Replify Accelerator

Installation Guide

Version 8.5

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1 About Replify Accelerator

Replify Accelerator is a software-based WAN Acceleration product suite. Its purpose is to provide application acceleration over Wide Area Networks by reducing the bandwidth used by applications and improving their responsiveness for end users.

Acceleration is achieved using several techniques:

- Compression – All data between Accelerator components is compressed.
- De-duplication – Data between Accelerator components is analysed and stored in a local cache. If data is re-sent, Replify Accelerator can replace with a cache reference that uses much less bandwidth than the original data.
- Protocol Optimization – Extra optimizations are available for commonly used protocols such as HTTP and SMB.
- TCP Optimization – When using links with high levels of latency or packet loss, TCP connections can be re-used and control congestion using an algorithm more suited to the WAN environment.

There are two optimization components in Replify Accelerator:

- Replify Virtual Appliance
- Replify Accelerator Client

Additionally, the Replify Enterprise Manager is also available. This provides extra capabilities around reporting and licensing which may be beneficial for larger deployments.

1.1 Replify Virtual Appliance

The Virtual Appliance is a mandatory component of any Replify Accelerator deployment. This should be installed as close as possible in network terms to any services that are to be optimized. Any traffic to be optimized across the WAN will be processed by the appliance.

The Virtual Appliance can be connected to other Virtual Appliances or to Accelerator Clients. More information is available below.

The Virtual Appliance will be configured with Application Servers. Application Servers define the services that should be optimized across the WAN and the specific optimizations that should be applied for each of these.

1.1.1 Remote Virtual Appliance

An alternative use for a Virtual Appliance is to act as a gateway on the remote side of the network for all traffic that requires optimization. This appliance will communicate with the

remote Virtual Appliance regarding optimizations that need applied. Local network traffic routed via this appliance that is destined for Application Servers defined on the remote appliance will be accelerated across the WAN.

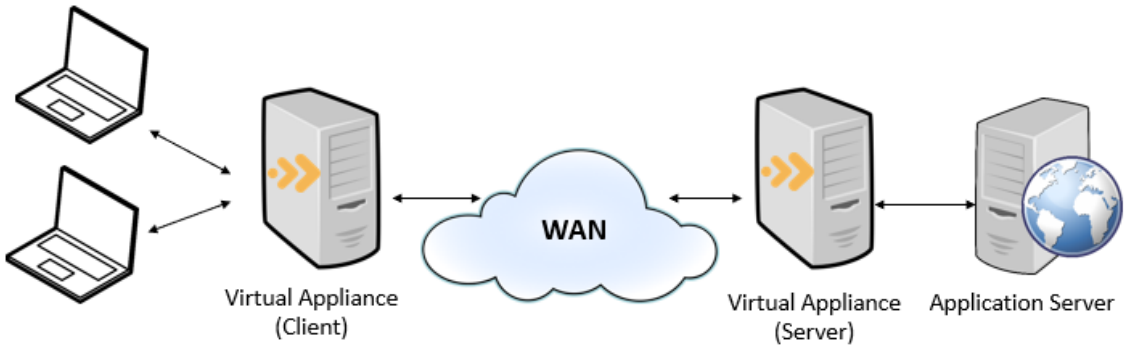

Figure 1: Peered Appliance Deployment

1.2 Replify Accelerator Client

The Replify Accelerator client can be installed on end user devices and connects to a remote Virtual Appliance. The client contains the same core optimization capabilities as an appliance but is packaged differently so that it can be installed on client operating systems.

The client intercepts locally generated traffic. Any traffic destined for an IP that has been defined as an application server on the remote appliance will then be accelerated across the WAN.

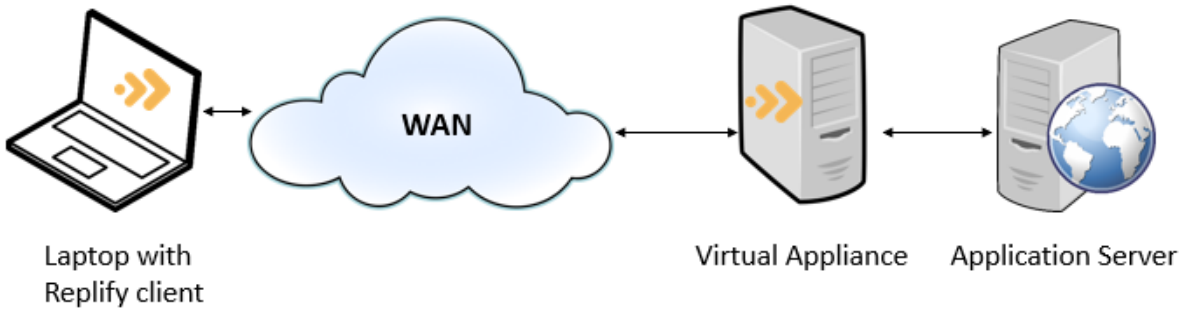

Figure 2: Replify Accelerator Client Deployment

1.3 Replify Enterprise Manager

The Replify Enterprise Manager is an optional component that can be installed in larger Replify Accelerator deployments. This can be used to aggregate statistics from multiple virtual appliances, licence multiple appliances and communicate details of Replify Virtual Appliances to Accelerator Clients.

2 Installing the Virtual Appliance

The Virtual Appliance has been packaged for various deployment platforms and works the same way on each.

A basic knowledge of the deployment platform being used is assumed.

2.1 Resources

Replify Support should be contacted to get details of the resources that should be made available to the appliance. For small scale testing purposes, a machine with 2 vCPUs, 2GB RAM and the supplied hard disk should be sufficient.

It is assumed that one network interface will be enough for the Virtual Appliance. If a more complex configuration is required contact Replify Support.

2.2 VMWare ESX/ESXi

An appliance can be installed on VMWare ESX/ESXi version 7 or 8 using an OVF file. The VMDK file is also available if you wish to create a VM using your own custom settings.

Additional disk space can be added to the appliance by adding a new virtual disk to the VM and restarting. The existing disk should not be resized.

2.3 Hyper-V

The Hyper-V image is supplied in a zip file. When this is extracted, the contents can be imported using Hyper-V manager. The Hyper-V image can be deployed by any Windows versions that support a version 9.0 Hyper-V VM.

The VM has no network connectivity by default. The Virtual Machine's network adaptor should be connected to a Virtual Switch before starting the VM.

Additionally, the network adaptor should be configured to use a static MAC address.

Additional disk space can be added to the appliance by adding a new virtual disk to the VM and restarting. The existing disk should not be resized.

2.4 KVM/QEMU/Proxmox

The Virtual Appliance is supplied as a QCOW2 image that can be used as the hard disk in a standard image. See the resources section above for details of RAM/CPUs/network etc. The Proxmox image can be installed on any version 7.x or later of Proxmox.

2.5 Docker

The Virtual Appliance is supplied as a Docker container. This is available at https://hub.docker.com/r/replifyltd/accelerator.

The above link contains a link to a YML that can be used to start the container using docker-compose. This is the recommended way to start an Accelerator container on a stand-alone Docker system. If manual configuration is required, details are below:

2.5.1 Volumes

Configuration and cache data that are to be persisted are stored across several volumes. The following volumes need to be made available and mounted at the following locations:

- /replify/ca_directory
- /replify/certificate_store
- /replify/certs/
- /replify/config
- /replify/db
- /replify/log
- /replify/stats

2.5.2 Ports

Replify Accelerator exposes several endpoints. Not all of these need to be exposed for every Replify Accelerator Docker deployment.

- 80: Web UI
- 443: Secure web UI
- 32897: Management data
- 32894: Secure management data (if using secure peering)
- 32896: Data
- 32881: Redirection port (if being used as a client-side appliance)
- 1080: Socks port (If using container as a SOCKS proxy)
- 161/udp: SNMP: (If using SNMP agent functionality)

2.5.3 Capabilities

- NET_BIND_SERVICE
- NET_RAW
- NET_ADMIN (Only required if being used as a client-side appliance or if using application server transparency functionality)

2.5.4 Environment

Only one environment variable is required.

- REPLIFY_ADMIN_PASSWD: This will be the password that will be used to login to the UI of the container. (the username will be admin)

2.5.5 Sysctl

The following variables will need to be configured if running as a client-side appliance. Not all of these need to be exposed for every Replify Accelerator Docker deployment.

- net.ipv4.ip_forward=1 (Needed if being used as a client-side appliance)
- net.netfilter.nf_conntrack_tcp_timeout_time_wait=30 (Required if lots of short-lived connections are to be accelerated)
- net.ipv4.conf.lo.rp_filter=0 (Required if using application server transparency functionality)
- net.ipv4.conf.eth0.send_redirects=0 (Required if being used as a client-side appliance. If using an interface other than eth0, this should be updated appropriately)

2.5.6 Ulimits

The following ulimit value is recommended when there is a high number of connections.

- nofile=128000

2.6 Debian Linux

The Virtual Appliance is supported on Debian v12 (Bookworm) or later. This can be installed from the public Debian repository. To install the package, copy the following into a shell:

```
KEYRING="/usr/share/keyrings/replify-archive-keyring.gpg"
KEY="https://www.replify.com/replify.gpg"
REPOSITORY="http://packages.replify.com/oban/"
SOURCE_LIST="/etc/apt/sources.list.d/replify.list"
sudo apt-get update
sudo apt-get --yes install gpg curl
curl -fsSL $KEY | sudo gpg -o $KEYRING --yes --dearmor
echo "deb [signed-by=$KEYRING] $REPOSITORY binary/" | sudo tee $SOURCE_LIST
sudo apt-get update
sudo apt-get install replify-accelerator
```

2.7 Raspbian

The Virtual Appliance is supported on Raspbian v12 or later. This can be installed using the instructions above for Debian Linux.

2.8 Cloud Platforms

Replify Accelerator can be installed on any cloud platform that supports Debian Linux images. Create a Debian Linux v12 (Bookworm) image or later and follow the instructions for a Debian Linux installation. Additionally, for security purposes, it is worthwhile reading the Authentication and Network Configuration sections below.

2.9 Authentication

If using a Virtual Machine provided by Replify, you can log in to the console using the username admin and the password **default**. You can also login to the Virtual Machine using SSH with these details.

The Virtual Appliance also exposes a web interface. The default credentials of this are

- Username: admin
- Password: default

On Debian Linux and cloud installations you can login with user **root** and the root password or with any native Linux user that is part of the **replify** or **root** OS groups.

A new user can easily be created and added to a group from the command line. For example:

```
sudo adduser myusername
sudo adduser myusername replify
```

2.10 Network Configuration

The Virtual Appliance needs to have one network interface available. On Virtual Machines that are provided by Replify, these will be configured to use DHCP to obtain an IP address, netmask, gateway and DNS servers. If these need to be configured manually, this can be done by running **configure-network** from the console of the VM.

For more complex network configurations, please contact Replify Support.

2.10.1 Open Ports

Access to the VA on the following ports should be enabled, otherwise optimization may fail.

- TCP/32894
- TCP/32896
- TCP/32897
- TCP/80 (Used by API/GUI)

- TCP/443 (Used by API/GUI)

WAN Port Mapping functionality allows alternative TCP ports to be used for data connections. If port mapping is used, access to the ports specified should be enabled.

2.10.2 Configuring the Virtual Appliance as a Bridge

For the Virtual Appliance to optimize TCP traffic, the traffic must be redirected to it. This is often handled by the Replify Accelerator Client, or by routing traffic to be optimized to the VA via policy-based routing. In some situations, deploying Replify Accelerator 'in-line' is preferred. For that situation, Replify Accelerator can be configured to work in 'bridge mode'. This will enable Replify Accelerator to accept traffic from two interfaces (typically WAN and LAN) and optimize the data as appropriate.

Figure 3: Replify Virtual Appliance deployed inline

To do this, run the following command in the Virtual Appliance shell:

```
replify-ctl enable-bridge-mode
```

The network configuration of the virtual appliance is configured on Linux in **/etc/network/interfaces**. By default, this is not configured for the virtual appliance to work as a bridge.

An example **interfaces** file is included on the Virtual Appliance at this location:

```
/replify/config/examples/interfaces.bridging
```

This can be copied directly to replace the existing **interfaces** file, or simply used as a reference to update the existing **interfaces** file manually.

After these steps have been completed the machine should be rebooted to ensure the new configuration takes effect.

To disable the bridging functionality, run the following command in the Virtual Appliance shell:

```
replify-ctl disable-bridge-mode
```

3 Installing the Replify Accelerator Client

The Replify Accelerator Client can be downloaded from the User Interface of either the Replify Virtual Appliance or the Replify Enterprise Manager.

3.1 Windows

The Accelerator Client is provided as an MSI file. The following MSI properties are available:

- VA_ADDRESS – IP of a VA that the client should connect to on start-up
- REM_ADDRESS – IP or a REM that the client should connect to on start-up

A configuration application will be installed within the Start Menu.

3.1.1 Windows client configuration

It is possible to pre-configure the client that is downloaded from the VA or REM to automatically connect to a VA/REM by running one of the following on the VA/REM shell:

```
replify-ctl add-va-to-installers <IP ADDRESS>
replify-ctl add-em-to-installers <EM ADDRESS>
```

Note that running these commands will mean that the digital signature of the client installer is no longer valid. This may cause Windows to issue a warning to this effect.

A group policy template is also available that can be used to configure the client. Please contact Replify Support for more information.

3.1.2 Advanced Windows Installation

A number of options are available for controlling the Windows installation.

3.1.2.1 Service Only Mode (GUI inactive by default)

If you wish to install without providing access to the Replify GUI by default, you can use the UI_ENABLE=false option when using *msiexec.*

3.2 MacOS

The MacOS client is supplied as an installation package within a DMG file. The application will be installed in the Applications folder.

It should be noted that the mechanism used to intercept MacOS traffic is slightly different from the Windows and Linux clients and needs to be configured manually.

For traffic to be intercepted by the client, it needs to be directed to a SOCKS proxy on the local machine that is managed by the Accelerator client. This can be configured in the OS or via the client UI.

This means that applications that do not respect the OS proxy settings will not be accelerated on MacOS.

3.3 Ubuntu Linux

The Ubuntu client is supplied as a Debian package that can be installed using standard software installation tools.

3.4 Android

The Android client is supplied as an APK file.

Before installing, check that the “allow installation from unknown sources” setting is enabled in security settings.

It should be noted that the mechanism used to intercept Android traffic is slightly different from the Windows and Linux clients and needs to be configured manually.

For traffic to be intercepted by the client, it needs to be directed to a HTTP proxy on the local device that is managed by the Accelerator client. Any traffic to be accelerated needs to be redirected to the local proxy running on port 32891. This can be configured in the APN settings for mobile traffic or in the WIFI network’s advanced settings for wireless traffic.

Applications that do not respect these proxy settings will not be accelerated unless the device is rooted. Contact support@replify.com for more information.

4 Installing the Replify Enterprise Manager

The Enterprise Manager has been packaged for various deployment platforms and works the same way on each.

Note: The Enterprise Manager is an optional component in most Replify Accelerator deployments. It is not required for application acceleration.

4.1 Resources

Replify Support should be contacted to get details of the resources that should be made available to the appliance. For most purposes, a machine with 1 vCPU, 2GB RAM and the supplied hard disk should be sufficient.

Only one network interface needs to be made available for the Enterprise Manager

4.2 VMWare ESX/ESXi

An appliance can be installed on VMWare ESX/ESXi using an OVF file. The VMDK file is also available if you wish to create a VM using your own custom settings.

4.3 Hyper-V

The Hyper-V image is supplied in a zip file. When this is extracted, the contents can be imported using Hyper-V manager.

The VM has no network connectivity by default. The Virtual Machine's network adaptor should be connected to a Virtual Switch before starting the VM.

Additionally, the network adaptor should be configured to use a static MAC address.

4.4 KVM/QEMU/Proxmox

The Enterprise Manager is supplied as a QCOW2 image that can be used as the hard disk in a standard image. See the resources section above for details of RAM/CPUs/network etc.

4.5 Docker

The Enterprise Manager is supplied as a Docker container. This is available at https://hub.docker.com/r/replifyltd/manager.

The above link contains a link to a YML that can be used to start the container using docker-compose. This is the recommended way to start an Enterprise Manager container on a stand-alone Docker system. If manual configuration is required, details are below:

4.5.1 Volumes

Configuration and cache data that are to be persisted are stored across several volumes. The following volumes need to be made available and mounted at the following locations:

- /replify/ca_directory
- /replify/certs/
- /replify/em/config
- /replify/em/db
- /replify/em/dets
- /replify/log

4.5.2 Ports

Replify Accelerator exposes several endpoints. Not all of these need to be exposed for every Replify Accelerator Docker deployment.

- 80: Web UI
- 443: Secure web UI
- 32899: Accepts connections from clients
- 32900: Accepts connections from VAs

4.5.3 Capabilities

- NET_BIND_SERVICE

4.5.4 Environment

Only one environment variable is required.

- REPLIFY_ADMIN_PASSWD: This will be the password that will be used to login to the UI of the container. (the username will be admin)

4.5.5 Ulimits

The following ulimit value is recommended when there is a high number of connections.

- nofile=128000

4.6 Debian Linux

The Virtual Appliance is supported on Debian v12 (Bookworm) or later. This can be installed from the public Debian repository. To install the package, copy the following into a shell:

```
KEYRING="/usr/share/keyrings/replify-archive-keyring.gpg"
KEY="https://www.replify.com/replify.gpg"
REPOSITORY="http://packages.replify.com/oban/"
SOURCE_LIST="/etc/apt/sources.list.d/replify.list"
sudo apt-get update
sudo apt-get --yes install gpg curl
curl -fsSL $KEY | sudo gpg -o $KEYRING --yes --dearmor
echo "deb [signed-by=$KEYRING] $REPOSITORY binary/" | sudo tee $SOURCE_LIST
sudo apt-get update
sudo apt-get install replify-mgr
```

4.7 Cloud Platforms

Replify Accelerator can be installed on any cloud platform that supports Debian Linux images. Create a Debian Linux v12 (Bookworm) image or later and follow the instructions for a Debian Linux installation.

4.8 Authentication

If using a Virtual Machine provided by Replify, you can log in to the console using the username **admin** and the password **default**. You can also login to the Virtual Machine using SSH with these details.

The Enterprise Manager also exposes a web interface. The default credentials of this are:

- Username: admin
- Password: default

On Debian Linux installations you can login with user **root** and the root password or with any native Linux user that is part of the **replify** or **root** OS groups.

A new user can easily be created and added to a group from the command line. For example:

```
sudo adduser myusername
sudo adduser myusername replify
```

4.9 Network Configuration

The Virtual Appliance needs to have one network interface available. On Virtual Machines that are provided by Replify, these will be configured to use DHCP in order to obtain an IP

address, netmask, gateway and DNS servers. If these need to be configured manually, this can be done by running **configure-network** from the console of the VM.

4.10 Firewall

The Enterprise Manager needs to be accessible across the WAN on TCP ports 32899 and 32900.

5 Post-Installation

After the product is installed, configuration can be performed using the web interface that is exposed on the server, container, or Virtual Machine.

A user guide giving full details of product functionality can be downloaded from the help section of the user interface.

A quick start guide to get a deployment up and running is also available at https://www.replify.com/resources/