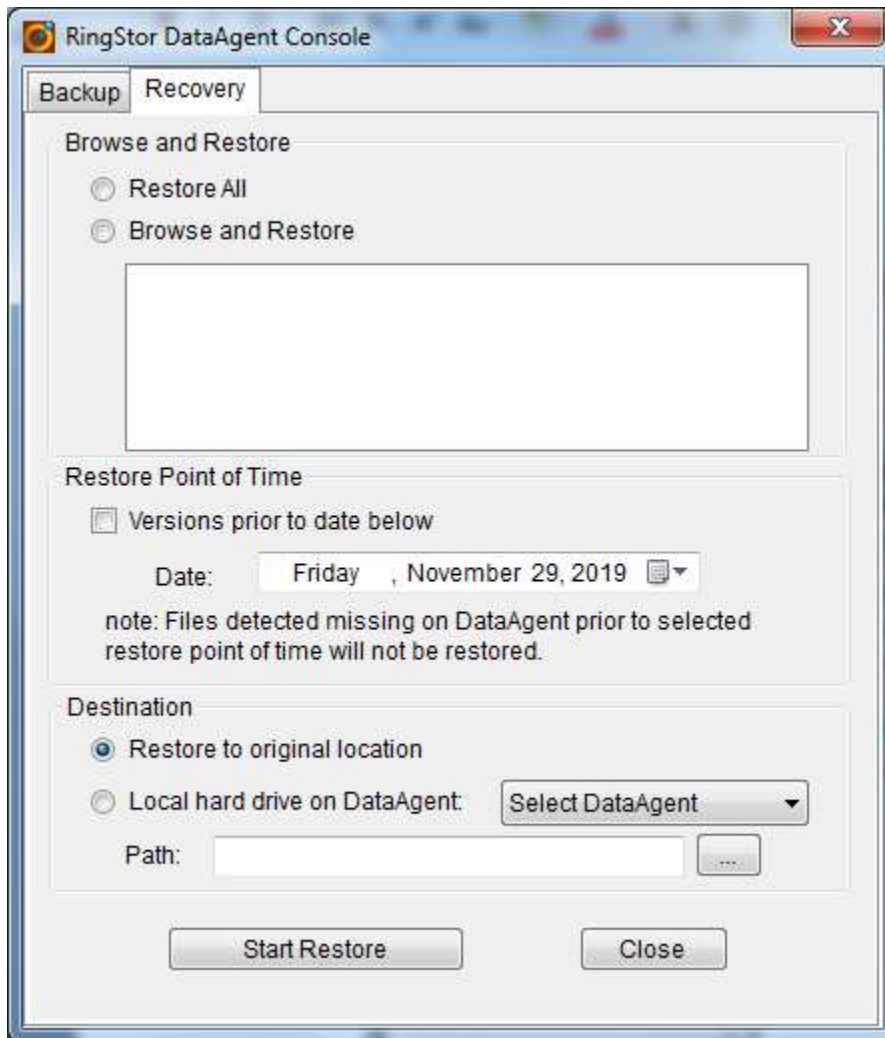
From RingStor Explorer Task List, verify restore runs to completion with 100% done.

6.1.3.3 For Local Backup + Replication DataSets, choose either RingStor Cloud or Local Backup for restore:



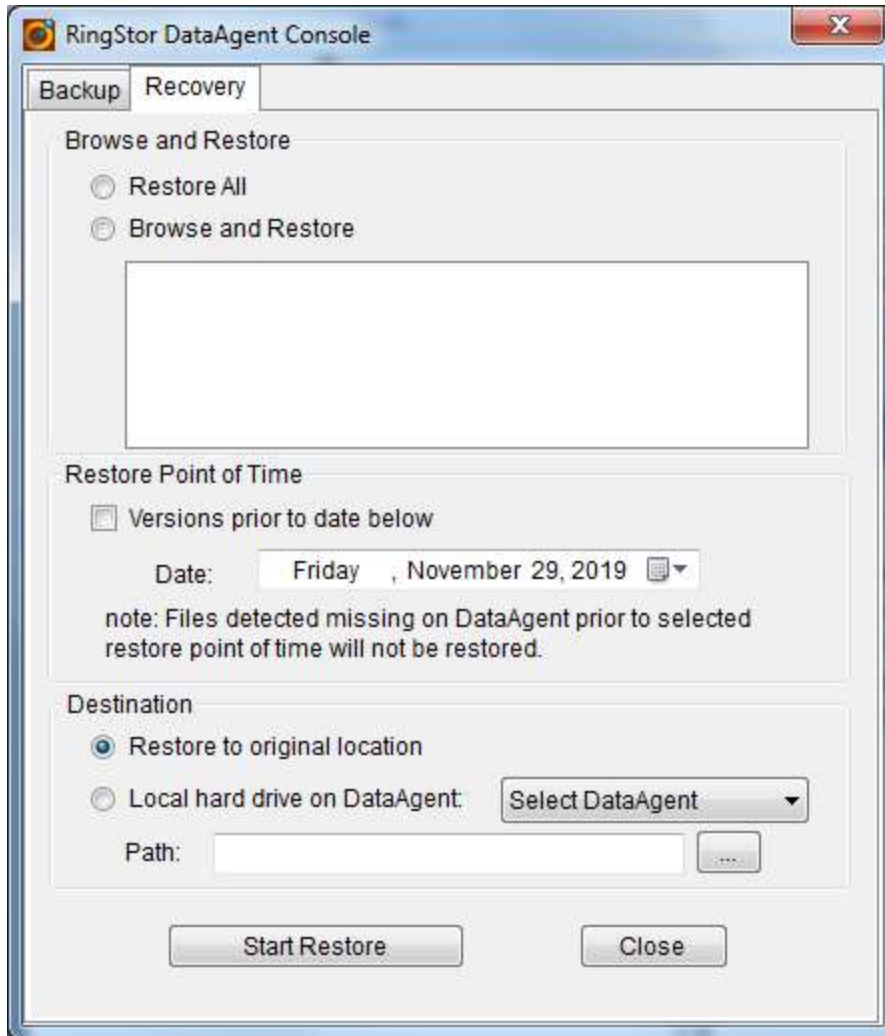
From RingStor Explorer Task List, verify restore runs to completion with 100% done.

6.1.3.4 For Backup to Amazon S3 DataSets, browse and select folders/files to restore:



From RingStor Explorer Task List, verify restore runs to completion with 100% done.

6.1.3.5 For Backup to Microsoft Azure DataSets, browse and select folders/files to restore:



From RingStor Explorer Task List, verify restore runs to completion with 100% done.

6.2 SQL Database Backup

SQL Database Backup DataSet is a collection of Microsoft SQL databases on DataAgent that require protection. DataSet's protection scheme is supported by its associated agent in section 1.3.

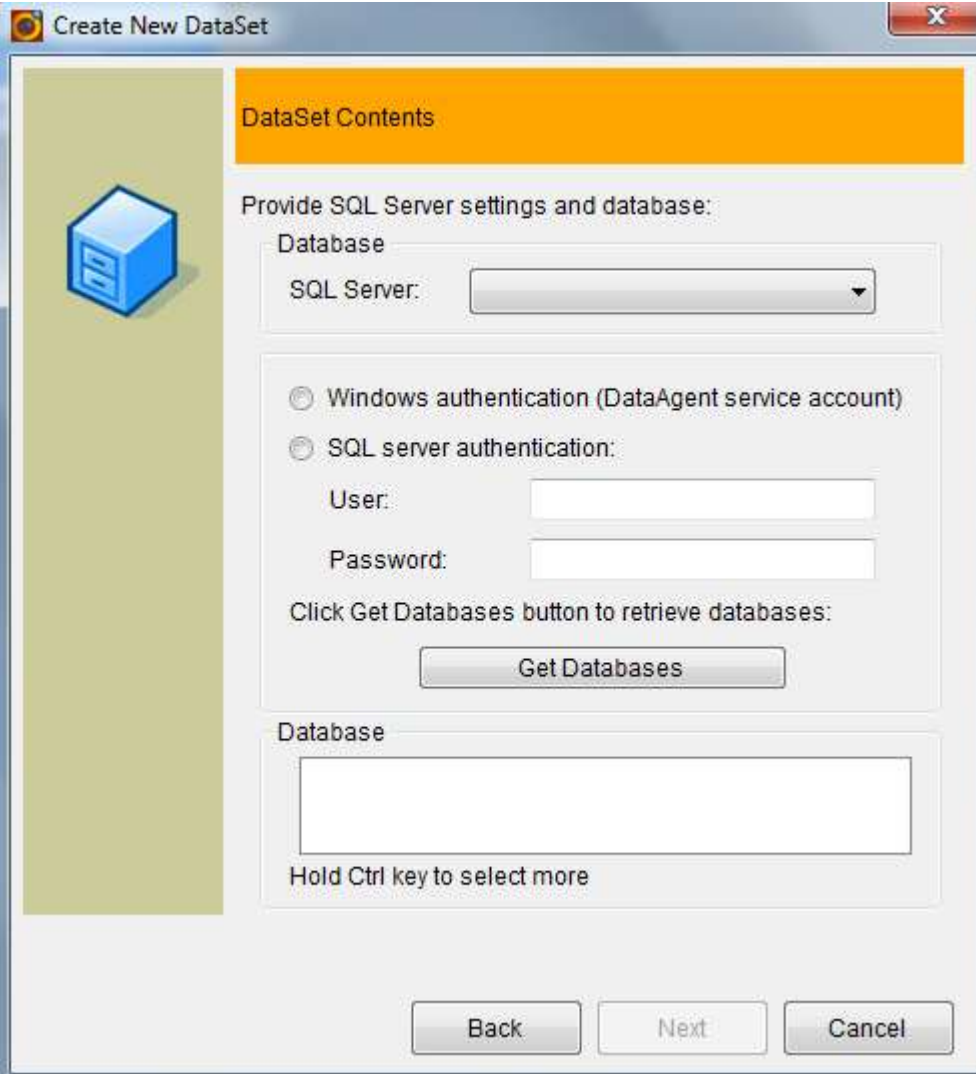
Feature	Comments
---------	----------

Backup Mode	Online, Local, Local + Replication
Base Line Backup	Yes
Backup	Full, Incremental

6.2.1 Create DataSet

From RingStor Explorer, select a DataAgent, right click SQL Database Backup agent, choose Create New DataSet menu to start the wizard.

Provide SQL settings, select SQL databases:



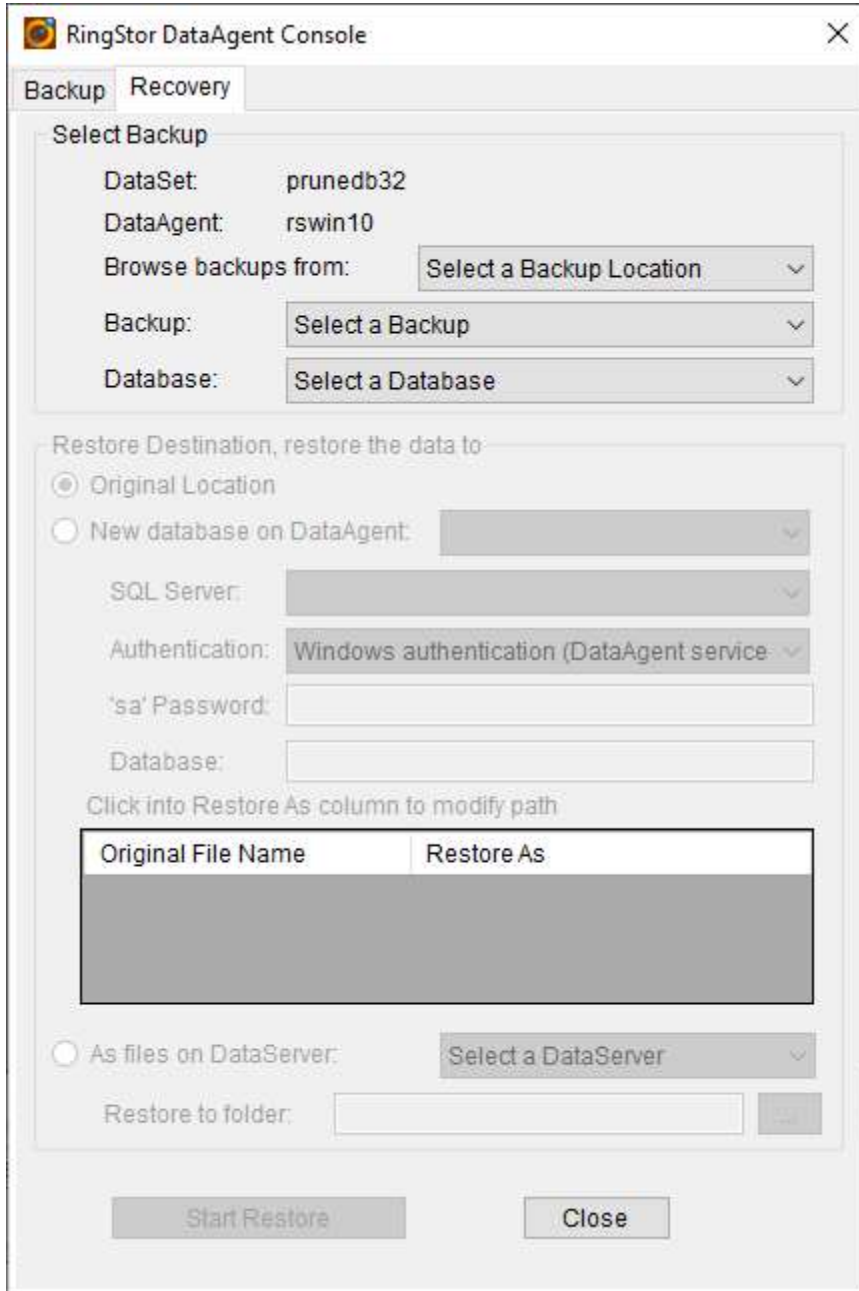
For SQL Database Backup agent, provide SQL server, username and password, database for protection. Click Get Databases button to list all databases and select one or more for DataSet.

6.2.2 Backup

Follow similar steps in File Backup for instructions.

6.2.3 Recovery

From Backup and Recover menu for the DataSet, click Recovery tab, select the location of backup to restore, example below:



The screenshot shows the RingStor DataAgent Console window with the Recovery tab selected. The interface is divided into several sections:

- Select Backup:** This section contains fields for DataSet (prunedb32), DataAgent (rswin10), and three dropdown menus: "Browse backups from:" (Select a Backup Location), "Backup:" (Select a Backup), and "Database:" (Select a Database).
- Restore Destination, restore the data to:** This section has two radio buttons: "Original Location" (selected) and "New database on DataAgent:". Below these are fields for "SQL Server:", "Authentication:" (Windows authentication (DataAgent service)), "'sa' Password:", and "Database:".
- Click into Restore As column to modify path:** This section contains a table with two columns: "Original File Name" and "Restore As". The table body is currently empty.
- As files on DataServer:** This section has a radio button and a dropdown menu "Select a DataServer". Below it is a "Restore to folder:" field with a browse button.

At the bottom of the window are two buttons: "Start Restore" and "Close".

Select one database, a task, choose one restore options:
Original Location (select database must no longer exist)
New database on DataAgent
As files on DataServer

From RingStor Explorer Task List, verify restore runs to completion with 100% done.

6.3 MySQL Database Backup

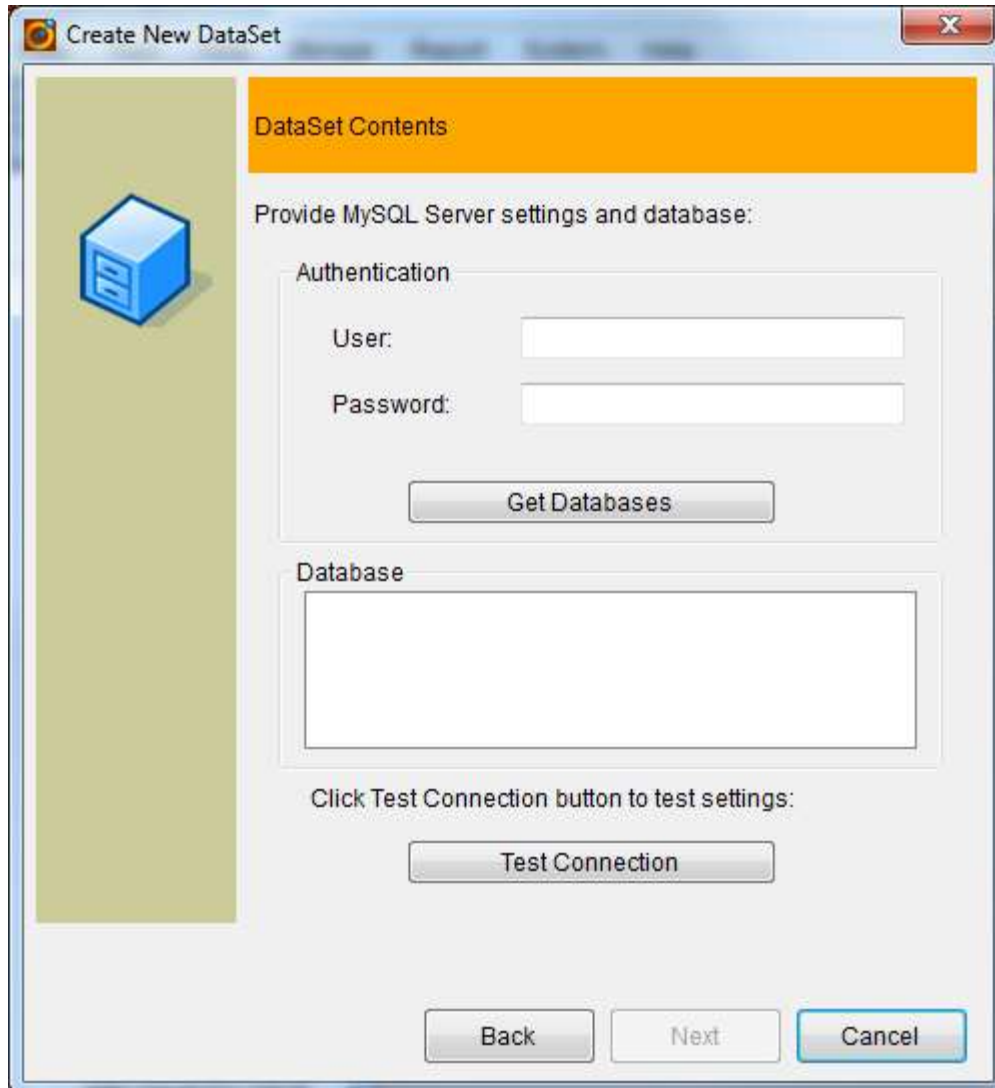
MySQL Database Backup DataSet is a collection of MySQL databases on DataAgent that require protection. DataSet's protection scheme is supported by its associated agent in section 1.3.

Feature	Comments
Backup Mode	Online, Local, Local + Replication
Base Line Backup	Yes
Backup	Full, Incremental

6.3.1 Create DataSet

From RingStor Explorer, select a DataAgent, right click MySQL Database Backup agent, choose Create New DataSet menu to start the wizard.

Specify MySQL settings, choose MySQL databases:



For MySQL Database Backup agent, provide user and password, database for protection. Click Get Databases button to list all databases and select one or more for DataSet.

6.3.2 Backup

Follow similar steps in SQL Database Backup for instructions.

6.3.3 Recovery

From Backup and Recover menu for the DataSet, click Recovery tab, select the location of backup to restore, follow steps on screen to restore MySQL database.

6.4 Exchange Backup

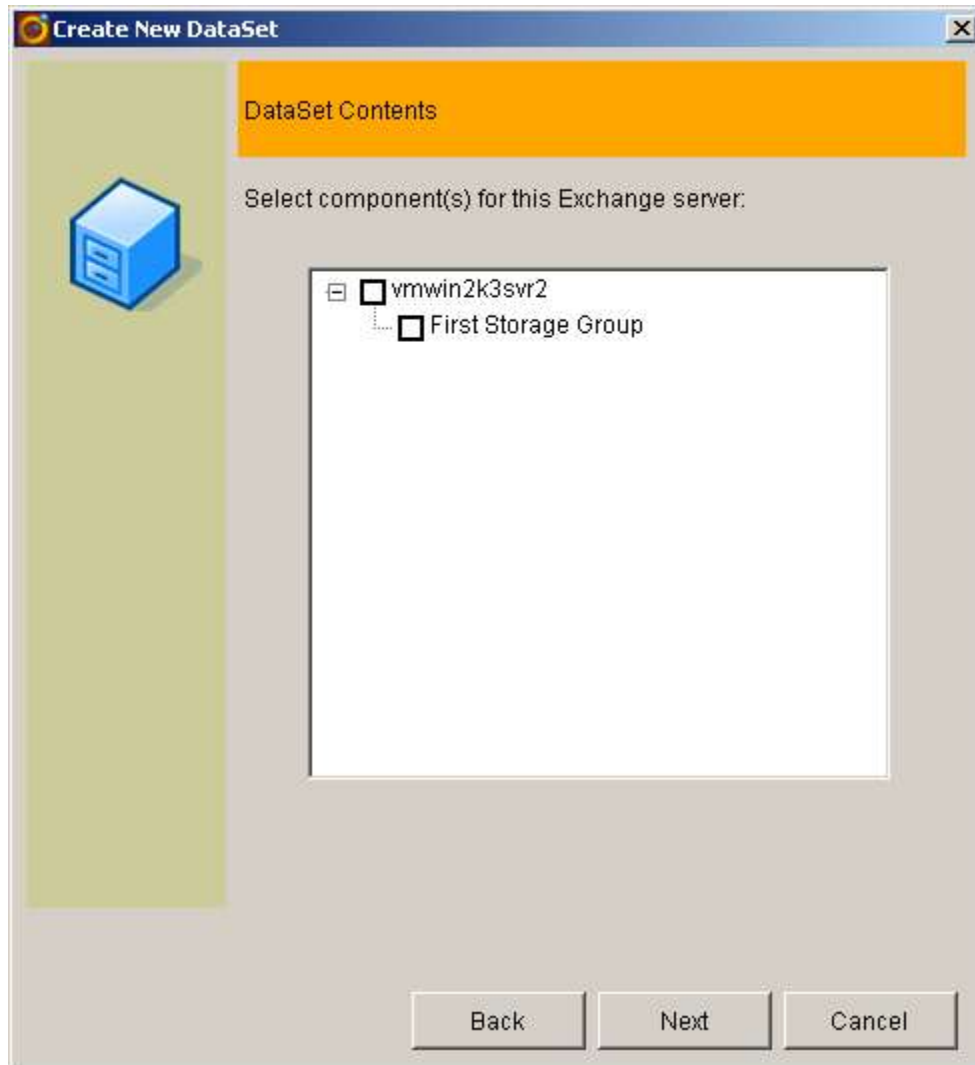
Exchange Backup DataSet is a collection of databases, logs in Microsoft Exchange on DataAgent. DataSet's protection scheme is supported by its associated agent in section 1.3.

Feature	Comments
Backup Mode	Online, Local, Local + Replication
Base Line Backup	Yes
Backup	Full, Incremental

6.4.1 Create DataSet

From RingStor Explorer, select a DataAgent, right click Exchange Backup agent, choose Create New DataSet menu to start the wizard.

Specify Exchange components:

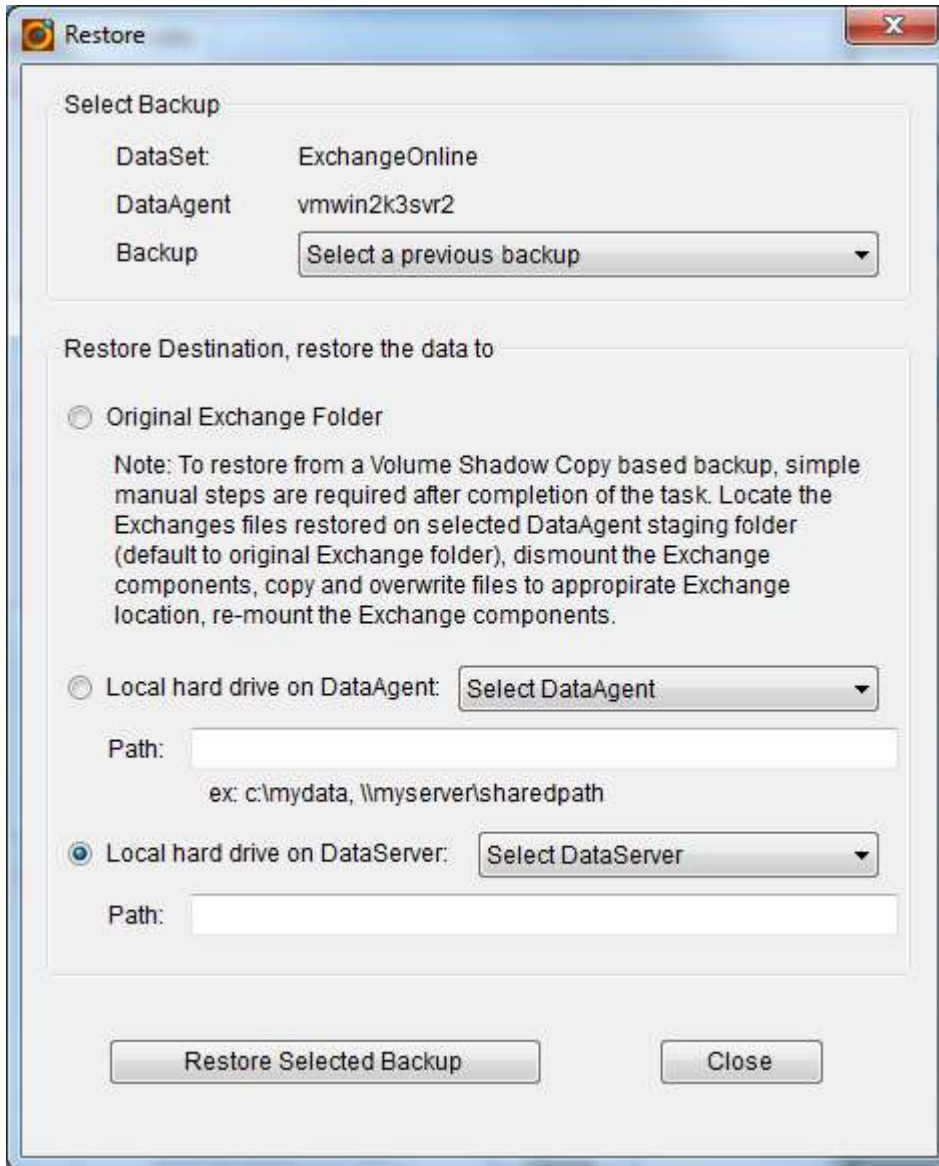


6.4.2 Backup

Follow similar steps in SQL Database Backup for instructions.

6.4.3 Recovery

Select backup task to restore and restore destination:



6.5 Exchange Mailbox Backup

Exchange Mailbox Backup DataSet is a collection of mailboxes in Microsoft Exchange on DataAgent. DataSet's protection scheme is supported by its associated agent in section 1.3.

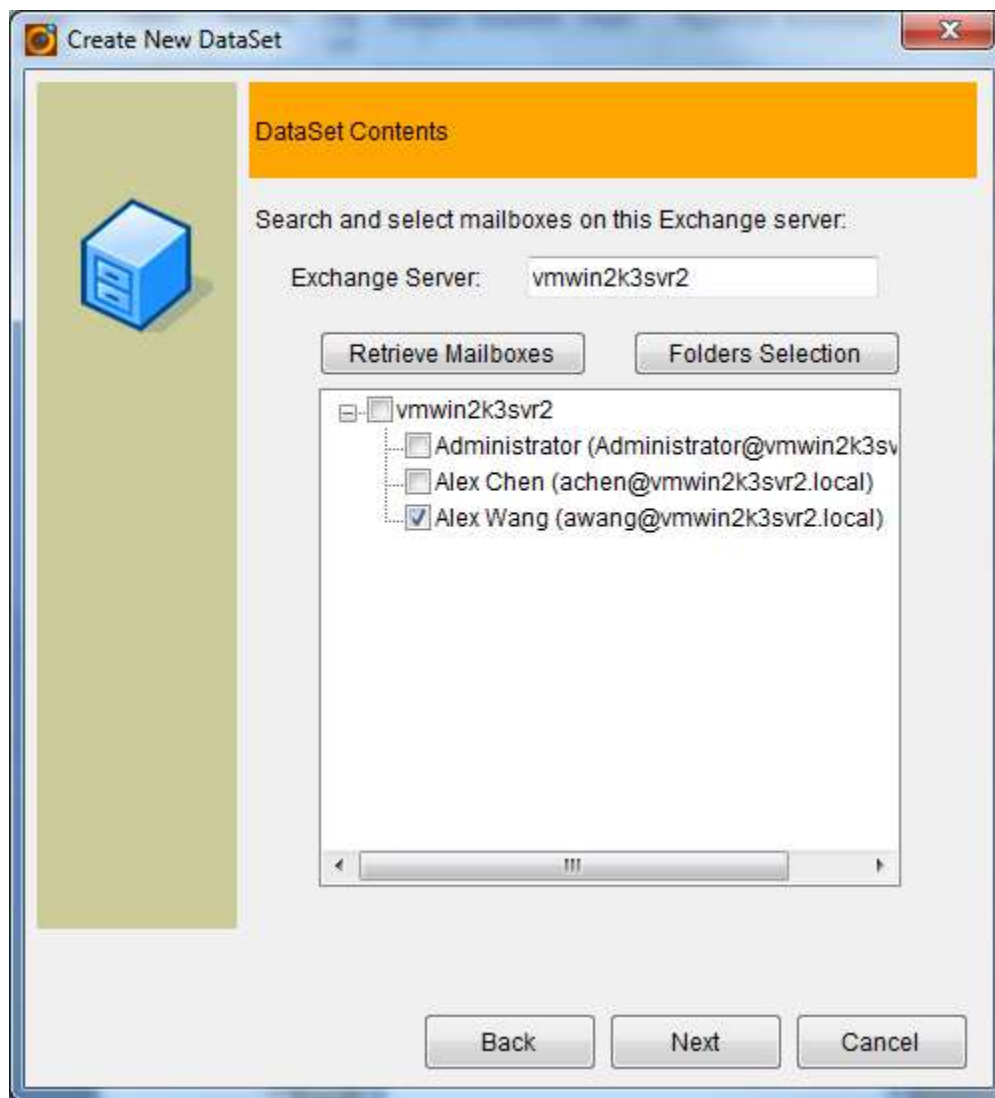
Feature	Comments
---------	----------

Backup Mode	Online
Base Line Backup	No
Backup	Incremental

6.5.1 Create DataSet

From RingStor Explorer, select a DataAgent, right click Exchange Mailbox Backup agent, choose Create New DataSet menu to start the wizard.

Specify Exchange mailboxes:



6.5.2 Backup

Follow similar steps in File Backup for instructions.

6.5.3 Recovery

Follow similar steps in File Backup for instructions.

6.6 Office 365 Mailbox Backup

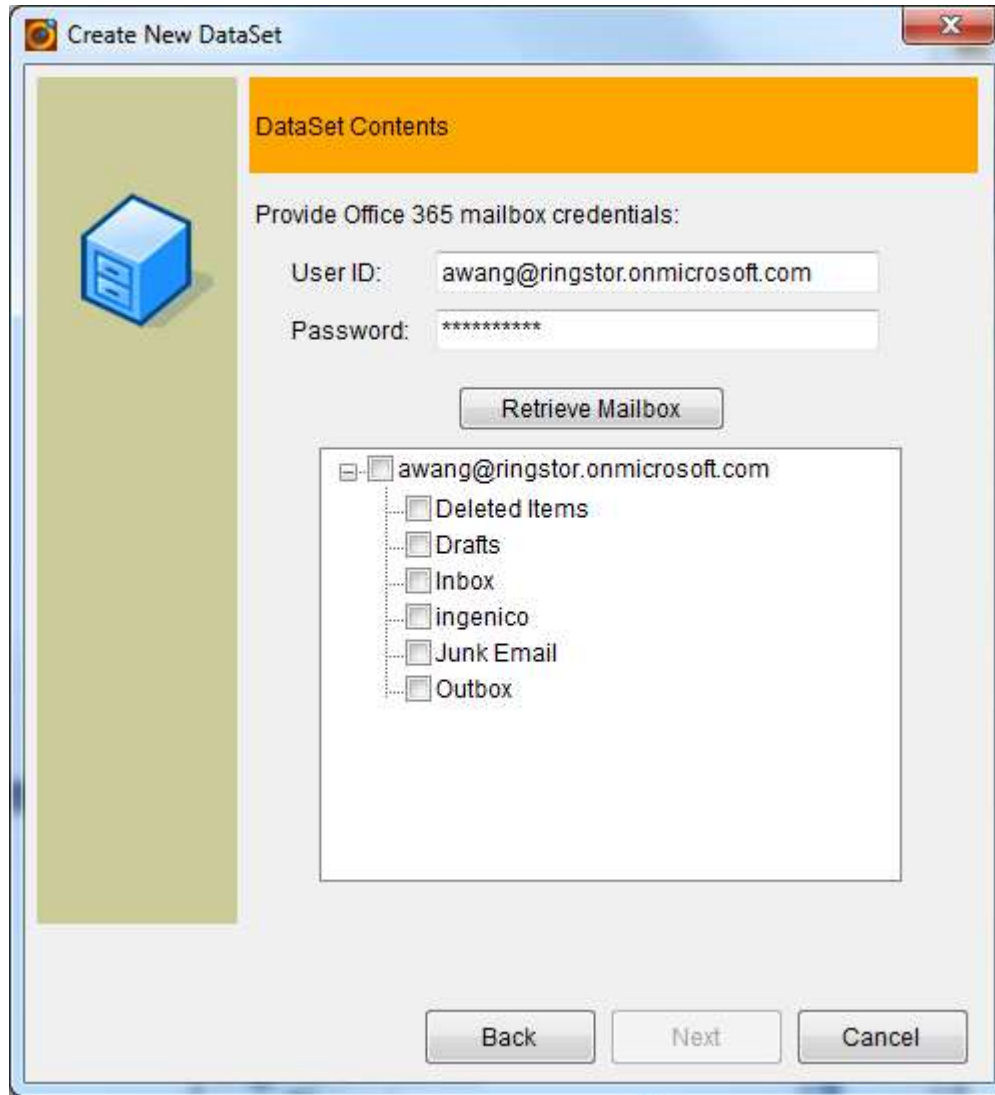
Office 365 Mailbox Backup DataSet is all email messages in one Office 365 mailbox. DataSet's protection scheme is supported by its associated agent in section 1.3

Feature	Comments
Backup Mode	Online
Base Line Backup	No
Backup	Incremental

6.6.1 Create DataSet

From RingStor Explorer, select a DataAgent, right click Office 365 Mailbox Backup agent, choose Create New DataSet menu to start the wizard.

Specify Office 365 mailbox



6.6.2 Backup

Follow similar steps in File Backup for instructions.

6.6.3 Recovery

Follow similar steps in File Backup for instructions.

6.7 Bare Metal Backup

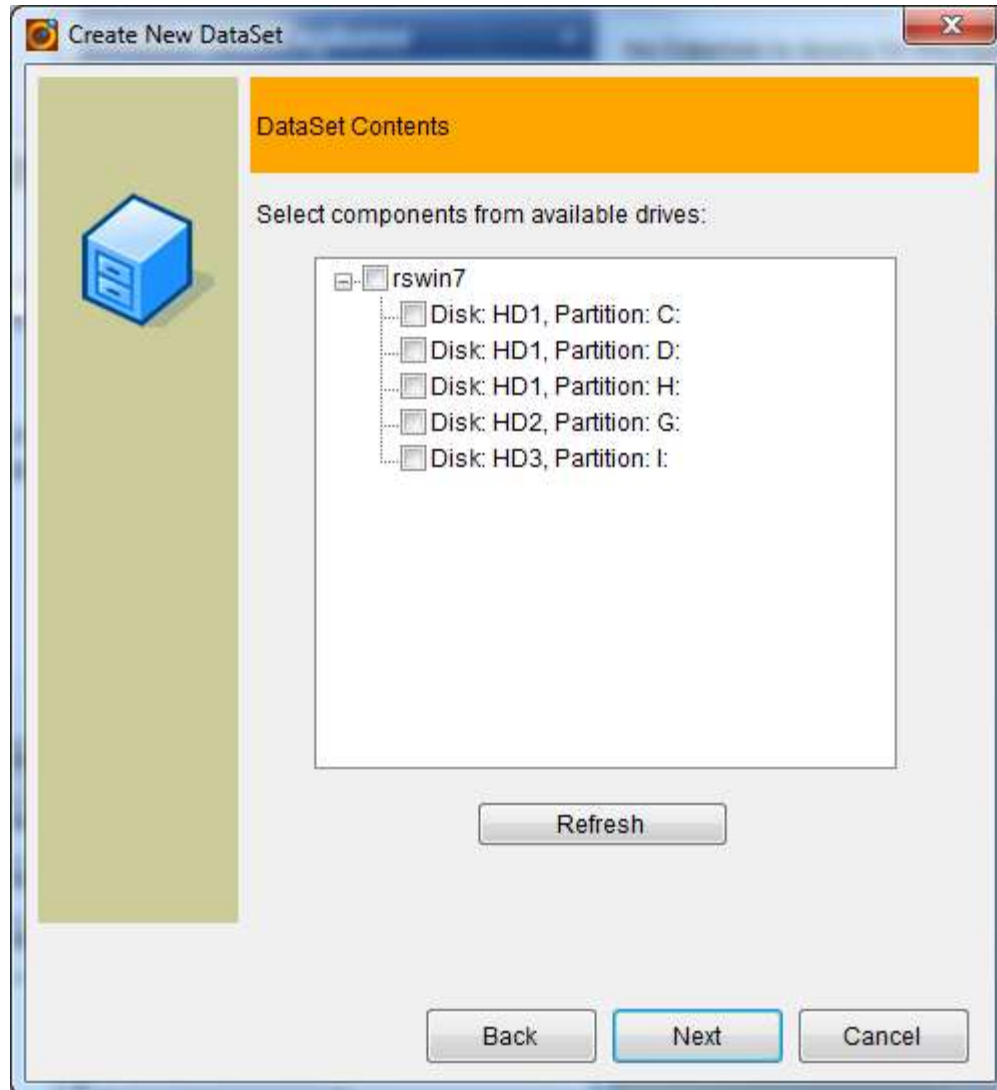
■ Bare Metal Backup DataSet is a physical hard drive or a volume on DataAgent. DataSet's protection scheme is supported by its associated agent in section 1.3.

Feature	Comments
Backup Mode	Local, Local + Replication
Base Line Backup	Yes
Backup	Full, Differential

6.7.1 Create DataSet

From RingStor Explorer, select a DataAgent, right click Bare Metal Backup agent, choose Create New DataSet menu to start the wizard.

Specify hard drive or volume:



6.7.1 Backup

Full backup is required for Bare Metal backup. Follow steps in File Backup for instructions.

6.7.2 Recovery

There are different options to recover from a Bare Metal Backup.

- Browse Backup and Select Files/Folders to Restore – use this option to just restore a few files/folders from a backup
- Restore Backup to VHD – use this option to restore entire backup to a VHD
- Restore As Backup Files – restore backed up hard drive images as files, this option is for restore backup onto a physical computer.

Please contact RingStor for detailed instructions how to restore a Bare Metal backup in RingStor.

6.8 VMware Virtual Machine Backup

VMware Virtual Machine Backup DataSet is collection of virtual machine instances in VMware ESXi. DataSet's protection scheme is supported by its associated agent in section 1.3

Feature	Comments
Backup Mode	Local, Local + Replication
Base Line Backup	No
Backup	Full

6.8.1 Create DataSet

From RingStor Explorer, select a DataAgent, right click VMware Virtual Machine Backup agent, choose Create New DataSet menu to start the wizard.

Specify VMware ESXi server settings, choose virtual machines:

Create New DataSet

DataSet Contents

Provide login and select virtual machines:

Authentication

Authentication: vCenter ESXi Server

Host:

User:

Password:

Get Virtual Machines

Virtual Machines

Back Next Cancel

6.8.2 Backup

Full backup is required for VMware Virtual Machine backup

6.8.3 Recovery

There are different options to recover from a VMware Virtual Machine Backup.

- Restore from Local Backup on DataAgent – use this option if backup to restore is at local storage on DataAgent
- Restore from RingStor Cloud – use this option to restore backup from RingStor Cloud

6.9 Hyper-V Backup

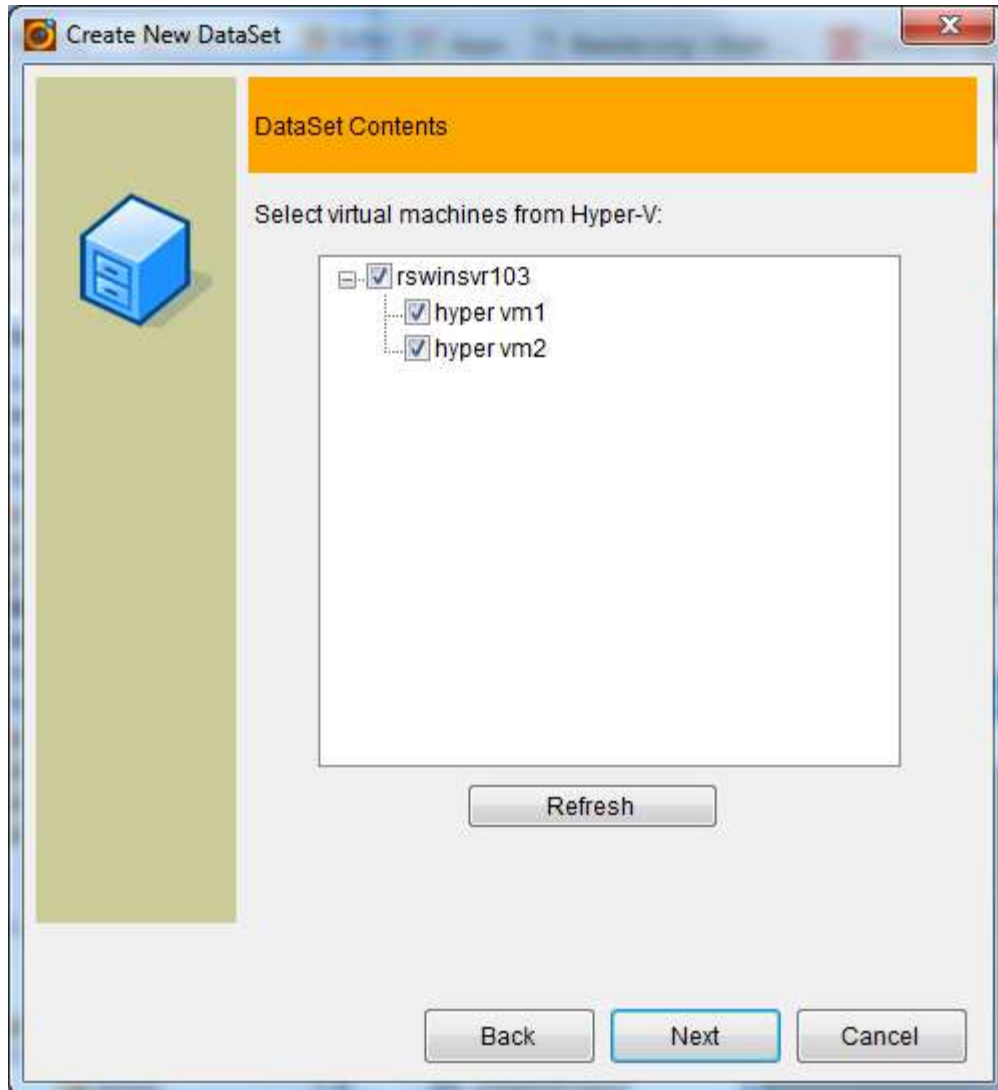
Hyper-V Backup DataSet is collection of virtual machine instances in Microsoft Hyper-V. DataSet's protection scheme is supported by its associated agent in section 1.3

Feature	Comments
Backup Mode	Local, Local + Replication
Base Line Backup	No
Backup	Full

6.9.1 Create DataSet

From RingStor Explorer, select a DataAgent, right click Hyper-V Backup agent, choose Create New DataSet menu to start the wizard.

Choose Microsoft Hyper-V virtual machines:



6.9.2 Backup

Full backup is required for Hyper-V backup.

Note: Windows Server Backup must be installed on Windows server for Hyper-V backup.

6.9.3 Recovery

There are different options to recover from a Hyper-V Virtual Machine Backup.

- Restore from Local Backup on DataAgent – use this option if backup to restore is at local storage on DataAgent
- Restore from RingStor Cloud – use this option to restore backup from RingStor Cloud

6.10 OpenStack Backup

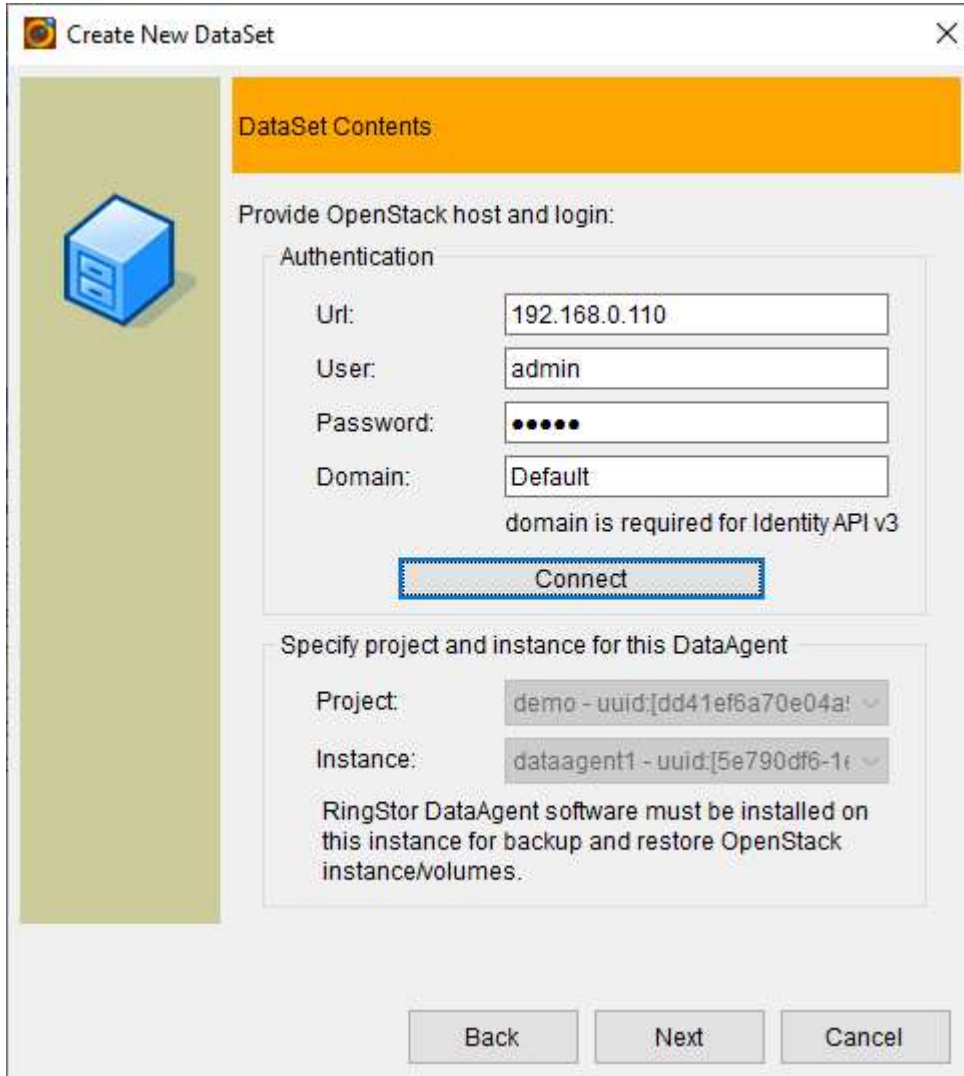
OpenStack Backup DataSet is collection of instances in OpenStack. DataSet's protection scheme is supported by its associated agent in section 1.3

Feature	Comments
Backup Mode	Online
Base Line Backup	No
Backup	Full, Incremental

6.10.1 Create DataSet

From RingStor Explorer, select a DataAgent, right click OpenStack Backup agent, choose Create New DataSet menu to start the wizard.

Choose OpenStack instances:



Create New DataSet

DataSet Contents

Provide OpenStack host and login:

Authentication

Url: 192.168.0.110

User: admin

Password: ●●●●●

Domain: Default

domain is required for Identity API v3

Connect

Specify project and instance for this DataAgent

Project: demo - uuid:[dd41ef6a70e04a]

Instance: dataagent1 - uuid:[5e790df6-1e]

RingStor DataAgent software must be installed on this instance for backup and restore OpenStack instance/volumes.

Back Next Cancel

Note: volumes attached to selected instances are backed up. Images are not backed up.

6.10.2 Backup

Full or incremental backup is required for OpenStack backup.

6.10.3 Recovery

Restore from RingStor Vault – use this option to restore backup from RingStor Vault

6.11 Oracle Database Backup

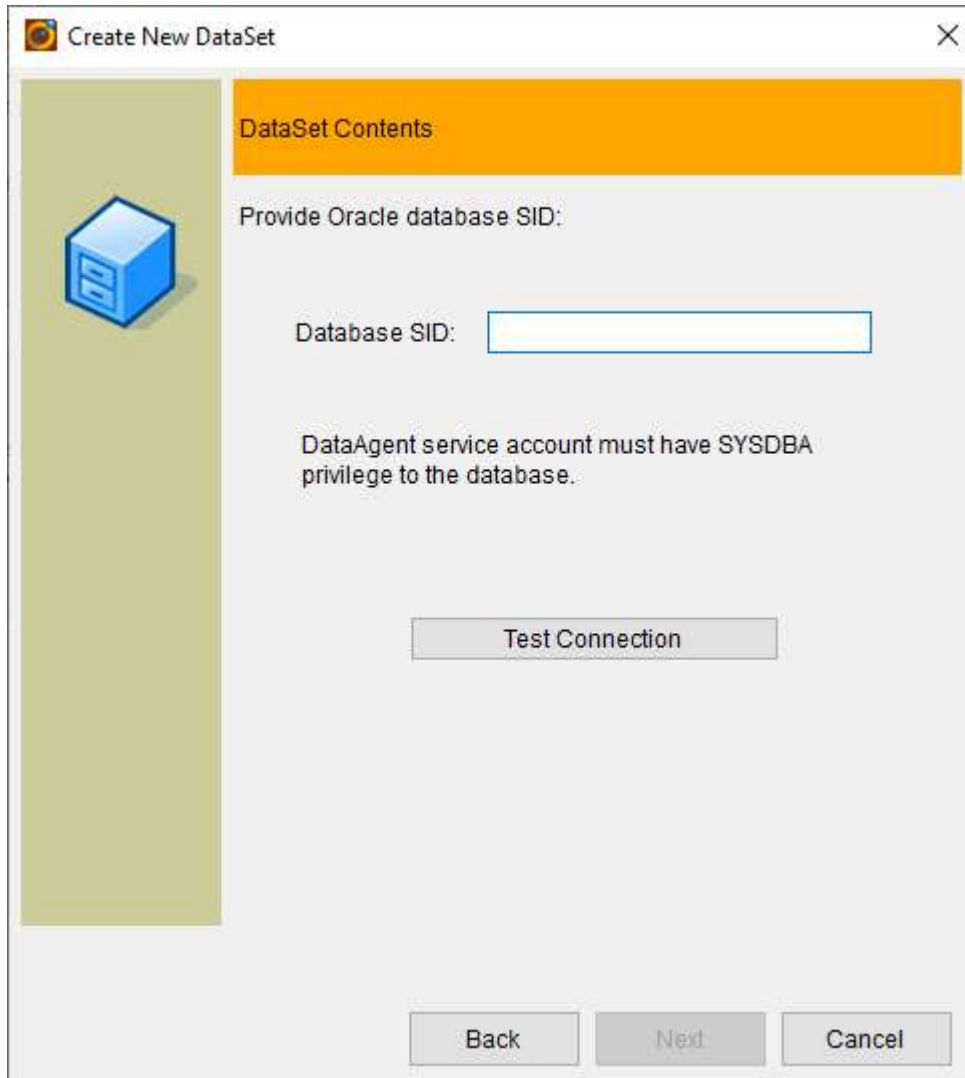
Oracle Database Backup DataSet is one database in Oracle Database Server 12 or newer. DataSet's protection scheme is supported by its associated agent in section 1.3

Feature	Comments
Backup Mode	Online
Base Line Backup	No
Backup	Full, Incremental, Archive Logs

6.11.1 Create DataSet

From RingStor Explorer, select a DataAgent, right click Oracle Database Backup agent, choose Create New DataSet menu to start the wizard.

Provide Oracle database SID:

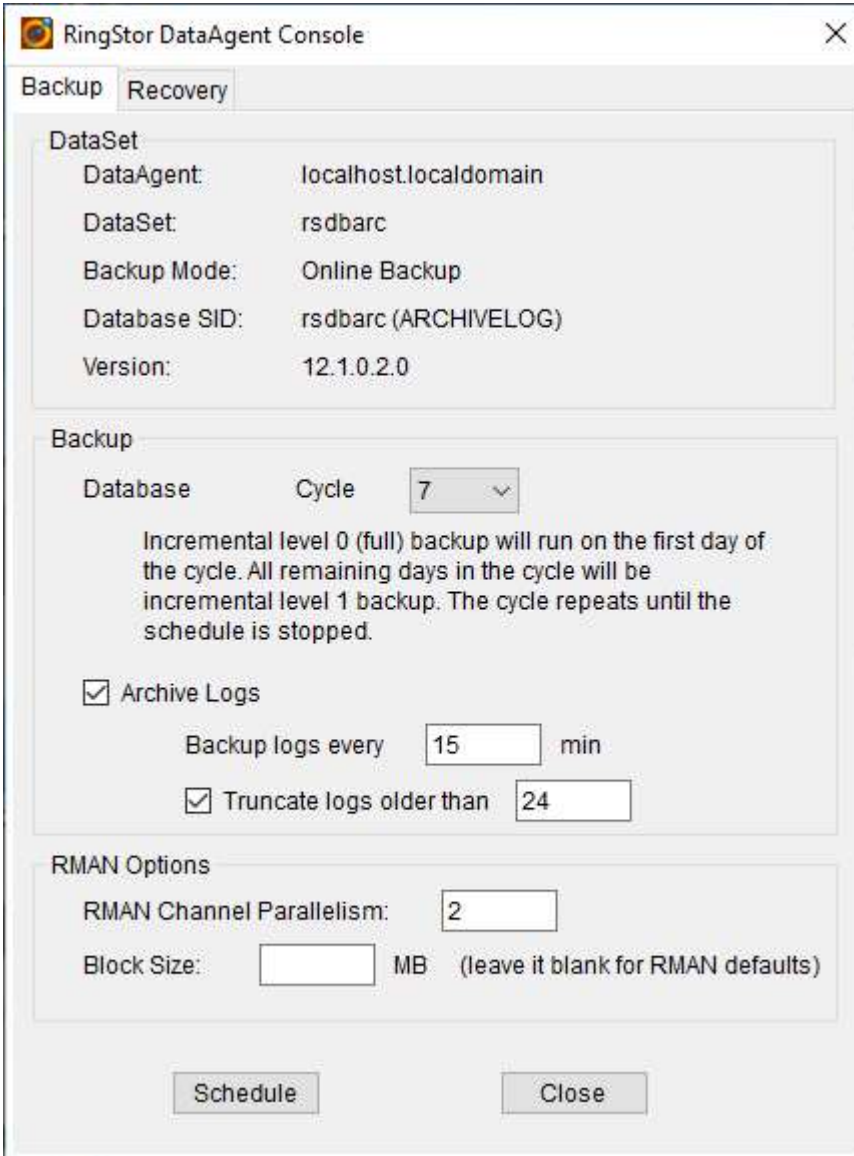


Note: OS authentication is used for DataAgent to access the Oracle, thus DataAgent service account must have SYSDBA privilege to the Oracle database. This service account must be also part of super user group.

6.11.2 Backup

For Oracle database, backup is by cycles. The first backup in each cycle is an incremental level 0 backup, ie, a full backup, subsequent backups in the same cycle are all incremental level 1 backups, ie, incrementals.

For database in ARCHIVELOG mode, archive logs can be backed up more frequently.



The screenshot shows the 'RingStor DataAgent Console' window with the 'Backup' tab selected. The 'DataSet' section contains the following information:

DataAgent:	localhost.localdomain
DataSet:	rsdbarc
Backup Mode:	Online Backup
Database SID:	rsdbarc (ARCHIVELOG)
Version:	12.1.0.2.0

The 'Backup' section includes a 'Database' field and a 'Cycle' dropdown menu set to '7'. Below this, a text box explains: 'Incremental level 0 (full) backup will run on the first day of the cycle. All remaining days in the cycle will be incremental level 1 backup. The cycle repeats until the schedule is stopped.'

There are two checked options:

- Archive Logs
 - Backup logs every min
 - Truncate logs older than

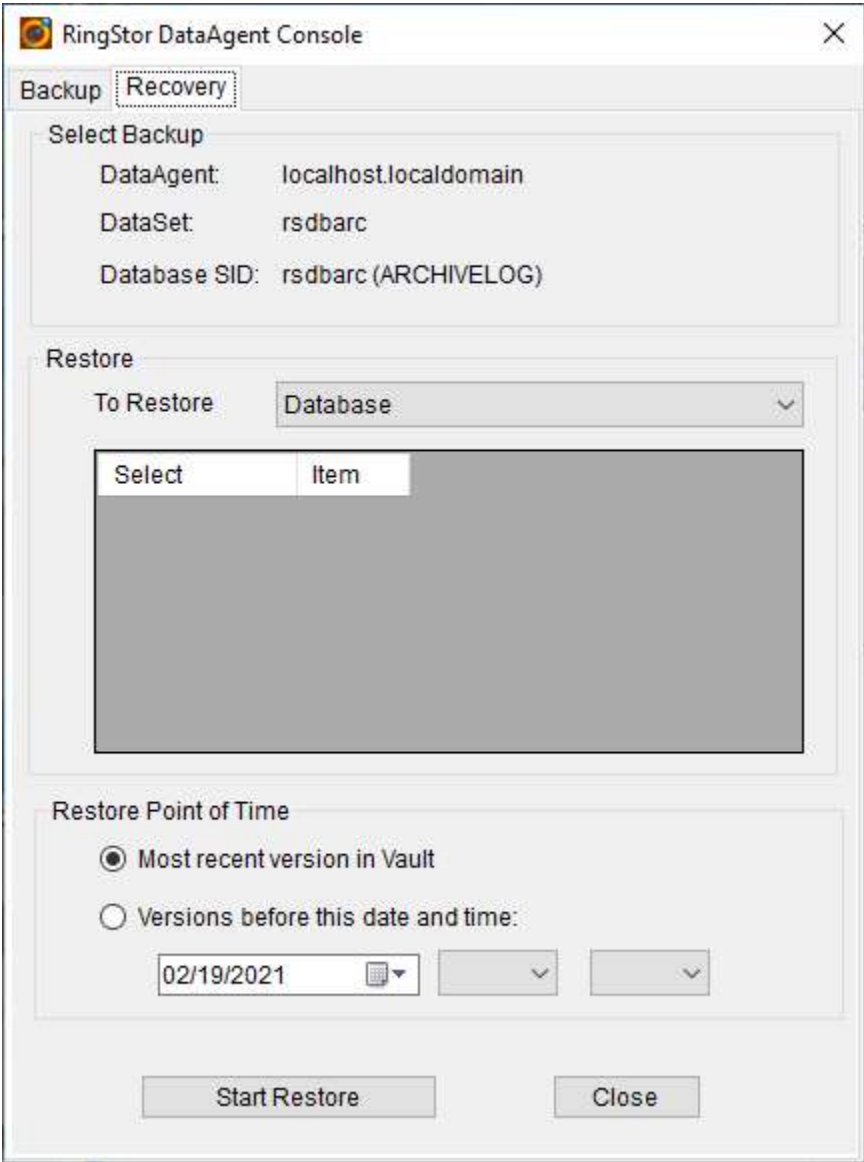
The 'RMAN Options' section includes:

- RMAN Channel Parallelism:
- Block Size: MB (leave it blank for RMAN defaults)

At the bottom, there are 'Schedule' and 'Close' buttons.

6.11.3 Recovery

Database, tablespaces or data files can be selected for restore. After restore, recover database, tablespaces or data files are attempted.



7 Data Sync

7.1 Planning Data Sync

Before define application data to sync, a right data sync plan must be selected. In this release.

7.1.1 File Sync

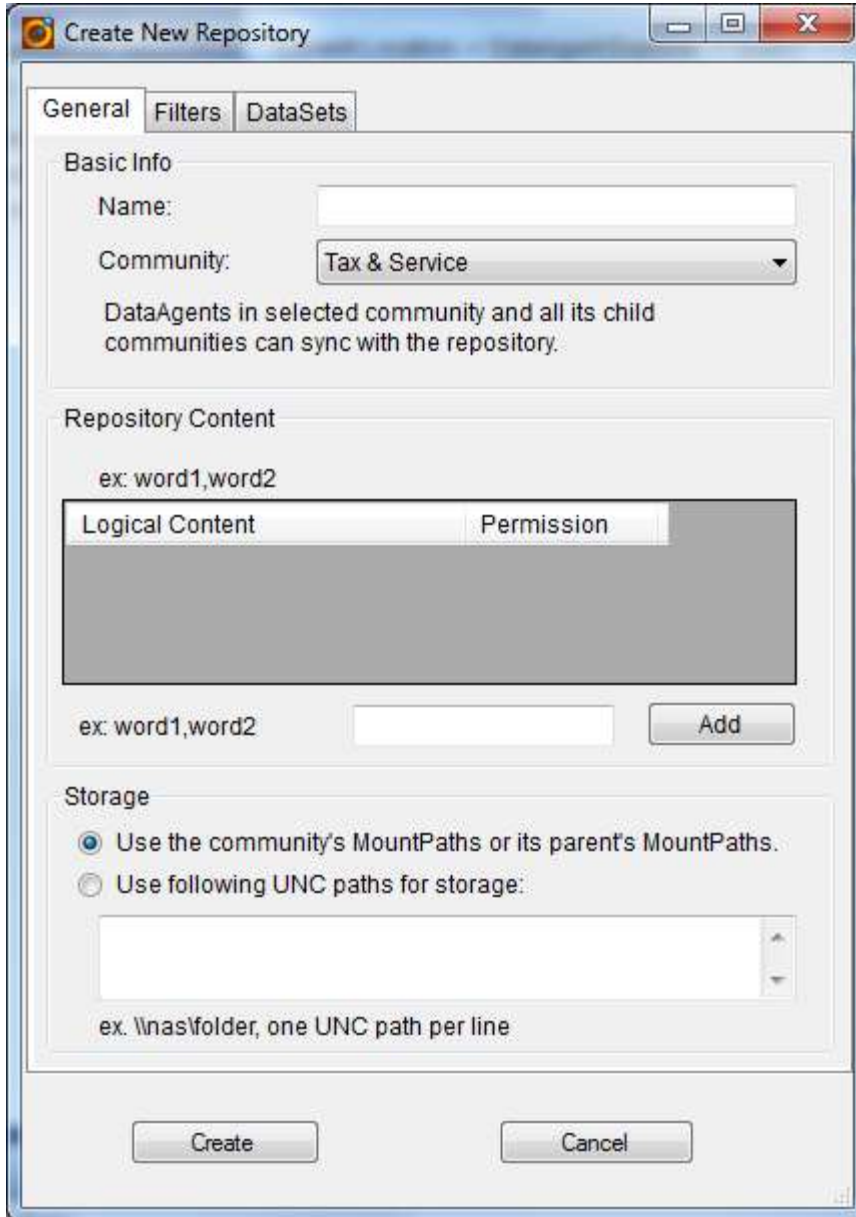
Files from different DataAgents can be synced to the same repository. Three different sync modes are supported:

- Bi-Directional: data is synced in both ways, most recent copies are kept in all agents
- Upload Only: most recent data is uploaded to sync repository in cloud
- Download Only: Download from sync repository only

7.2 Create Sync Repository

Sync repository is the data repository residing inside private cloud. Different sync DataSets can upload or download most recent copies of data to and from the sync repository.

During the process to create a sync DataSet, sync repository can be created on this screen below:



Create New Repository

General Filters DataSets

Basic Info

Name:

Community: Tax & Service

DataAgents in selected community and all its child communities can sync with the repository.

Repository Content

ex: word1,word2

Logical Content	Permission

ex: word1,word2 Add

Storage

Use the community's MountPaths or its parent's MountPaths.

Use following UNC paths for storage:

ex. \\nas\folder, one UNC path per line

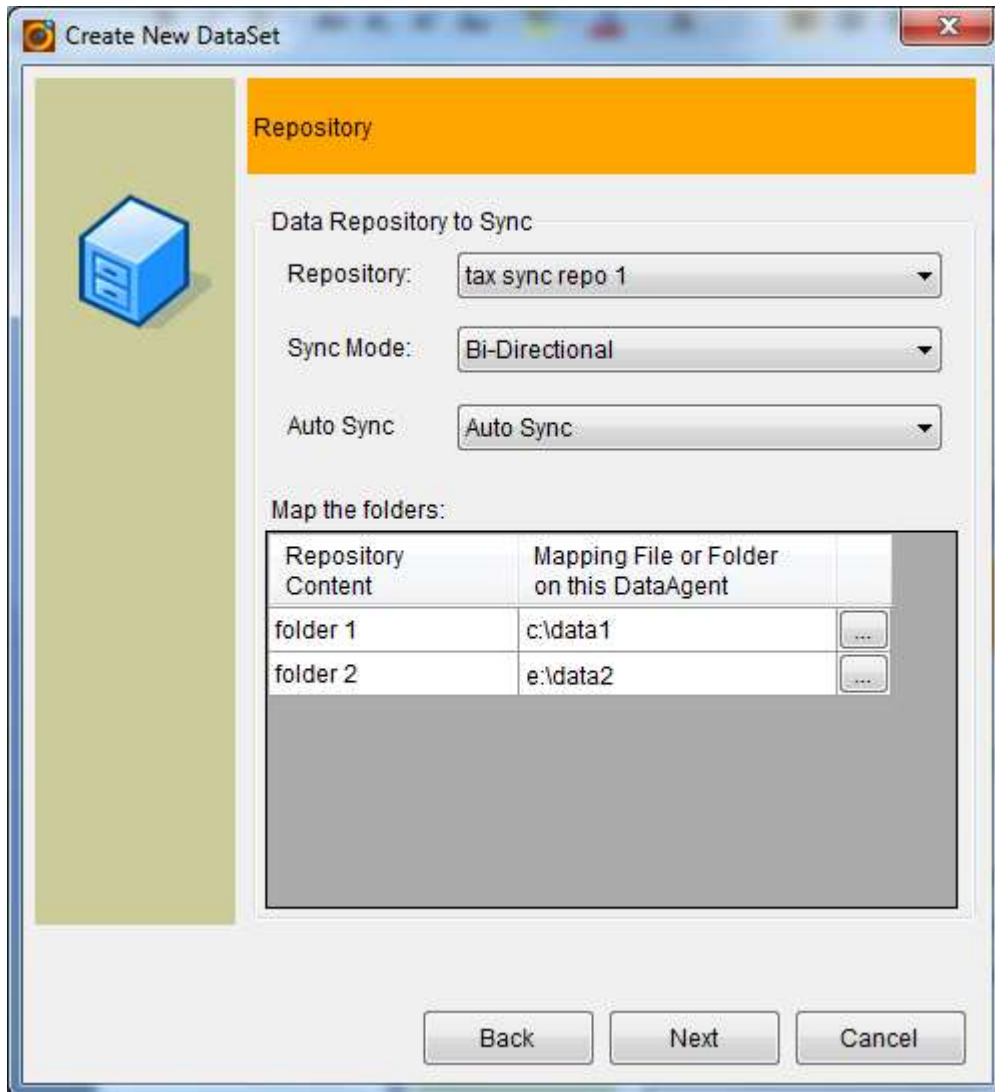
Create Cancel

The Logical Content provides a folder to folder mapping for file sync DataSet.

7.3 Create Sync DataSet

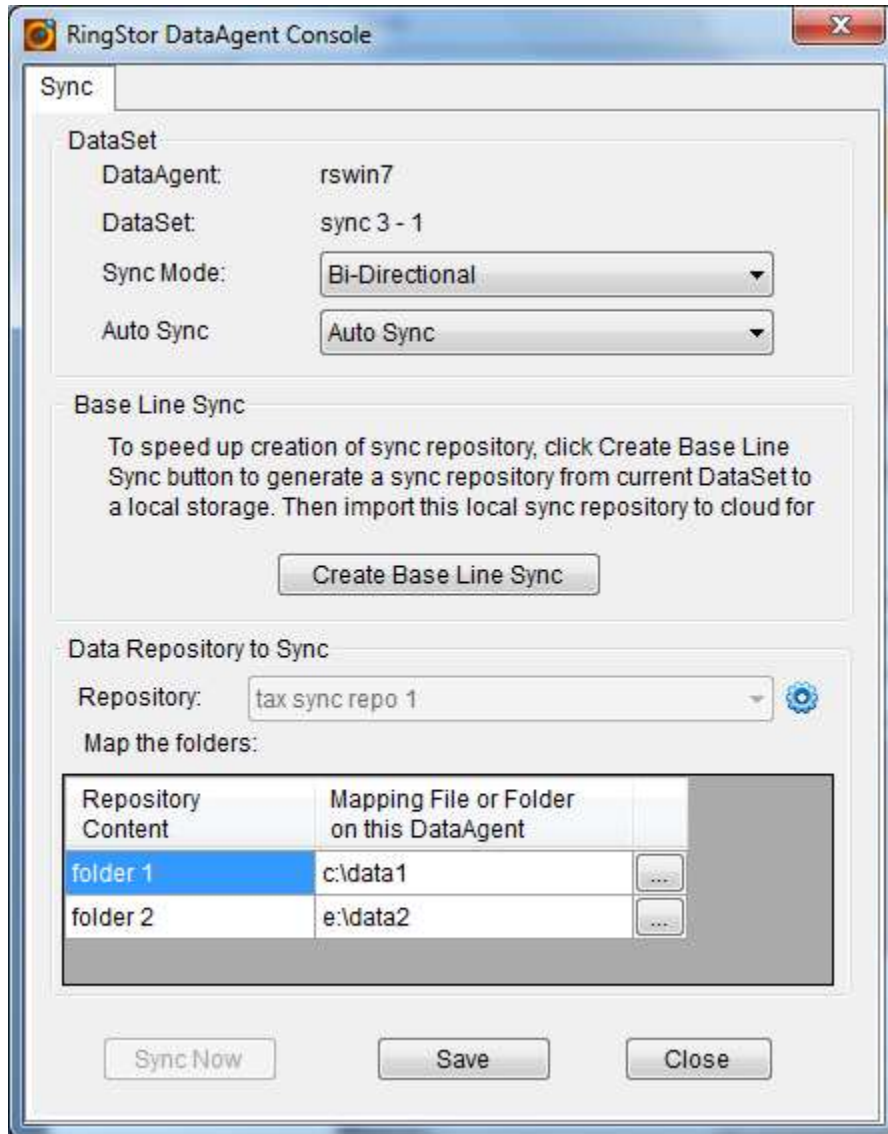
DataSet is a collection of application data on DataAgent that require sync.

- Select a Sync Repository and provide physical folder for Logical Content in sync repository



7.4 Manage Data Sync

Data sync is run on pre-defined time interval. To pause the sync, right click Sync menu on DataSet, change the sync mode:



8 Data Storage

8.1 Introduction

Data transmitted to RingStor system are stored in MountPaths.

MountPath is a folder resided on a magnetic disk, hard drive, USB drive, SAN drive, etc. Based on its connection to the DataServer, MountPath must be a network shared path accessible to all DataServers, for example a UNC path, a SAN drive

IMPORTANT TIP: In order for DataServer to access a MountPath, the domain user account that DataServer service is runs with must have read/write access to the MountPath. Please see DataServer Installation for more details.

MountPaths are grouped into a MountPath Pool. MountPath Pool is designed to control storage access for DataServers in RingStor system. Please refer to Storage Access Control section for details.

8.2 MountPath Pool

MountPath Pool is a logic entity that contains a list of MountPaths.

MountPath Pool can be of any of these three types:

- Primary – MountPaths in the pool will be selected first by DataServer for storage
- Secondary – MountPaths in the pool will be selected by DataServer for storage if no MountPaths in primary pool can be used.
- Reserved – MountPaths in the pool will never be used.

MountPaths in a MountPath Pool can be selected based on pool's selection scheme:

- Randomly – DataServer will select MountPath randomly for storage
- Lowest Free Space First – DataServer will select MountPath with lowest free space first.
- Highest Free Space First – DataServer will select MountPath with highest free space

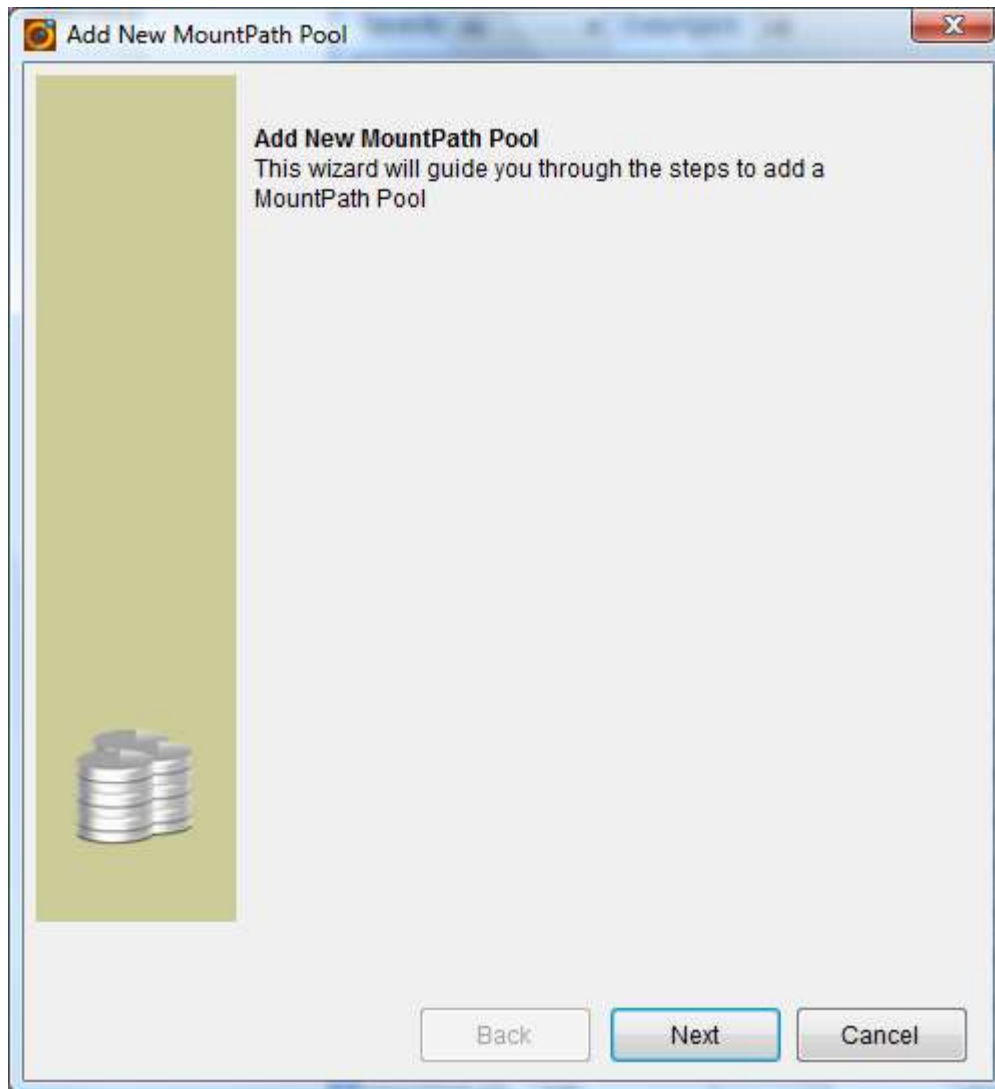
first.

Creating a new MountPath Pool is a series of steps managed by **Create New MountPath Pool Wizard** accessible from any of following places within **RingStor Explorer**.

Main Menu -> Storage -> Add New MountPath Pool

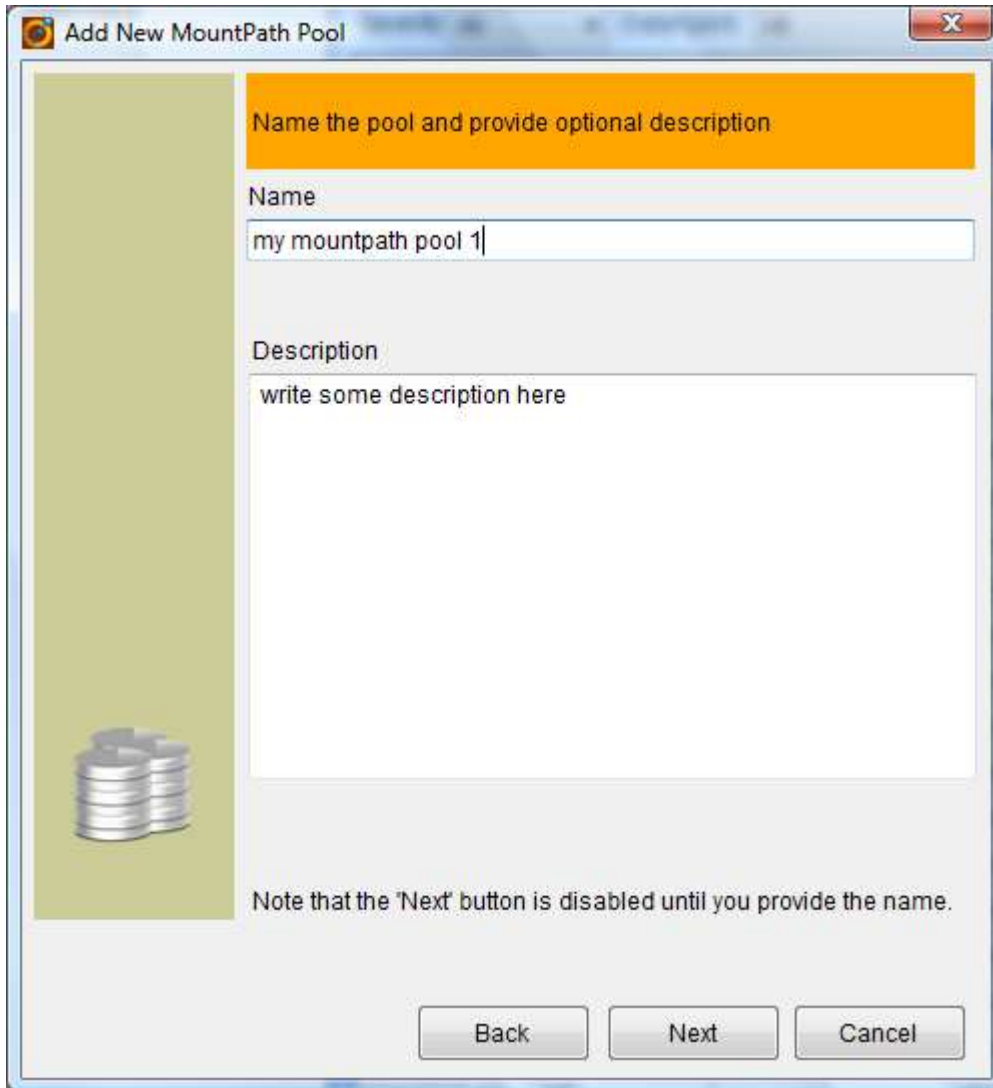
Create New MountPath Pool Wizard

Step 1 – Introduction



Click Next to continue.

Step 2 – Name the MountPath Pool



Add New MountPath Pool

Name the pool and provide optional description

Name
my mountpath pool 1

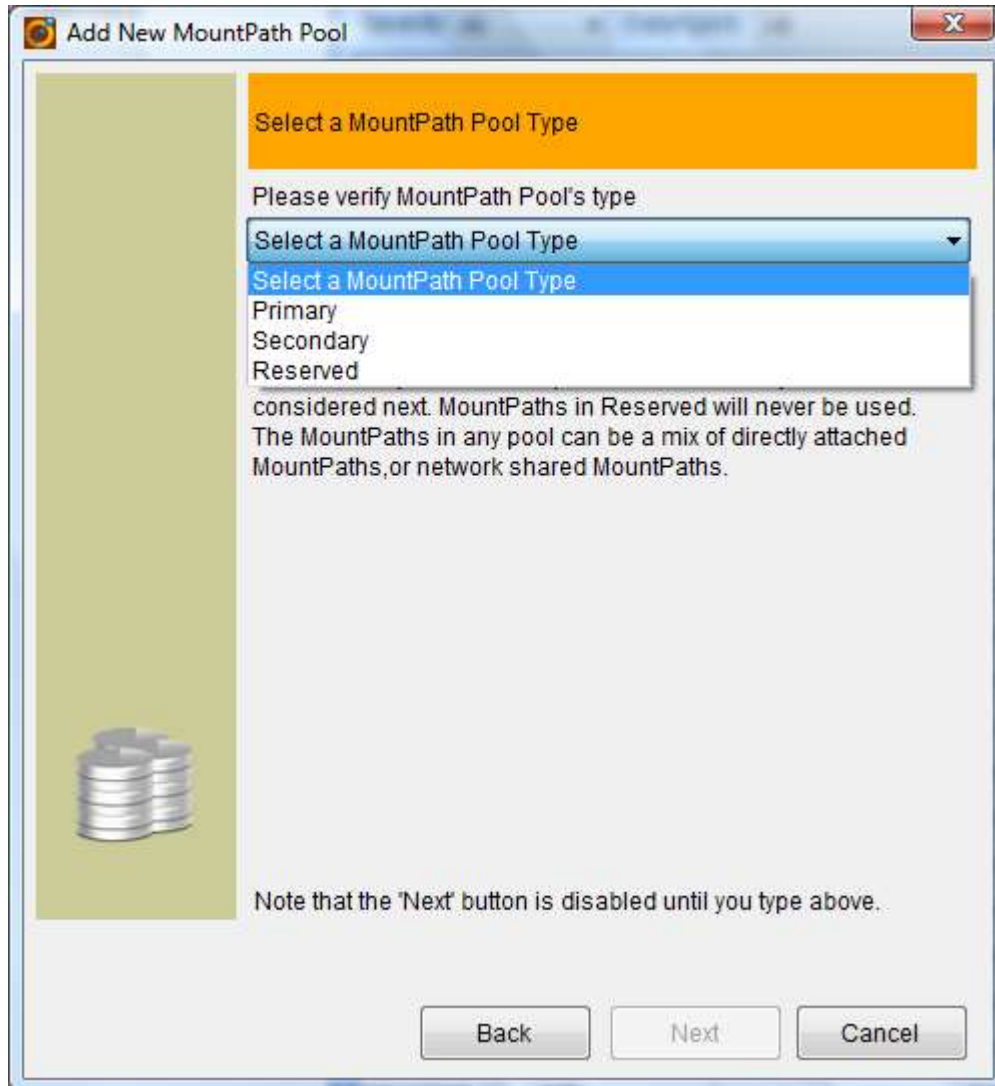
Description
write some description here

Note that the 'Next' button is disabled until you provide the name.

Back Next Cancel

Provide a friendly name for the MountPath Pool, provide optional description.
Click Next to continue.

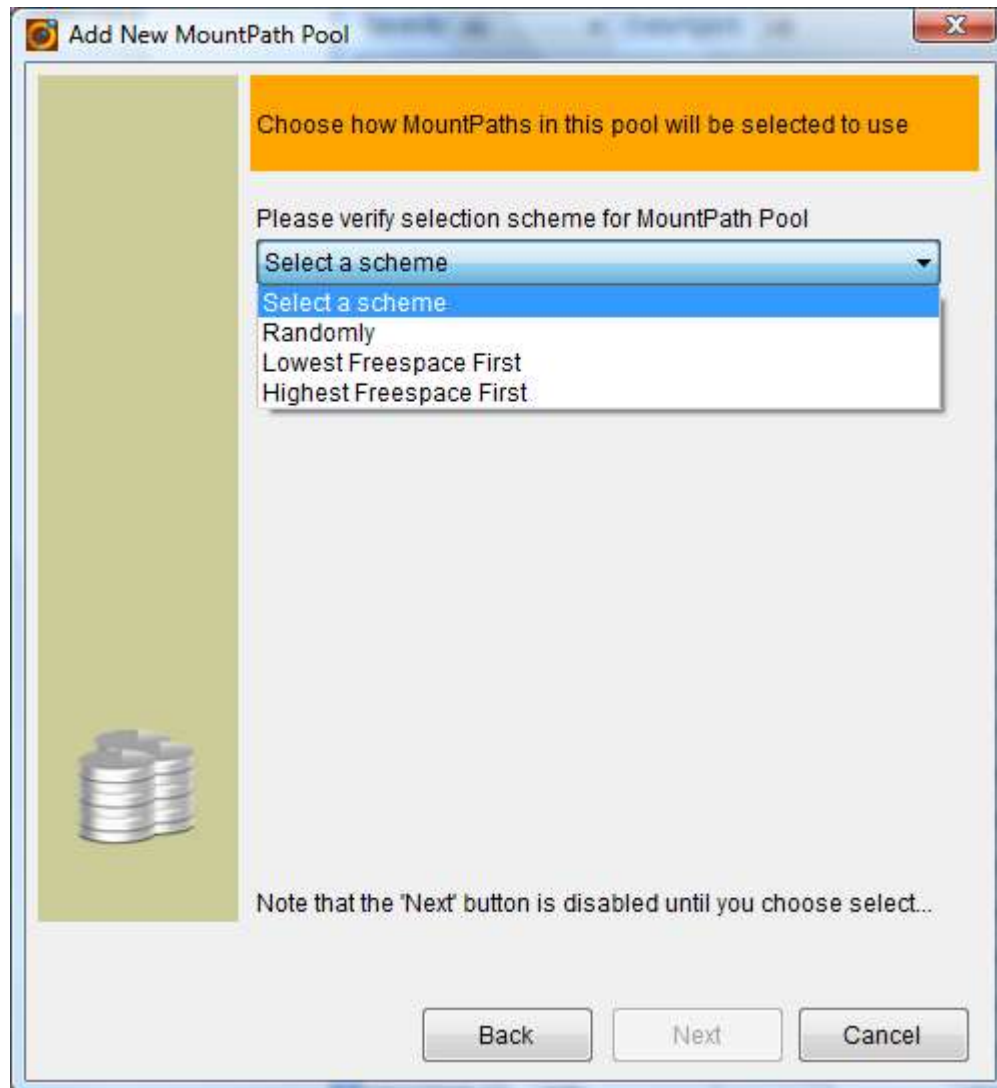
Step 3 – Select MountPath Pool Type



Select the type for this MountPath Pool.

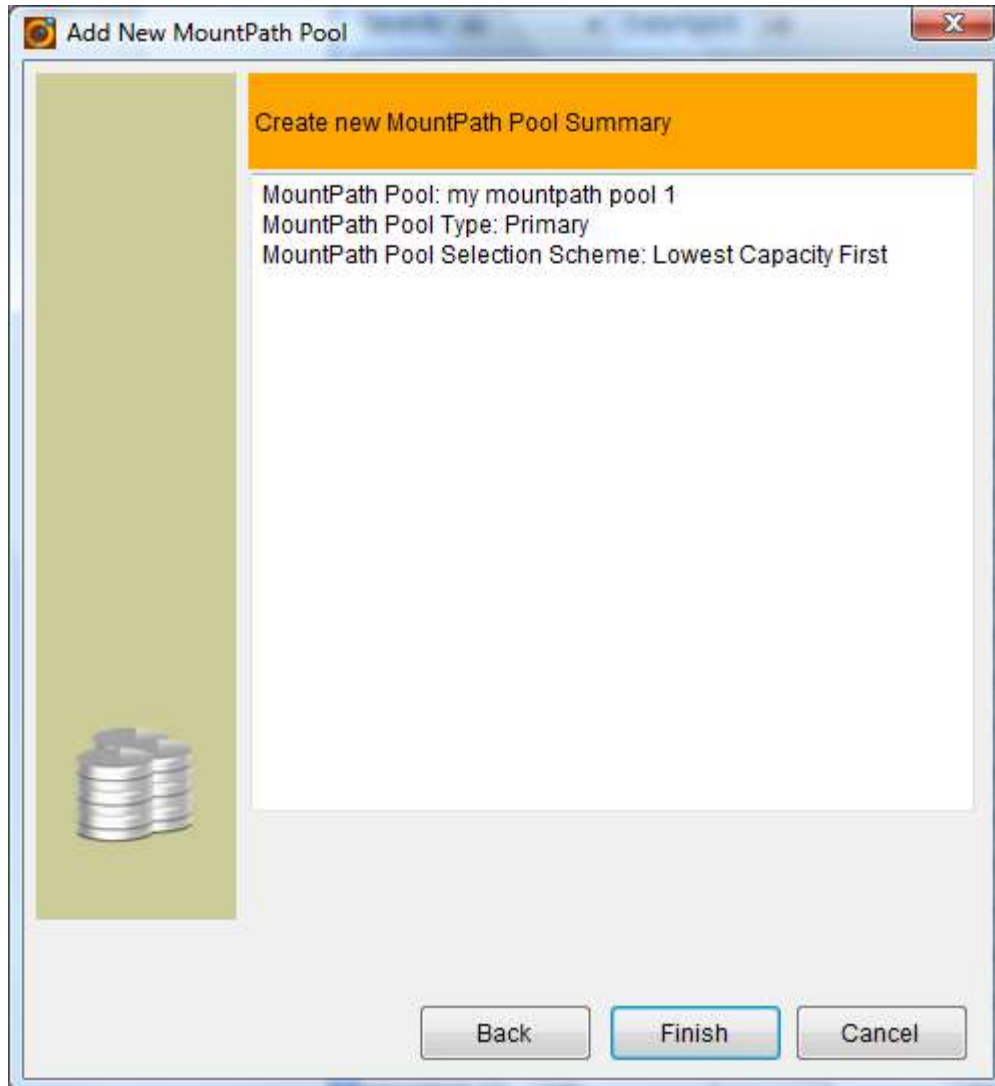
Click Next to continue.

Step 4 – Specify MountPath Selection Scheme



Click Next to continue.

Final Step - Summary



Final step shows the summary for the MountPath Pool. Click back to make modifications, click Finish to create the MountPath Pool. A pop up message will be displayed when creation completes.

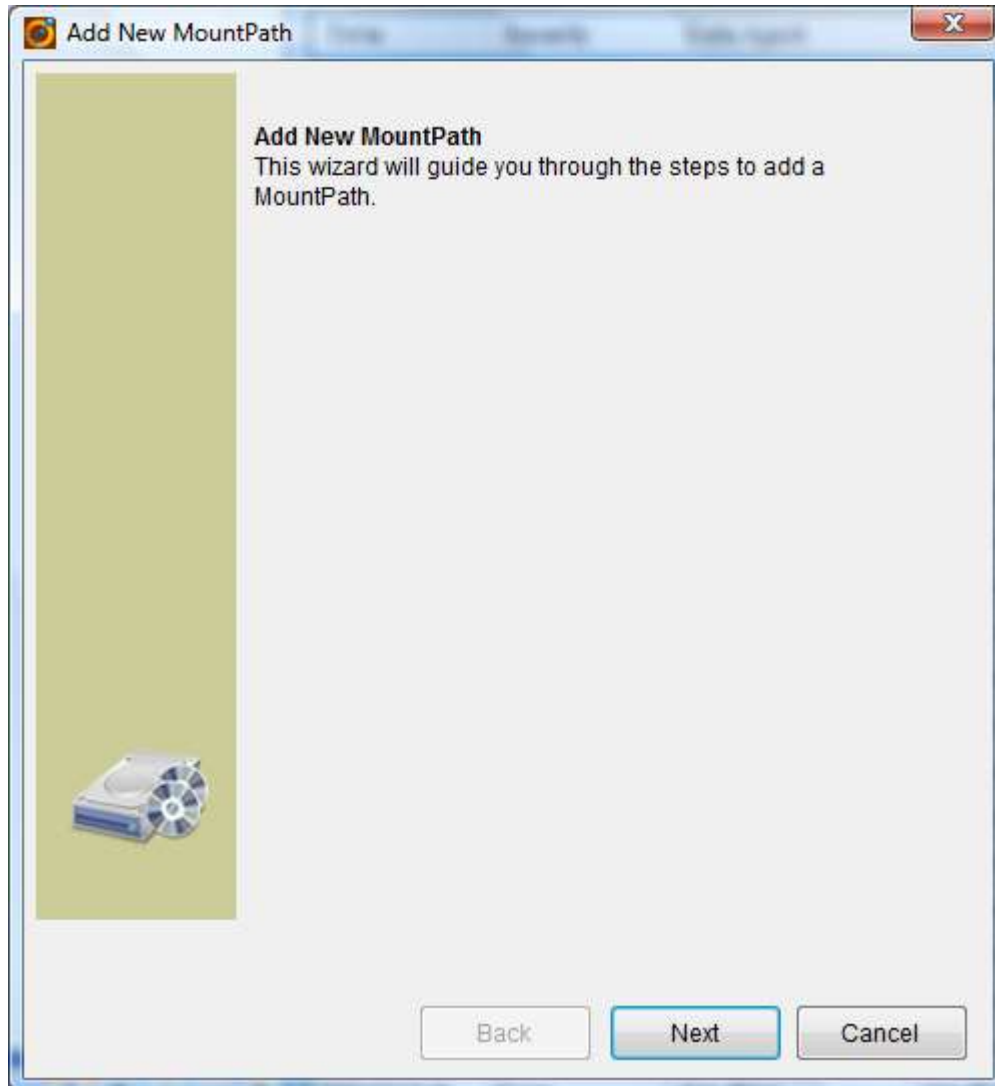
8.3 MountPath

Creating a new MountPath is a series of steps managed by **Create New MountPath Wizard** accessible from any of following places within **RingStor Explorer**.

Main Menu -> Storage -> Add New MountPath

Create New MountPath Wizard

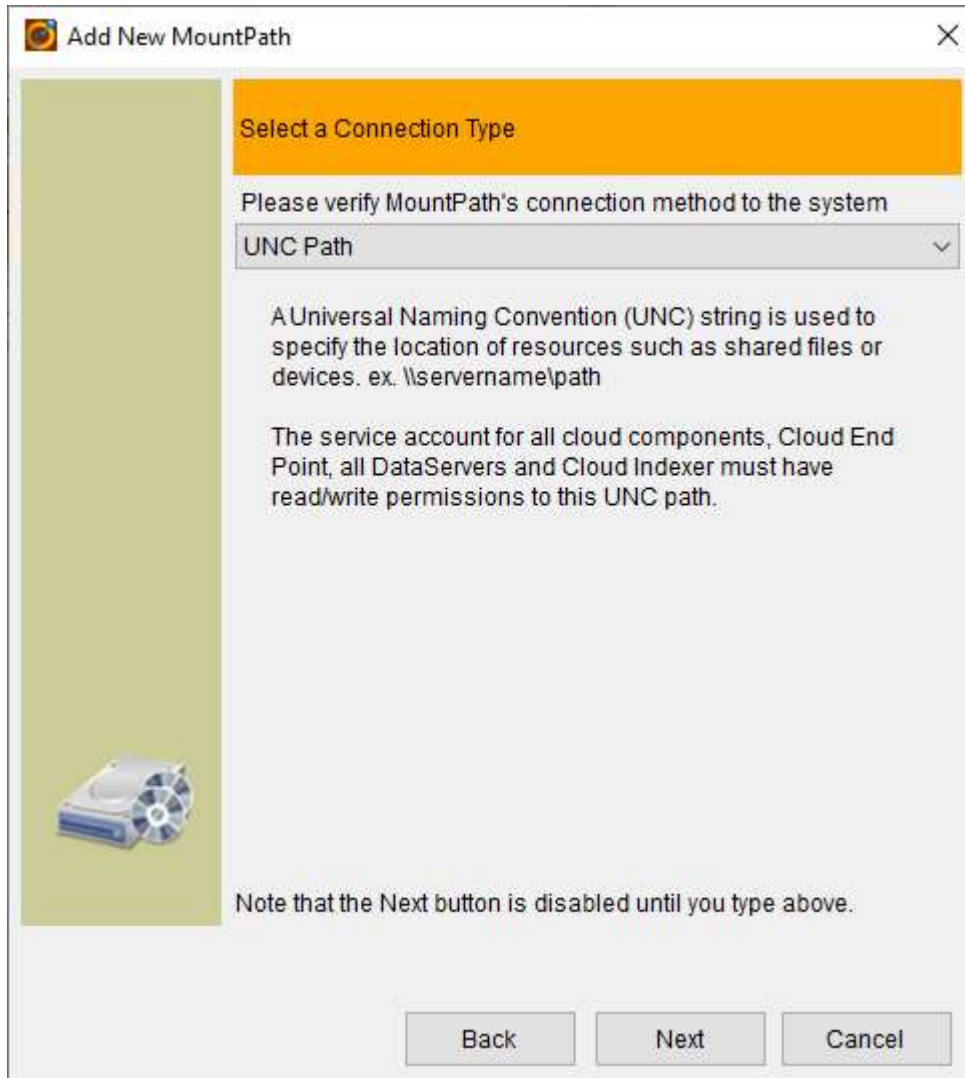
Step 1 – Introduction



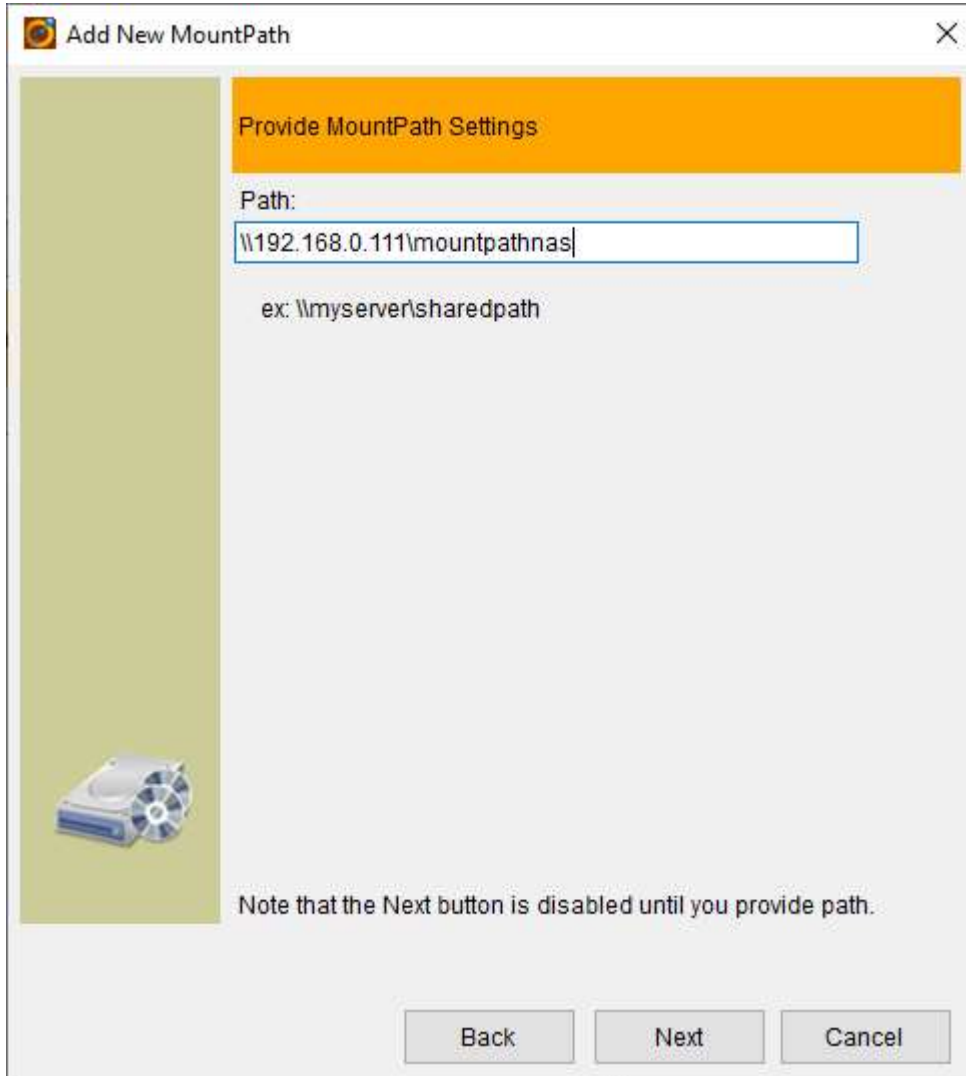
Click Next to continue.

Step 2 – Select MountPath Connection Type

For Cloud on Windows, the connection type is UNC Path:



Step 3 - Provide network shared path:



Add New MountPath

Provide MountPath Settings

Path:

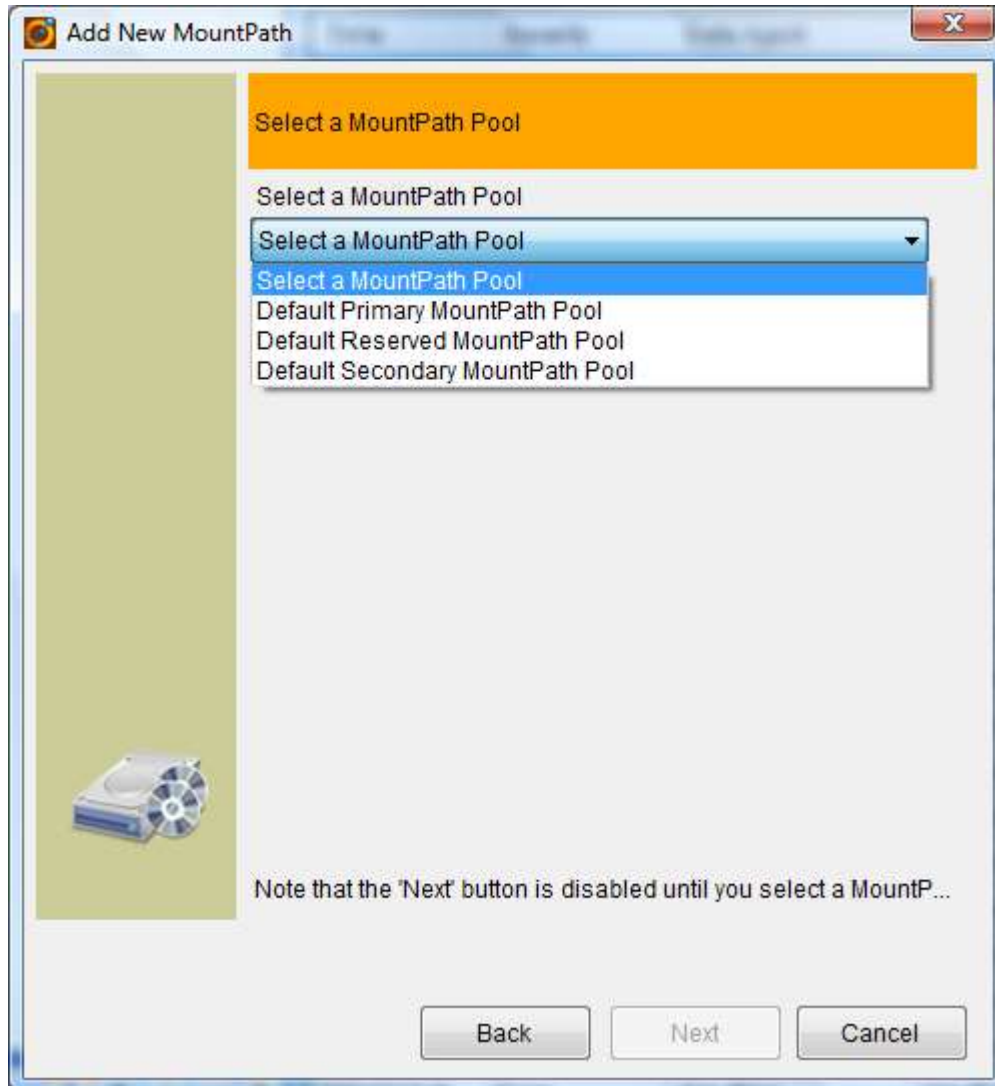
ex: \\myserver\sharedpath

Note that the Next button is disabled until you provide path.

Back Next Cancel

Click Next to continue to Step 4.

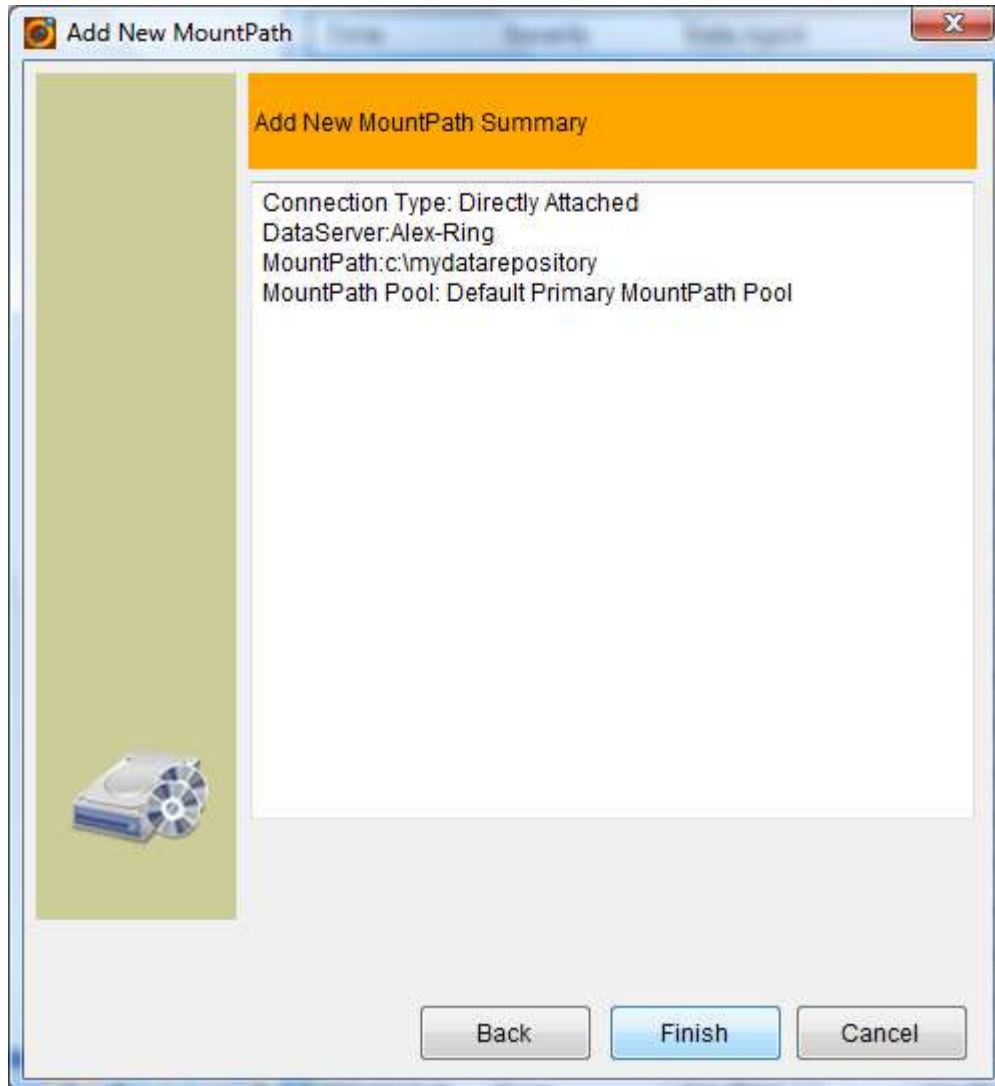
Step 4 – Select MountPath Pool



MountPath must belong to a MountPath Pool, select the MountPath Pool for this MountPath.

Click Next to continue.

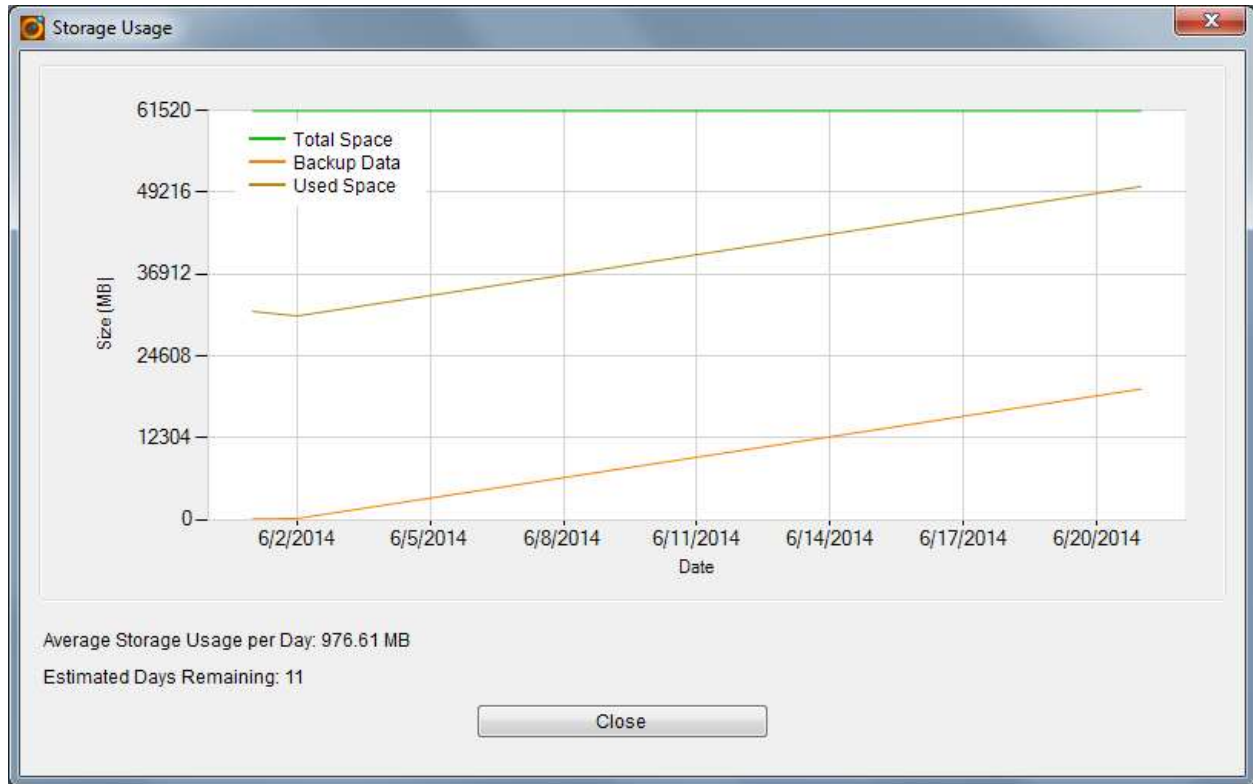
Final Step - Summary



Final step shows the summary for the MountPath. Click Back to make modifications, click Finish to create the MountPath. A pop up message will be displayed after creation completes.

8.4 Storage Usage

Storage Usage is a chart that display last 30 days of spaces for all Mount Paths and backup data. Administrator can view storage remaining and decide if and when more storage needs added to the cloud.



Average Storage Usage per Day: average growth of backup data

Estimated Days Remaining: if backup data grows at average rate, how many days all MountPath will be filled.

Please note, 5GB is default minimum reserve free space for each MountPath, backup will not be written to the Mount Path if its free space is less than minimum reserved space.

8.5 DataSet Storage Usage

From Storage menu, DataSet Storage Usage menu will show each DataSet's selected size and storage size, this report can be used to calculate how much storage has been allocated for a DataSet, or all DataSets in a community.

DataSet Storage Usage
✕

Select DataSets to Prune:

Community: All ▾

Select	Customer	DataAgent	Agent	DataSet	Selected Size	Storage Size	Ratio	Report Time
<input type="checkbox"/>	Tax & Service, L...	rswin10	VMware Virtual Machine Backup	VM	16 GB	32 GB	2	3/7/2020 9:53:...
<input type="checkbox"/>	Tax & Service, L...	rswin10	VMware Virtual Machine Backup	VM2	40 GB	79.09 GB	1.97	3/7/2020 9:53:...
<input type="checkbox"/>	Tax & Service, L...	rswin10	VMware Virtual Machine Backup	VM3	20 GB	36 GB	1.8	3/7/2020 9:53:...
<input type="checkbox"/>	Tax & Service, L...	rswin10	File Backup	backup2	108.94 MB	105.41 MB	0.96	3/19/2020 3:49...
<input type="checkbox"/>	Tax & Service, L...	rswin10	File Backup	backup	108.94 MB	105.53 MB	0.96	3/18/2020 5:19...
<input type="checkbox"/>	Tax & Service, L...	rswin10	File Backup	FileAmazon	108.94 MB	105.43 MB	0.96	3/19/2020 3:49...
<input type="checkbox"/>	Tax & Service, L...	rswin10	Bare Metal Backup	rswin10_hd	238.33 GB	205.44 GB	0.86	3/19/2020 3:49...
<input type="checkbox"/>	Tax & Service, L...	rswin10	File Backup	File	27.99 GB	7.13 GB	0.25	3/18/2020 5:19...
<input type="checkbox"/>	Tax & Service, L...	rswin10	SQL Database Backup	SQL	17.83 GB	4.62 GB	0.25	3/18/2020 5:19...
<input type="checkbox"/>	Tax & Service, L...	rswin7	MySQL Database Backup	MySQL	257.63 KB	34.98 KB	0.13	3/18/2020 5:19...
<input type="checkbox"/>	Master Commu...	ubuntu	VMware Virtual Machine Backup	vm2	20 GB	2.49 GB	0.12	3/18/2020 5:19...

Total Selected Size: 441.1 GB
Total Storage Size: 373.17 GB
Overall Ratio: 0.84

9 Reports

9.1 Introduction

Reports can be generated from RingStor Explorer to provide summary for RingStor. Following reports are supported in RingStor:

- Community Report – generate summary for selected communities
- Task Report – generate history info for tasks
- Event Report – generate events for a given time frame, etc
- Storage Report – generate summary info for all MountPaths
- DataServer Report – generate summary info for all DataServers
- DataAgent Report – generate summary info for all DataAgents
- User Report – generate summary info for all users
- User Activity Report – generate a list of activities for a user
- Task Detail Report – generate report on files backed up by a task
- DataSet Protection Report – generate report on protection status of DataSets, optionally to list all files backed up in cloud
- License Usage Report – generate license usage information for selected communities

Report can be generated in several formats, CSV, Html.

Report can also be scheduled and emailed to specified users when ready.

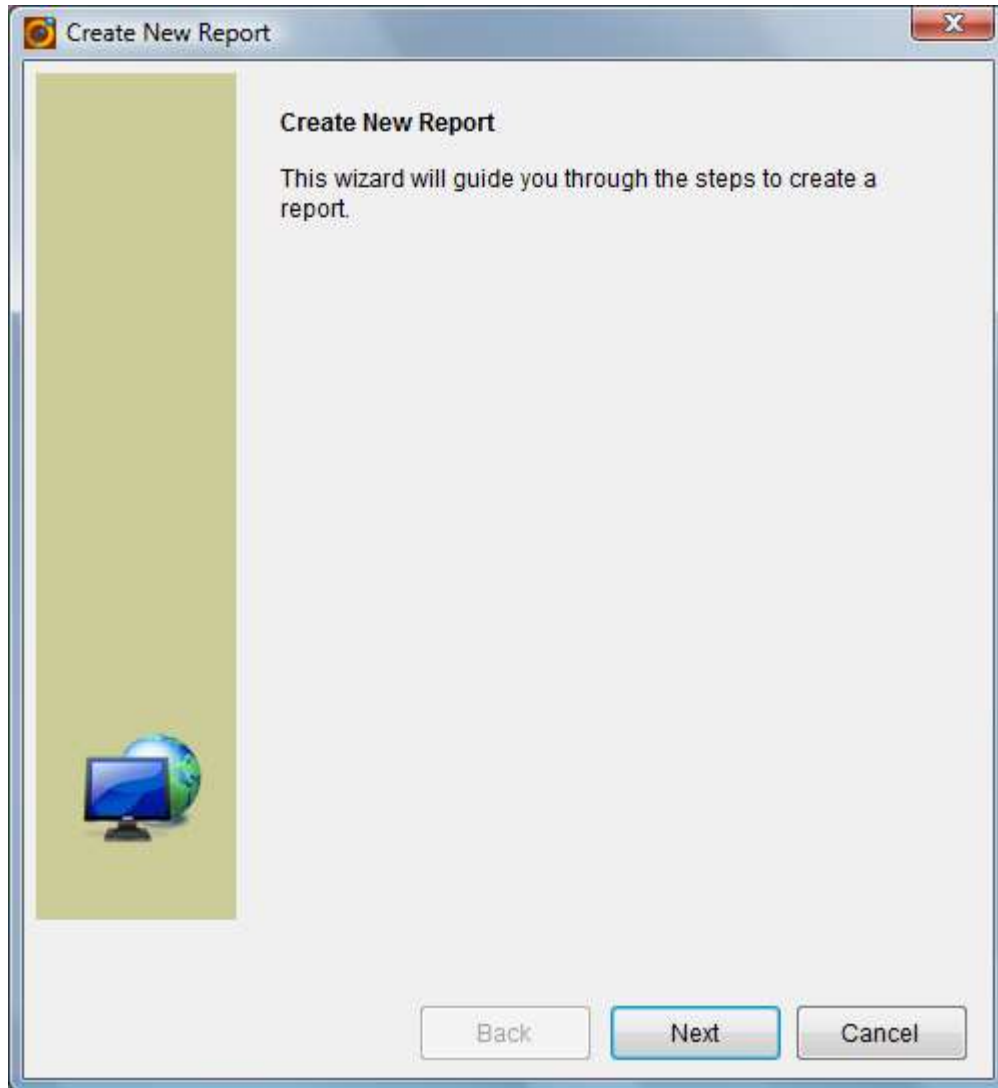
9.2 Create New Report

Creating a new report is a series of steps managed by **Create New Report Wizard** accessible from any of following places within **RingStor Explorer**.

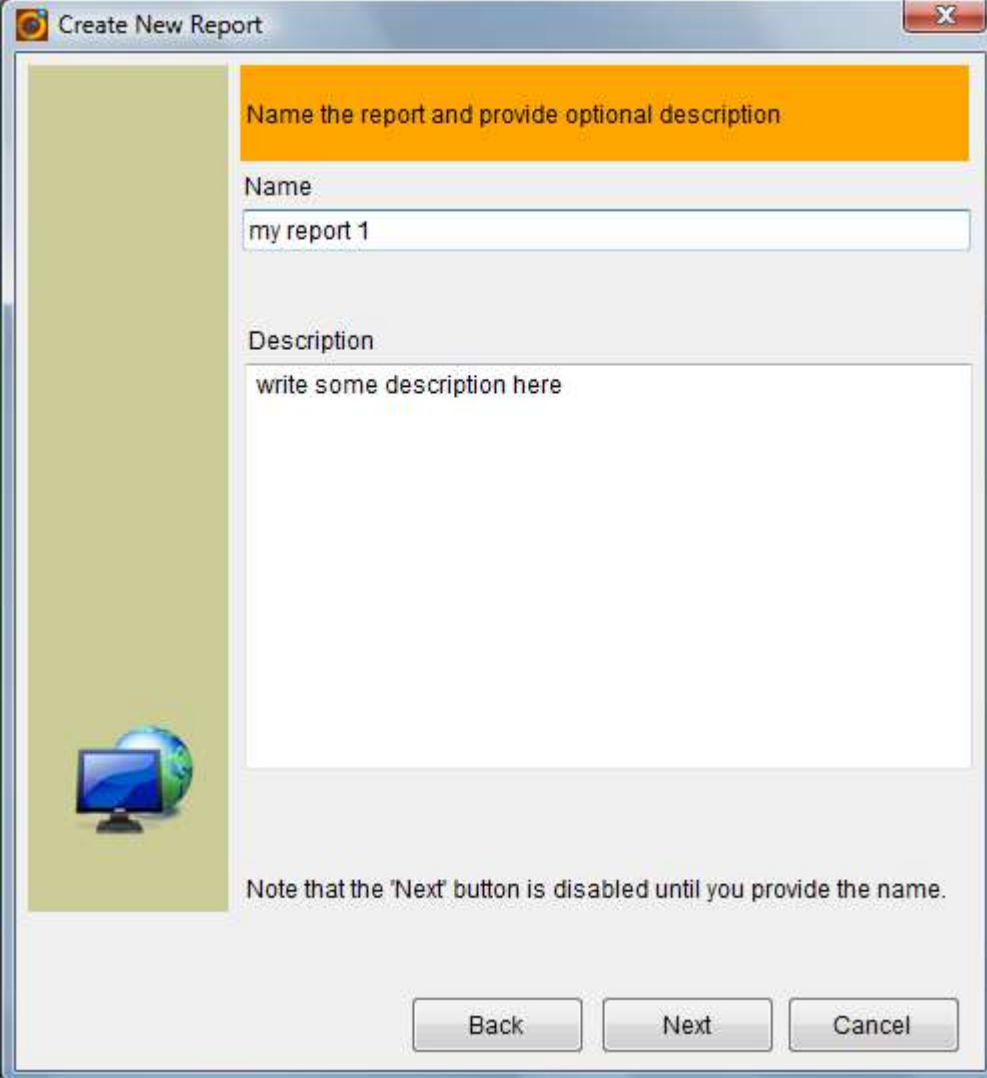
Top Menu -> Report -> Create New Report

Create New Report Wizard

Step 1 – Introduction



Step 2 – Name the report



Create New Report

Name the report and provide optional description

Name

my report 1

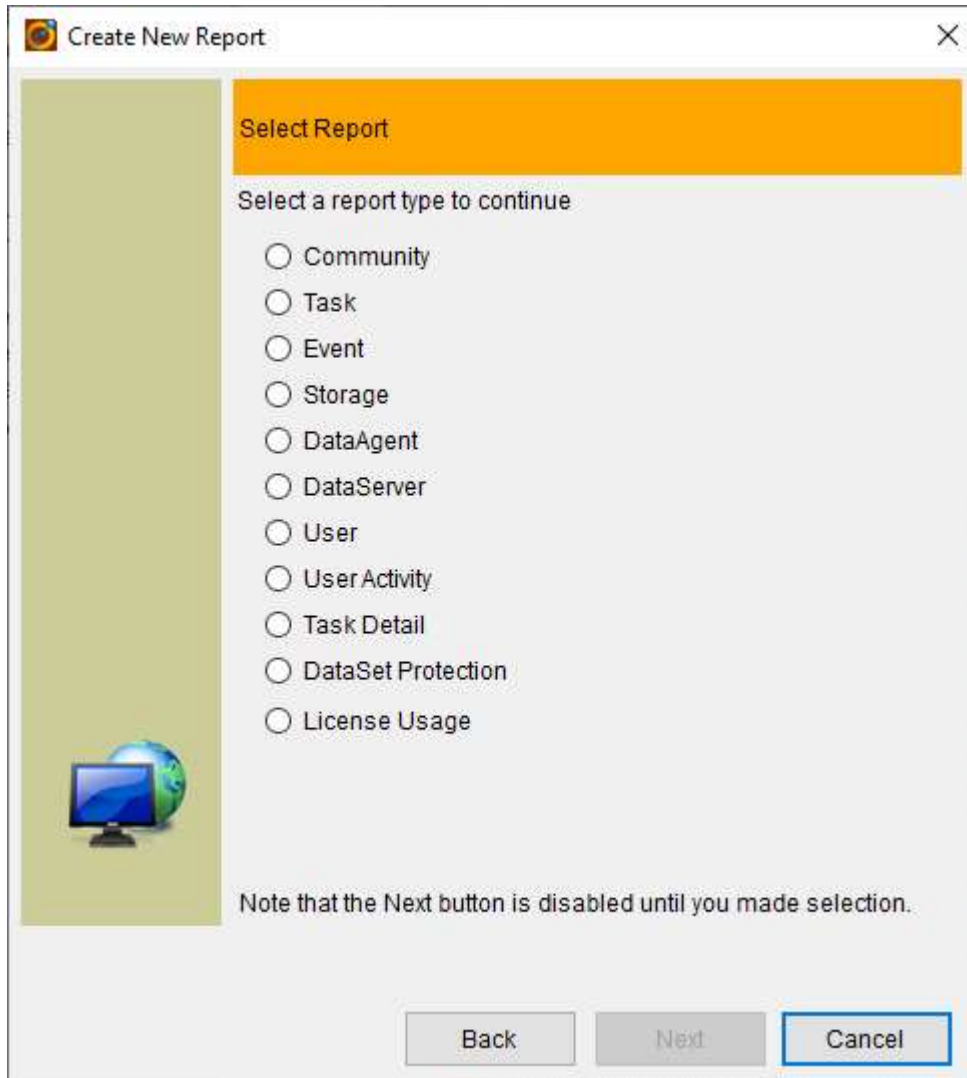
Description

write some description here

Note that the 'Next' button is disabled until you provide the name.

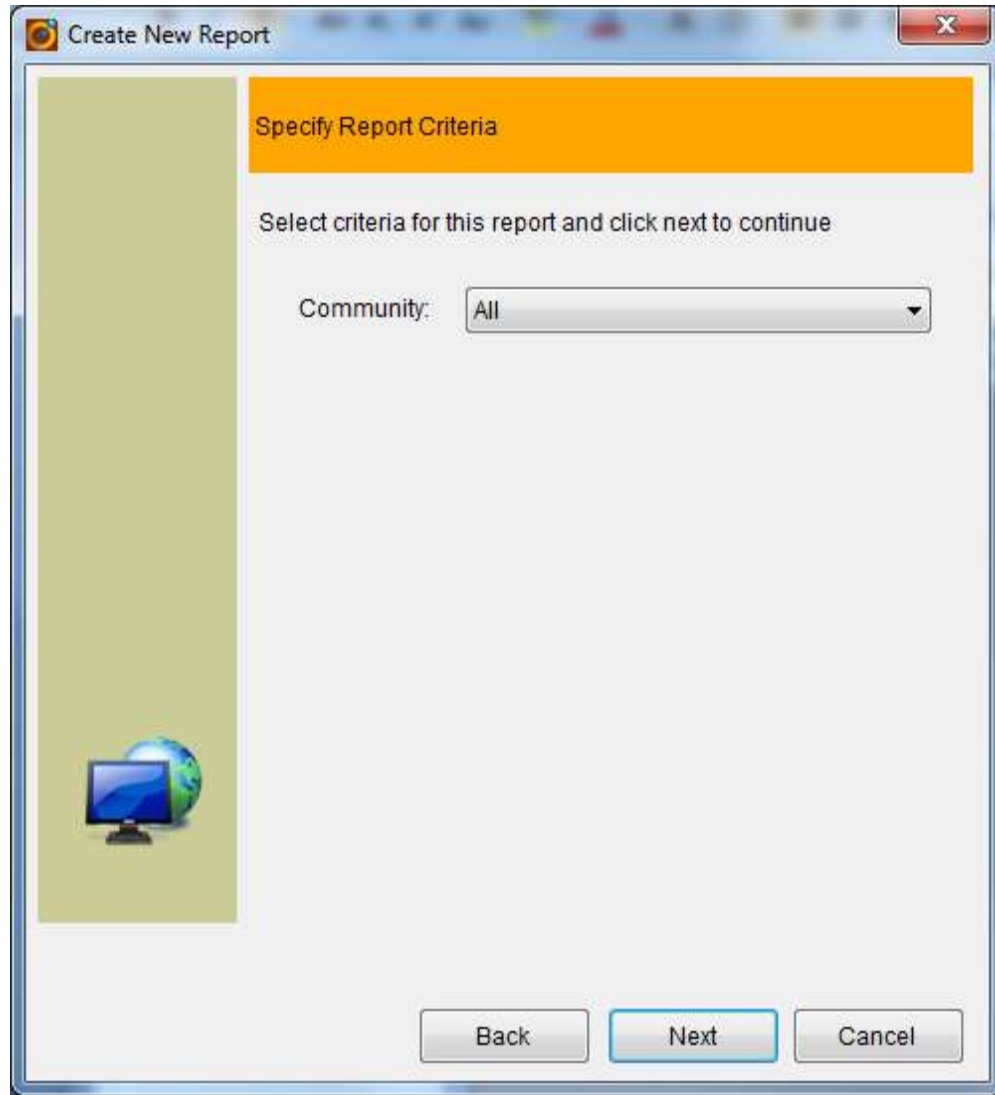
Back Next Cancel

Step 3 – Select report type

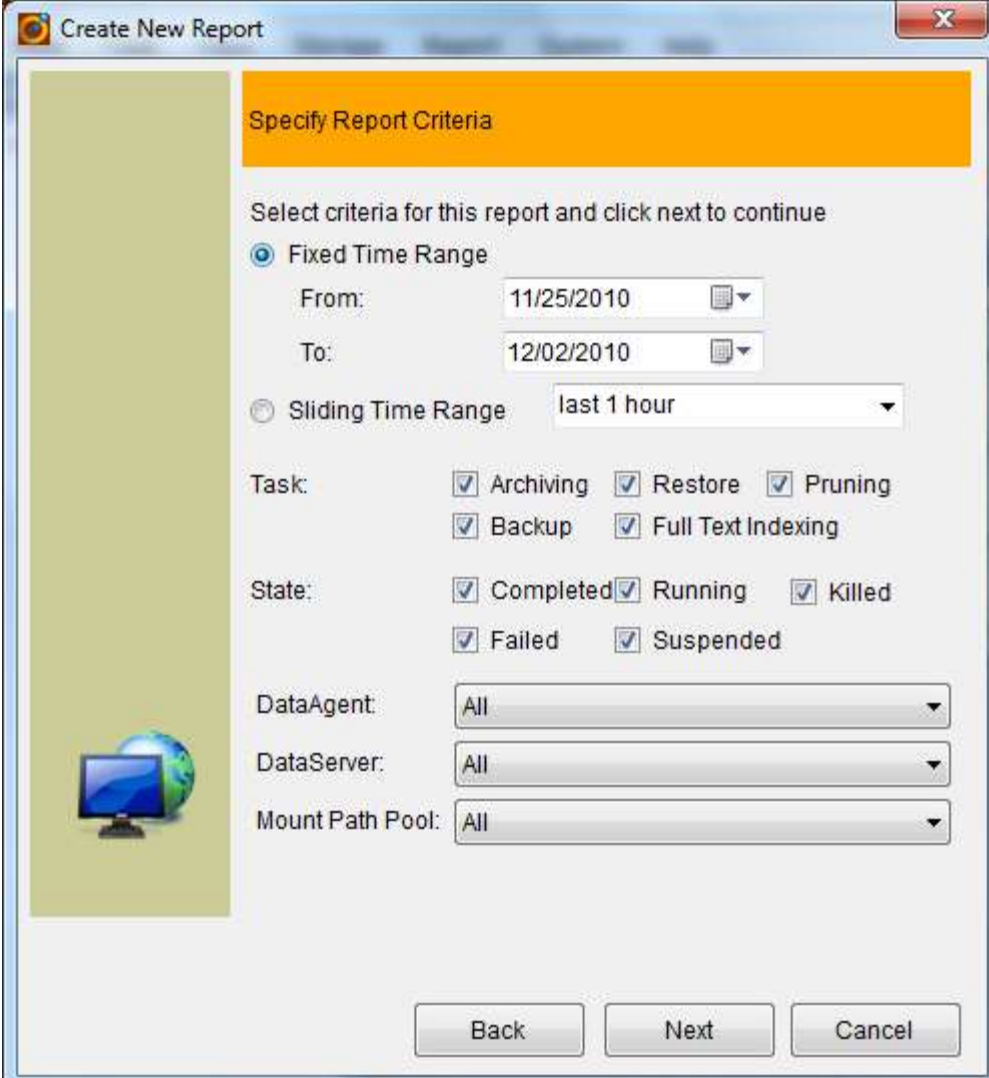


Step 4 – Set report criteria

Community Report – generate license information and usage for selected communities



Task Report – list selected tasks and their status, progress, data size, etc.



Create New Report

Specify Report Criteria

Select criteria for this report and click next to continue

Fixed Time Range

From: 11/25/2010

To: 12/02/2010

Sliding Time Range last 1 hour

Task: Archiving Restore Pruning
 Backup Full Text Indexing

State: Completed Running Killed
 Failed Suspended

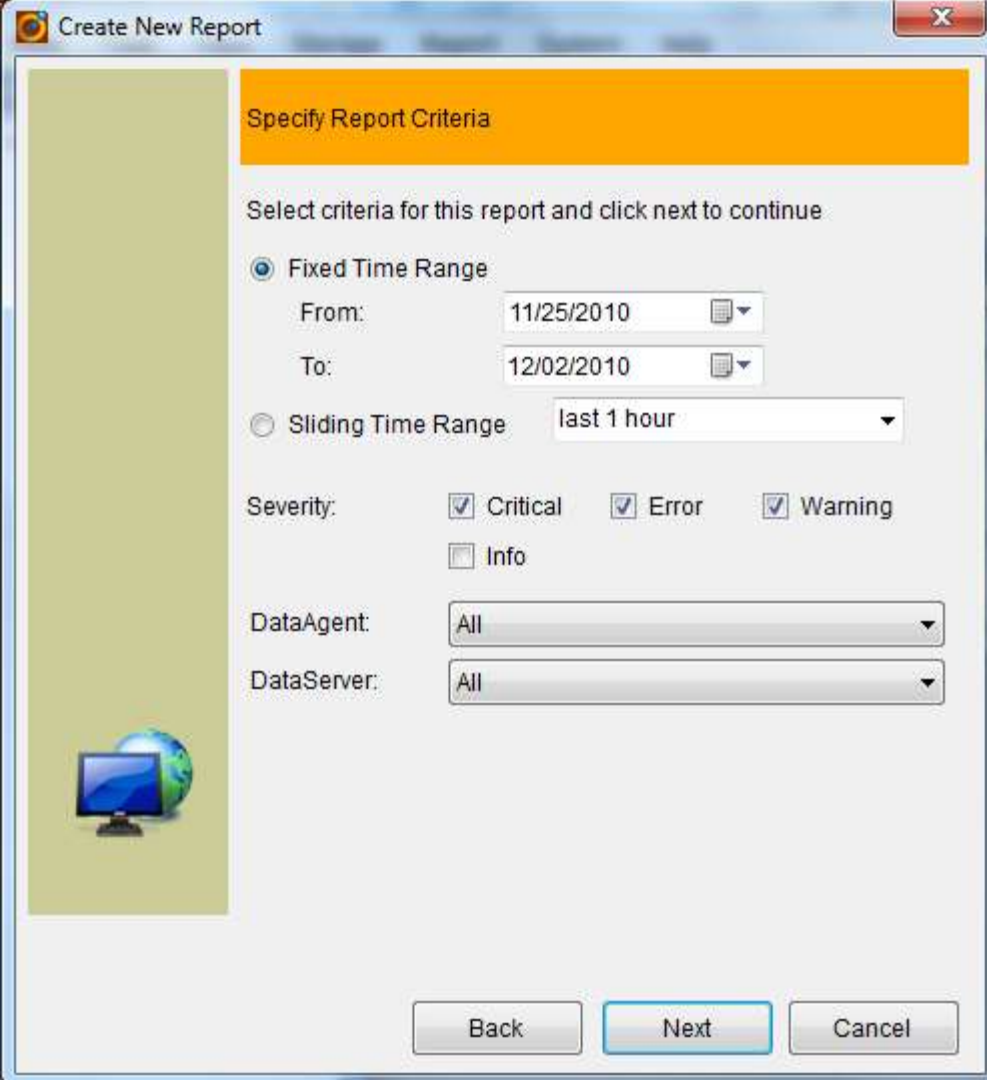
DataAgent: All

DataServer: All

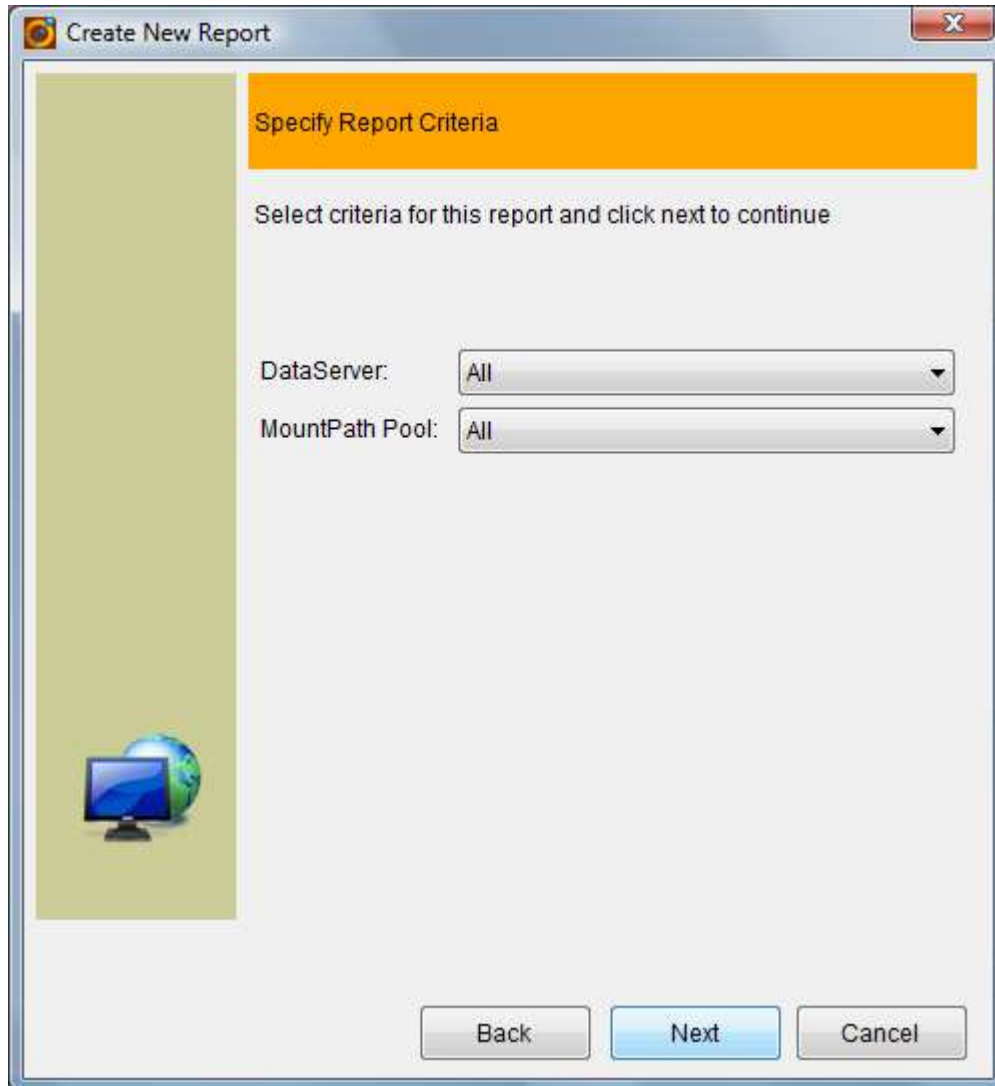
Mount Path Pool: All

Back Next Cancel

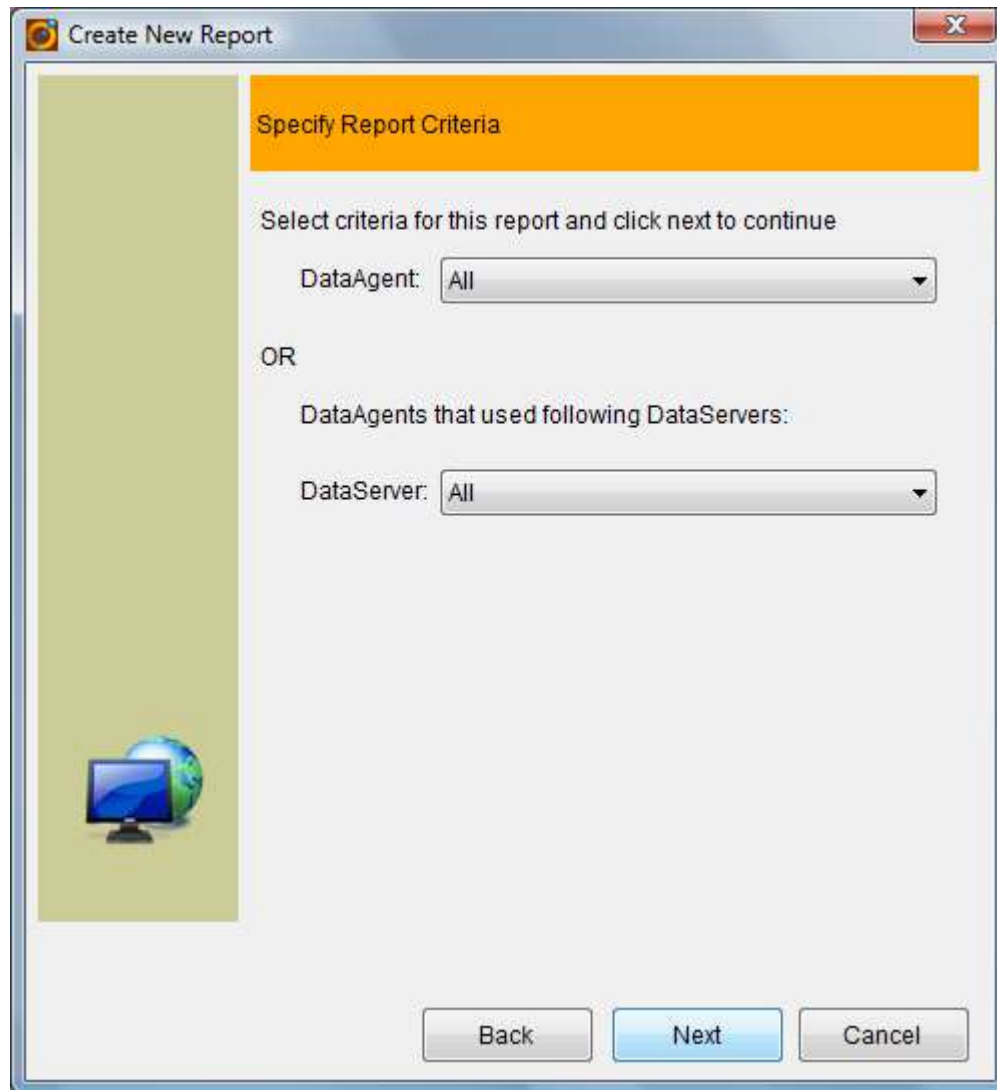
Event Report – list selected events and their details



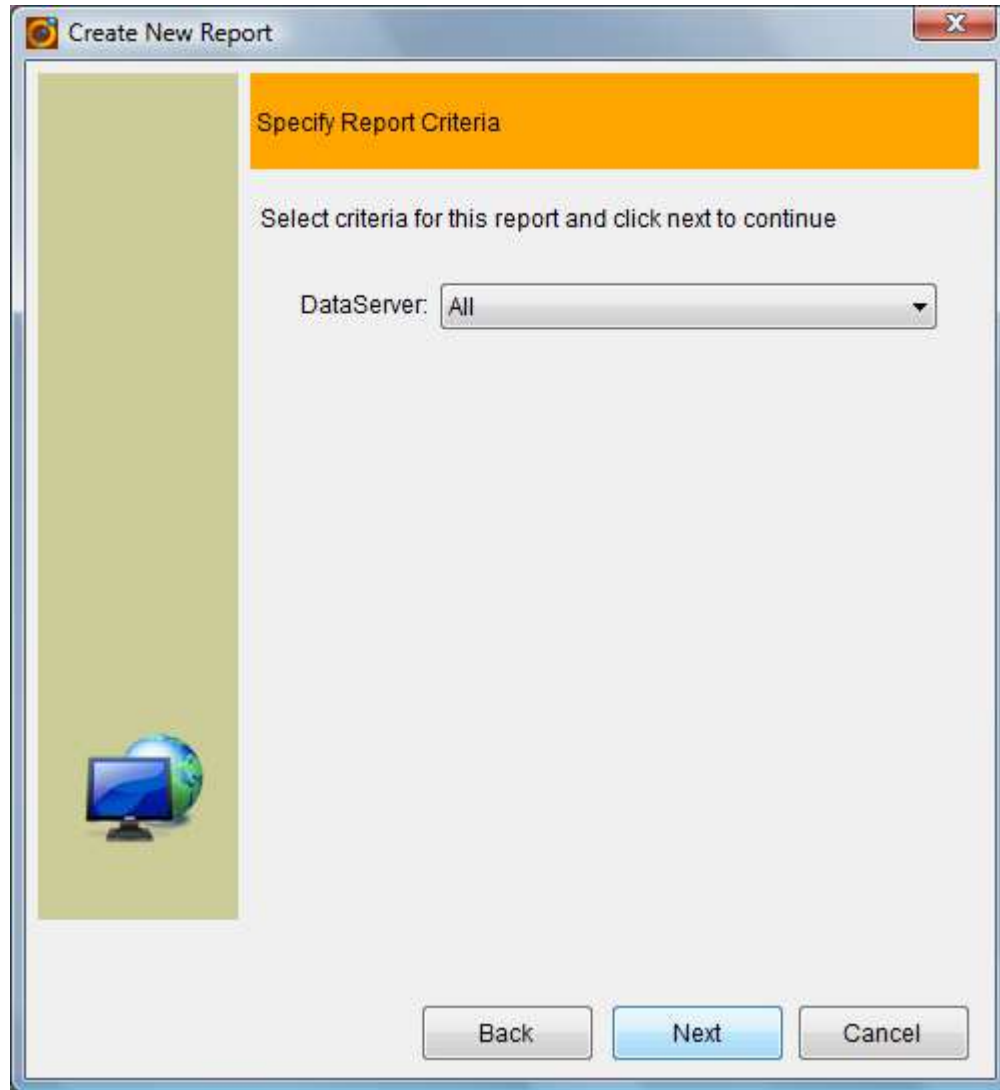
Storage Report – list selected MountPaths and their status, usage, etc.



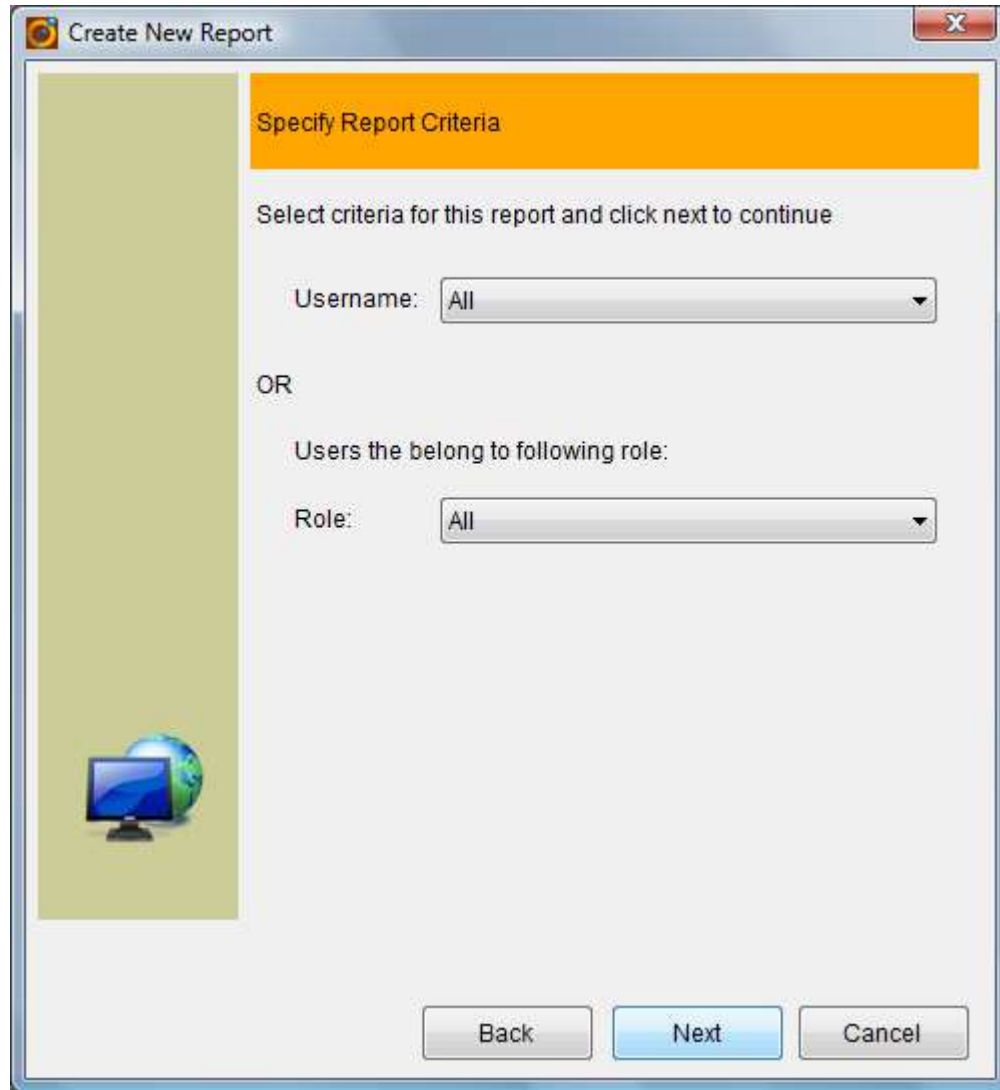
DataAgent Report – list selected DataAgents and their status, installation time, etc.



DataServer Report – list selected DataServers and their status, installation time, etc.



User Report – list selected users and their details



Create New Report

Specify Report Criteria

Select criteria for this report and click next to continue

Username: All

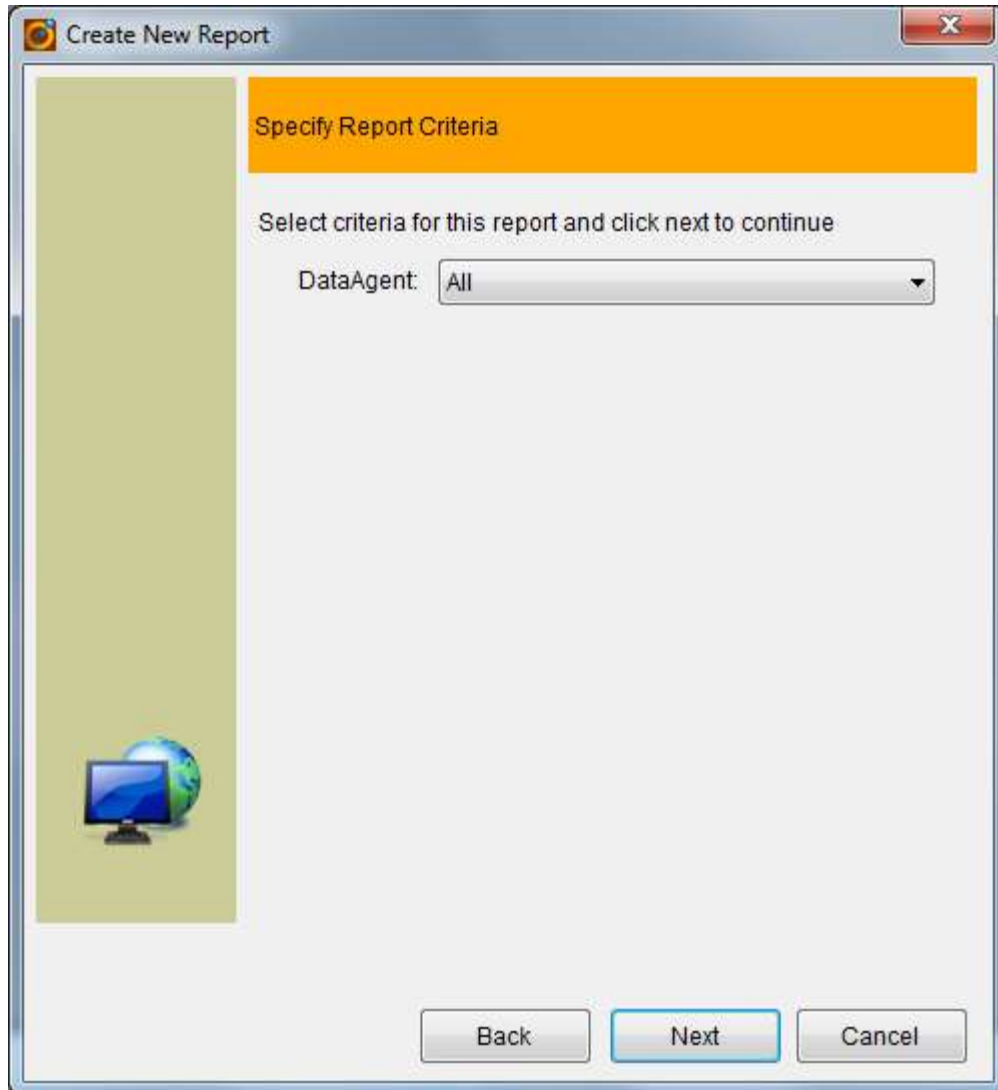
OR

Users the belong to following role:

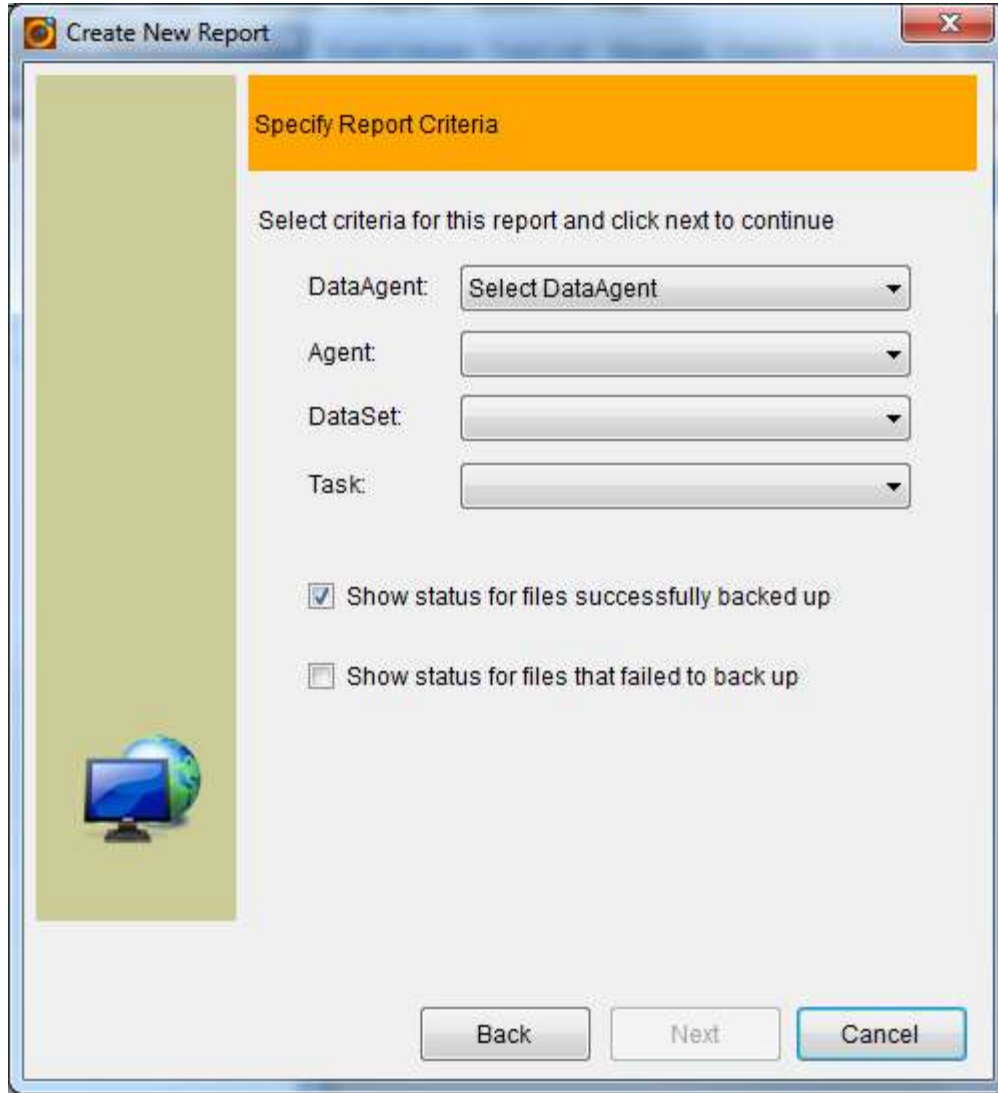
Role: All

Back Next Cancel

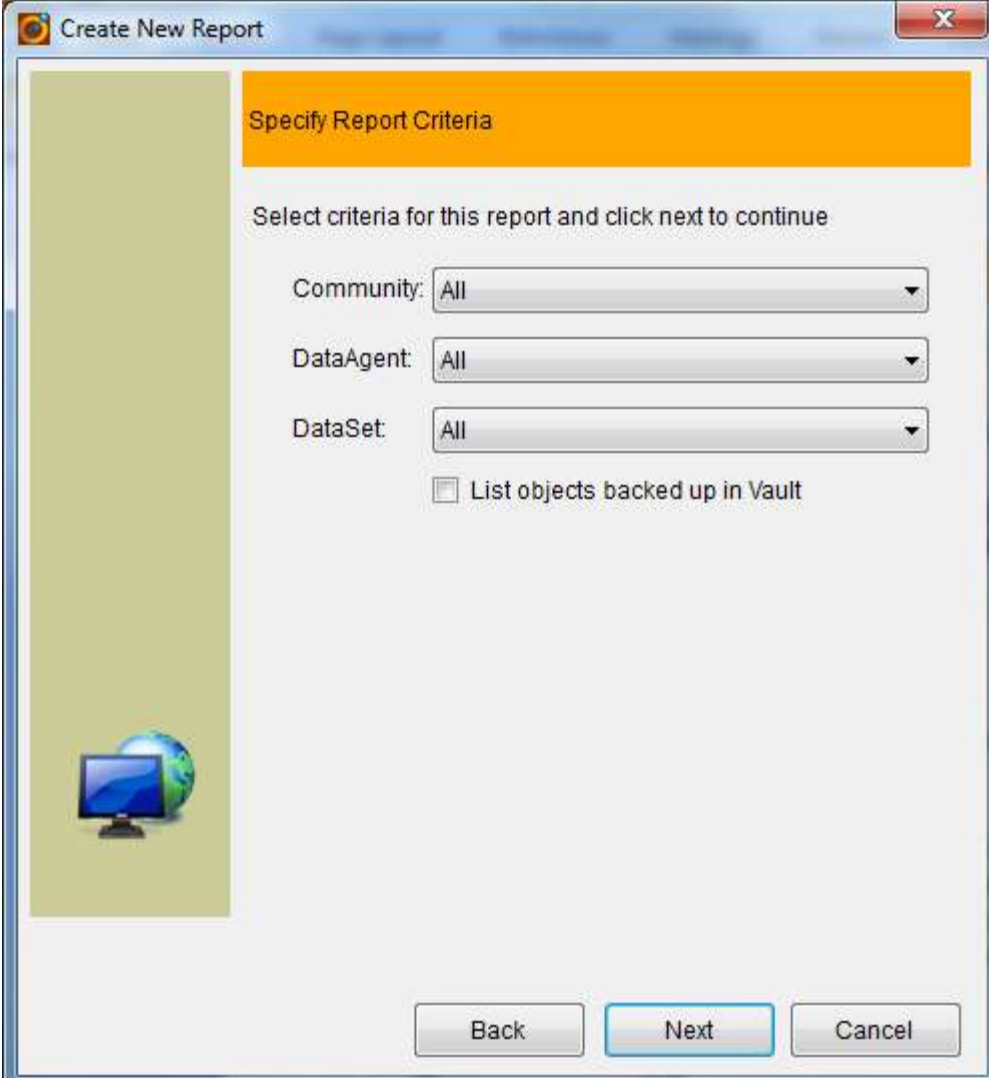
User Activity Report – list activities for a selected user



Task Detail Report – list status, size for each file in a selected task



DataSet Protection Report – list selected DataSets and their data protection status, optionally their contents in Vault



Create New Report

Specify Report Criteria

Select criteria for this report and click next to continue

Community: All

DataAgent: All

DataSet: All

List objects backed up in Vault

Back Next Cancel

License Usage Report – list selected communities and their license usage information:



Create New Report

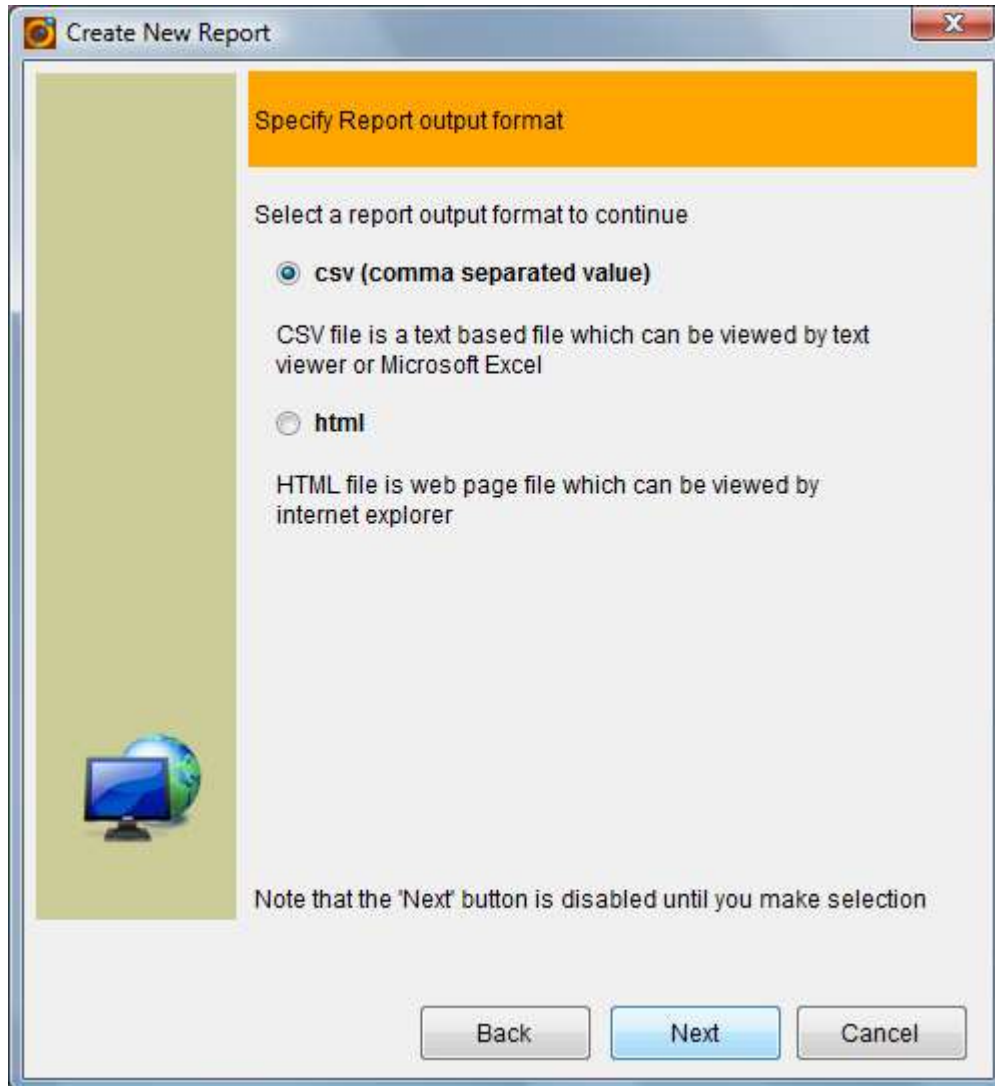
Specify Report Criteria

Select criteria for this report and click next to continue

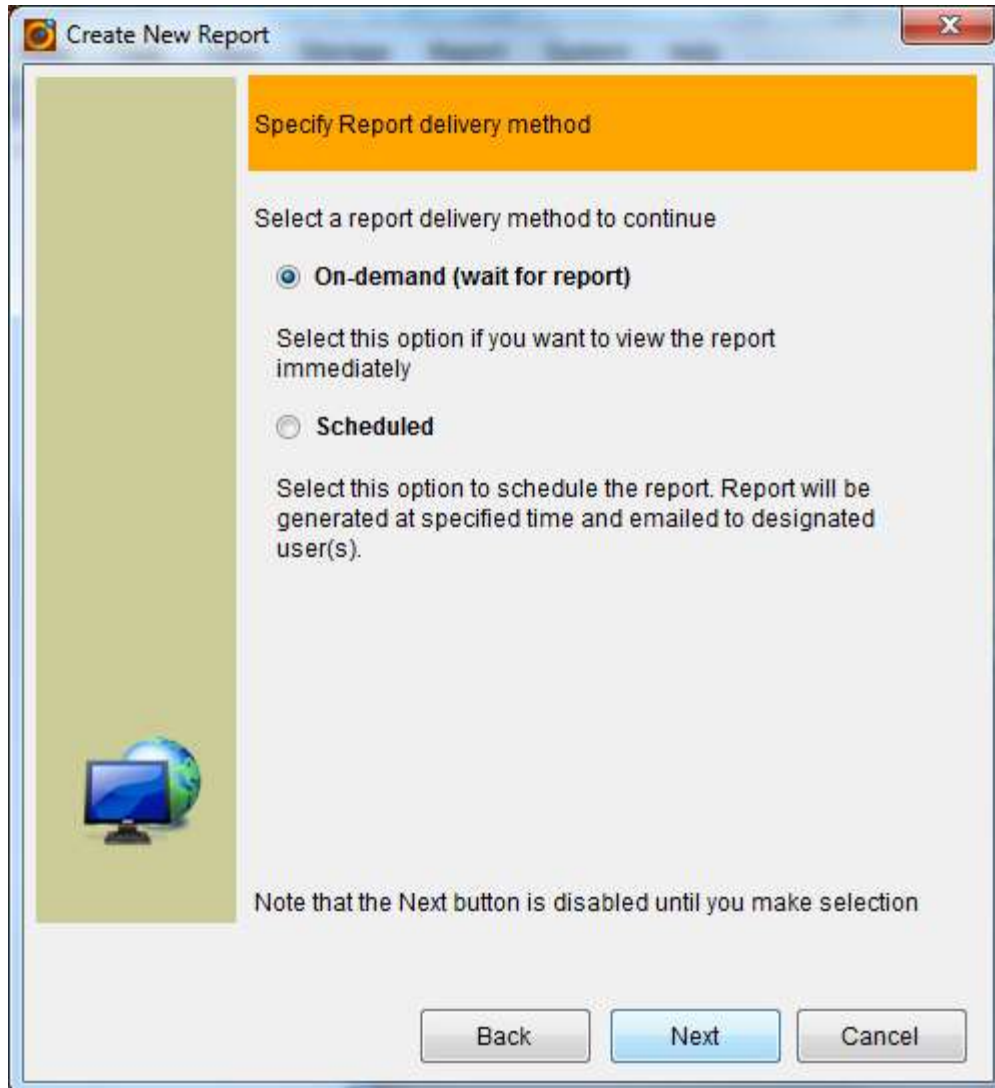
Community: All

Back Next Cancel

Step 5 – Select output format



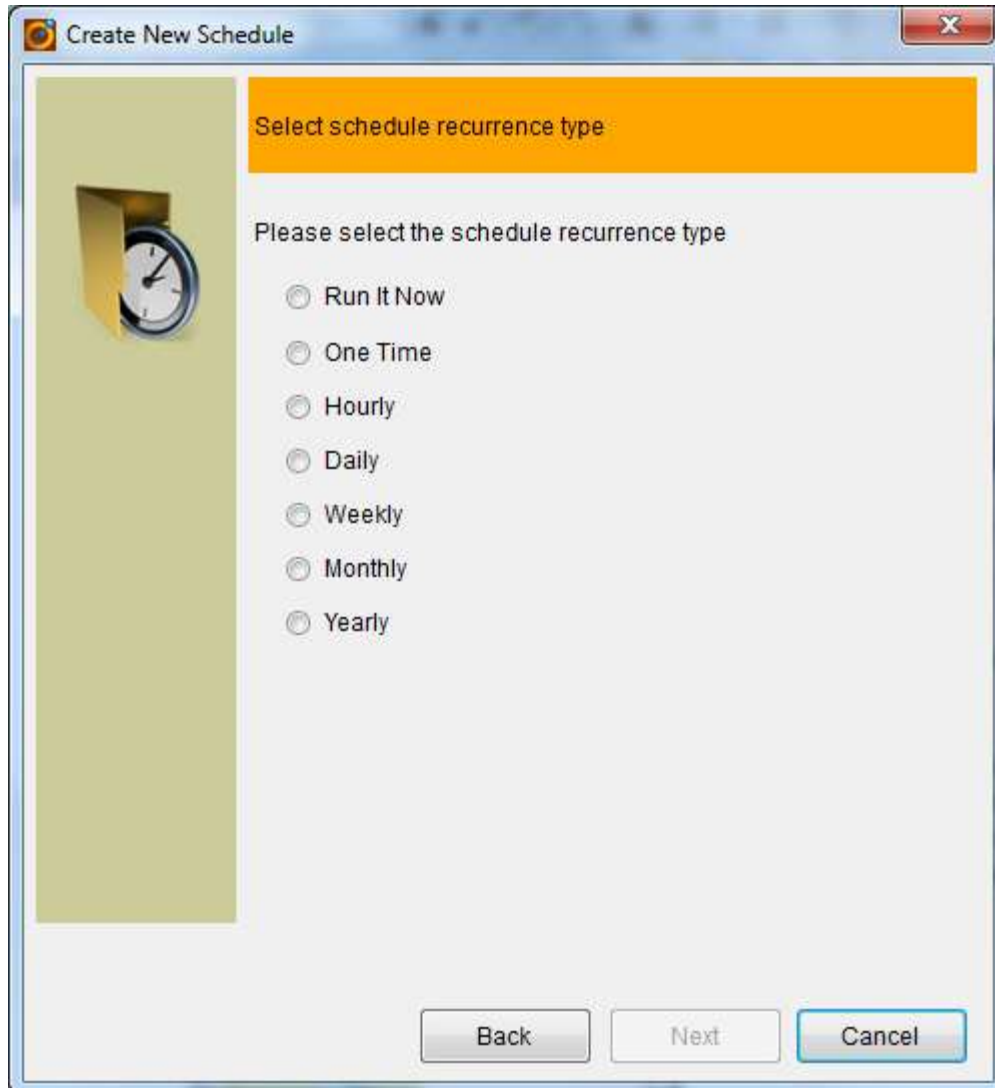
Step 6 – Select delivery method



If On-demand is selected, click Next to go to final step.

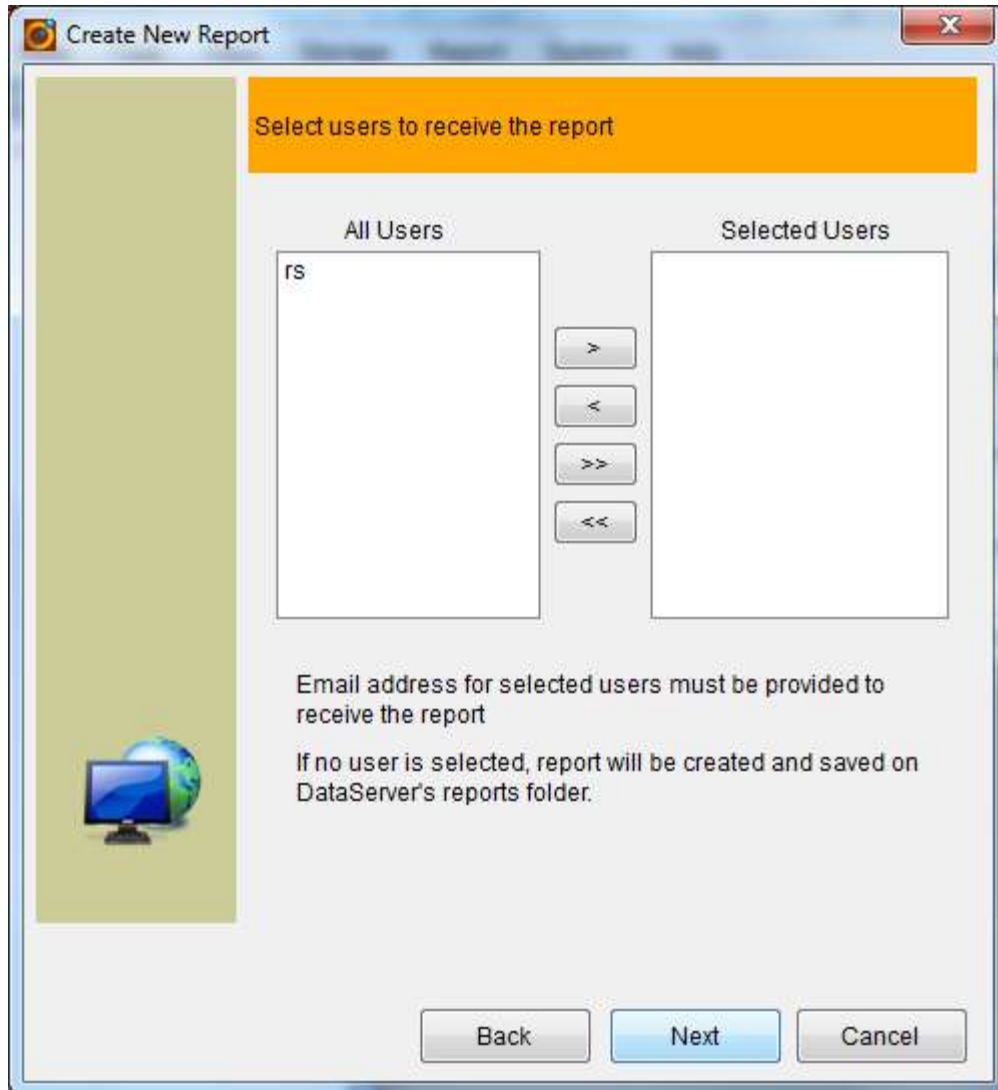
If Scheduled is selected, click Next to continue to set up the schedule.

Step 7 – Select schedule reoccurrence

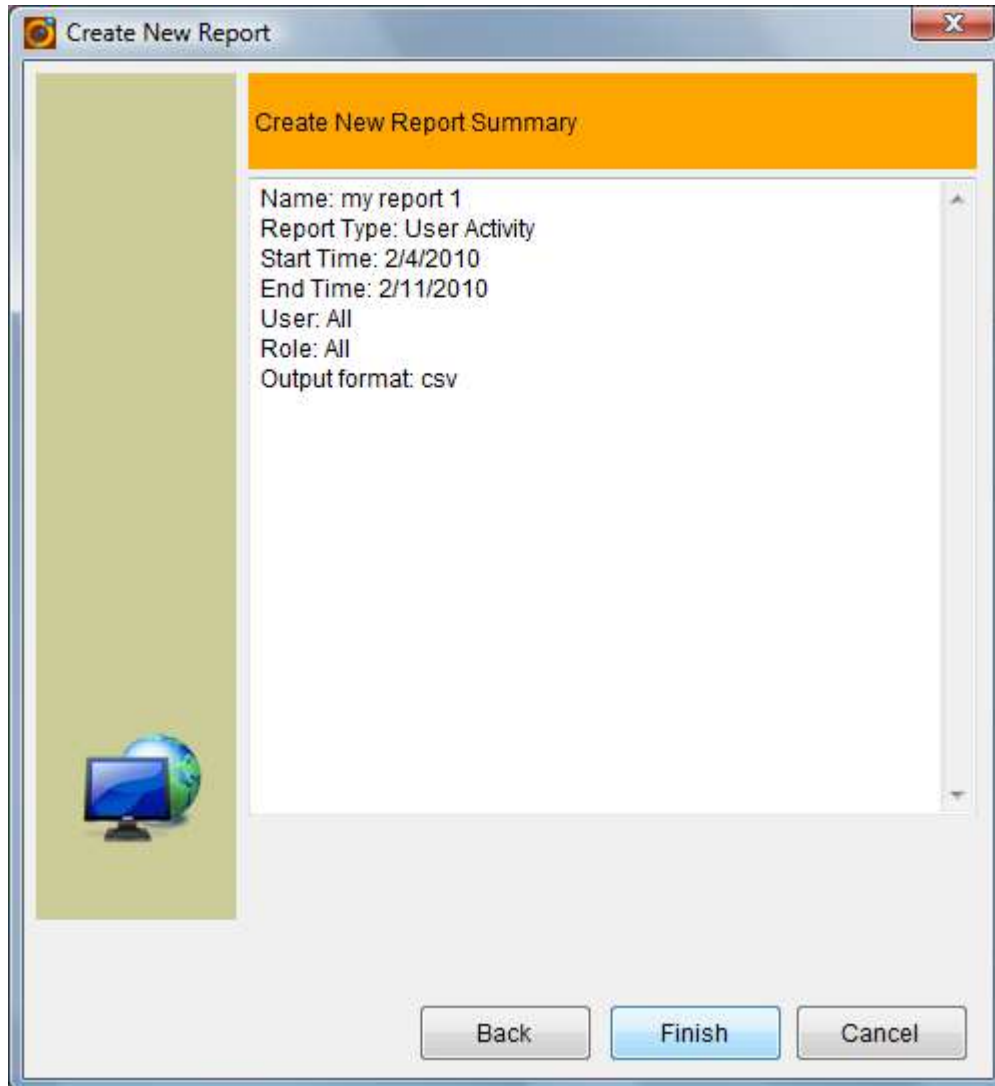


Depending on which recurrence is selected, use following step to provide schedule's details.

Step 8 – Select users that will receive the report



Step – Final Step




Click Back to make modification, click Finish to generate and open the report.

9.3 Open Report

Generated reports are saved in cloud system and can be retrieved and opened for review. User can access open report menu from the following place:

Main Menu -> Reports -> Open Report

Following screen is the Open Report screen where user can specify the criteria to search reports. User can further select operation on selected reports.

 Open Report ✕

Report Type: ▾

Create By: ▾

Between: ▾ and ▾

Select	Name	Report Type	Output Format	Create Date

10 System Administration

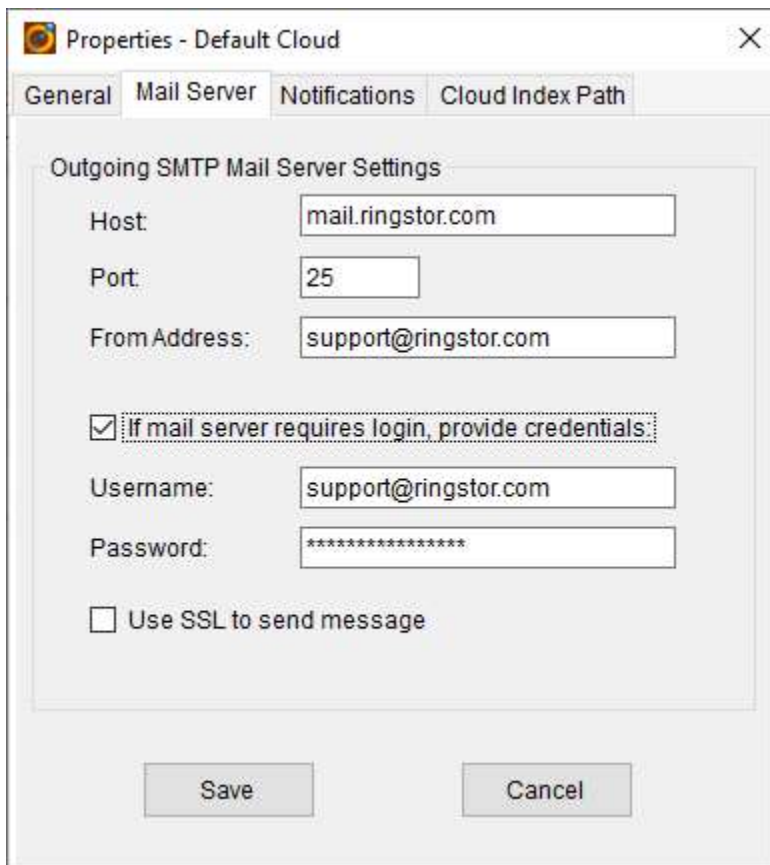
10.1 Notification

RingStor provides two sets of notifications, system and task. To enable notification for backup and restore jobs, please follow steps in Data Backup and Recover.

In order to enable notification, a SMTP server must be provided first.

10.1.1 Setup SMTP Server

Log into RingStor Explorer as cloud administrator, open Settings from System menu on top, click Mail Server to set up SMTP server. This SMTP server will be used by cloud to send notifications as well as scheduled reports.



Properties - Default Cloud

General Mail Server Notifications Cloud Index Path

Outgoing SMTP Mail Server Settings

Host: mail.ringstor.com

Port: 25

From Address: support@ringstor.com

If mail server requires login, provide credentials

Username: support@ringstor.com

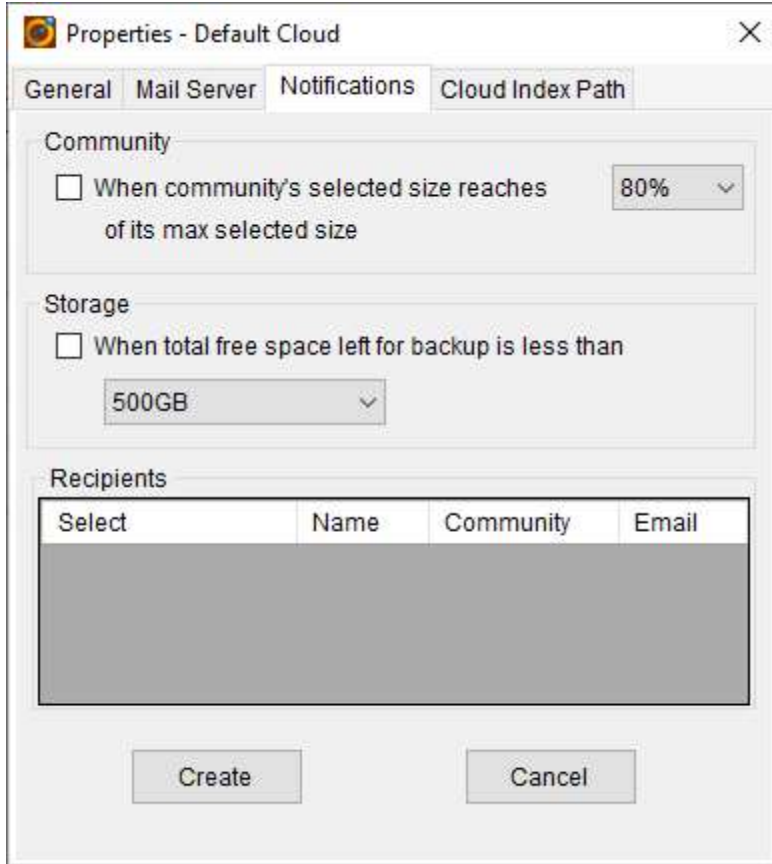
Password: *****

Use SSL to send message

Save Cancel

10.1.2 Enable System Notification

From RingStor Explorer, System -> Settings, open Notification tab, enable notification and recipients.



Properties - Default Cloud

General Mail Server **Notifications** Cloud Index Path

Community

When community's selected size reaches 80% of its max selected size

Storage

When total free space left for backup is less than 500GB

Recipients

Select	Name	Community	Email
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Create Cancel

10.2 License Management

License must be valid for DataServer to start successfully. If license is invalid or expired, DataServer will detach itself from RingStor, thus make it unavailable for all tasks.

For current license info and usage, click Menu -> System -> License. Following is an example of such screen:

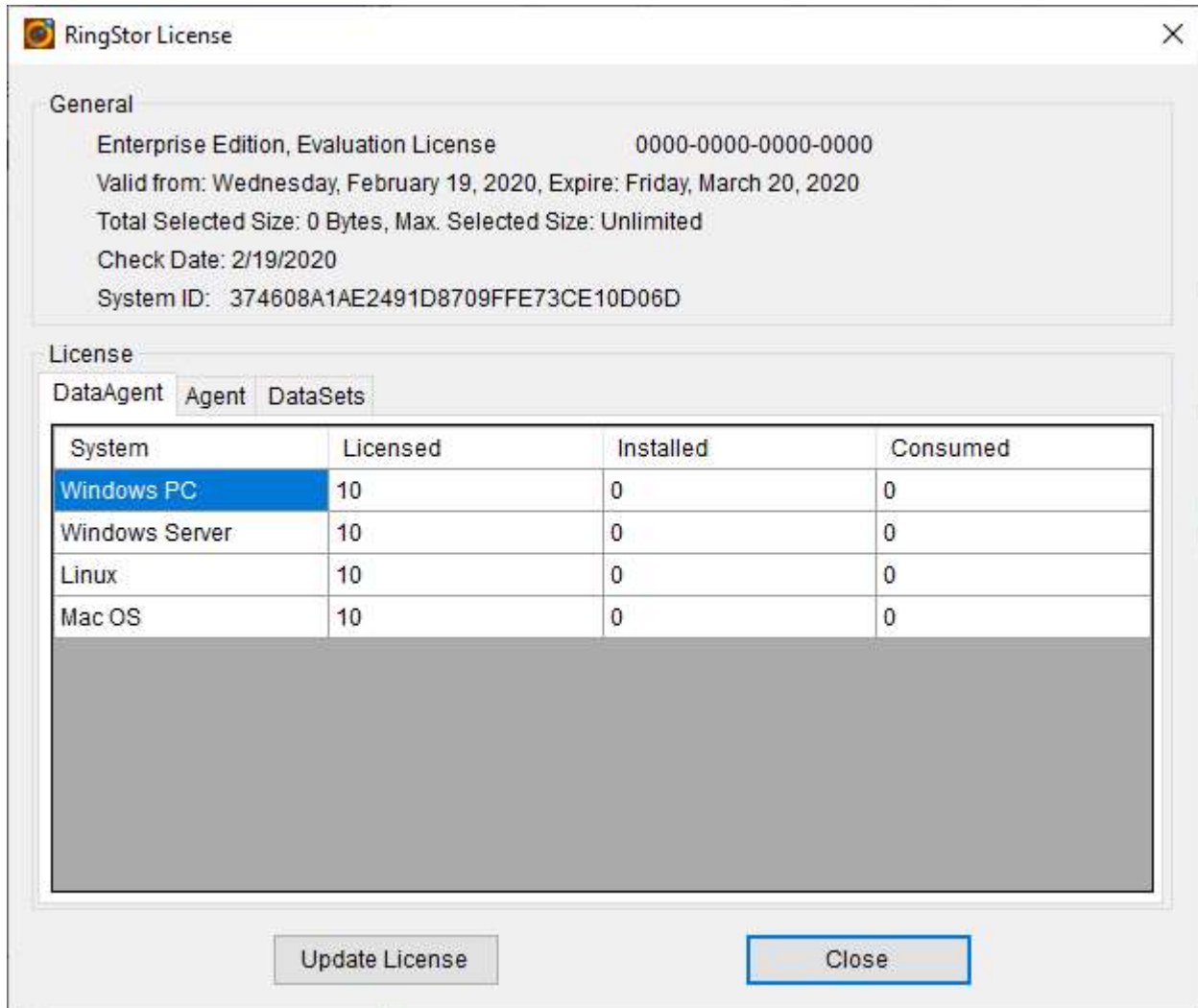


Figure 13.1 License Sample

10.2.1 Activation

To apply a full commercial license, or upgrade your license, follow the steps below to apply and activate the license:

- Log into RingStor Explorer with administrator's credentials (you created this during DataServer install)
- From top menu, click System -> License, click Update License to upload license file.
- Click Activate to activate the license. The license will be automatically prorogated to all DataServers in RingStor system.

11 Support

Support is available to all customers who have valid license.

Standard support is provided for customers with free trial license. Please visit <http://www.ringstor.com> for details.

Premium support packages are provided and can be purchased by contacting RingStor.

Documentation can be downloaded from <http://www.ringstor.com/>