

# Linux Agent (64-bit)

## Version 9.21.1002

### Release Notes, August 1, 2023

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## 1 OVERVIEW

The Linux Agent is installed on each 64-bit Linux computer that you want to protect. Using Portal, you can manage the agent, back up data to a vault, and restore data from the vault. A plug-in for protecting Oracle databases on Linux is also available.

### 1.1 Release History

Version 9.21.1002, October 31, 2022

Version 9.20.1004, August 26, 2022

## 1.2 Compatibility

Portal	<p>To manage this Linux Agent version, we recommend using Portal version 9.00 or later.</p> <p><i>Important:</i> This agent version checks the public key of the Portal certificate when it tries to connect to Portal. If users are hosting their own Portal, we recommend updating the Portal certificate before new agents are registered to Portal or existing agents are upgraded from a version earlier than 8.63.</p>
Windows CentralControl	<p>We do not recommend managing agents using Windows CentralControl. To take advantage of new features and important security enhancements, we highly recommend using Portal to manage the Linux Agent.</p> <p>By default, the Linux Agent cannot connect to Windows CentralControl. If you must manage the Linux Agent using Windows CentralControl 9.21, please contact Support for assistance.</p> <p><i>Note:</i> You cannot create Linux Bare Metal Restore jobs using Windows CentralControl.</p> <p><i>Important:</i> Changing job configurations using Portal and Windows CentralControl alternately is not supported. Do not manage the same agent using both Portal and Windows CentralControl.</p>
Vault	<p>This Linux Agent version is supported with Vault version 8.70, 8.62, 8.61 and 8.56.</p>

## 1.3 Supported Platforms

The Agent is supported on the following 64-bit Linux platforms:

- CentOS 7 (up to Update 9)<sup>1</sup>
- Debian 12
- Debian 11 (up to Update 7)
- Debian 10 (up to Update 13)
- openSUSE Linux 15 (up to Service Pack 5)<sup>2</sup>
- Oracle Linux 9 (up to Update 2)
- Oracle Linux 8 (up to Update 8)
- Oracle Linux 7 (up to Update 9)
- Red Hat Enterprise Linux Server 9 (up to Update 2)
- Red Hat Enterprise Linux Server 8 (up to Update 8)
- Red Hat Enterprise Linux Server 7 (up to Update 9)
- Rocky Linux 9 (up to Update 2)
- Rocky Linux 8 (up to Update 8)
- SUSE Linux Enterprise Server 15 (up to Service Pack 5)<sup>2</sup>
- SUSE Linux Enterprise Server 12 (up to Service Pack 5)<sup>2,3</sup>
- Ubuntu Server 22.04
- Ubuntu Server 20.04
- Ubuntu Server 18.04
- Ubuntu Server 16.04

<sup>1</sup> The Linux Agent will be supported on CentOS 7 until its end of support on June 30, 2024. Because CentOS Stream is a pre-release branch of RHEL and has no long-term, stable versions, the Linux Agent will not be supported on CentOS Stream.

<sup>2</sup> This platform is not supported when the BTRFS file system is used.

<sup>3</sup> The Agent is supported on this platform, but BMR backups are only supported for BIOS-based systems (not UEFI-based systems).

The Agent is supported with the following Linux file systems: ext2, ext3, ext4, XFS, GFS, ReiserFS, and JFS.

The BTRFS file system is not supported.

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## 2 NEW FEATURES

### 2.1 New Features in Version 9.21

#### Security enhancements

Security enhancements have been added in this Linux Agent version.

### 2.2 New Features in Version 9.20

#### Updated supported platforms

The Agent is now supported on Oracle Linux 9, Red Hat Enterprise Linux Server 9 and Ubuntu Server 22.04.

#### Security enhancements

Security enhancements have been added in this Linux Agent version.

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## 3 INSTALLATION NOTES

### 3.1 Installation Requirements

- CPU: 64-bit processor (No support for Itanium processors or IBM Power processors)  
*Note:* Meet or exceed the hardware requirements of your operating system.
- RAM: Minimum of 2 GB.
- Disk space: We recommend at least 1 GB of disk space reserved on the installed path file system (/opt, by default). For an upgrade, we recommend 700 MB of disk space in addition to the current installed path size.
- SELinux must be disabled on the system.
- glibc runtime libraries version 2.16 or later. An agent installation will terminate if the required glibc version is not available on the server.

*Note:* You may see core dumps related to semaphore limits on the system. You can change the semaphore limits through the following kernel configuration parameters:

Parameter / Recommended Minimum Limit

semmni / 128

Defines the number of semaphore identifiers in the kernel.

This is the maximum number of unique semaphore sets that can be active at any one time.

semmsns / 32000

Defines the maximum number of semaphores in the system. User processes include jobbed processes, plus all other semaphores required by other software.

semmsl / 250

Defines the maximum number of semaphores per identifier list.

semopm / 100

Controls the number of semaphore operations that can be performed per semop system call.

## 3.2 Bare Metal Restore Requirements

To enable BMR backups, Relax-and-Recover version 2.7 or 2.6 must be installed on the Linux system before you install Agent version 9.21. For more information, see the *Linux Agent and Oracle Plug-in User Guide*.

*Note:* Relax-and-Recover version 2.5 was required for BMR backups with Linux Agent 8.83. If Relax-and-Recover 2.5 was installed for use with Linux Agent 8.83, we recommend uninstalling Relax-and-Recover version 2.5 and performing a fresh install of Relax-and-Recover version 2.7 or 2.6 before upgrading the Agent to version 9.21.

When you first run a BMR backup job, we recommend reserving a minimum of 1 GB of space in the root file system for the resulting .iso file.

When restoring a Linux server from a BMR backup, the destination machine must have:

- At least 4 GB of RAM.
- The same boot type (BIOS or UEFI) as the source system, and compatible hardware.
- Hard drives should be the same size or larger than drives on the source system.
- A connection to the network, so that it can communicate with the vault.

## 3.3 Licensing

Agent and Plug-in licenses are distributed automatically when the Agent connects to a vault (based on your license quota). To back up and restore data to or from a vault, you need a valid account, username and password. Contact your service provider to obtain the required information.

## 3.4 Install

The file name of the 64-bit Agent installation kit is: Agent-Linux-x64-9.21.1002.tar.gz

*Note:* You can only install the 64-bit Linux Agent on a 64-bit system. You cannot install the 64-bit Linux Agent on a 32-bit system.

The Agent kit installs the following binary files:

Binary File	md5sum Value
AgtUpgd	9682524b6c64c3308420126468b73064
bmragent	589d2ebedc72ea71b8949173df64bd8d
buagent	aa663a7fc9da5de1e4702b9954441ddd

libcrypto.so.1.0.0	fce92f39af490529f0e44dfb361fc953
libevcl.so	06262d27a08a00580260de3e601c3ab8
libevclient.so	f34d61a4e023e4fed3163c3e2b22c329
libevplugins.so	eb801756e03f9de315d482196703d1e9
libevtrace.so	162d28325f253d2e579e38d733282ddb
liblz4.so.1.9.4	b9ca0f1bbd6c45699284a832c2f0f342
libprotobuf.so.32.0.5	22fd0eacab2875202c3b38b70d1de1d4
libssl.so.1.0.0	9218cb75ed6303e0c047d213308bc94a
libstdsoap2.so.2.8	71698f4758dca043ce6bf19946affa57
VV	f431f671f1881188eabed9c7958bbd17
VVAgent	22cda2ca774892626e8aaf4bfb1b5ee
xlogcat	88956d1118529813a5a18527c5cef506

To obtain md5sum values, issue the following commands. These commands are examples based on an Agent that has been installed in the default location (i.e., /opt/BUAgent).

```
cd /opt/BUAgent
md5sum *
```

## 3.5 Upgrade

You can upgrade to Linux Agent version 9.21 from version 9.20 or 8.x.

To upgrade a previous Linux Agent version to version 9.21, first upgrade the Agent to version 8.x.

*Note:* If Relax-and-Recover 2.5 was installed for use with Linux Agent 8.83, we recommend uninstalling Relax-and-Recover version 2.5 and performing a fresh install of Relax-and-Recover version 2.7 or 2.6 before upgrading the Agent to version 9.21.

## 4 FIXES AND KNOWN ISSUES

### 4.1 Fixes

#### 4.1.1 Fixes in Version 9.21

- When you view a Linux Agent log in Portal, information messages no longer appear when you view Errors and Warnings only. (EV-89279)
- The permissions value for job config files is now 660. (EV-78834)
- A warning message now appears in the backup log when a folder cannot be excluded from a backup because it is required for a BMR backup. (EV-62628)

#### 4.1.2 Fixes in Version 9.20

There are no fixes in this version.

## 4.2 Known Issues

- When you restore a Linux system from a BMR backup, file systems that are mounted in subdirectories of /media, /run, /mnt and /tmp are not recreated. This is due to an exclusion in Relax-and-Recover (rear).  
WORKAROUND: If a file system is mounted in a subdirectory of /media, /run, /mnt or /tmp, you must manually recreate and remount the file system during or after the system recovery. We do not recommend mounting local file systems in subdirectories of /media, /run, /mnt or /tmp. (EV-97864)
- When you try to recover a Debian, Ubuntu, SUSE or OpenSUSE Linux system with UEFI firmware from a Bare Metal Restore (BMR) backup to a different server or virtual machine, the recovery fails with kernel-related error messages. This issue is due to a problem in Relax-and-Recover (rear) version 2.6.  
WORKAROUND: On each Debian, Ubuntu, SUSE and OpenSUSE Linux system with UEFI firmware, upgrade Relax-and-Recover to version 2.7. Run the BMR backup job for each system to create a new ISO file for recovering the system. (EV-92806)
- When you try to recover a Red Hat 9 or Oracle Linux 9 system from a Bare Metal Restore (BMR) backup to a different server, an error might state that you need to recreate the physical volume at the disk layout recreation stage. This is a known issue for Red Hat 9 when the new "use\_devicesfile" lvm2 feature is enabled. For more information, see information from Red Hat for Bug 1965941.  
WORKAROUND: Turn off the "use\_devicesfile" feature by modifying the /etc/lvm/lvm.conf file, set the "use\_devicesfile=0" flag (remove the '#' in front), and run the BMR backup job again to create a new iso file for restoring the system. If you do not want to disable this feature, you can manually recreate the lvm PV if the physical volume recreation error occurs. For more information, please contact Support. (EV-86190)
- This Linux Agent version cannot connect to Windows CentralControl without a configuration change. If you must manage the Linux Agent using the legacy Windows CentralControl, please contact Support.  
  
*Note:* To take advantage of new features and important security fixes, we highly encourage using Portal to manage the Linux Agent.
- If you uninstall the Agent and reinstall it with a different Relax-and-Recover path, the old Relax-and-Recover path is restored if you re-register the Agent to the same vault and synchronize jobs. A BMR job could fail to create an .iso file in this case.  
WORKAROUND: Run the bmrregister script after re-registering to the vault. (EV-44185)
- When restoring an Oracle Linux 7 UEFI-based system from a BMR backup, the system might shut down during the recovery if you select the default "no secure boot" option in Relax-and-Recovery.  
WORKAROUND: When restoring an Oracle Linux 7 UEFI-based system from a BMR backup, select the "Relax-and-Recover (Secure Boot)" option. (EV-55410)
- If a job is seeded to a vault using Agent version 7.34 or earlier and reseeded using Agent version 7.50 or later, the vault storage size for the job data cannot be reduced. (EV-25740)
- When you re-register an Agent with a vault, backup jobs that never ran may not be brought to the Agent. The jobs still exist on the vault, so you cannot create jobs with the same names.  
WORKAROUND: After an Agent re-registration, delete jobs with no safesets from the vault before creating jobs with the same names. (EV-13227)
- When only permissions have changed in a file in the ReiserFS file system, permissions are backed up successfully but the deltized size may appear as 0 bytes in the Backup Summary report. (EV-13683)

- When a backup is run from the Linux Bash shell, it may end with the following message: *User defined signal 2*  
WORKAROUND: Trap the signal, which is used to terminate running threads, by beginning the backup script with the following line: `trap "USR2`
- If your backup selection contains hardlinks outside of your selection, you may receive a backup log warning indicating that some hard links related to these file(s) were not selected and have not been backed up. This may occur even if you exclude these hardlink files. To avoid this warning, include all the hardlink files sharing the same inode. (19795)
- When you perform a complete system restore (DR), make sure that there is sufficient disk space for the creation of large recovery logs from the Agent (and other possible logging or auditing from the operating system). File-level logging on a setup containing a large file system may generate a large log, which may fill up the available or allocated disk space. If the logs are on the same partition as the root file system, this may prevent the OS from booting. (19353)
- An NFS backup job for a mounted file system may fail if the NFS mount is disconnected at run time. The error messages for this failure may not explain that the problem is related to NFS. (19215)
- When you restore a very large number of files to an alternate location, you may run out of inodes for the file system. This may stop the restore process from responding. If you kill the VV process, defunct processes may remain and truncated restore logs may result. The logs may indicate that there is no space left on the device, but this may not be true. Because each file consumes an inode, you may not be able to restore additional files (regardless of how much space is available).  
*Recommendation:* Allocate more inodes for the destination file system. (18967)
- The command-line log viewer, xlogcat, uses the default language that you select during installation unless the LANG environment variable indicates a different supported language. For example, if German (de-DE) is your selected language, but your LANG value specifies U.S. English (LANG=en\_US.utf8), xlogcat may display the log in English. You can override this using the "-l" (lowercase l) command-line parameter, or by adjusting the LANG variable. (18941)
- For a backup or restore task on an NFS system to succeed, you need permissions to read, write and create files and directories on the mounted Network File System. This includes the remote system allowing operations for an anonymous user. A good test is to try it from the command line first. If you cannot read/write/create files or directories on NFS manually, the Agent backup and restore may not work. This issue applies to all Linux platforms.
- Linux systems may be configured with strong firewall settings (IP tables) that may block communication between the Agent and Portal or Windows CentralControl.

The following ports are used by default for the Agent:

- \* 808, 8031 (inbound) - VVAgent control by Windows CentralControl
- \* 8086, 8087 (outbound) - buagent registration and control by Portal
- \* 25 (outbound) - email notification
- \* 2546 (outbound) - VV backup, restore, and synchronization with the Vault

To allow management of the Agent by Windows CentralControl, you may open the firewall with a rule similar to this:

```
iptables --append <chain-name> -p tcp -m tcp --dport 808 --syn -j ACCEPT
```

This rule may be made permanent in the normal way for your distribution.

- Certain file systems and directories may be excluded from backups, including the /dev (device) directory (including the devpts file system at /dev/pts), /boot directory, /var/run directory, and the

proc file system (usually at /proc). In Linux kernel version 2.6, the sysfs file system may represent the system hardware devices and drivers (usually at /sys). This may also be excluded from backups.

*Note:* On a complete system backup, /dev and /proc directories are not backed up.

The Linux Agent only protects these locations under their default names. These files must be restored to an alternative location and replaced manually if necessary, as automatic replacement may leave the operating system in an unusable state.

- When restoring Linux system files, the boot loader should be reconfigured to find the restored operating system files and kernel in their current positions on the hard drive. When using GNU GRUB (<http://www.gnu.org/software/grub/>), follow the instructions from the GRUB user manual for installing GRUB natively: <http://www.gnu.org/software/grub/manual/grub.html#Installation>

For other boot loaders, refer to the manual provided by your vendor.

By default, chkconfig may not include VVAgent in the list of services that it manages. If you add VVAgent to chkconfig, the default run levels become 3 and 5.

*Recommendation:* Use 3 and 5 as default run levels for starting the VVAgent script. (8321)

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## 5 PRODUCT SUPPORT

### 5.1 Technical Support

Contact information for your provider is available through the Need Help button in Portal.

### 5.2 Product Updates

Product updates are available through your provider.

### 5.3 Documentation

The following documentation is available for Agent for Linux (64-bit):

- Server Backup online help (<https://onlinehelp.evault.com>)
- Release notes (this document)
- User Guide