

# Protecting Thousands of Machines with Veeam Agents



Dmitrii Popov  
Product Management, R&D



Danilo Chiavari  
Presales Manager, Italy



# What to expect from this session?



Quick overview: what's new in 2023.



Overview of Agent management methods.



Super useful Agent features you may easily miss.



Design and operational «dos and don'ts» from real-world experience.



# Veeam Agents in less than a minute

- Image-level, volume-level or file-level backups of physical or virtual machines.
- Supporting both client and server OS: Windows, Linux, MacOS, UNIX (AIX / Solaris).
- Free editions available!
- Can operate stand-alone or centrally managed.
- Unified licensing with Veeam® Backup & Replication™ (VUL instances).



veeAMON 2023



What's new



# What's new in V12



Object storage support



Trusted immutability



Cyber resiliency

# What's new in Agents

- ✓ SureBackup®.
  - ✓ Recovery tokens.
  - ✓ Cloud-native Agents.
  - ✓ Changed-block tracking for workstations and file-level backup in Windows Agent.
  - ✓ GFS retention in Linux Agent.
  - ✓ Resume backup and new UI in Mac Agent.
  - ✓ BMR in AIX/Solaris Agent.
  - ✓ Latest operating systems.
- And many, many more!



# Veeam Backup & Replication v12: **what's new**

[https://www.veeam.com/veeam\\_backup\\_whats\\_new\\_wn.pdf](https://www.veeam.com/veeam_backup_whats_new_wn.pdf)



**WHAT'S NEW**

veeAMON 2023



# Standalone Agents

# Standalone Agents

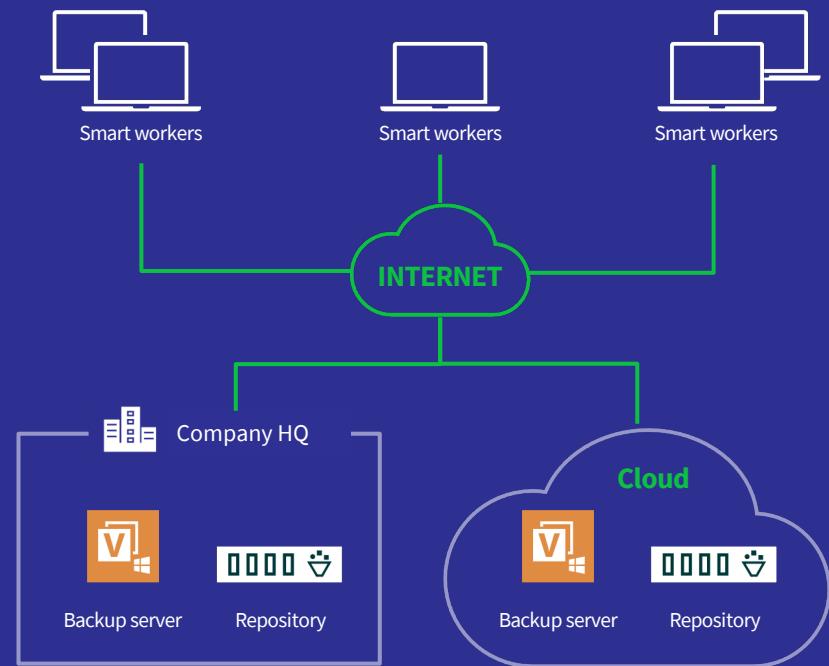
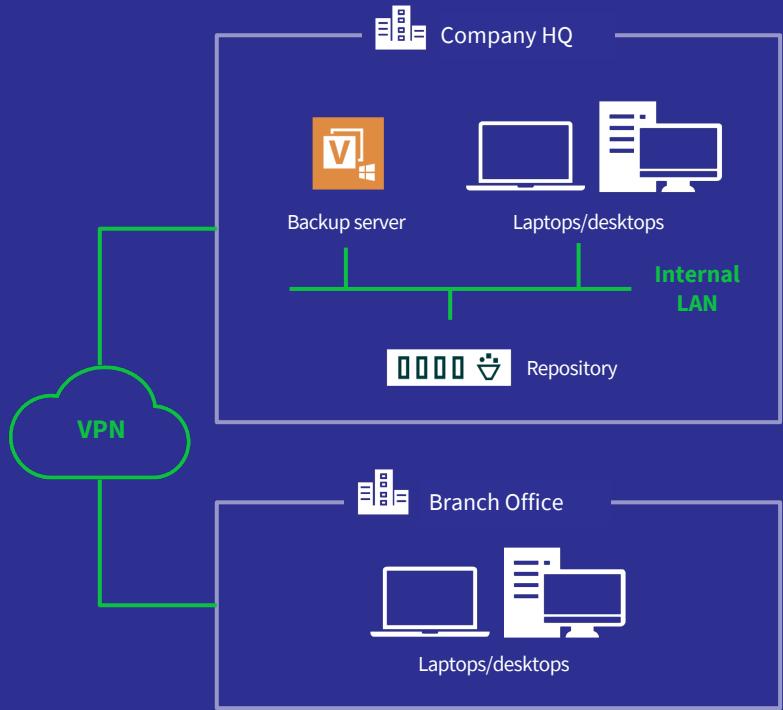
- ✓ Third-party tools.
- ✓ Veeam Service Provider Console.
- ✓ Veeam Backup & Replication.



# The problem



# The problem



veeAMON 2023

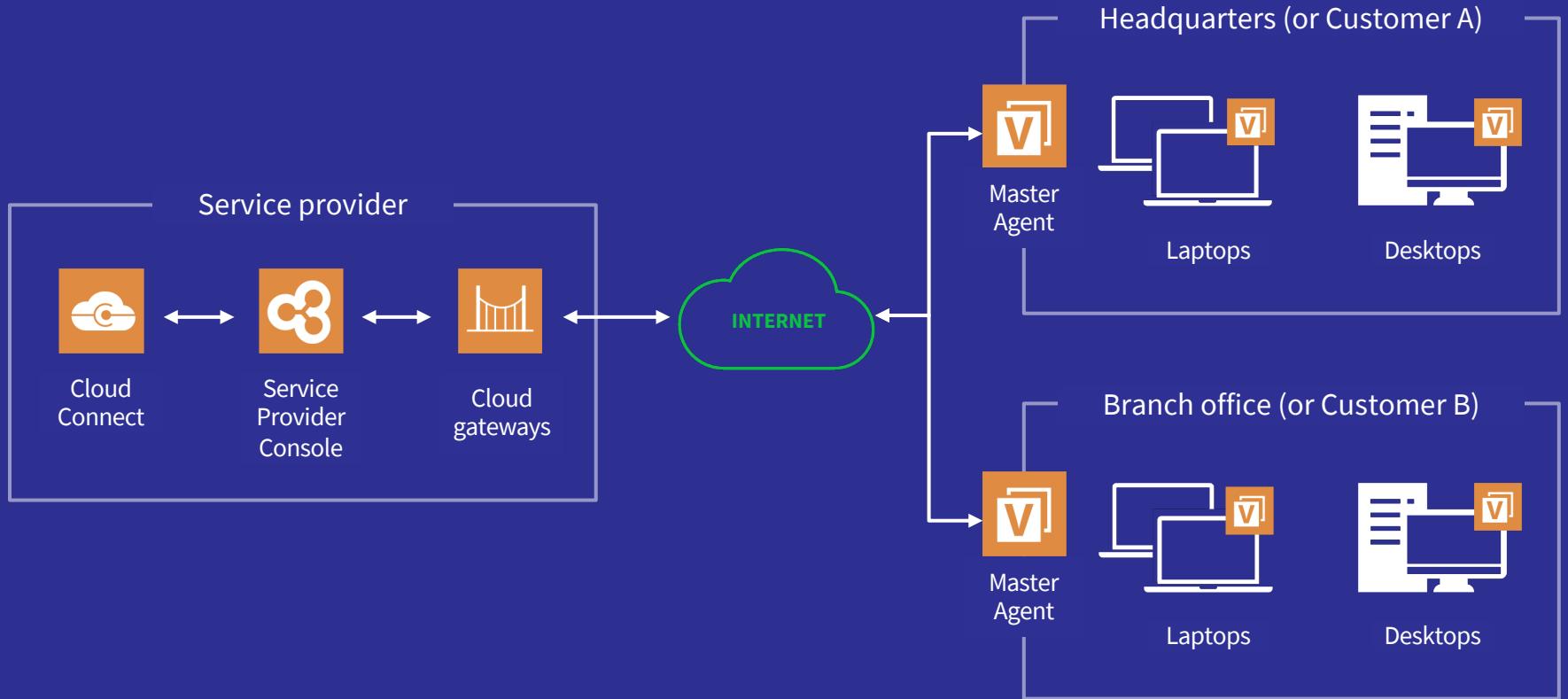


# Veeam Service Provider Console and Agents

# Agent management in VSPC

- Very first method of centrally installing and managing Agents from Veeam.
- Originally only Veeam Agent for Windows, later added Linux and MacOS.
- Automatic discovery and installation available for Windows and Linux Agents (MacOS needs to be installed manually).

# Agent management in VSPC



# Self-service file restore portal (VSPC)

The screenshot shows a web-based interface for a self-service file restore portal. At the top, there is a navigation bar with icons for 'Browse', 'Search', 'Restore List', and 'Audit'. The main area is titled 'Browse [exch3]'. On the left, there is a sidebar with a 'Job:' dropdown set to 'Server: Entire co...', a 'Restore Point:' section with a 'Select...' button, and a large empty area. A modal dialog box titled 'Select Restore Point' is displayed in the center. This dialog contains a calendar for April 2023 and a list of restore points. The calendar shows dates from April 26 to May 6. The date '18' is highlighted with a blue border. To the right of the calendar, a list box shows a single entry: '4/13/2023 12:30 AM'. At the bottom of the dialog are 'Select' and 'Cancel' buttons.

# Self-service file restore portal (VSPC)

Browse [exch3]

Job:  
Server: Entire co... ▾

Restore Point:  
🕒 4/17/2023 12:30 AM

Selected: All 1 items

<input checked="" type="checkbox"/>	Name	Type	Path	Owner	Size	Last Modified
<input checked="" type="checkbox"/>	ReAgentOld.xml	XML Document	C:\Recovery	Administrators	971.0 B	10/9/2023

File or Folder

Restore List

Audit



Root  
C:  
\$Recycle.Bin  
Logs  
PerfLogs  
Program Files  
Program Files (x86)  
ProgramData  
Recovery  
System Volume Inf  
Users  
VeeamFLR  
Windows  
M:  
System Volume Inf

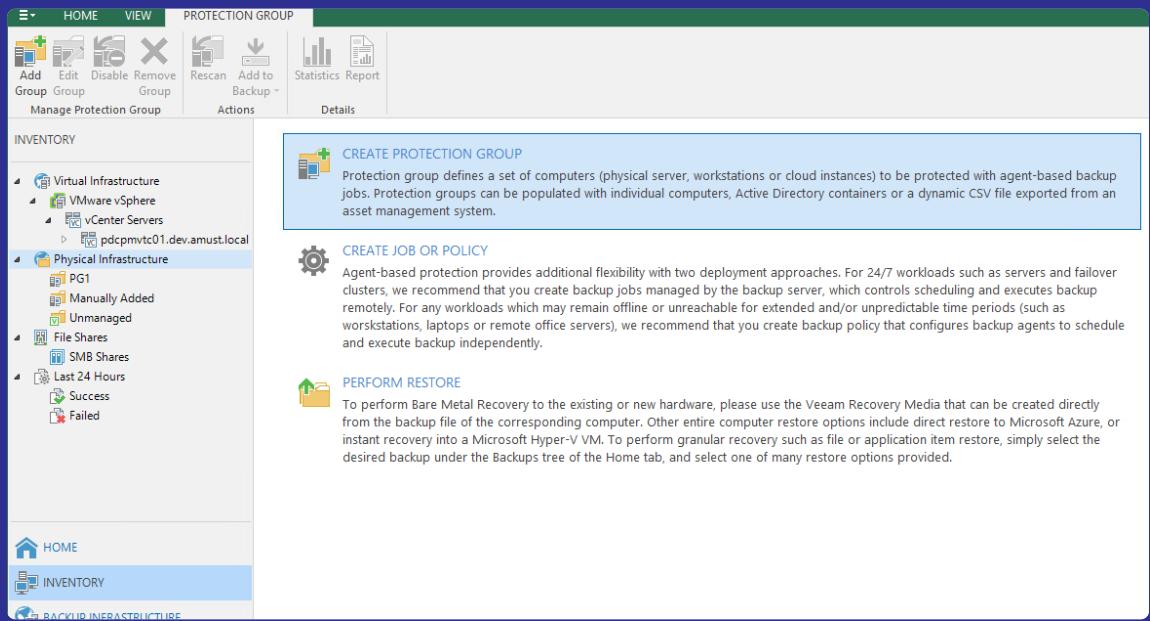
veeAMON 2023



# Veeam Backup & Replication and Agents

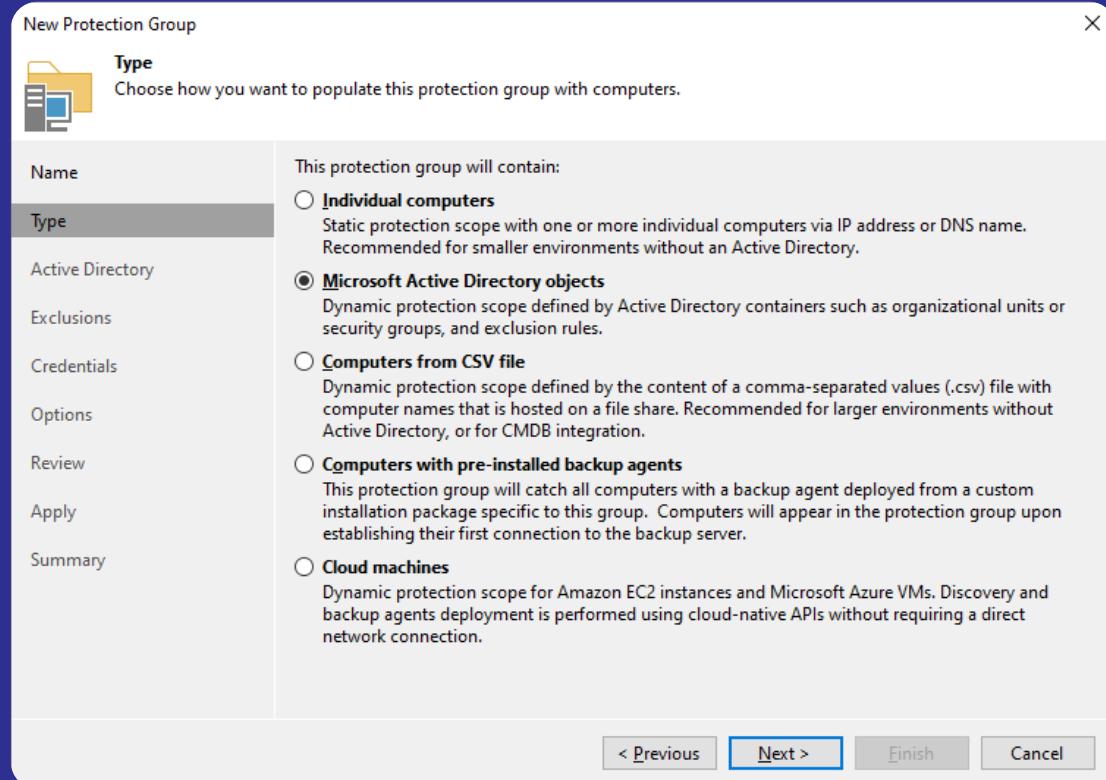
# Inventory

- Former virtual machines.
- Objects to protect.
- Create protection groups.

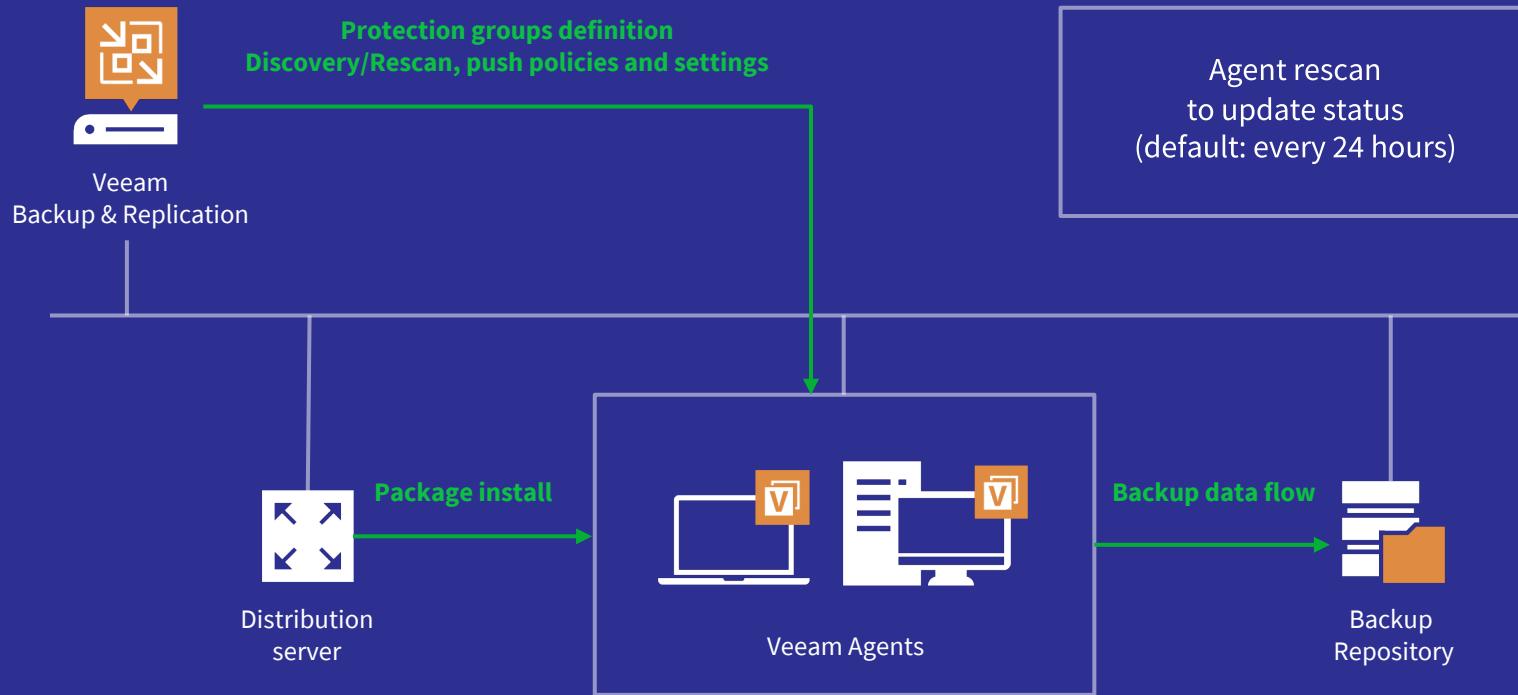


# Inventory

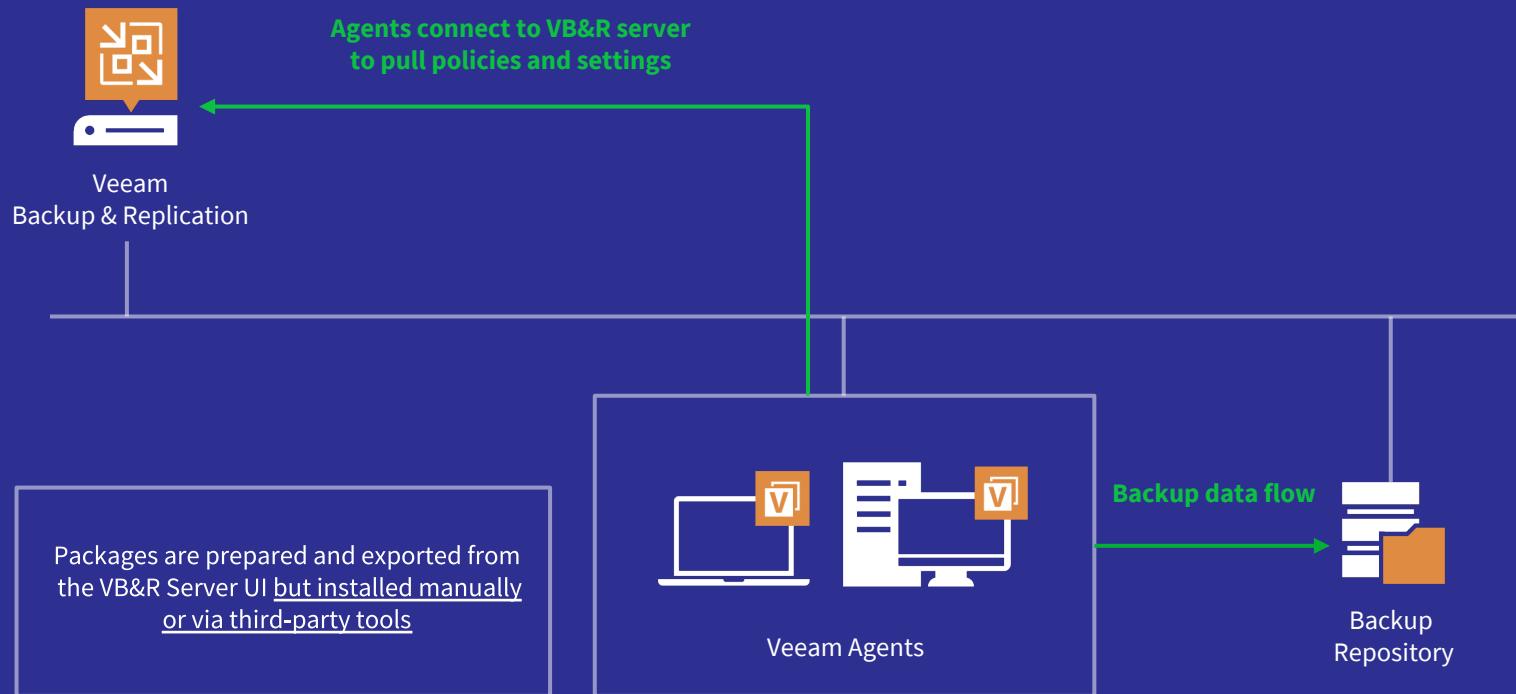
- Individual computers.
- Active Directory.
- From CSV file.
- Cloud machines **NEW!**
- Pre-installed agents\*.  
(aka “catch-all” groups)



# Regular protection groups



# Pre-installed backup Agents with «catch-all» protection groups



# Job & policy



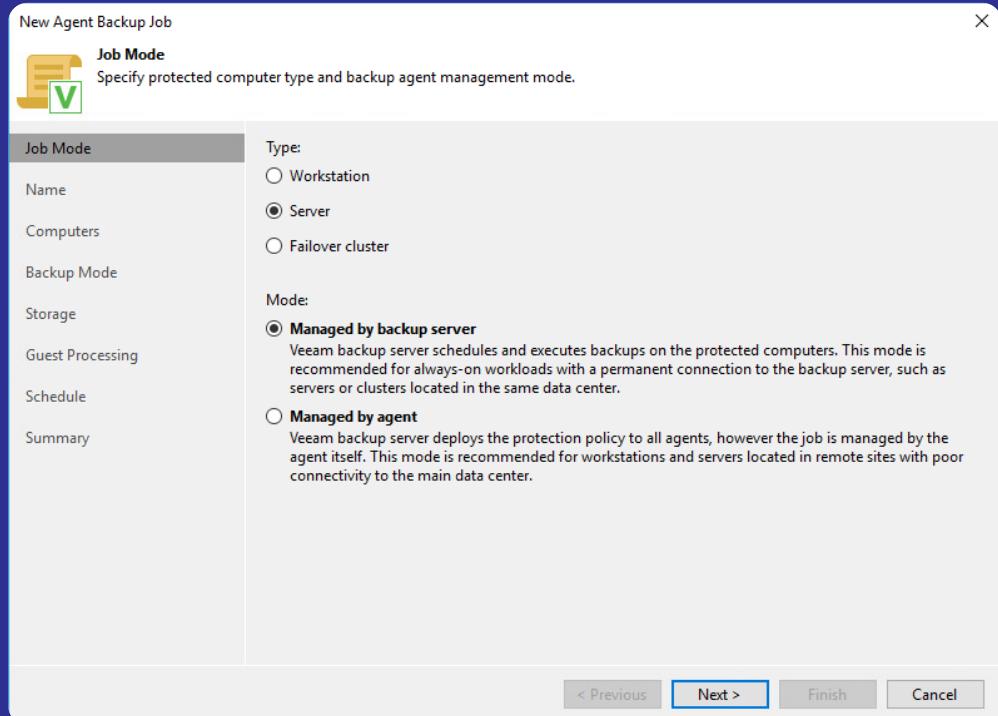
## Managed by backup server (aka job)

- Server.
- Failover cluster.



## Managed by Agent (aka policy)

- Workstation.
- Server.



# Scheduling: workstations

New Agent Backup Job X

**Schedule**  
Specify the scheduling options. If you do not set the schedule, the job will need to be controlled manually.

**Job Mode** Periodically  
We will wake your computers from sleep to take a backup unless the connected standby power model is enabled. Normally, this model is only enabled on mobile devices, such as tablets.

**Name**

**Computers**  Daily at 10:00 PM  Everyday  Days...  
If computer is powered off at this time    
Once backup is taken, computer should

**Backup Mode**

**Objects**

**Destination** At the following events  
 Lock  
 Log off  
 When backup target is connected  
 Eject removable storage once backup is completed (ransomware protection)

**Storage**

**Schedule** Back up no more often than every 2  hours

**Summary**

# Scheduling: servers (and failover clusters)

New Agent Backup Job

**Schedule**  
Specify the scheduling options. If you do not set the schedule, the job will need to be controlled manually.

**Job Mode**

Run the job automatically

Daily at this time:  Everyday

Monthly at this time:  Fourth

Periodically every:  Hours

**Automatic retry**

Retry failed items processing:  times

Wait before each retry attempt for:  minutes

**Backup window**

Terminate job outside of the backup window

Prevent long-running or accidentally started job from impacting your production infrastructure during the busy hours.

**Name**

**Computers**

**Backup Mode**

**Objects**

**Destination**

**Backup Server**

**Storage**

**Backup Cache**

**Guest Processing**

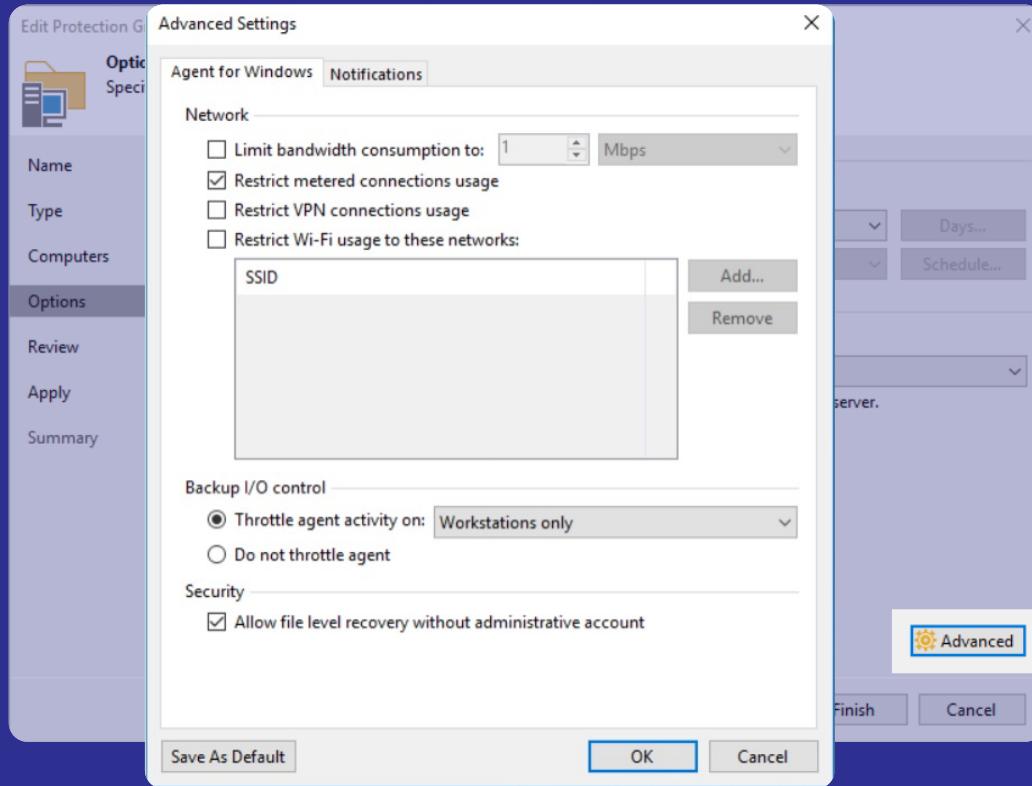
**Schedule**

# A few useful **AGENT FEATURES**

that have been there for quite a while  
but not many people know about ☺



# Performance and security settings



- Limit network bandwidth.
- Restrict metered connections.
- Restrict VPN connections.
- Only allow specific WiFi SSIDs.
- Agent CPU throttling.
- Allow FLR for non-admin users.

# Self-service file-level recovery from Agent UI

The screenshot shows the Veeam Agent UI interface. On the left, there's a sidebar with icons for Add New Job..., Settings, Support, and About. The main area shows a backup job titled "Win10-02 Backup - 10.10.0.102". A context menu is open over this job, with the "Restore file" option highlighted. To the right, a detailed view of the backup job is displayed, including restore point details and a timeline of actions.

**Restore point details**

- Backed up items: Ripristino:EFI system partition (disk 0)
- Total backup size: 7,45 GB
- Backup duration: 0:12:53
- Average backup duration: 0:13:40
- Restore point size: 259 MB
- Free disk space: 0 B

**Action Duration**

Action	Duration
Required backup infrastructure resources have been assigned	0:02:03
Creating VSS snapshot	0:00:06
Calculating digests	0:00:07
Getting list of local users	0:00:01
Ripristino (disk 0) (499,0 MB) 14,0 MB read at 14 MB/s [CBT]	0:00:01
EFI system partition (disk 0) (99,0 MB) 99,0 MB read at 99 MB/s	
(C:) (49,4 GB) 1,6 GB read at 117 MB/s [CBT]	0:00:12
Saving GuestMembers.xml	0:00:05
Finalizing	0:01:41
Incremental backup created	
Collecting recovery media files	0:00:42
Processing finished at 27/06/2022 14:12:54	

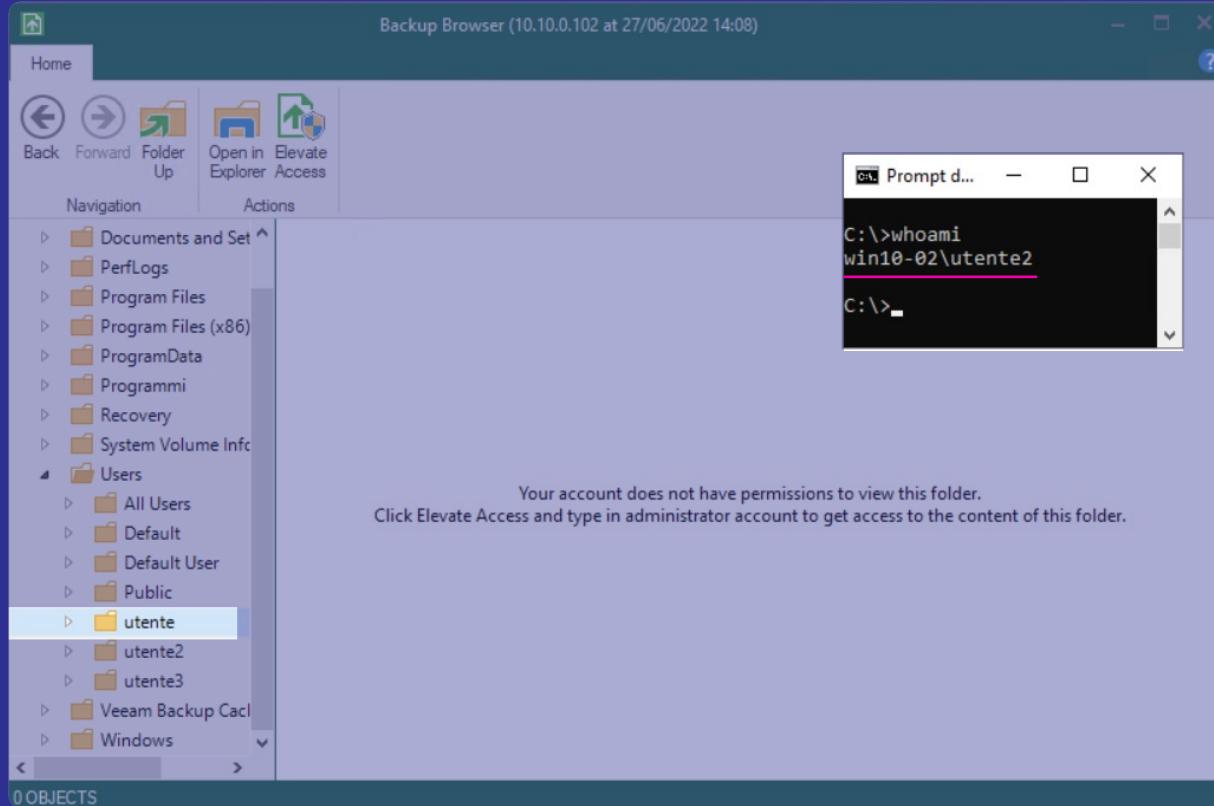
**Timeline**

- 2 days ago
- 2 days ago

**Actions**

- Restore Files
- Restore Volumes

# Self-service file-level recovery from Agent UI



# Self-service file-level recovery from Agent UI

Backup Browser (10.10.0.102 at 27/06/2022 14:08)

Prompt d...

```
C:\>whoami  
win10-02\utente2  
C:\>
```

Navigation Actions

Name	Type	Size	Creation Date	Modified Date
3D Objects	Folder		22/06/2022 18:06	22/06/2022 18:06
AppData	Folder		22/06/2022 17:59	22/06/2022 17:59
Contacts	Folder		22/06/2022 18:06	22/06/2022 18:06
Cookies	Folder		22/06/2022 17:59	22/06/2022 17:59
Dati applicazioni	Folder		22/06/2022 17:59	22/06/2022 17:59
Desktop	Folder		22/06/2022 17:59	22/06/2022 18:00
Documenti	Folder		22/06/2022 17:59	22/06/2022 17:59
Documents	Folder		22/06/2022 17:59	22/06/2022 18:03
Downloads	Folder		22/06/2022 17:59	22/06/2022 18:00
Favorites	Folder		22/06/2022 17:59	22/06/2022 18:00
Impostazioni locali	Folder		22/06/2022 17:59	22/06/2022 17:59
Links	Folder		22/06/2022 17:59	22/06/2022 18:00
Menu Avvio	Folder		22/06/2022 17:59	22/06/2022 17:59
Modelli	Folder		22/06/2022 17:59	22/06/2022 17:59
Music	Folder		22/06/2022 17:59	22/06/2022 18:03
nobackup	Folder		22/06/2022 18:30	22/06/2022 18:03
OneDrive	Folder		24/06/2022 15:12	24/06/2022 15:12

33 OBJECTS

# Delegated file-level recovery (Enterprise Manager)

Search backups of: fs1

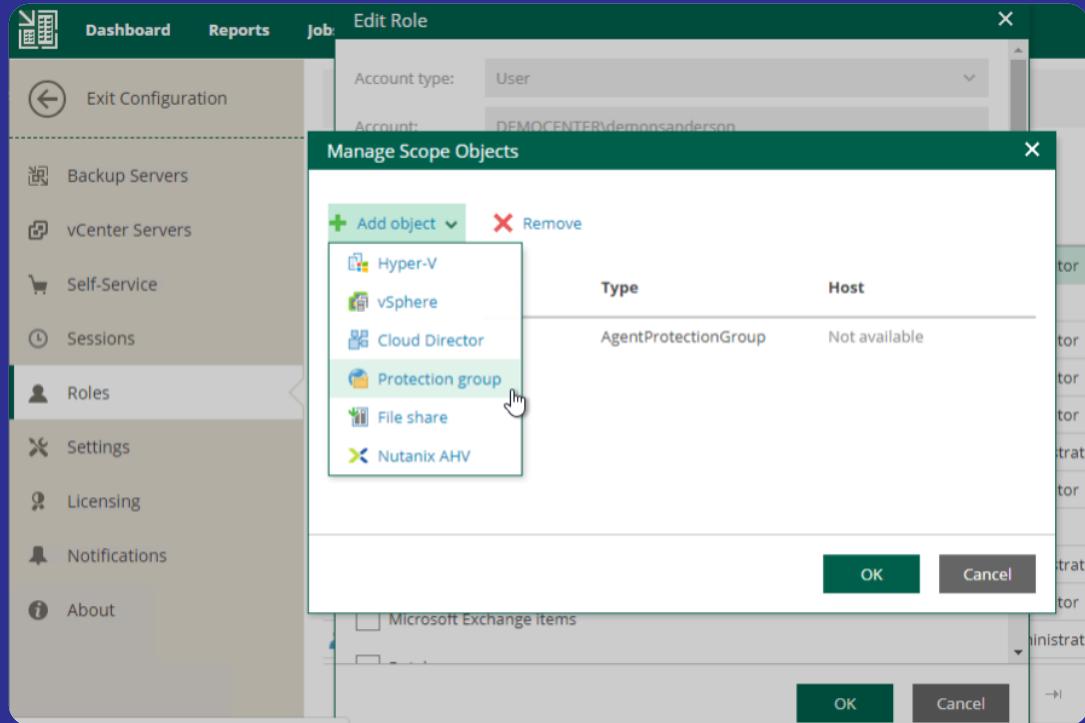
4/17/2023 11:23:20 pm

Type in a file name to search for

Name	Size	Owner	Modified
log.txt	22.5 KB		7/5/2022 01:14:52 am
log2.txt	22.5 KB		7/5/2022 01:15:24 am

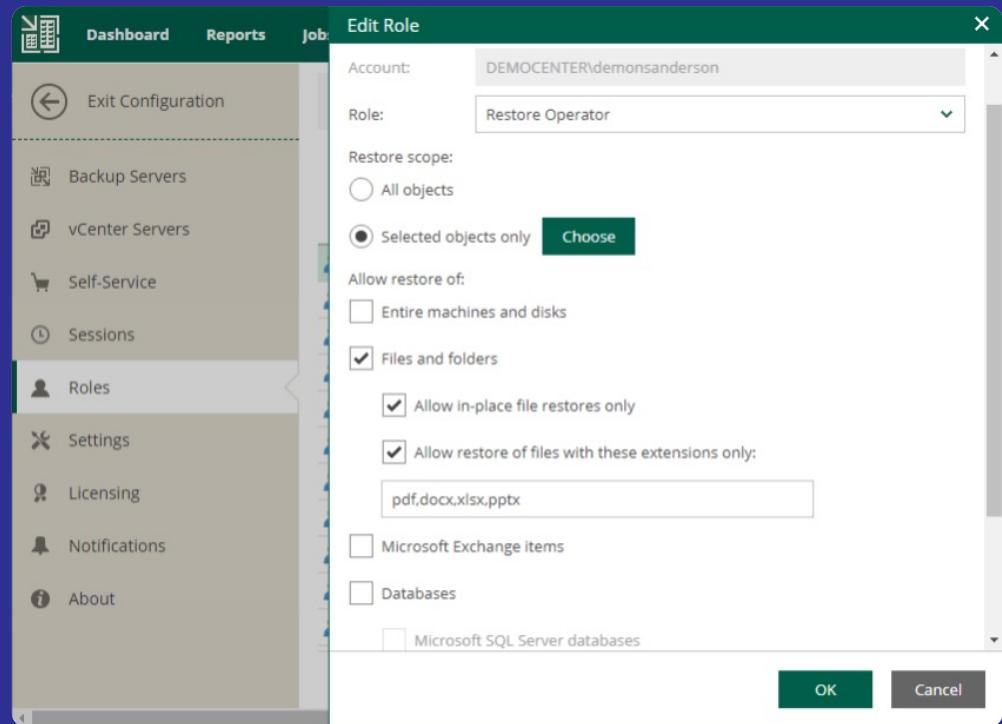
# Delegated file-level recovery (Enterprise Manager)

- Designate users/groups as «Restore Operators».
- Define «Scope» of Agents they can restore files from (based on protection groups).

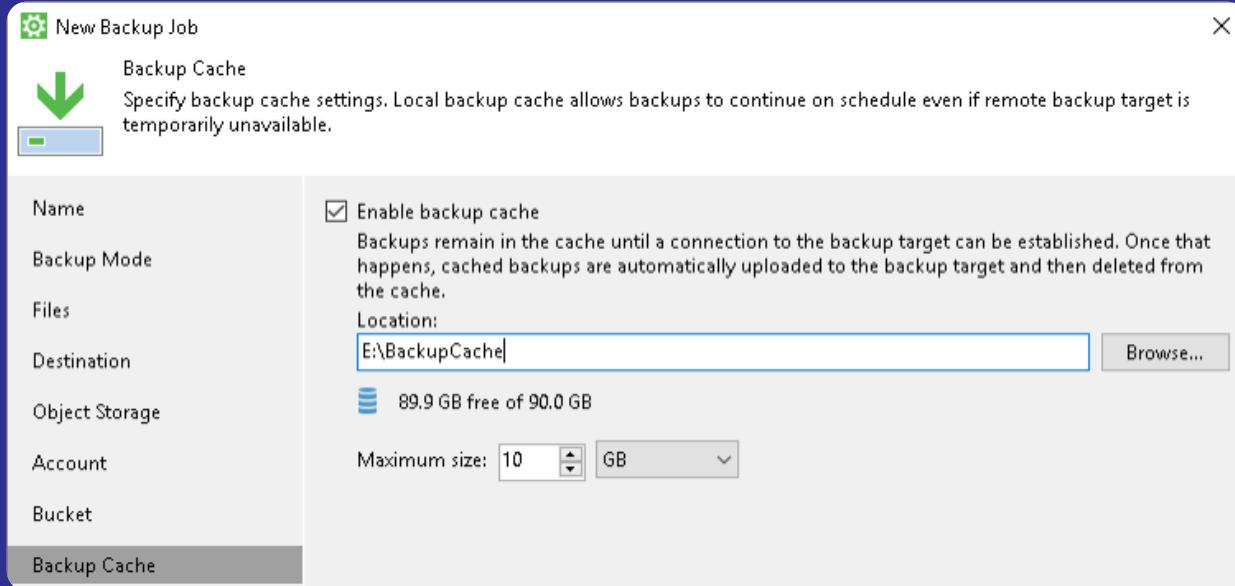


# Delegated file-level recovery (Enterprise Manager)

- Restrict restore to only specific file types (e.g. PDF, DOCX, etc.).
- Inhibit local download of files (allowing only restore to original location).



# Backup cache



- Backup runs even if Agent is disconnected from target repository.
- When connection is resumed, cached restore points are synchronized.

veeAMON2023

And now, some  
**DESIGN TIPS & BEST PRACTICES**

# General advice for large-scale deployments

## Configuration database: plan for adequate resources and performance:

- **VB&R:** SQL Server Standard/Enterprise, or tuned PostgreSQL instance (VB&R v12+).
- **VSPC:** SQL Server Standard/Enterprise.

## Protection groups sizing

- Using «small» groups (<1000 Agents each) helps with performance (and Rescan times, if using «regular» protection groups).

## Name resolution

- Make sure DNS works correctly to avoid duplicates or other side effects.
- Reducing TTL/record caching can help mitigating issues.



# Visibility: monitoring and reporting

With a large number of Agents and even larger amount of backup sessions, it is crucial to keep control and visibility of the environment

**Veeam ONE** to the rescue!



Real-time monitoring  
and alerts.



Pre-defined reports.

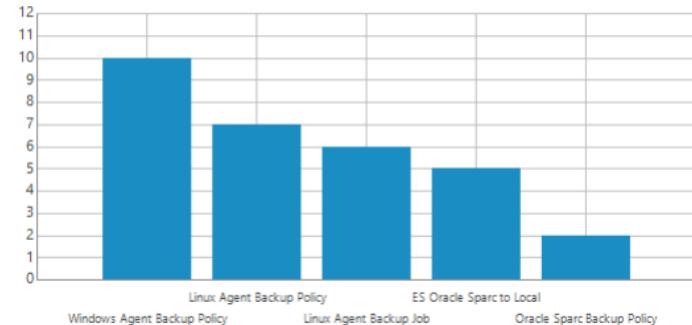


Easy to build custom  
dashboards, heatmaps...

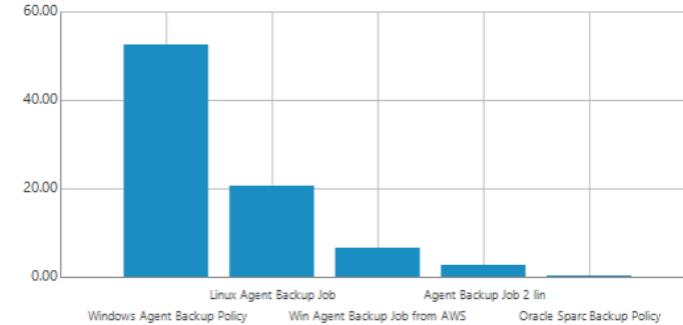
# Agent backup job and policy history

## Summary

Top 5 Jobs and Policies by Restore Points Created



Top 5 Jobs and Policies by Backed up Data (GB)



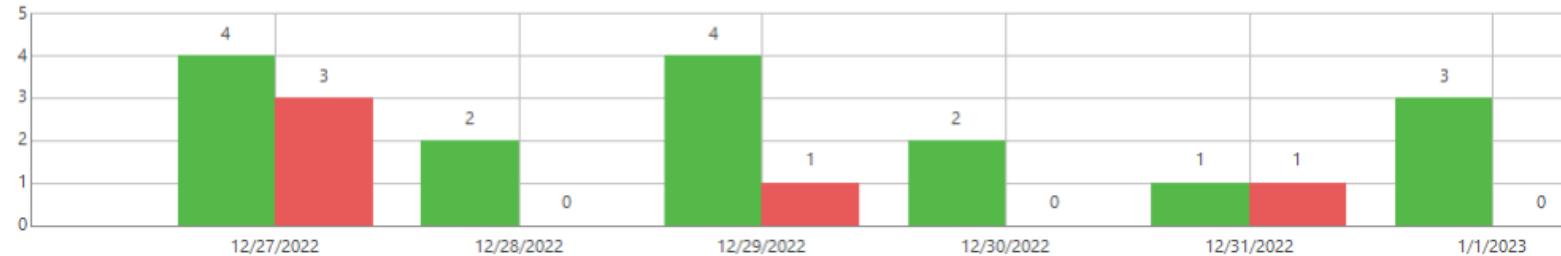
Agent Backup Jobs and Policies Result



# Computer backup status

## Summary

### Agent Backup Status

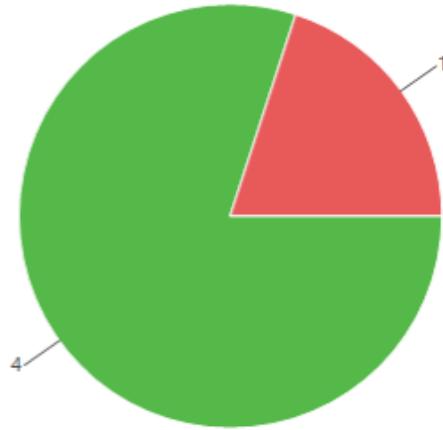


Computer Name	12/27/2022	12/28/2022	12/29/2022	12/30/2022	12/31/2022	1/1/2023
<b>Backup Job/Policy: ES Backup Job 2 agent</b>						
ms-12.tech.local	Failed	-	-	-	-	-
vvg-win19.tech.local	Failed	-	-	-	-	-
<b>Backup Job/Policy: ES Oracle Sparc to Local</b>						
knv-sparc-s11.4	Success	Success	-	-	-	-
<b>Backup Job/Policy: Linux Agent Backup Job</b>						
ms-ub-02	Success	-	Success	Success	-	Success

# Computers with no archive copy

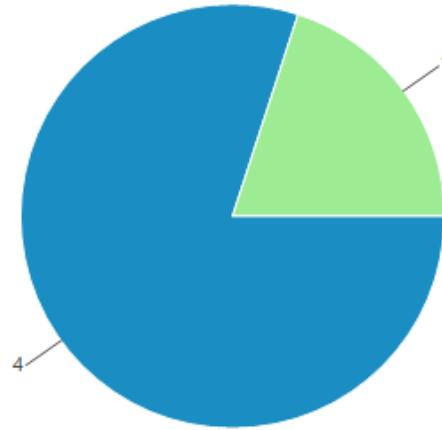
## Summary

Computers Archive Status



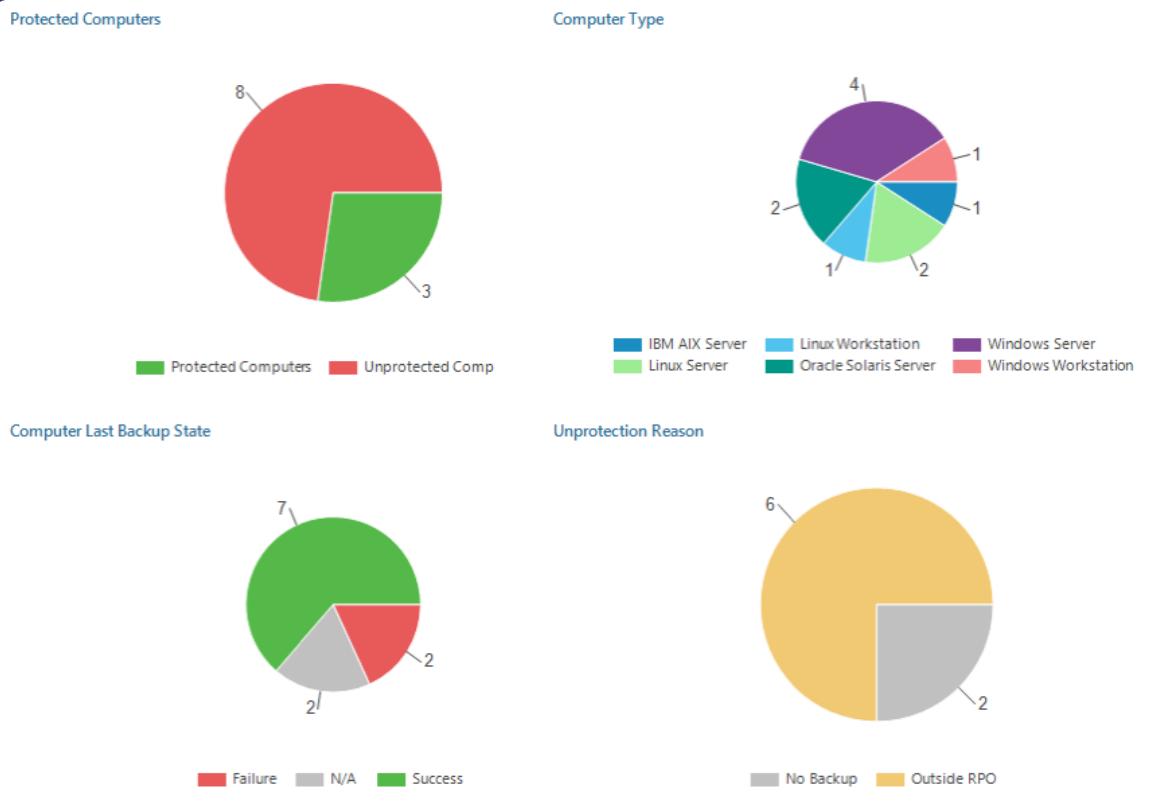
■ At least 1 Copy ■ No Archive Copy

Archive Copies by Location Type



■ Backup Repository ■ Cloud Repository

# Protected computers



# Choosing backup target for mobile workstations

## How to plan for mobile users?

Veeam Cloud Connect:

- Single-port operation, no VPN required.
- Can be complex to set up and manage.
- Need to manage separately if Agent is connected to internal LAN/VPN or internet.

Direct-to-Object storage (VAW v6, VAL v6, VAM v2 and later) + «catch-all» groups:

- Simplest option.
- Easy backup to public cloud.

# Choosing backup mode

## Entire computer/volume-level

### Pros

More recovery options

Backup resume after disconnect (Windows)

### Cons

Larger backups

Additional space for recovery media ISO for bare metal restore (Windows)

## File-level

### Pros

Smaller backups

Granular inclusions and exclusions

### Cons

No backup resume (Windows)

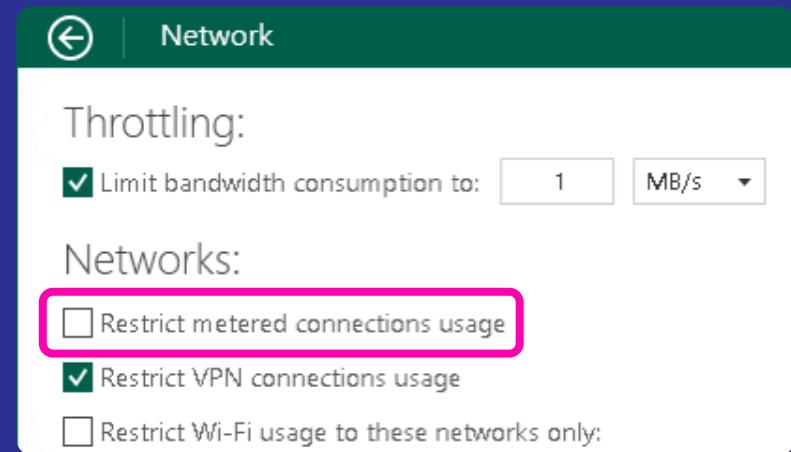
No backup cache (Windows)

Usually slower

# VPN traffic handling

## Natively detected VPN providers

- Windows built-in VPN client.
- Cisco.
- Fortinet.
- Palo Alto.
- OpenVPN.



## Additional VPN solutions can be added

- Detection is based on the adapter name.
- Edit **Re ic v Ne kAda e** registry key – [LINK](#).

Note: the key needs to be created on all Agent machines.



# Limiting retries in case of failure

## Automatic retries for backup runs

- Every 10 minutes, over 23 hours.
- Applies to «managed by Agent» backups (i.e. all workstation backups).

Job Name ↓		Session Type	Status
↳ Backup - Gr 17/18 - NB	(Retry 36)	Windows Agent...	Failed
↳ Backup - Gr 17/18 - NB	(Retry 35)	Windows Agent...	Failed
↳ Backup - Gr 17/18 - NB	(Retry 34)	Windows Agent...	Failed
↳ Backup - Gr 17/18 - NB	(Retry 33)	Windows Agent...	Failed
↳ Backup - Gr 17/18 - NB	(Retry 32)	Windows Agent...	Failed

## Lowering retries can be beneficial

- To limit impact on configuration database and UI usability/readability.
- You can switch to default «managed by server» retry logic (three retries in total, 10 minutes apart) via a registry key → [open a support ticket for instructions](#).

Automatic retry

Retry failed items processing:  times

Wait before each retry attempt for:  minutes

# Self-service file recovery (Enterprise Manager)

## Dedicated machine recommended

- Performance: separated from Veeam Backup & Replication database instance and VB&R server.
- Security: can publish web portal on the internet, reducing risk and attack surface.

## Useful configuration tweaks

- Change local path for staging and serving files for download.  
(default is `C:\Program Files\veeam\Backup\Recovery\Staging`) through registry keys
  - `WebRecoveryTempPath`
  - `WebRecoveryFileTempPath`
- LINK to [Enterprise Manager best practices](#).



# Self-service file recovery (Enterprise Manager)

Download of large files can fail due to built-in 10 minutes timeout

- Can be tweaked in the `eb.config` file (value is in seconds) – [LINK](#).



A screenshot of Visual Studio Code showing the configuration file `Web.config`. The file path is `c$ > Program Files > Veeam > Backup and Replication > Enterprise Manager > WebApp > Web.config`. A red box highlights the following XML code:

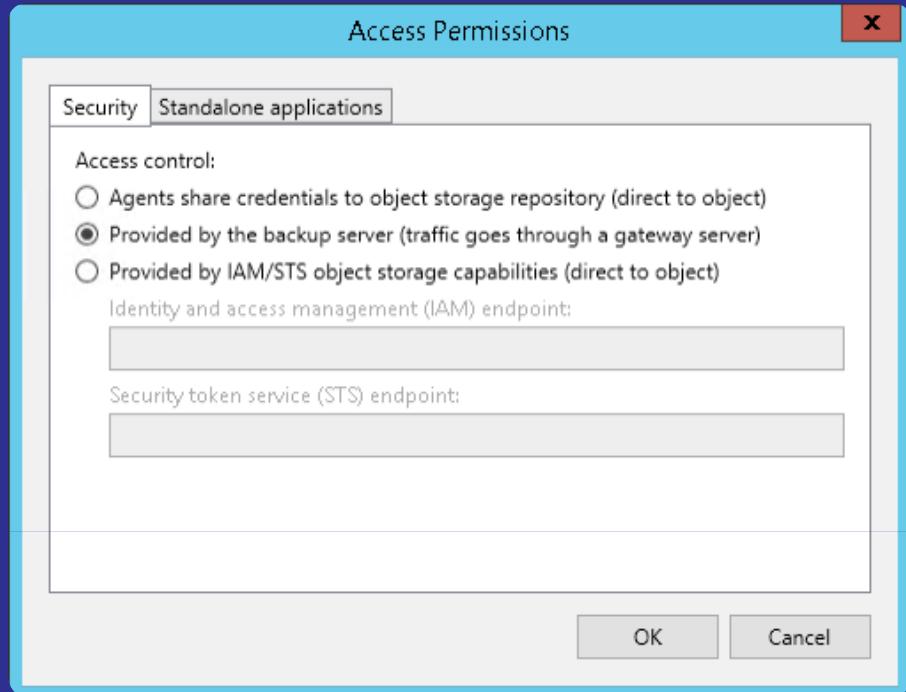
```
<location path="ZipDownload.ashx">
  <system.web>
    <httpRuntime executionTimeout="600" />
  </system.web>
</location>
```

# Direct-to-object backups: access permissions

Different permissions schemes ([LINK](#))

«Secure Mode»: each Agent has segregated access to the storage bucket, in a «multi-tenant» fashion

Backup traffic can be direct or through a gateway server



# Direct-to-object backups: further reading

From The  Architects

Veeam Backup &  
Replication

V12 Enhanced security and scalability with  
object storage Secure Mode

Written by Luca Dell'Oca

[White paper available](#)

Written by Luca Dell'Oca

(Principal Cloud Solution Architect, EMEA)

Design principles, security and scalability.

In-depth explanation of how it works.

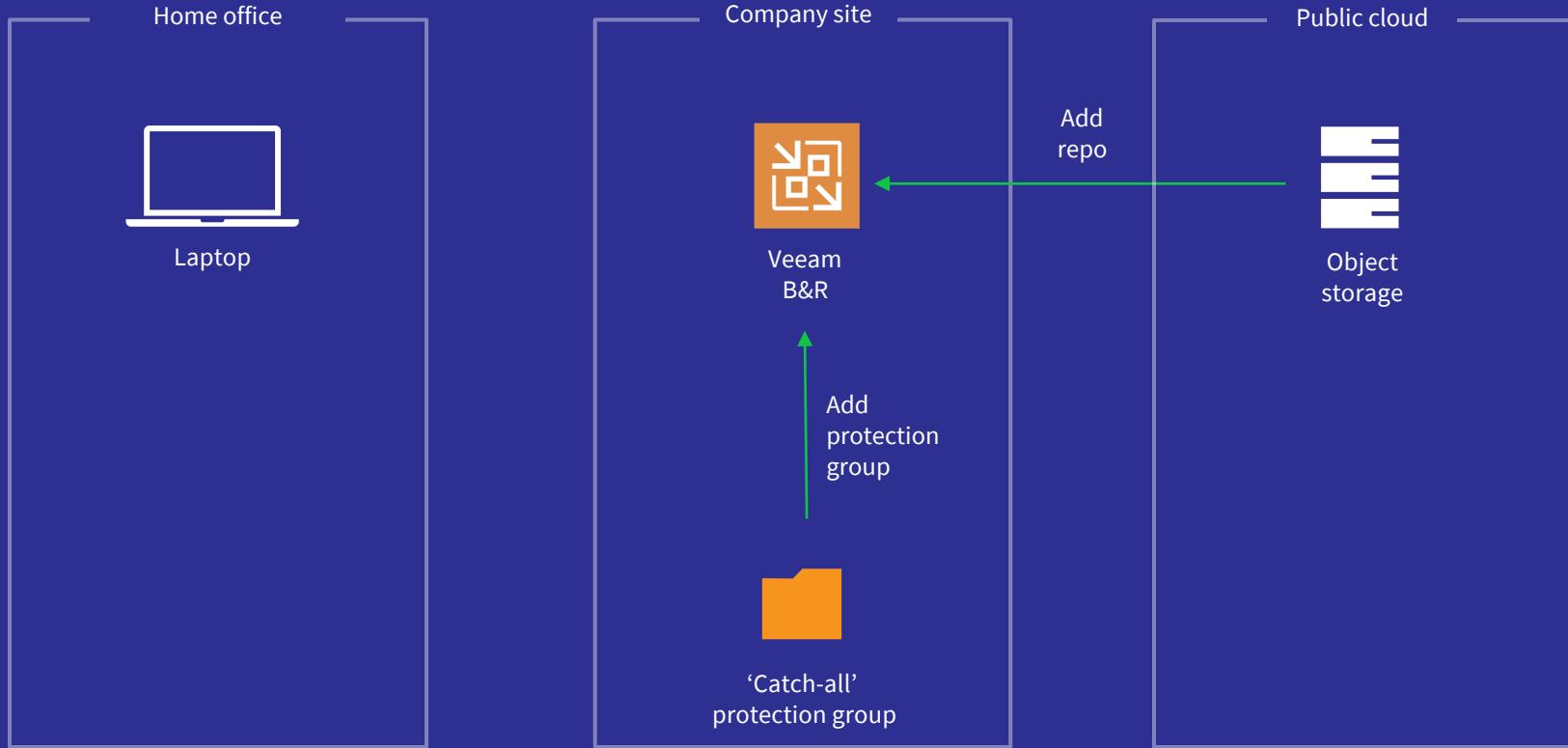
Limitations and caveats.



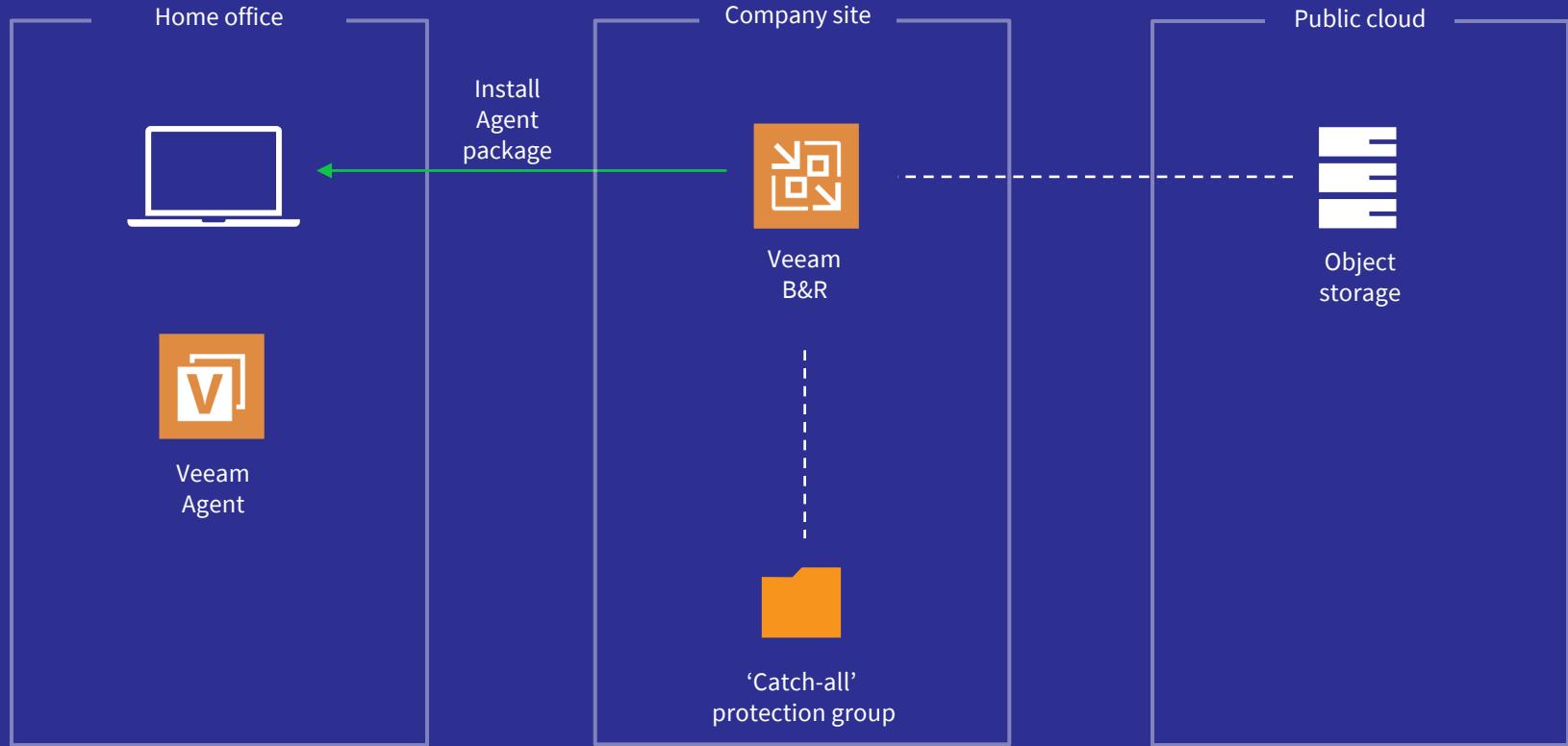


A possible  
reference architecture

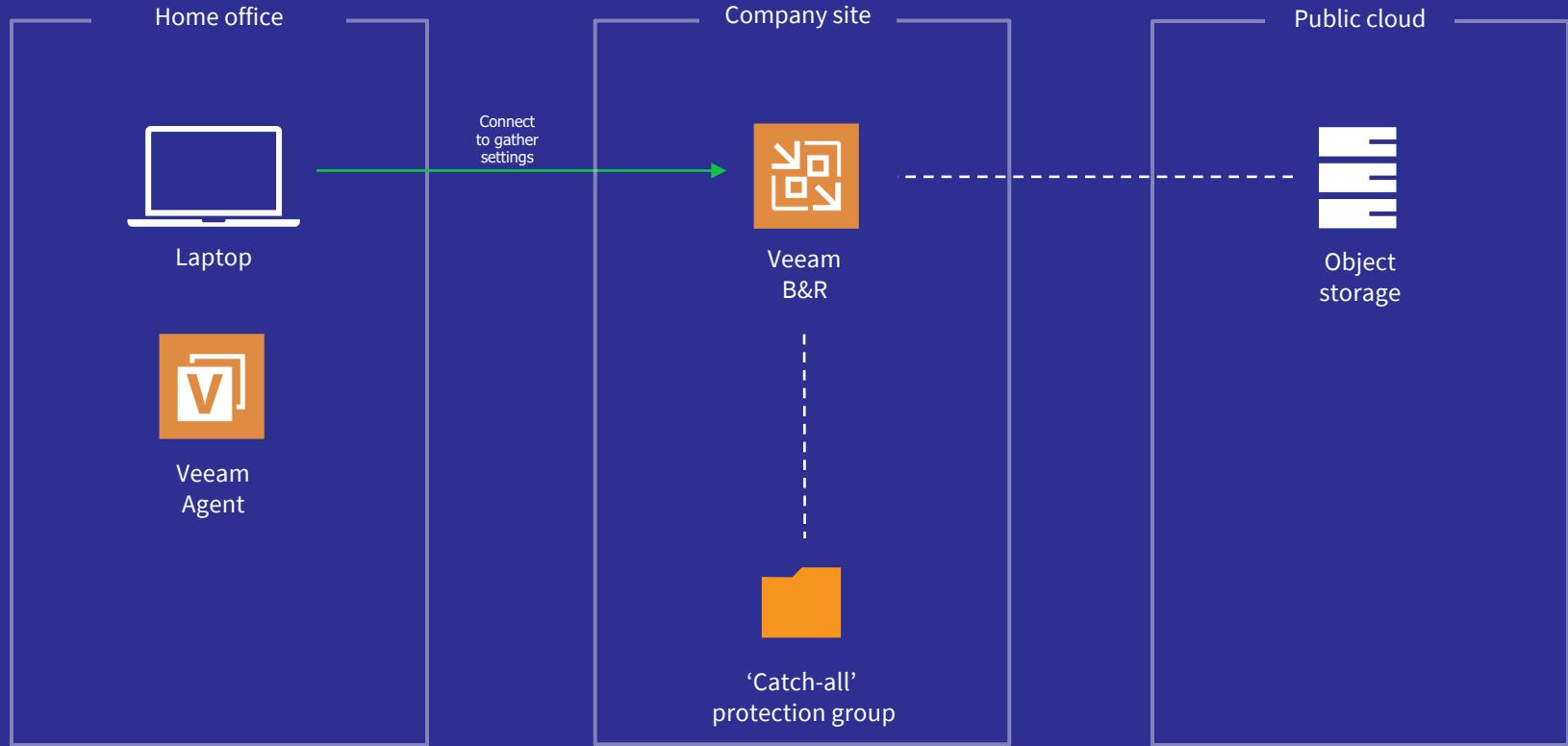
# Architecture for mobile workforce protection



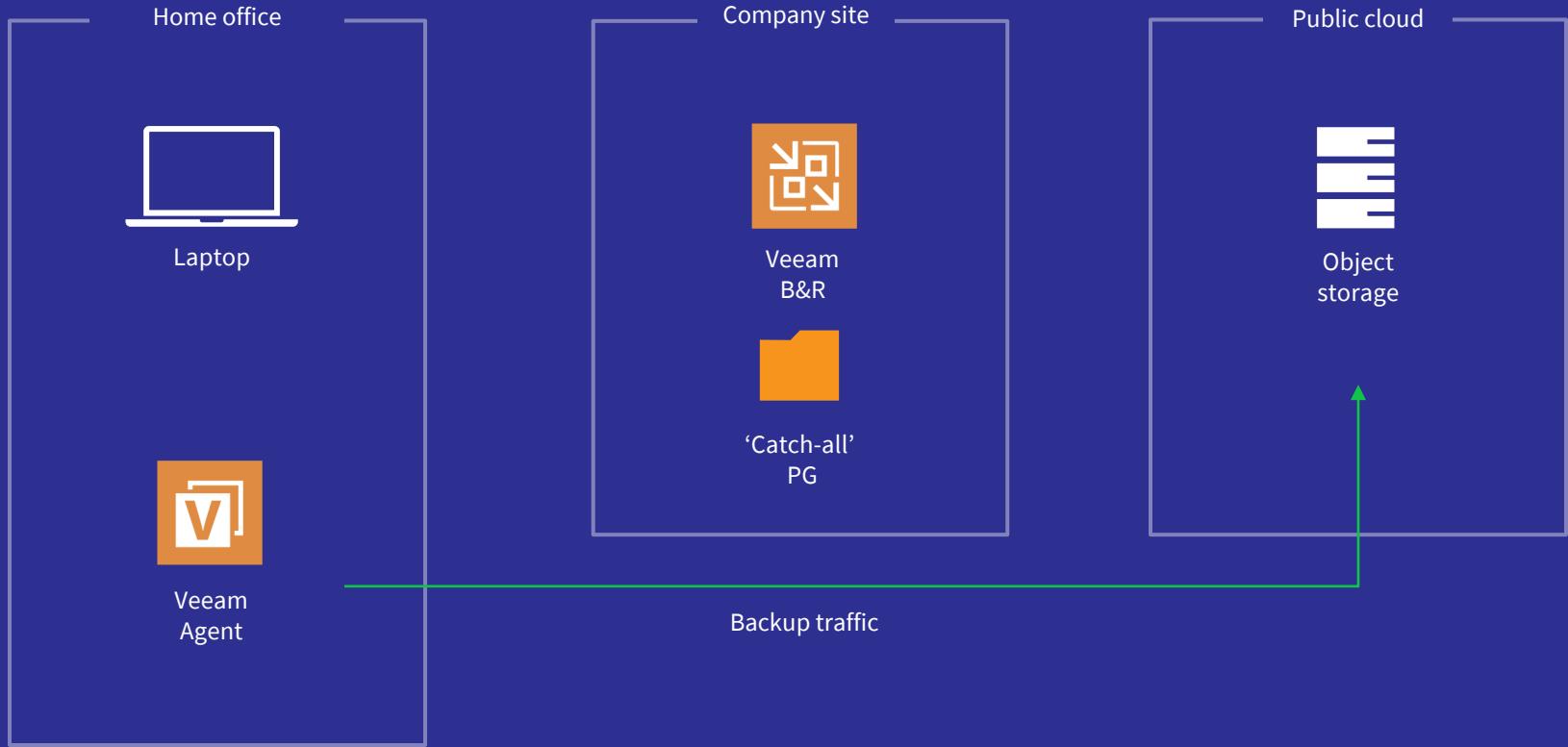
# Architecture for mobile workforce protection



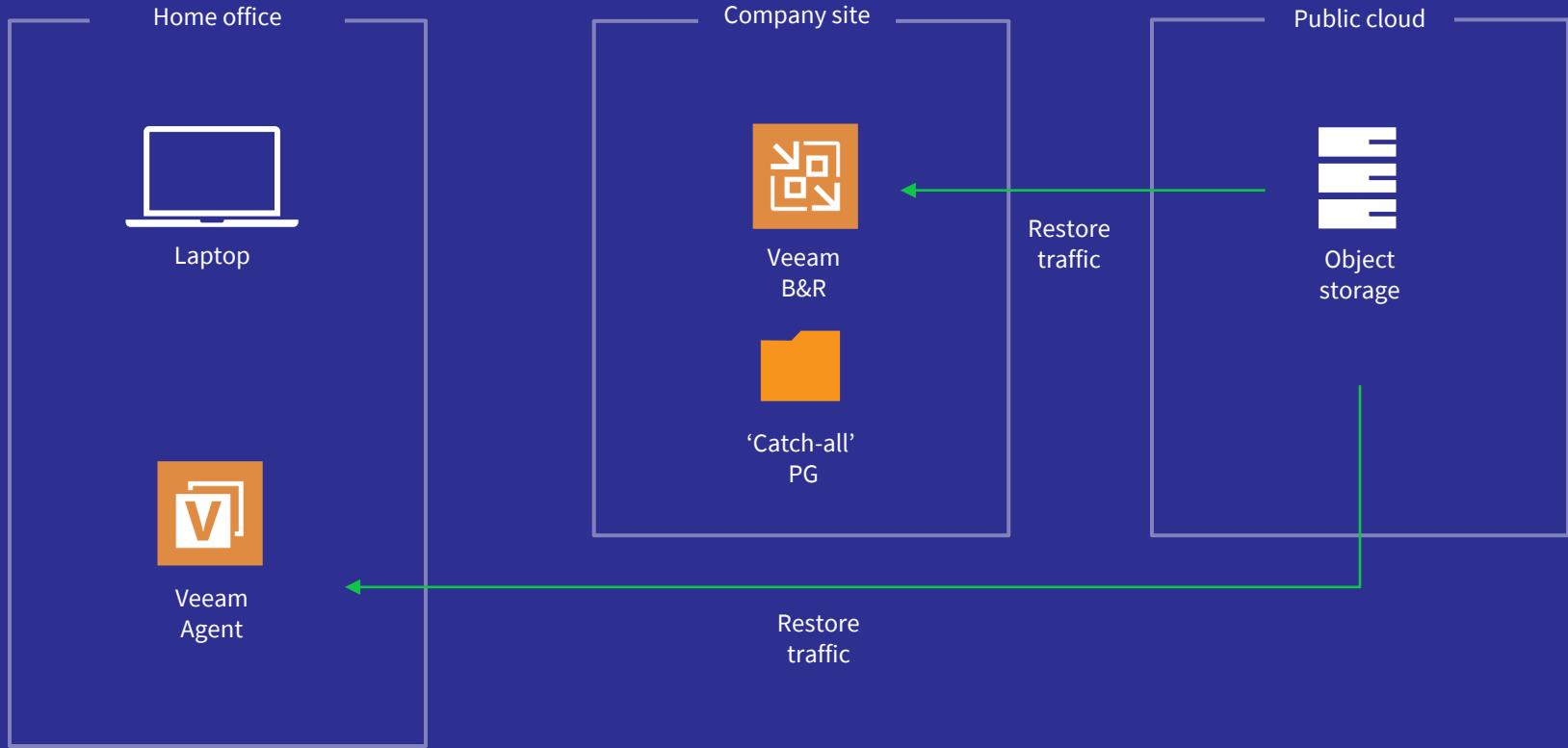
# Architecture for mobile workforce protection



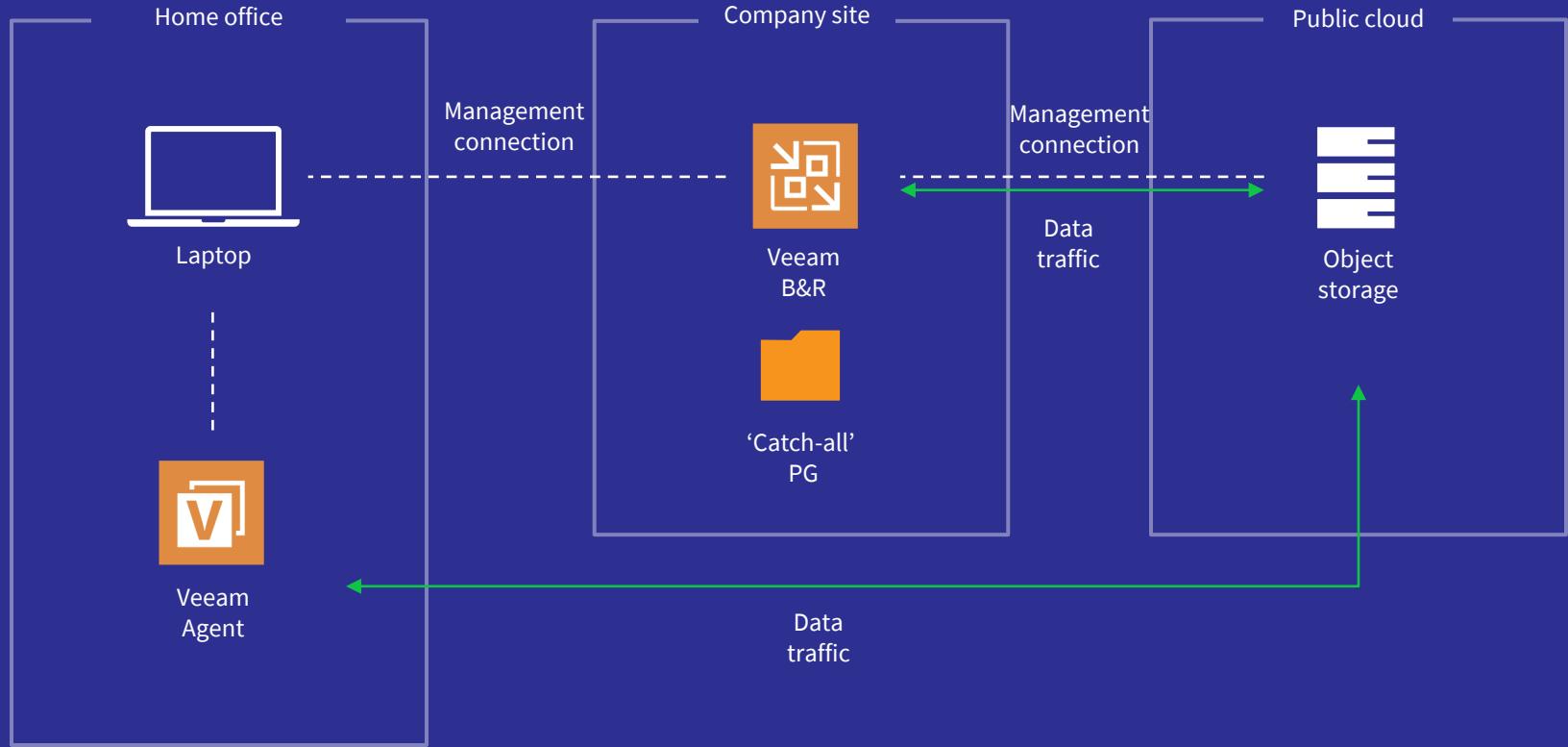
# Architecture for mobile workforce protection



# Architecture for mobile workforce protection



# Architecture for mobile workforce protection



# To sum up:

**Target:** object storage repository (Azure/AWS/ S3 compatible with AIM/STS services)

**Protection groups:** computers with pre-installed agents

- Periodic one way connection from the agent to the B&R.
- Authentication directly with OS.

**Managed by agent job type**

**Tune the settings:** backup mode/VPN connection/self-service/retries and others

**Reports: Veeam ONE™ to the rescue**

veeAMON 2023



What's next?



# Share your feedback!

- Veeam R&D Forums.
- Talk with us.
- Sales or support teams.





# Thank you!

veeAMON2023