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# Vinchin Backup & Recovery v7.0

## User Guide for MySQL Database

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成都云祺科技有限公司
Chengdu Vinchin Technology Co.,Ltd.

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# Supported MySQL Environments

Supported Deployment: Stand-alone
Supported MySQL Versions: 5.6, 5.7, 8.0, 8.0.26
Supported Operating Systems: RHEL 7, 8 & CentOS Linux 7, 8

# Preparation for MySQL Backup

## Download Agent

Open the web console of Vinchin Backup & Recovery, on the login screen, click on **Download Backup Plugin** to show the agent download options.
In the **Type** dropdown list, please select **Physical Backup Agent** option.
In the **OS** dropdown list, please select the target Linux distribution.
Click on **Download** button to download the backup agent for the Linux servers.
The downloaded backup agent installer for Linux server should be a .tar.gz package. If you've downloaded it on a Windows desktop, please upload it to the Linux server which you wish to backup.

## Install Agent

Login to the command line interface (CLI) of the Linux server. Install the backup agent follow the steps below.
1. By using the below command to decompress the .tar.gz package.

```
tar -zvxf vinchin-backup-agent-xxx-x86_64.tar.gz
```

Where the 'xxx' should be the version number and Linux distribution same as the actually downloaded installer.

2. Enter the backup plugin package folder.

```
cd vinchin-backup-agent-xxx-x86_64
```

Where the 'xxx' should be the version number and Linux distribution same as the folder decompressed from the agent installer.

3. Install with the below command.

```
./agent_install
```

Once you execute the agent install command, the installation will begin, and during the installation process, you need to specify the agent connection mode and maybe required to specify the backup server IP based on connection mode you choose.

4. Choose the connection mode.

```
1) Server-to-client
2) Client-to-server
```

```
Please select connection mode [1,2] <default 2>:
```

Choose between 1 and 2 to determine “server to client” or “client to server” connection mode.
If 1 (input 1 and press enter), the agent will only be installed and will not connect to server, users will have to add the agent from Vinchin Backup & Recovery web console after the agent installation.
If 2 (directly press enter or input 2 and press enter), users will be asked to provide the Vinchin backup server IP for the agent being able to automatically connect to after the installation.

5. Specify backup server IP.
Only if the connection mode is 2, users will be asked to specify the backup server IP.

```
Please select connection mode [1,2] <default 2>:2
Please input backup server IP:172.18.1.10
```

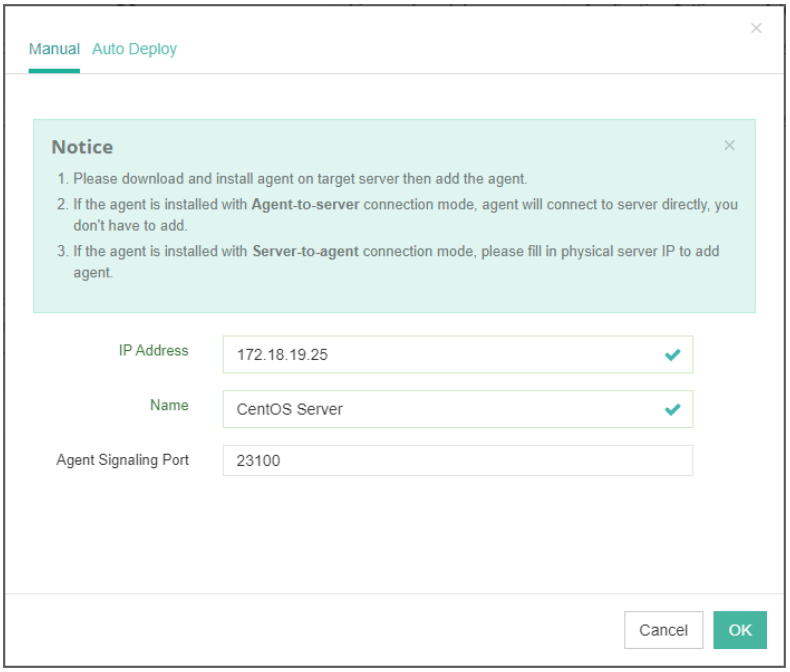
Please enter Vinchin backup server IP then press enter.

6. Specify client/server listening port.
If the connection mode is 1, users will be asked to specify the client listening port. It’s not recommended to change the port number, please press enter to continue.
If the connection mode is 2, users will be asked to specify the server listening port. It’s not recommended to change the port number, please press enter to continue.

7. Specify client transport port.
It’s not recommended to change the client transport port, please press enter to confirm the installation.
Once the users completed the above settings, the installation will be done in a few seconds, if you had chosen connection mode 1 (server to client), after the agent installation, please open Vinchin Backup & Recovery web console to add the agent to Vinchin backup server, please refer to Add Agent.

## Add Agent

No matter for Linux or Windows backup agents, if the connection mode is 1 (Server-to-client), after the agent installation, users have to add the agents from Vinchin Backup & Recovery web console from **Resources** > **Agents** page.
Click on **Add** button to add the agent.

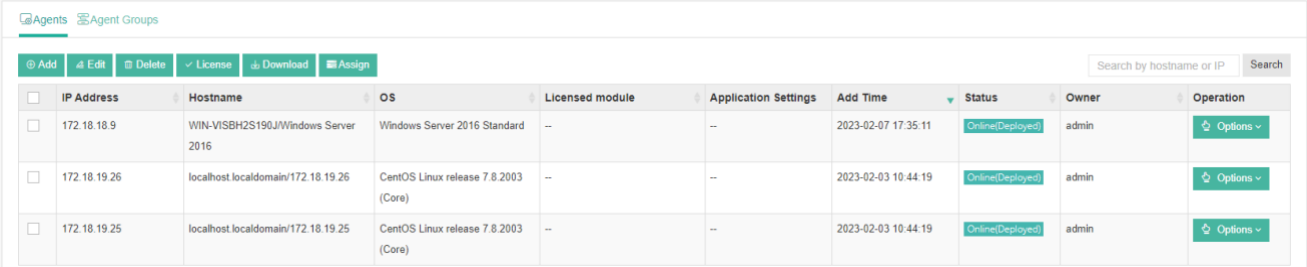



In the **IP Address** field, please input the IP of the Linux/Windows server which you had installed the agent with Server-to-client connection mode.

In the **Name** field, you can give it a name for identification.

As for the **Agent Signaling Port**, it's not recommended to change it, please leave it as default.

Once done, click **OK** to add the agent.

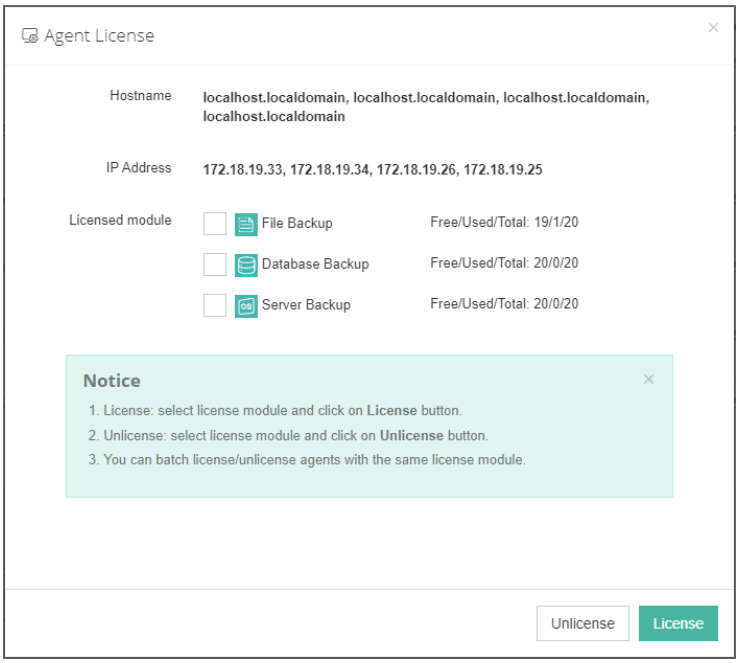



All agents connected to Vinchin backup server, no matter with Server-to-client or Client-to-server mode, will be all list on the **Resources** > **Agents** page.

## License Agents

All physical backup agents connected to Vinchin backup server will be listed on the **Resources** > **Agents** page. Before users can perform file, database or server backup, the agents need to be licensed with corresponding license modules.

Select one or a group of physical backup agents and click on License button, you'll be able to enable backup of those agents.




The physical backup agents can be licensed with File Backup, Database Backup and Server Backup license modules. According to the workloads running on the physical server, please select corresponding module and then click on **License** button to get the agents licensed for backup.

To unlicense the agents, please also select the corresponding module and click on **Unlicense** button to get the agents unlicensed.

# Configure Application

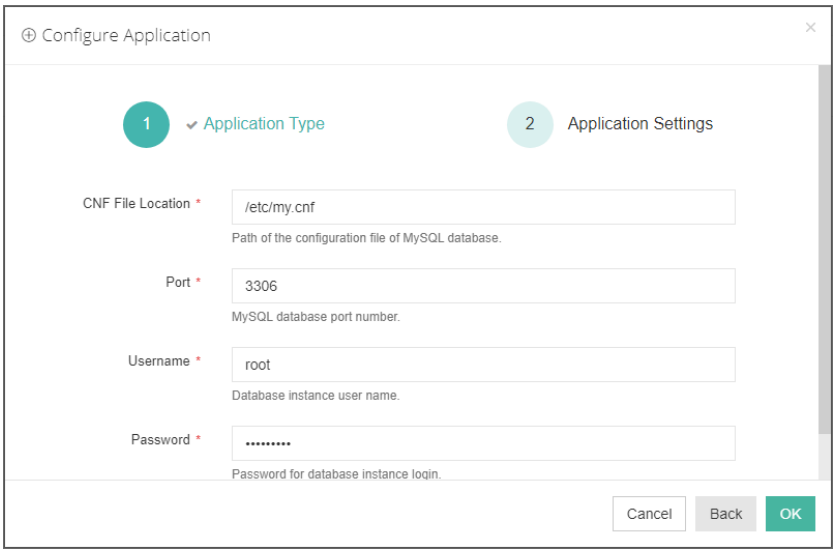
After the installation of Vinchin physical backup agent on MySQL database server, users have to license the agent with database backup module.

When done installation and licensing, please open Vinchin Backup Server web console and go to **Resources** > **Agents** page, find the target agent, click on **Options** and then select **Application** to configure application settings for database backup.

Click on **Configure Application** button to configure the application settings.

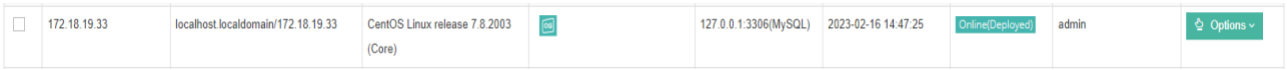
In the **Application Type** dropdown list, please select **MySQL** and then click on **Next**.

In the Applications Settings screen, please configure the following settings.




In the **CNF File Location** field, please type in the file path of MySQL cnf file. Leave the Port number with default value and provide database administrator username and password, click on OK to complete the application configuration.

When MySQL application is successfully configured, in the agents list, you should see the agent look like below.



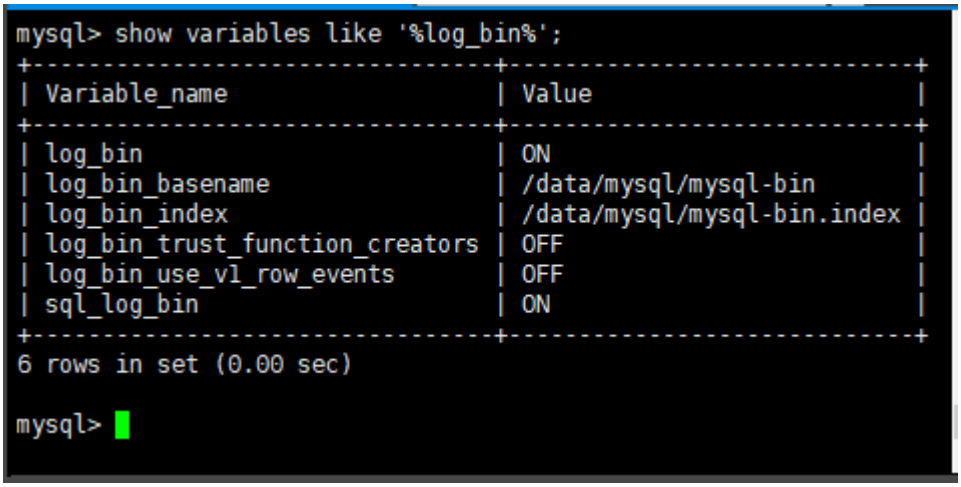

Now you should be able to create backup jobs for the MySQL database server.

# Before Backing Up MySQL Database

If you want to run MySQL log backup, MySQL database needs binary logging enabled. You can check with below command from MySQL database command line interface.

```
show variables like '%log_bin%';
```

If you got log_bin value as on, which means binary logging is enabled.

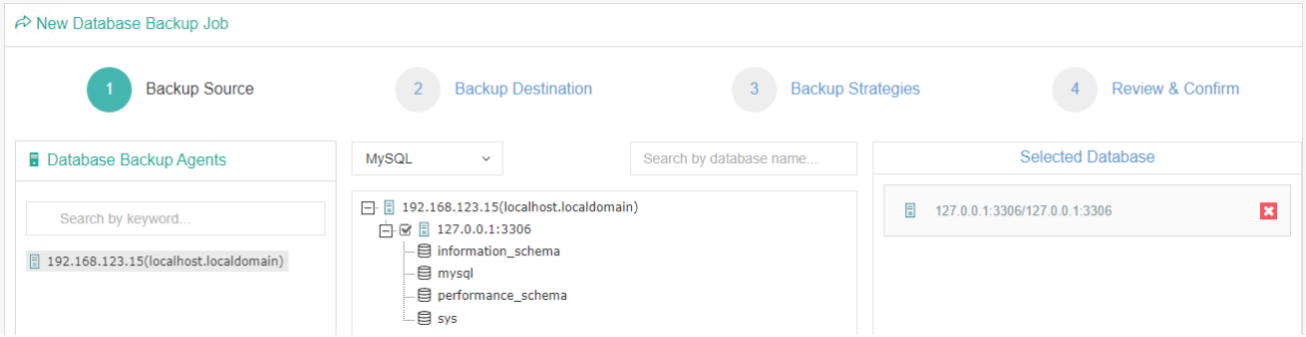



If binary logging is not enabled, it needs the database administrator to enable it.

# Create Backup Job

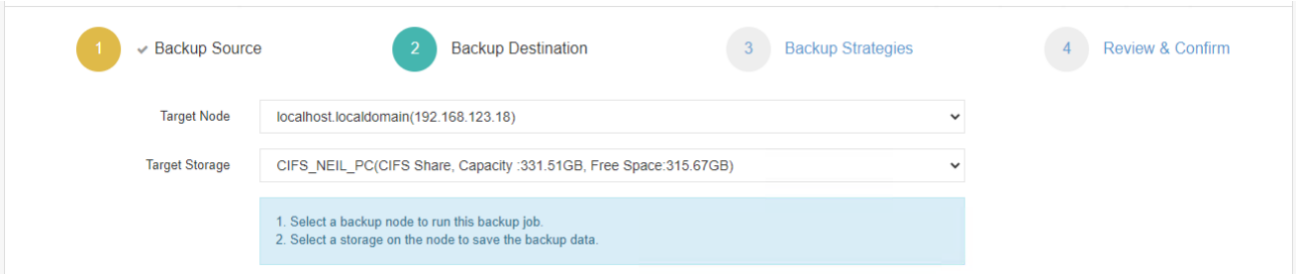
## Step 1: Backup Source

First select backup source from left column, then select MySQL database instance you wish to backup, in the right column will show which instance you selected, click on next to step 2.




## Step 2: Backup Destination

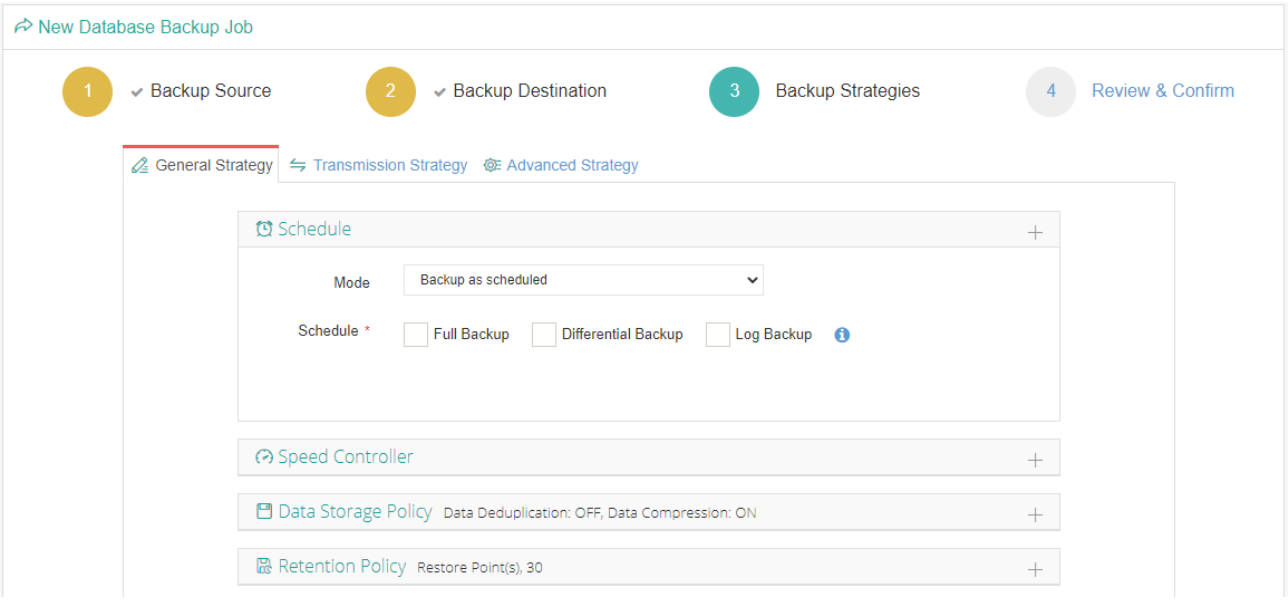
A backup destination (backup storage) should be associated with this backup job.




In the **Target Node** dropdown list, you can select a backup node on which you want the backup data to be processed and stored.
In the **Target Storage** dropdown list, the storages belong to the selected backup node can be selected.

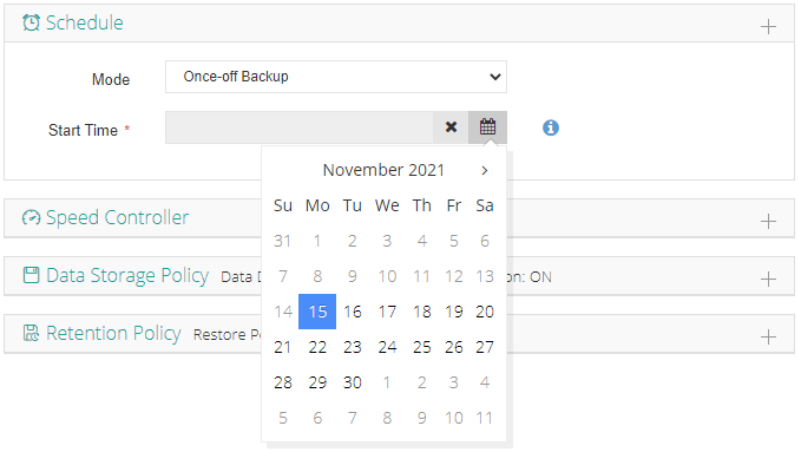
## Step 3: Backup Strategies

In the General Strategy it including Schedule, Speed Controller, Data Storage Policy and Retention Policy.



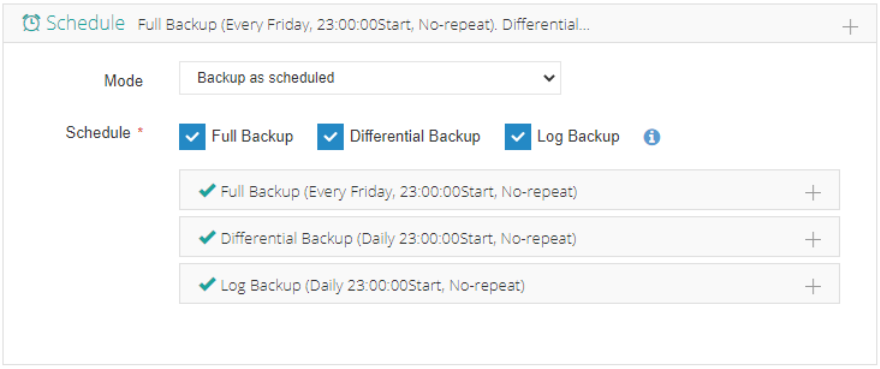

In the Schedule field, you can configure the time schedule of the backup job, you can configure the job as a **Backup as Scheduled** job or a **Once-off Backup** job.

For a once-off backup job, the job will only run for once, and only full backup will be performed. You only have to appoint a time of when to start the backup job, in the Time Schedule field.




For backup job type, you can schedule Full Backup, Incremental Backup and Log Backup.

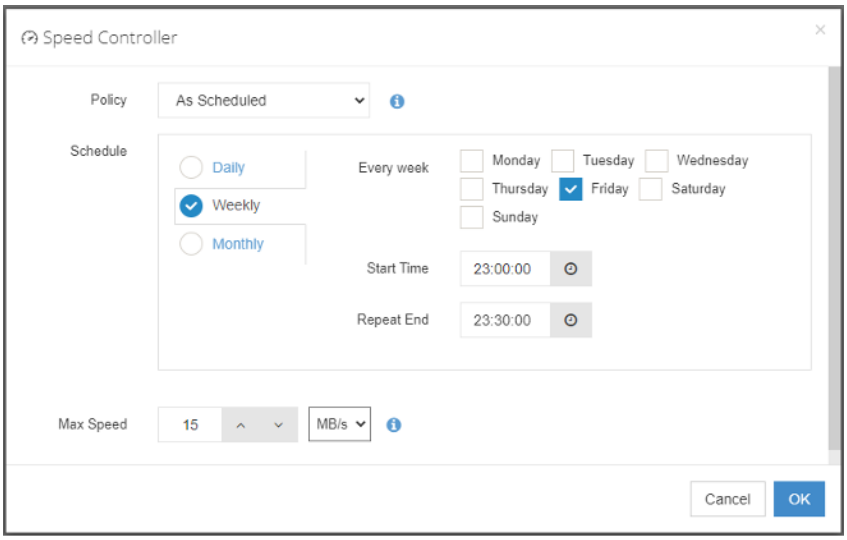
Here we take these three Backup as an Example. Please set the backup mode and backup schedule as per your actual demands, then please click on **Next** to continue.



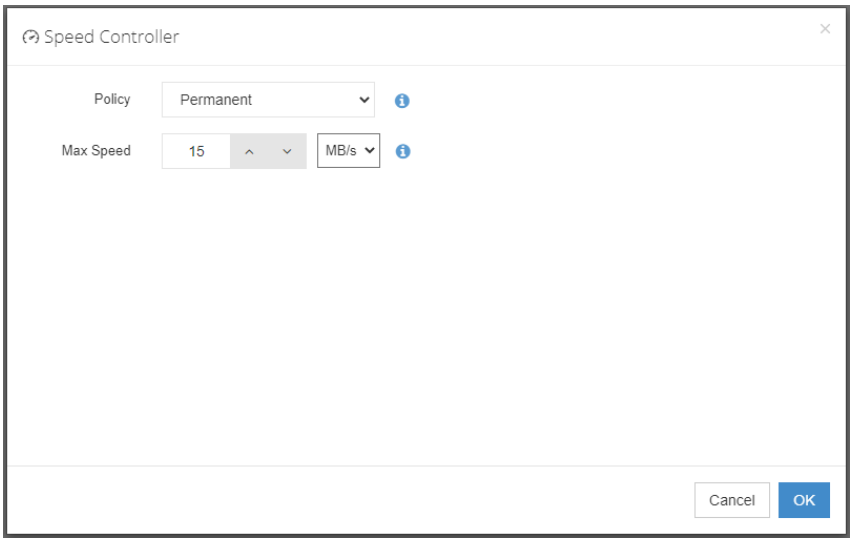

Speed Controller is optional. It can be used to limit the transmission speed during database backup if needed.

The speed controller policy can be configured as either As Scheduled or Permanent. An As Scheduled policy can be

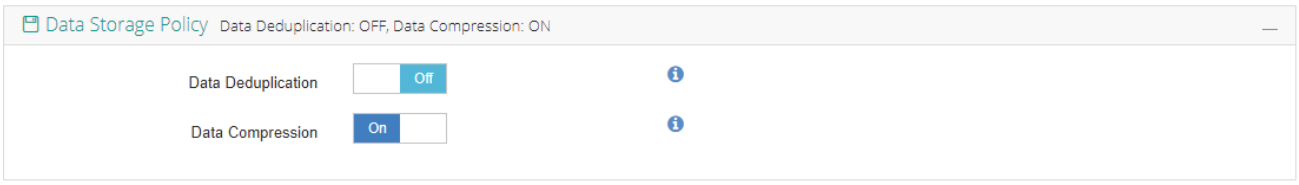
configured to limit the backup speed on Daily, Weekly and Monthly basis.




A Parmanent policy will always limit the backup speed within the specified Max Speed.



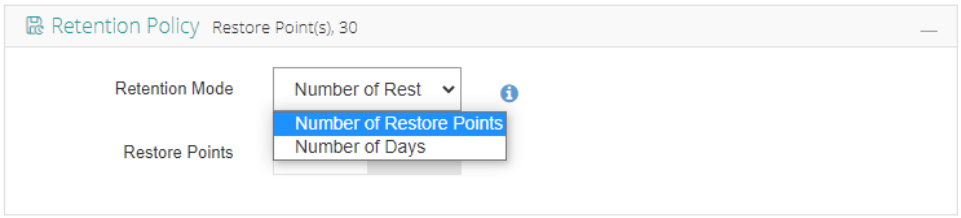

There are 2 options in Data Storage Policy section, Data Deduplication and Data Compression. By enabling these 2 options, the backup data will be deduplicated and compressed before saving into backup storage.




For the retention policy of the database backup, there are 2 retention mode, retain the database backups according to **Number of Restore Points** or **Number of Days**.

For the retention mode **Number of Restore Points**, the restore points will be counted by full restore points, including the incremental backups and log backups dependent on this full backup.

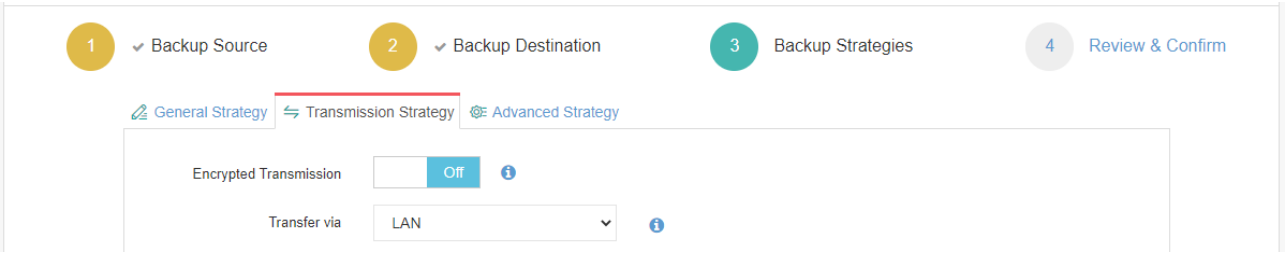
For retention mode **Number of Days**, Vinchin Backup Server will save the restore points within the specified number of days.




When the retention policy is triggered, the outdated restore points will be purged to comply with the retention policy.

In the transmission Strategy, you can choose to enable **Encrypted Transmission** for data safety.

The backup data will be transferred through LAN by default.



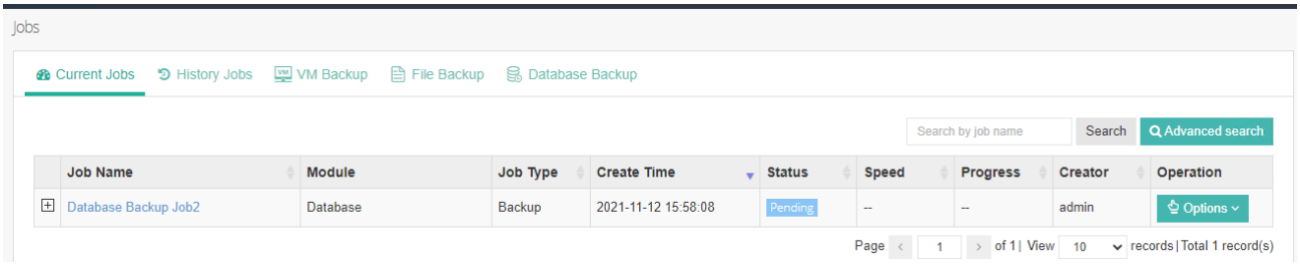

## Step 4: Review & Confirm

After completing the above-mentioned settings, you are able to review and confirm the settings in one screen.

A job name can be specified for identification of the database backup job, and by clicking on the Submit button to create the backup job.

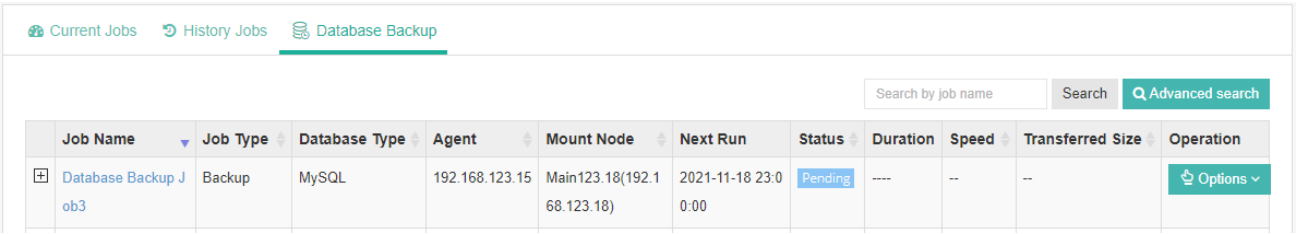
## Managing Backup Job

Once a database backup job had been created, you will be redirected to the **Monitor Center** > **Jobs** page.




The status of the newly created job will usually be **Pending**, when the time condition matches the schedule, it will automatically run. And the status will change to Running, you can also see the transfer speed here within the job list.

Besides the Current Job list, there's a dedicated tab to show database backup jobs. More detailed information of database backup jobs, including database type, database agent info, backup node, next run time and some more detailed information dedicated for database backup will be given.




By clicking on the job name you can check more detailed information on the **Job Detail** page.

For a scheduled backup job, after running one of the schedules, the status will change to Pending again and then wait for the next run.

For a once-off backup job, after running the job for once, it will be removed from the Current Job list. And you can find it from the History Job list.

# Before Restoring MySQL Database

There are two methods to recover MySQL database, **Override Original Database** and **Redirect Restore to New Path**.

For **Override Original Database** restore, MySQL database needs to be shutdown. For example:

```
systemctl stop mysqld
```

And an empty temporary directory needs to be created and should be granted with mysql user permission for storing cache data during restoration process. For example:

```
mkdir /data
chown -R mysql:mysql /data
```

All data in the original data directory (datadir) needs to be cleared before restoration, it's recommended to rename the original data directory and create a new directory with the original data directory name, and it needs to be granted with mysql user permission, for example:

```
cd /var/lib/
mv mysql mysql.bk
mkdir mysql
chown -R mysql:mysql mysql
```

*Note*

*1. The above operations should be done by the MySQL database admin.*

*2. The temporary directory is recommended to be created on the same partition as original data directory.*

*2. For the datadir, it's configured in the my.cnf file, database admin should perform the above operations according to the actual environment.*

For **Redirect Restore to New Path**, a temporary directory and a new data directory need to be created and need to be granted with mysql user permissions, for example:

```
mkdir /data
chown -R mysql:mysql /data
mkdir /data1
chown -R mysql:mysql /data1
```

*Note*

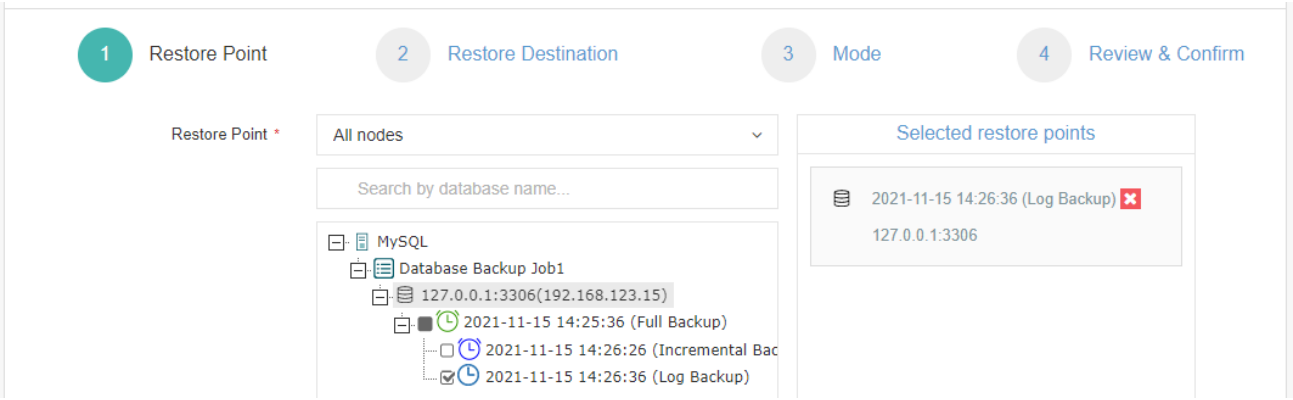
*1. Redirect Restore to New Path does not require shutdown MySQL database services.*
*2. The restored data will be saved in the new data directory, database admin can use the restored data to create new database or modify the my.cnf file to start MySQL database from the new data directory.*

To restore databases from database backup restore points, please go to **Database Backup** > **Restore** page. There are 4 steps to restore databases from the database backup restore points.

# Create Restore Job

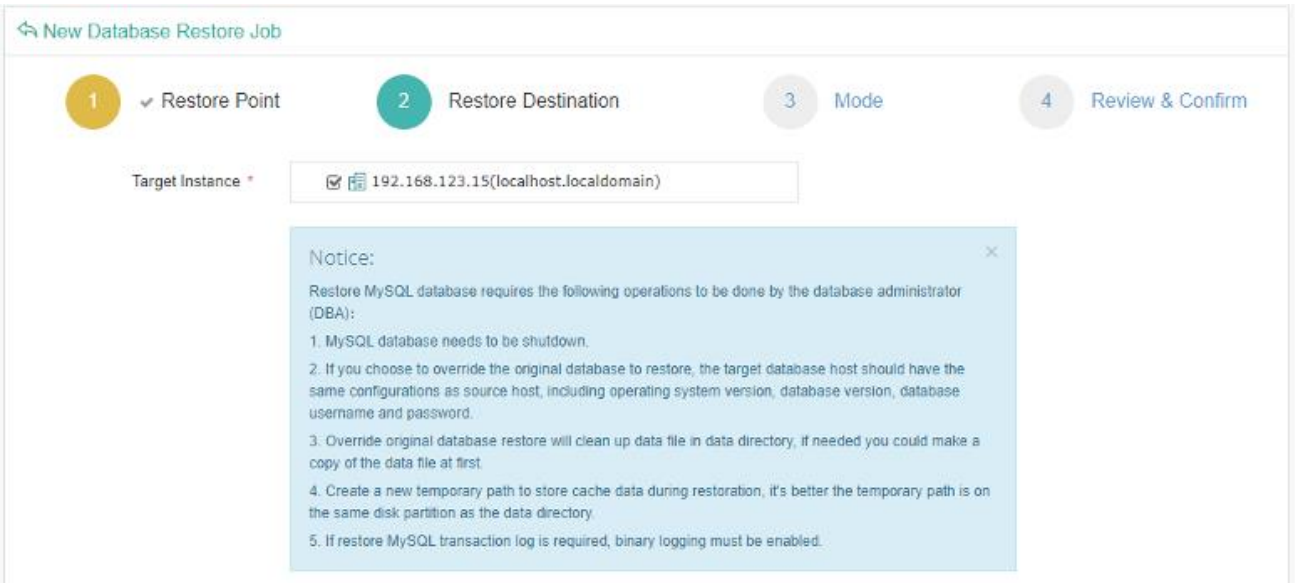
## Step 1: Restore Point

In the Restore Point dropdown list, select a backup node which stores the desired restore points.
Select a target database restore point under your database which you want to restore. You can quickly find the target restore point by searching the job name, database name or the date of the restore point. One restore job only can select one restore point.



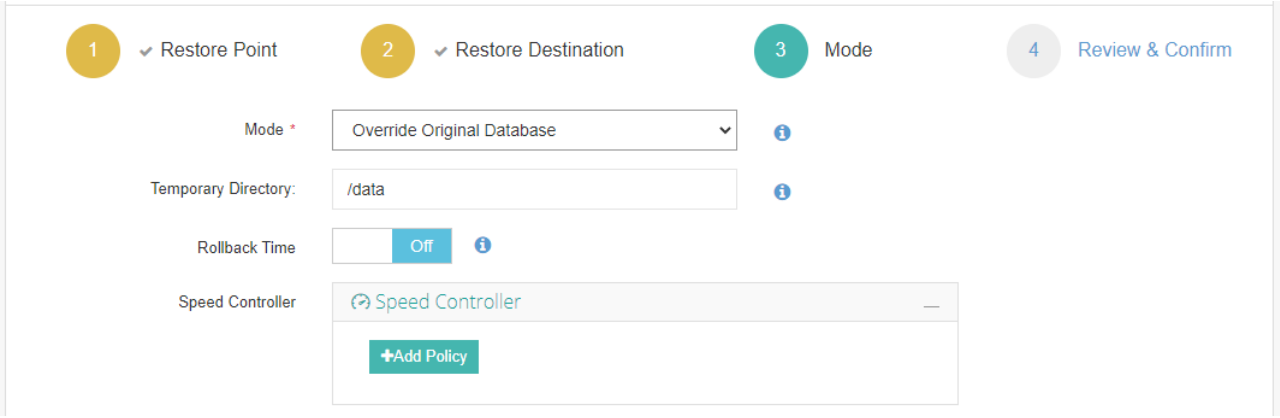

## Step 2: Restore Destination

After selecting restore point, select **Target Instance** to restore.

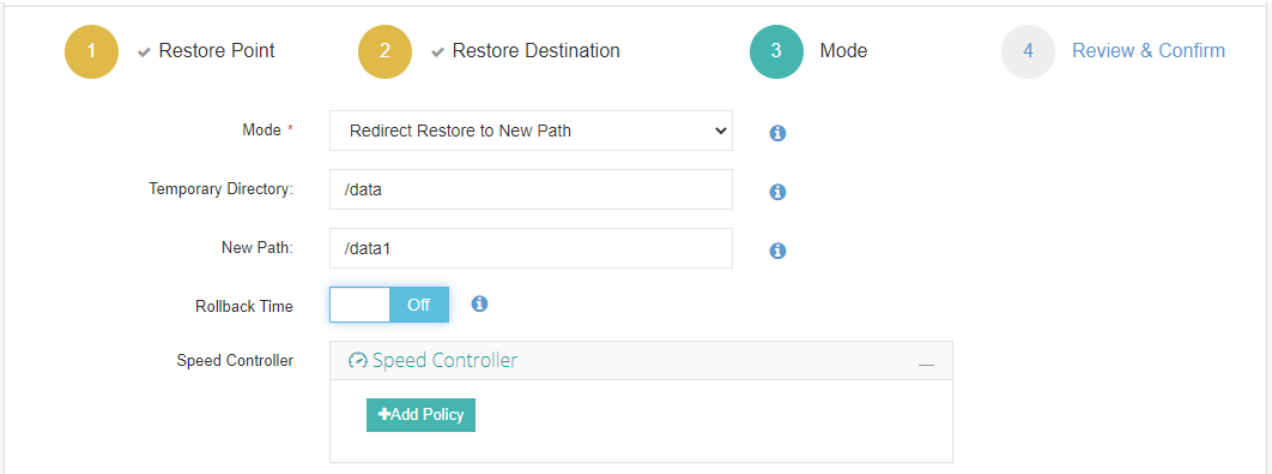



## Step 3: Restore Strategy

For **Override Original Database** restore, fill in the temporary directory path.

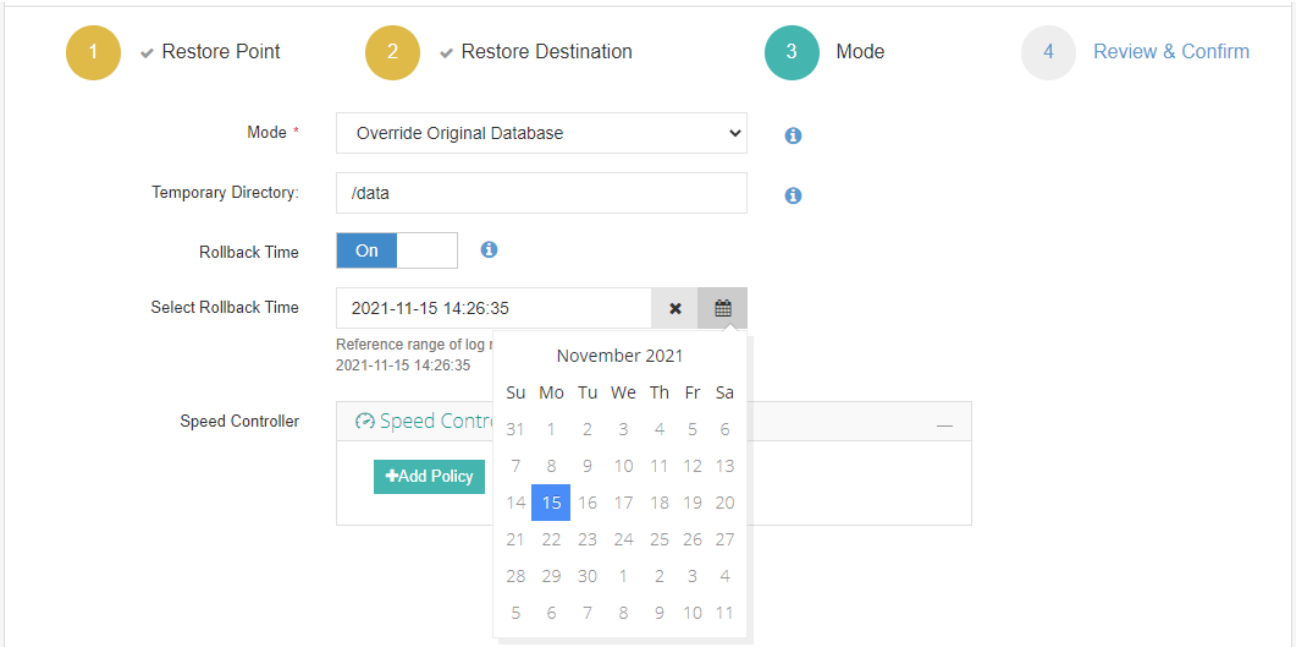



For **Redirect Restore the New Path** restore, fill in the temporary directory path and the new data directory path.




**Rollback time**: if you had selected log backup restore point, you are able to rollback MySQL database state within

the given time range.




If you disable rollback time it will by default restore to the latest time point of the backup when it's been taken.
Same as database backup, while restoring databases, you can also configure **Speed Controller** to limit the database restore speed accordingly.

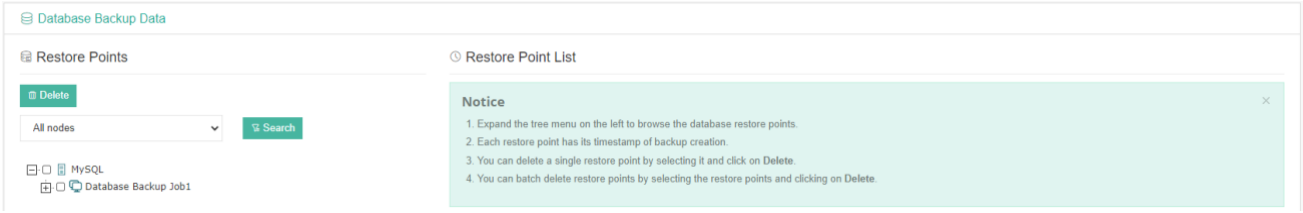
## Step 4: Review & Confirm

After completing the above-mentioned settings, you are able to review and confirm the settings in one screen.
Once the job has been created, you'll be redirected to the **Monitor Center** > **Jobs** page.
As the database restore job is by default to be executed right after the creation of the job, so it will run automatically, when you see it in the current job list, it should be in running status already, and once completed, the job will be automatically deleted from the current job list.
After this you can browse the restored job from History Jobs. Your restored data will be found in the path you configured during creating the restore job.

***Note***
*If you use log backup point to override original database, MySQL service will auto restart, no need to manually start MySQL service.*

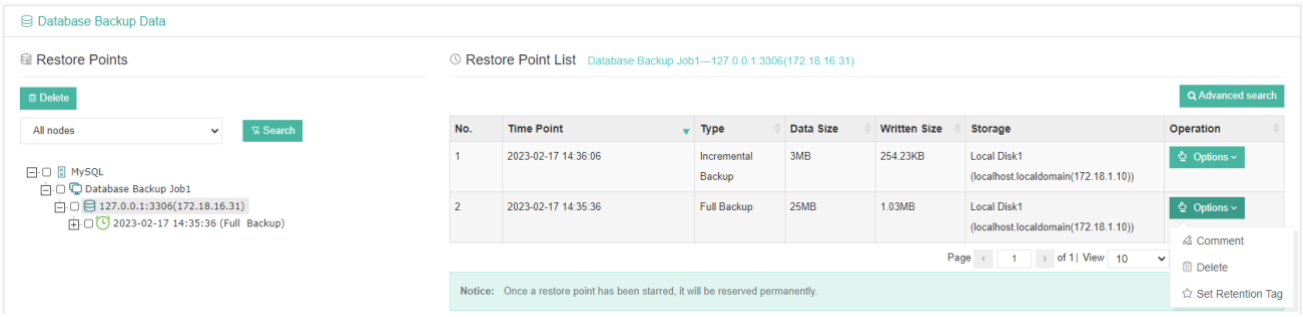
# Managing Backup Data

The database backup data can be managed from **Physical Backup** > **Database Backup** > **Backup Data** page.




If you want to delete a restore point or multiple restore points, you can first select target restore point(s) from the left tree view, and click on the **Delete** button. The incremental backup and log backup cannot be deleted individually, they will be deleted along with the dependent full backup.

When deleting backup data, you need to provide your login password to confirm the deletion, once deleted the data will be unrecoverable.




For the restore point list in the right column, you need to select a database in the left tree menu to view all restore points of the selected database. Information like backup type, data size, written backup size and storage will be given.

You can add comments to the full backups, incremental backups and the log backups, and set retention tags for the full restore point to keep the full backup and its dependent incremental and log backups to not be deleted by retention policy.

A full restore point can be also deleted from the Restore Point List by clicking on Options and then select Delete, the dependent incremental and log backups will be deleted along with the full restore point.