Creating a 2-node replicated block device setup with WinDRBD

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Chapter 1. Introduction

1.1. About

This document provides a step-by-step guide of how to create a replicated block device between two Windows Server 2016 hosts. Use cases for such a setup are, amonst others, disaster recovery (standby node can take over immedieately, because it has up-to-date data) and software defined storage (for example, migrating virual machines).

1.2. Overview

Rolling out a 2 node setup using WinDRBD involves following steps:

- Prerequisites describes what you need for a 2-node setup of WinDRBD.
- Obtaining an installable version of WinDRBD describes how to get an installable version of WinDRBD from Linbit.
- Installing WinDRBD describes how to install WinDRBD on your Windows Server 2016 machine.
- Create backing storage devices describes how to create backing storage devices.
- Configure Windows firewall describes how to modify your Windows firewall settings for WinDRBD.
- Configure the WinDRBD resource describes how to configure the WinDRBD resources.
- Start WinDRBD resources describes how to bring the WinDRBD resources up.
- Using WinDRBD devices describes how you can use the WinDRBD devices.
- Testing WinDRBD describes how you can check if WinDRBD is actually doing the right thing.
- Troubleshooting WinDRBD describes what you can do if something goes wrong.

Chapter 2. Installing WinDRBD

2.1. Prerequisites

To deploy a 2-node setup of WinDRBD you need 2 machines connected over an internet protocol (IP) based network. At least one machine should run a Microsoft Windows operating system supported by WinDRBD. The other machine may be a Linux machine or another machine with a supported Windows OS.

Current supported versions of Windows include:

- Windows Server 2016 (64 bit)
- Windows 10 (64 bit)
- Windows 7 (service pack 1) (64 bit)

If you wish to use WinDRBD on a 32 bit Windows OS, please contact Linbit.

For Linux, most modern distributions (RHEL, Debian, Ubuntu, SLES, ...) should work.

The machines may be physical or virtual machines.

The machines should have free storage (unpartitioned storage area) or a partition which is currently unused for use as a WinDRBD backing device. It is possible to convert an existing NTFS partition for use as a WinDRBD backing device. However we recommend not to use partitions that contain valueable data for testing WinDRBD since WinDRBD is still beta (as of 12/2018).

For the network connectivity, the machines don't need to be in the same LAN, they may also be located in different geografical regions. However when using WinDRBD over long distances, using DRBD Proxy is recommended.

For now (12/2018), network should be IPv4 based, i.e. the nodes should be able to see each other via IPv4.

2.2. Obtaining an installable version of WinDRBD

Since 64-bit Windows versions require drivers to be digitally signed, Linbit releases signed versions of WinDRBD with a trusted certificate. These releases contain a self-extracting EXE with an inno-setup based installer and thus should be also be installable on older versions of Microsoft Windows.

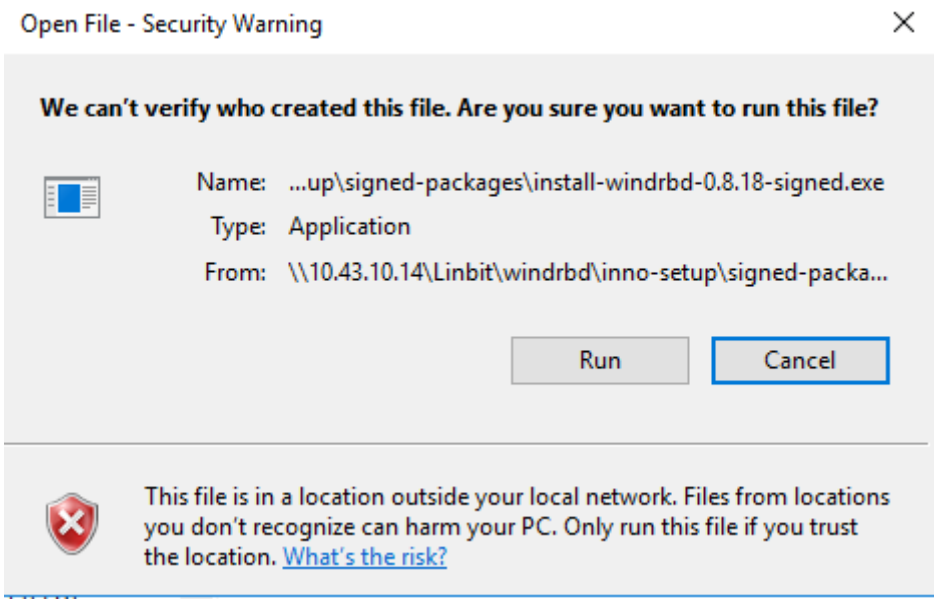
To obtain an installable version of WinDRBD, please go to TODO: ?? The EXE files follow the naming scheme

```
install-windrbd-x.y.z-signed.exe
```

where x.y.z is the version code of WinDRBD (as shown by drbdadm --version).

2.3. Installing WinDRBD

Once you have downloaded WinDRBD simply start the installer by doubleclicking the EXE file. Since the installer will be run as Administrator user (it has to, since it will install a kernel driver), Windows will ask if you really want to execute the installer. Click Run to run it.



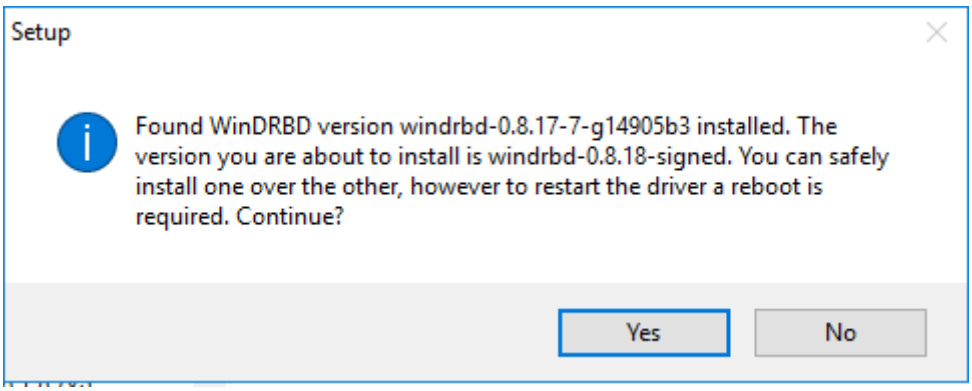
Once started the installer will ask for a language for the installation (this is just for the installation, most texts will still be in English, especially the help texts of the userspace utilities, like drbdadm).

2.3.1. Upgrade from earlier versions

Then, the installer checks for previously installed versions of WinDRBD. In the rare case you have beta 4 installed, you must choose to uninstall it first, since it is incompatible with newer versions of WinDRBD. Please do not forget to reboot the machine after installation has finished in case you have beta4 installed before (the installer will not ask for a reboot, you have to do that manually).

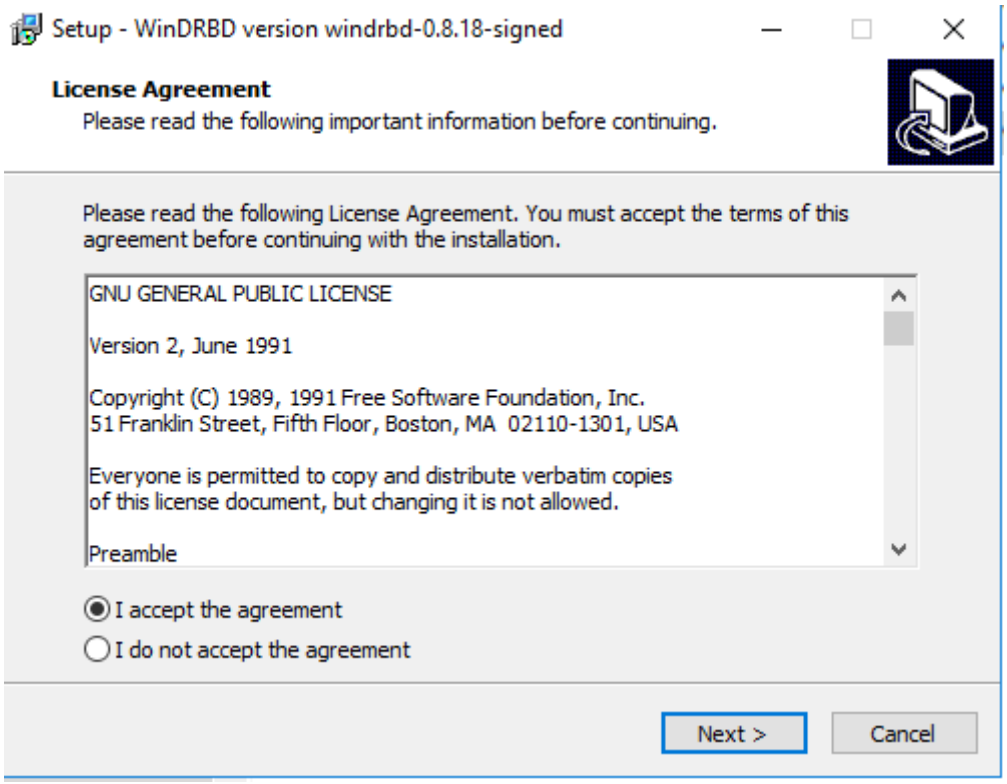
For all other versions, you will get a panel that asks if you wish to upgrade from a previously installed version. If you don't get a panel (and license agreement is shown rightaway) you don't have WinDRBD already installed and also don't need a reboot after installation.

An upgrade panel might look like this:



2.3.2. License agreement

You then will be asked for accepting the WinDRBD license agreement. WinDRBD is licensed under the GNU general public license and therefore is Open Source. Note that there is no kind of warranty for GPL licensed software and so also for WinDRBD. Please read the license carefully, since it tells you what rights you have.



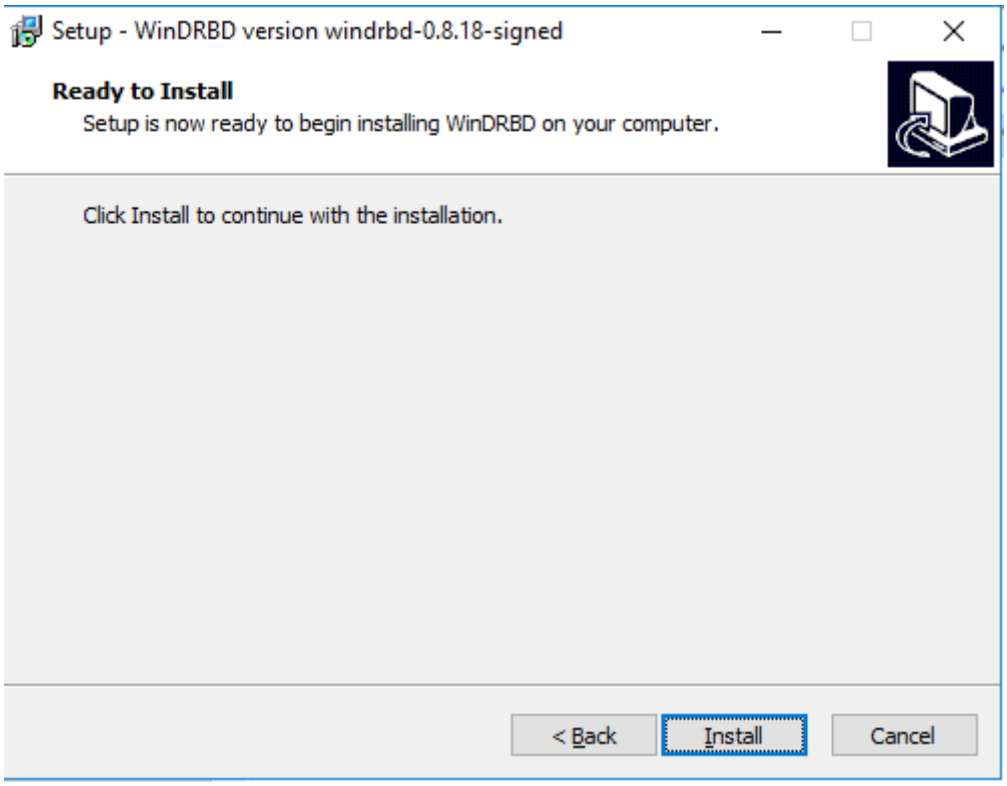
To accept the license, select I accept the agreement and click Next.

2.3.3. Release notes

Next screen shows an overview about what has changed recently in WinDRBD. This is mainly of interest if you are upgrading from an earlier release of WinDRBD. Once you are done reading it, click next to continue.

2.3.4. Installation

We are now ready to install WinDRBD on your computer. Click install to start the installation process. The process itself should take no more than 15 seconds.



You then might get prompted for rebooting the machine in case this is an upgrade. Save all your work and click Finish in order to finish WinDRBD installation.

?? README

2.4. Create backing storage devices

2.5. Configure Windows firewall

2.6. Configure the WinDRBD resource

2.7. Start WinDRBD resources

2.8. Using WinDRBD devices

2.9. Testing WinDRBD

doing a failover

2.10. Troubleshooting WinDRBD

log file

call Linbit

```
*) Make a snapshot of your Windows System (either using
          your favorite VM enviroment or something like CloneZilla).
```

```
*) Run the install-windrbd-signed-0.8.0-beta4.exe file from the
   Linbit Website as Administrator.
```

```
*) You'll find the windrbd configuration files in the folder
```

```
C:\windrbd\etc\drbd.d
```

```
(note that they use the UNIX end-of-line character, you should
 keep that).
```

```
*) Start logging by following command (as Administrator):
```

```
windrbd log-server <filename>
```

```
Will log to the cmd window and to the file filename.
(note: to log via network change the ipaddress in the
registry:
```

Computer\HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\services\drbd\syslog_ip

```
and reboot).
```

```
The target must either run windrbd log-server or be a
Linux host with UDP logging activated (see file INSTALL).
If it is a Linux host log messages usually go to
/var/log/syslog
```

```
*) Adapt the windrbd-sample.res config file to match your
          settings. You have to change:
```

```
*) IP address of this host and the peer (address)
       *) GUID of the backing device (disk on windowshost)
*) Mount point (device)
```

```
If you rename this file, keep the .res extension.
```

```
*) To check the syntax, do
```

```
drbdadm dump windrbd-sample
```

```
(where windrbd-sample is the resource name)
```

```
*) Then create metadata (from now on, everything as Administrator):
```

```
drbdadm create-md windrbd-sample
```

```
*) Activate the device:
```

```
drbdadm up windrbd-sample
```

```
*) Make it primary, so you can read/write it.
```

```
drbdadm primary windrbd-sample
```

```
       This also creates the windrbd device to access the data
(note that this is one point where windrbd differs from
 Linux DRBD). Your drive now should show up in the
        Windows Explorer.
```

```
*) To format the windrbd device, click format on the
   panel that shows up. Be sure to select NTFS, others
          will not work.
```

```
*) Get another Windows or Linux host, repeat the steps
          and watch them syncing. Be sure that the sizes of the
   backing devices and meta-data settings (internal/external)
   match on both hosts (this is a common reason for
   connection failure, there are others).
```

```
Note that (older) Linux DRBD versions do not understand
       the windrbd disk and device syntax , so you have to fill in
dummy values (just copiing the file won't work). Or you
       upgrade your drbd-utils (under Linux) to 9.6.0 or newer.
```

```
       Also reconfigure Windows Firewall (unless turned off
       completly) to allow TCP/IP on the configured windrbd
ports.
```

```
*) To uninstall WinDRBD, either use Uninstall WinDRBD in
   the start menu or Windows Add/Remove Programs facility.
```

```
       Currently, to complete uninstall (to remove the driver)
a reboot is required (you will get prompted)
```

```
*) Unless you want to keep it, delete the C:\windrbd folder also.
```