

Installing IBM® Linux Tape Driver on RHEL with NEO® Tape Library Attached

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Description

This guide describes the installation process for the IBM Linux Tape driver on a Red Hat Enterprise Linux (RHEL) 7.4 system with a NEOxl 80 tape library attached. The IBM tape driver is used primarily with IBM Spectrum Protect backup software for Linux. This document walks the reader on how to properly install the IBM Linux Tape driver properly on RHEL when the following installation error occurs.

```
[root@sd32127rh74 ibm]#
[root@sd32127rh74 ibm]# rpm -ivh lin_taped-3.0.48-rhel7.x86_64.rpm
error: Failed dependencies:
    lin_tape = 3.0.48 is needed by lin_taped-3.0.48-1.x86_64
[root@sd32127rh74 ibm]#
```

This process is the same for the other supported NEO tape libraries (NEO StorageLoader, NEOs T24, and NEOxl 40). The guide also covers some basic troubleshooting.

Prerequisites

Download the following files and versions of the supporting IBM Linux Tape source and device driver:

- lin_tape-3.0.48-1.src.rpm
- lin_taped-3.0.48-rhel7.x86_64.rpm

IBM Linux Tape Driver Installation

The next few steps require a Linux command prompt to verify the NEO library and its tape drives.

1. Verify all devices are present by typing:

```
# cat /proc/scsi/scsi
```

In this example, a NEOxl 80 and two LTO-8 drives are shown.

```
[root@sd32127rh74 /]# cat /proc/scsi/scsi
Attached devices:
Host: scsi0 Channel: 02 Id: 00 Lun: 00
  Vendor: SMC      Model: SMC2208      Rev: 3.29
  Type:   Direct-Access          ANSI SCSI revision: 05
Host: scsi11 Channel: 00 Id: 00 Lun: 00
  Vendor: HL-DT-ST Model: DVDROM GP10NB20 Rev: 1.02
  Type:   CD-ROM                ANSI SCSI revision: 00
Host: scsi9 Channel: 00 Id: 00 Lun: 00
  Vendor: MSCC     Model: Smart Adapter Rev: 1.60
  Type:   Enclosure          ANSI SCSI revision: 05
Host: scsi9 Channel: 02 Id: 00 Lun: 00
  Vendor: MSCC     Model: 3154-8e      Rev: 1.60
  Type:   BATT              ANSI SCSI revision: 05
Host: scsi10 Channel: 00 Id: 00 Lun: 00
  Vendor: IBM      Model: ULTRIUM-HH8   Rev: KAH1
  Type:   Sequential-Access  ANSI SCSI revision: 06
Host: scsi10 Channel: 00 Id: 01 Lun: 00
  Vendor: IBM      Model: ULTRIUM-HH8   Rev: KAH1
  Type:   Sequential-Access  ANSI SCSI revision: 06
Host: scsi10 Channel: 00 Id: 01 Lun: 01
  Vendor: BDT      Model: MULTISTAK     Rev: 2.80
  Type:   Medium Changer    ANSI SCSI revision: 05
[root@sd32127rh74 /]#
```

2. Type the following:

```
# lsscsi -g
```

Again, a NEOxl 80 and two LTO-8 drives are shown.

```
[root@sd32127rh74 ibm]# lsscsi -g
[0:2:0:0] disk SMC SMC2208 3.29 /dev/sda /dev/sq0
[9:0:0:0] enclosu MSCC Smart Adapter 1.60 - /dev/sq1
[9:2:0:0] storage MSCC 3154-8e 1.60 - /dev/sq3
[10:0:0:0] tape IBM ULTRIUM-HH8 KAH1 /dev/st0 /dev/sq4
[10:0:1:0] tape IBM ULTRIUM-HH8 KAH1 /dev/st1 /dev/sq5
[10:0:1:1] mediumx BDT MULTISTAR 2.80 /dev/sch0 /dev/sq6
[11:0:0:0] cd/dvd HL-DT-ST DVDROM GP10NB20 1.02 /dev/sr0 /dev/sq2
[root@sd32127rh74 ibm]#
```

3. Change to the directory where the supporting IBM Linux Tape drivers are located by typing:

```
# rpmbuild --rebuild lin_tape-3.0.48-1.src.rpm
```

```
[root@sd32127rhel74 ibm]# ls -al
total 540
drwxr-xr-x. 2 root root 80 Dec 11 09:54 .
drwxr-xr-x. 4 root root 28 Dec 11 09:43 ..
-rwxr-xr-x. 1 root root 497529 Dec 11 09:54 lin_tape-3.0.48-1.src.rpm
-rwxr-xr-x. 1 root root 51432 Dec 11 09:54 lin_taped-3.0.48-rhel7.x86_64.rpm
[root@sd32127rhel74 ibm]#
[root@sd32127rhel74 ibm]#
[root@sd32127rhel74 ibm]# rpmbuild --rebuild lin_tape-3.0.48-1.src.rpm
```

The results are then displayed.

```
[root@sd32127rhel74 ibm]#
[root@sd32127rhel74 ibm]# rpmbuild --rebuild lin_tape-3.0.48-1.src.rpm
Installing lin_tape-3.0.48-1.src.rpm
Executing(%prep): /bin/sh -e /var/tmp/rpm-tmp.S3LYwT
+ umask 022
+ cd /root/rpmbuild/BUILD
+ cd /root/rpmbuild/BUILD
+ rm -rf lin_tape-3.0.48
+ /usr/bin/gzip -dc /root/rpmbuild/SOURCES/lin_tape-3.0.48.tgz
+ /usr/bin/tar -xf -
+ STATUS=0
+ '[' 0 -ne 0 ']'
+ cd lin_tape-3.0.48
+ /usr/bin/chmod -Rf a+rX,u+w,g-w,o-w .
+ exit 0
Executing(%build): /bin/sh -e /var/tmp/rpm-tmp.ayvXTy
+ umask 022
+ cd /root/rpmbuild/BUILD
+ cd lin_tape-3.0.48
```

4. Install the source rpm driver from the /root/rpmbuild/RPMS/x86_64 directory:

a. Type:

```
# ls -la /root/rpmbuild/RPMS/x86_64/lin_tape-3.0.48-1.x86_64.rpm
```

b. Then type:

```
# rpm -ivh /root/rpmbuild/RPMS/x86_64/lin_tape-3.0.48-1.x86_64.rpm
```

```
[root@sd32127rh74 ibm]#
[root@sd32127rh74 ibm]# ls -la /root/rpmbuild/RPMS/x86_64/lin_tape-3.0.48-1.x86_64.rpm
-rw-r--r--. 1 root root 1135976 Feb 14 09:24 /root/rpmbuild/RPMS/x86_64/lin_tape-3.0.48-1.x86_64.rpm
[root@sd32127rh74 ibm]#
[root@sd32127rh74 ibm]# rpm -ivh /root/rpmbuild/RPMS/x86_64/lin_tape-3.0.48-1.x86_64.rpm
Preparing...
Updating / installing...
 1:lin_tape-3.0.48-1
Created symlink from /etc/systemd/system/multi-user.target.wants/lin_tape.service to /usr/lib/systemd/system/lin_tape.service.
lin_tape loaded
[root@sd32127rh74 ibm]#
```

5. To install the downloaded rpm driver, type:

```
# rpm -ivh lin_taped-3.0.48-rhel7.x86_64.rpm
```

```
[root@sd32127rhel74 ibm]# ls -al
total 540
drwxr-xr-x. 2 root root    80 Dec 11 09:54 .
drwxr-xr-x. 4 root root   28 Dec 11 09:43 ..
-rwxr-xr-x. 1 root root 497529 Dec 11 09:54 lin_tape-3.0.48-1.src.rpm
-rwxr-xr-x. 1 root root 51432 Dec 11 09:54 lin_taped-3.0.48-1.x86_64.rpm
[root@sd32127rhel74 ibm]#
[root@sd32127rhel74 ibm]#
[root@sd32127rhel74 ibm]# rpm -ivh lin_taped-3.0.48-rhel7.x86_64.rpm
Preparing...##### [100%]
Updating / installing...
 1:lin_taped-3.0.48-1##### [100%]
Starting lin_tape...
Warning: dev_loss_tmo should be set to 2147483647 where Tape devices are attached, please read
lin_tape.ReadMe for instructions
Warning: fast_io_fail_tmo should be set to 5 where Tape devices are attached, please read lin_t
ape.ReadMe for instructions

lin_taped loaded
[root@sd32127rhel74 ibm]#
```

6. To verify the driver installed, type:

```
# rpm -qa | grep lin_tape
```

```
[root@sd32127rh74 /]#
[root@sd32127rh74 /]# rpm -qa | grep lin_tape
lin_tape-3.0.48-1.x86_64
lin_taped-3.0.48-1.x86_64
[root@sd32127rh74 /]#
[root@sd32127rh74 /]#
```

7. Verify IBM tape device drivers created based on the number of tape drives attached to host and verify the serial number of those tape drives by typing:

```
# ls -la /dev/IBM*
```

```
# cat /proc/scsi/IBM*
```

NOTE: If the output does not look similar to our example that follows, see the [Troubleshooting](#) section at the end of this document.

```
[root@sd32127rh74 /]#
[root@sd32127rh74 /]# ls -la /dev/IBM*
crw----- 1 root root 239, 3069 Feb 14 09:34 /dev/IBMSpecial
crw----- 1 root root 239, 0 Feb 14 09:34 /dev/IBMtape0
crw----- 1 root root 239, 1024 Feb 14 09:34 /dev/IBMtape0n
crw----- 1 root root 239, 1 Feb 14 09:34 /dev/IBMtape1
crw----- 1 root root 239, 1025 Feb 14 09:34 /dev/IBMtape1n
[root@sd32127rh74 /]#
[root@sd32127rh74 /]# cat /proc/scsi/IBM*
lin_tape version: 3.0.48
lin_tape major number: 239
Attached Changer Devices:
Number model SN HBA SCSI FO Path
 lin_tape version: 3.0.48
lin_tape major number: 239
Attached Tape Devices:
Number model SN HBA SCSI FO Path
0 ULTRIUM-HH8 11C2A700BF qla2xxx 10:0:0:0 NA
1 ULTRIUM-HH8 11C2A700B5 qla2xxx 10:0:1:0 NA
[root@sd32127rh74 /]#
```

8. To uninstall the IBM Linux tape driver, type:

```
# rpm -ev lin_tape-3.0.48-1 lin_taped-3.0.48-1.x86_64
```

```
# rpm -qa | grep lin_tape*
```

```
[root@sd32127rh74 ibm]# rpm -ev lin_tape-3.0.48-1.x86_64 lin_taped-3.0.48-1.x86_64
Preparing packages...
Shutting down lin_tape...
lin_taped unloaded

lin_taped-3.0.48-1.x86_64
Removed symlink /etc/systemd/system/multi-user.target.wants/lin_tape.service.
lin_tape-3.0.48-1.x86_64
[root@sd32127rh74 ibm]#
[root@sd32127rh74 ibm]#
[root@sd32127rh74 ibm]# rpm -qa | grep lin_tape*
[root@sd32127rh74 ibm]#
```

Troubleshooting

If the IBM device drivers are not created, verify each step at a time in order to isolate the problem:

1. Make sure the tape library and tape drives are turned on and all cables are connected (SAS or FC) to the host.

If fibre connected, make additional steps to fibre zone the tape library and tape drives to the host.

2. Verify if the devices are seen using the following commands:

- # `cat /proc/scsi/scsi`
- # `lsscsi -g`
- # `ls -la /dev/IBM*`
- # `cat /proc/scsi/IBM*`

3. Use the following commands to clear the Linux device tree cache and to rebuild it:

- # `rescan-scsi-bus.sh -r` (Remove)
- # `rescan-scsi-bus.sh -f` (Flush)
- # `rescan-scsi-bus.sh -a` (Rescan all)

4. Reboot the Linux server.

For more information on compatibility, please visit Overland-Tandberg website:

<https://www.tandbergdata.com/us/index.cfm/support/compatibility/compatibility/>

For information on NEO tape libraries, tape drives, and other Overland-Tandberg products, visit our Knowledge Base at:

<https://www.overlandtandberg.com/knowledgebase/>

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