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VINCHIN BACKUP & RECOVERY v7.0

User Guide for PostgreSQL Database

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Partner Independent Software Vendor

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Supported PostgreSQL Environments

Supported Deployment: Standalone Supported Versions: 12, 13, 14 Supported Operating Systems: RHEL 7, 8/CentOS 7, 8

Preparation for PostgreSQL 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 <u>Add Agent</u>.

Add Agent

If the connection mode is 1 (Server-to-client), after the agent installation, users have to added the agents from Vinchin Backup & Recovery web console from Resources > Agents page.

Click on Add button to add the agent.

Notice		
1. Please download and	d install agent on target server then add the agent.	
If the agent is installe don't have to add.	ed with Agent-to-server connection mode, agent v	vill connect to server directly, y
 If the agent is installe agent. 	d with Server-to-agent connection mode, please	fill in physical server IP to add
IP Address	170 10 10 05	
	172.10.15.25	•
Name	CentOS Server	×
Agent Signaling Port	23100	

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.

G,	gents 🖀 Agent Groups								
œ	Add 👍 Edit 🗊 Delete	✓ License	1					Search by hostnar	me or IP Search
	IP Address	Hostname	OS 🕴	Licensed module	Application Settings	Add Time	Status 0	Owner 🗄	Operation
	172.18.18.9	WIN-VISBH2S190J/Windows Server 2016	Windows Server 2016 Standard	-		2023-02-07 17:35:11	Online(Deployed)	admin	한 Options ~
	172.18.19.26	localhost.localdomain/172.18.19.26	CentOS Linux release 7.8.2003 (Core)	-		2023-02-03 10:44:19	Online(Deployed)	admin	☆ Options ∨
	172.18.19.25	localhost.localdomain/172.18.19.25	CentOS Linux release 7.8.2003 (Core)	-		2023-02-03 10:44:19	Online(Deployed)	admin	한 Options ~

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 must be licensed with Database Backup license modules for PostgreSQL. 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 PostgreSQL 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 PostgreSQL.

The database instances of PostgreSQL will be listed in the Select Instance field. Select the database instance and click on Next button to get the instance authenticated for backup.

⊕ Configure Application			×
1 ~ Ap	plication Type	2 Application Settings	
Database Name	postgres		
	Any database in the instance		
BIN File Path *	/usr/pgsql-14/bin		
	The path of the database BIN file.		
Username *	postgres		
	Database instance user name.		
Password *			
	Password for database instance login.		
		Cancel Back	ОК

You need to specify the database bin file path and the database user credentials to get it authenticated. When PostgreSQL application is successfully configured, in the agents list, you should see the agent look like below.

172.18.14.4	localhost.localdomain/postgresql	CentOS Linux release 7.8.2003	5432(PostgreSQL)	2023-02-17 14:08:43	Online(Deployed)	admin	🔄 Options 🗸
		(Core)					

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

Before Backing Up PostgreSQL Database

DBA must check the below prerequisites before taking PostgreSQL database backups.

1. Ensure that the Connection setting listen_address parameter contains "localhost" in the PostgreSQL.conf file under the ProstgreSQL data directory

2. The database backup agent needs to use 2 service ports:23100 and 23101. On the database server firewall, these 2 ports need to be opened for Vinchin backup server.

3. Archivelog mode needs to be enabled with the database instance before taking backups.

4. The password-based authentication should be "md5" or "scram-sha-256" in the pg_hba.conf under the PostgreSQL data directory.

Create Backup Job

To create database backup jobs, please go to Database Backup > Backup page. There are 4 steps to create a database backup job.

Step 1: Backup Source

First you need to select a target database server from the left column, then select PostgreSQL database instance you wish to backup, in the right column will show the instance you have selected.

➢ New Database Backup Job				
1 Backup Source	2 Backup Destination	3 Backup Strate	igies	4 Review & Confirm
Database Backup Agents	PostgreSQL ~	Search by database name	S	elected Database
Search by keyword 192.168.69.155(postgresql13)	☐ 192.168.69.155(postgresql13) ☐ ☞ ☞ 5 5432 └_		5432/5432	

Step 2: Backup Destination

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

A New Database Backup Job			
1 v Backup Source	2 Backup Destination	3 Backup Strategies	4 Review & Confirm
Target Node	vinchin67.srv(192.168.120.18)	~	
Target Storage	Local Disk1(Local Disk, Capacity :299.85GB, Free Space:298.91GB)	~	
	 Select a backup node to run this backup job. Select a storage on the node to save the backup data. 		

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.

➢ New Database Backup Job		
1 v Backup Sourc	e Sackup Destination 3 Backup Strategies	4 Review & Confirm
🖉 General Strategy	← Transmission Strategy @ Advanced Strategy	
	🖸 Schedule 🗕	
	Mode Backup as scheduled ~	
	Schedule * Full Backup Archive Log Backup 🚯	
	A Speed Controller +	
	Data Storage Policy Data Deduplication: OFF, Data Compression: ON +	
	Retention Policy Restore Point(s), 30 +	

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 Start Time field.

🖸 Schedule									_
Mode	Once-off Backup							~	
Start Time *							×		0
				Ma	ay 20	22		>	
Speed Controller		Su	Мо	Ти	We	Th	Fr	Sa	+
		24	25	26	27	28	29	30	
💾 Data Storage Policy Dat	a Deduplication: OFF, Data Compression: ON	1	2	3	4	5	6	7	+
		8	9	10	11	12	13	14	
Retention Policy Restore	Point(s), 30	15	16	17	18	19	20	21	+
		22	23	24	25	26	27	28	
		29	30	31	1	2	3	4	

If you want to setup a Backup as Scheduled job, you can schedule Full Backup and Archive Log Backup. For PostgreSQL database, it is recommended to schedule weekly full backup with daily archive log backup.

🖸 Schedule Full Backup (Ev	very Friday, 23:00:00Start, No-repeat). Archive Log Backup (Daily 23:0)0:00Start, No-repeat).	_
Mode	Backup as scheduled	~	
Schedule *	✓ Full Backup ✓ Archive Log Backup (1		
	 Full Backup (Every Friday, 23:00:00Start, No-repeat) 		+
	 Archive Log Backup (Daily 23:00:00Start, No-repeat) 		+

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.

Policy	As Scheduled 🗸 🔞	
Schedule	Daily Every week	Monday Tuesday Wednesday Thursday Yriday Saturday Sunday
	Start Time Repeat End	23:00:00 O 23:30:00 O
Max Speed	15 ^ ~ MB/s ~ 🚯	

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

२ Speed Contro	ller			
Policy	Permanent	× ()		
Max Speed	15 ^ ~	MB/s 🗸 🚯		
				Cancel OK

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.

Data Storage Policy Data Deduplication: OFF, Data Compression: ON				
Deduplication	Off	0		
Compressed Transfer	On	0		

For the retention policy of the database backup, there are 2 retention modes, 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 number of full restore points, including the archive log backups dependent on the corresponding full restore points.

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

Retention Policy Restore Point(s), 30				
Retention Mode	Number of Rest 🗸 👔			
Restore Points	Number of Restore Points 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.

1 v Backup Source	2 → Backup Destination	3 Backup Strategies	4 Review & Confirm
🖉 General Strategy	⇐ Transmission Strategy		
Encrypted T	ransmission Off		
	Transfer via LAN 🗸	0	

Advanced Strategy allows you to configure archive log deletion and log space monitoring options.

➢ New Database Backup Job							
1	✓ Backup Source	2 v Backup Destination	3 Backup Strategies	4 Review & Confirm			
		on Strategy @E Advanced Strategy					
	Delete Archiv	log Delete backed up archive log 🗸	0				
	Log Space	ert On ()					
	Thresho	by Percentage 🗸					
		You will receive system alerts when storage free space is below the given threshold.					
	Space	eft 20 ^ ~ %					

Delete Archivelog: there are 3 options Delete backup up archive log, do not delete and Delete all archive log. It is recommended to use the Delete backed up archive log option to delete the archive log which had been backed up. Log Space Alert: if enabled, Vinchin backup server will monitoring on the archive log space usage, when exceeded the specified threshold you will receive alerts on the Vinchin web console.

Notice

If Delete Archivelog has been set to Do not delete, DBA must manually delete archivelog files regularly, otherwise, production database crash may occur once space is fulfilling with archive log files. It is recommended to set Delete Archivelog option to Delete backed up archive log.

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 jobs, and by clicking on the Submit button to confirm the creation of the backup job.

Managing Backup Job

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

@ C	ACurrent Jobs 😒 Database Backup								
							Search by jo	b name Sea	rch Q Advanced search
	Job Name 🔶	Module	Job Type	Create Time	Status 🕴	Speed 🔶	Progress	Creator 🔶	Operation
+	Database Backup Job1	Database	Backup	2022-05-27 17:27:42	Pending	-	-	admin	실 Options ~
							Page < 1	of 1 View 10	✓ records Total 1 record(s)

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.

8 C	urrent Jobs "D History Jobs	😪 Database Back	kup								
									Search by jo	b name Sear	ch Q Advanced search
	Job Name	Job Type	Database Type	Agent	Backup Node	Next Run	Status	Duration	Speed 🕴	Transferred Size	Operation
+	Database Backup Job1	Backup	PostgreSQL	postgresql13(192.168.69.155)	vinchin67.srv(192.168.120.18)	2022-05-27 23:00:00	Pending			-	실 Options ~
								Page	< 1 >	of 1 View 10	 records Total 1 record(s)

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.

Preparation for PostgreSQL Database Restore

Vinchin Backup & Recovery supports two recovery mode for PostgreSQL database: Override Original Database restore and Restore to New Path.

Before starting to restore PostgreSQL database, there are some database configurations need DBA to check. The target recovery database server must have database backup agent installed, and the service ports: 23100 and 23101 needs to be opened for Vinchin backup server.

If override original database restore:

- 1. The target PostgreSQL database instance needs to be shutdown
- 2. The path of data directory and archive log directory must be the same as original database server
- 3. The free storage space of the database server must be enough to save the full restore point data size.
- If restore to new path:

1. You must specify a custom port number to run the database instance and the port number should not be used by any other services on the database server.

2. You need to specify new directories for data and the archive log, these 2 directories should be empty and should not be any directory which is being used by any other services on the database server.

3. For the free storage space required, it must be 2 times more than the full restore point data size.

To create a PostgreSQL database restore job, please go to Physical Backup > Database Backup -> Restore page and follow the steps below.

Create Restore Job

Step 1: Restore Point

If you select a full restore point, you'll be able to directly restore PostgreSQL database to the state of when the backup was taken. If you select an archive log restore point, you are able to roll back the database state to any time point between the first full backup timepoint and the selected archive log backup time point.

New Database Restore Job			
1 Restore Point	2 Restore Destination	3 Restore Strategy	4 Review & Confirm
Restore Point *	All nodes	~	Selected restore points
Search by database name		2022-05-27 17:41:	:07 (Archive Log Backup)
	[] PostgreSQL [] Database Backup Job1 [] B 5432(192:168.69.155) [] ① ① ① 2022-05-27 17:38:42 (Full Backup) [] ④ ① 2022-05-27 17:41:07 (Archive Log Backup)	5432	

Step 2: Restore Destination

After selecting restore point, select Target Instance which you wish to restore.

A New Database Restore Job							
1 v Restore Point	2 Restore Destination	3 Restore Strategy	4 Review & Confirm				
Target Instance *	𝗭 🛃 192.168.69.155(postgresql13)						

The target database instance can be the original database server or a new database server.

Step 3: Restore Strategy

Mode: Override Original Database applies to restore the data to the production database server. Override the data of the original database instance.

A New Database Restore Job							
1 v Restore Point	2 v Restore Destination	3 Restore Strategy	4 Review & Confirm				
Mode *	Override Original Database	~ 0					
Rollback Time	Off 3						
Speed Controller	🔿 Speed Controller	+					

Restore to New Path applies to restore data to a new directory. The directory needs to be created by the PostgreSQL database user and has PostgreSQL user permissions.

A New Database Restore Job					
1 v Restore Point	2 v Restore Destination	3 Restore Strategy	4 Review & Confirm		
Mode *	Restore to New Path	0			
New Path:	/var/lib/pgsql/13/data01/				
Custom Port:	5433				
	The custom port should not be any port which is already inuse.				
Custom Archive Directory:	/var/lib/pgsql/13/archivedir01				
Rollback Time					
Speed Controller	🔿 Speed Controller	+			

Rollback Time: if you had selected archive log backup restore point, you are able to rollback PostgreSQL database state within the given time range.

A New Database Restore Job						
1 v Restore Point	2 v Restore Destination		3 Restore Strategy	4 Review & Confirm		
Mode *	Override Original Database	~	0			
Rollback Time	On 🚯					
Select Rollback Time	2022-05-27 17:39:40 Reference range of log rollback time: 2022-05-27 17:38:15 ~ 2022-05-27 17:40:40	× 🛱				
Speed Controller	P Speed Controller		+			

If you disable rollback time it will by default restore to the latest time point of when the backup has been taken. Speed Controller: 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.

During the database restore process, the full data size of the full backup will be transferred from Vinchin backup server to the database server, and the data will be written in to a temporary directory, after transmission is completed then it will perform restore/roll backup restore operations according to the job configurations.

Managing Backup Data

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

⊜ Database Backup Data		
B Restore Points	© Restore Point List	
C Delete Al nodes C Search C S	Notice 1. Expand the tree menu on the left to browse the database restore points. 2. Each restore point has its timestamp of backup creation. 3. You can delete a single restore point by selecting it and click on Delete. 4. You can batch delete restore points by selecting the restore points and clicking on Delete.	×

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 archive log backups 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.

😂 Database Backup Data								
B Restore Points	[®] Res	© Restore Point List Database Backup Job25432(172.18.14.4)						
tt Delete							Q Advanced sear	
All nodes 🗸 😨 Search	No.	Time Point	🔻 Туре	🕴 Data Size	Written Size	Storage	Operation	
☐ PostgreSQL ☐ ⁽¹⁾ Database Backup Job2 ☐ ⁽²⁾ Database Backup Job2 ☐ ⁽²⁾ 9432(72,16,14,4) ☐ ⁽²⁾ 05 203,202,214,22230 (Fell, Backup)	1	2023-02-17 14:27:30	Full Backup	123MB	5.53MB	Local Disk1 (localhost.localdomain(172.18.1.10))	Options ~	
	Page < 1 > of 1 View 10 ~						✓ Delete	
	Notice	Notice: Once a restore point has been starred, it will be reserved permanently.						

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 the backup resides in will be given.

You can add comments to the full backups and the archive log backups, and set retention tags for the full restore point to keep the full backup and its dependent archive 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 archive log will be deleted along with the full restore point.

Note

1. In the restore point list, users are not allowed to delete an individual archive log restore point, when you click on Options button you are only able to add remarks to an archive log restore point.

2. If it's a full restore point, you are allowed to add remarks to it or to delete it, but deleting a full restore point will also delete the archive log restore point dependent on the full restore point.