



RAIDIX 5.1.2 TO RAIDIX 5.2 UPDATE MANUAL

Document version 1.0

CONTENTS

Introduction.....	3
Intended Audience.....	3
Guide Conventions.....	3
Contact Us.....	3
Requirements and Limitations	4
Features.....	5
System Update through the Web Interface.....	6
System Update in SC.....	6
System Update in DC	9
System Update through the Command Line Interface	13
System Update in SC.....	13
System Update in DC	16
Appendix A. Disconnecting and returning the drives with RAIDs	20
Specifics	20

INTRODUCTION

Intended Audience

This manual describes the procedure of updating the software RAIDIX 5.1.2 to RAIDIX 5.2.


This manual is mandatory for partners of RAIDIX LLC who perform the update of the RAIDIX 5.1.2 software.


Guide Conventions

The Guide uses the typefaces and formatting to specify different names and terms:

Convention	Uses
Bold	GUI controls, option value, minor titles.
<i>Italic</i>	Emphasis, term references, documentation titles, section titles, file paths.
Text color	Instructions below are only for specific situations and configurations.
Monospace	Commands, command utilities, and console-driven text.

Text paragraphs that need your special attention are marked with the following frame:

 *Note* – a note providing valuable information.

 *Warning* – binding instructions to guarantee the proper work of the software.

Contact Us

If you have any comments or suggestions on the improvement of the RAIDIX end-user documentation, send them at doc.comments@raidix.com. Specify a document title, a chapter number, and a page. Refer to the specific pages and sections whenever possible.

REQUIREMENTS AND LIMITATIONS

! When updating under workload, after failover, there may be a short interruption to host access. Some services and applications that are using shares may require a restart.

i After the update, network interfaces with DHCP-assigned IP addresses reset their DHCP flags

i For CentOS clients below version 7.9, after the update, when mounting an SMB shared folder with the `mount` command, the argument **vers=3.0** must be specified, for example:

```
# mount -t cifs -o  
"domain=sample,username=sample,password=sample,vers=3.0" path
```

! After updating the system (for the DC system, after updating the first node), CentOS below version 7.9 with an initiator requires a reboot.

To perform the update, follow these requirements and recommendations:

1. Perform the update as the user `admin`.
2. Perform the update only for the RAIDIX 5.1.2.
3. Perform the update in strict accordance with this manual and follow the sequence of the steps.

- !** Until the update *is fully complete* for the entire system:
- DON'T modify any RAIDIX objects.
 - DON'T disable the dual-controller mode (DC) until consulting the RAIDIX Support Team.
 - DON'T make any changes to the hardware components.
 - DON'T clean drives (**Clean** or `rdcli drive clean`).

4. The update is not supported for the DC system with manually-enabled Single Mode.
In RAIDIX 5.2, the SM mode is not available.
5. In DC system, all RAIDs must have the Online state.
6. The system must have valid license.
7. Both nodes must work correctly.
8. Before the update, make sure that the heartbeat network is up.
9. If you have changed templates in the `/usr/share/raidix/templates/` directory, save them before the update and return them after the update.
10. To check if the system is ready for the update, a configuration file is required. This requires either RAID on the system or a configuration file to be specified when starting the system check script.

Features

1. The update requires system reinstallation.
2. The update of the DC system is available under the load.
3. The Update can be started from any node.

SYSTEM UPDATE THROUGH THE WEB INTERFACE

System Update in SC

! Before you start the update, fulfill the requirements, and review the limitations for the update, which are pointed in the chapter "[Requirements and Limitations](#)".

1. Prepare the system to install the image.

1.1. Obtain a new license file(s) for the node.

RAIDIX 5.2 uses a new license file format. Contact your Support team for the new license.

1.2. If SSD cache is using in the system, turn it off until the update is complete:

i After the update, you should reconfigure SSD cache. Before turning SSD cache off, make sure you have info about its configuration settings.

On the **STORAGE | LUN LIST** page, in the *SSD Cache* section, get a name of the SSD cache LUN and click the **DISABLE SSD CACHE** button.

i If SSD cache contains data, which has not been flushed to the main RAID, SSD cache disabling may take a long time due to the flush of cached data.

1.3. Save the configuration file `raidixcfg.json`:

1.3.1. Open the **SYSTEM | CONFIGURATION RECOVERY** page.

1.3.2. In the *Current System Configuration* pane, click **SAVE AS...** and save the current configuration to the system.

1.3.3. In the System Configurations sections, in the line with just saved configuration, click **Download**.

1.4. If you use Active Directory, make sure you have the information to reconnect to AD, and disconnect the system from AD.

You can view the connection settings and can disconnect from AD on the **NAS | SHARES** page in the widget **Active Directory**.

1.5. If you use QoSmic, save the application signatures:

1.5.1. Open the **HOSTS & INTERFACES | QOSMIC** page.

1.5.2. In the *Application* section, click **Download** for each app.

1.6. Check that the system is ready for the update:

i This step verifies that the system is ready for the update. The step with the system update is located below in the instructions.

1.6.1. Open **MONITORING | SUPPORT**.

1.6.2. Click **Update service** and select the file `rdx-migrate-5.1.2-5.2.rpk`.

Click **Start Update**.

If the system is ready for the update, you will get the message

Update Completed

You can continue the update.

If the system is not ready, you will get a message with the reason explained. Fix the cause and check again if the system is ready.

- 1.7. Disconnect the drive enclosures from the node.

See more in [Appendix A. Disconnecting and returning the drives with RAIDs](#).

2. Install the system from the `raidix-5.2-*x86_64.iso` image (to learn more, see *RAIDIX 5.2 Software Installation and Configuration Guide*).

After installing the image, log in the system as admin.

3. Prepare the system to install the migration package.

- 3.1. Add license file(s) you obtained on the step 1.1:

- 3.1.1. Open the **SYSTEM | LICENSE** page.

- 3.1.2. Click **Add license file** and select the file you saved at the step 1.1.

- 3.2. Reconnect the drive enclosures to the node.

See more in [Appendix A. Disconnecting and returning the drives with RAIDs](#).


4. Run the migration:

 Performing the migration may take up to 1 hour.


- 4.1. Open the **MONITORING | SUPPORT** page.

- 4.2. In the *Software Version* section, click **Go to the Update Service**.

- 4.3. In the opened window, select `rdx-migrate-5.1.2-5.2.rpk`.

 *Do not* reboot the system in the process of the system update.

After the update is complete, the system will show the message "Update Completed".

 After the migration package is applied, the password for the admin user will be the same as it was set in RAIDIX 5.1.2.

5. If you use Active Directory, reconnect to it (to learn more, see the document *RAIDIX 5.2 Administrator's Guide*).

After connecting to AD, reboot the node.

6. Actions after the update.



If you use SAN, check the visibility of LUNs on the host. If necessary, run Rescan Disks (Disk Management - Action - Rescan Disks) for Windows systems or rescan SCSI host for Linux systems.

- 6.1. If you have disabled SSD cache, reconfigure it (to learn more, see the document *RAIDIX 5.2 Administrator's Guide*).
- 6.2. If you have saved the QoSmic app signatures, re-upload them (to learn more, see the document *RAIDIX 5.2 Administrator's Guide*).
- 6.3. The MPIO configuration for Linux hosts has changed in RAIDIX 5.2. If needed, replace the multipath.conf file on the hosts with the recommended one (to learn more, see appendix B in *RAIDIX 5.2 Administrator's Guide*).

System Update in DC

! Before you start the update, fulfill the requirements, and review the limitations for the update, which are pointed in the chapter "[Requirements and Limitations](#)".

1. The common preparation of both nodes to install the image.

1.1. Obtain new license files for the nodes.

RAIDIX 5.2 uses a new license file format. Contact your support team for the new licenses.

1.2. Disable target synchronization between the nodes, performing on each node:

i After the update, you should turn on target synchronization. Before turning the synchronization off, make sure you have info about its configuration settings.
You can see the info on the **HOSTS & INTERFACES | ADAPTERS** page by clicking **Target Synchronization**.

1.2.1. Open the **HOSTS & INTERFACES | ADAPTERS** page and click **Target Synchronization**.

1.2.2. Disable the synchronization.

1.3. If SSD cache is using in the system, turn it off until the update is complete on each node:

i After the update, you should reconfigure SSD cache. Before turning SSD cache off, make sure you have info about its configuration settings.

On the **STORAGE | LUN LIST** page, in the *SSD Cache* section, get a name of the SSD cache LUN and click the **DISABLE SSD CACHE** button.

i If SSD cache contains data, which has not been flushed to the main RAID, SSD cache disabling may take a long time due to the flush of cached data.

1.4. Save the configuration file `raidixcfg.json` from all the nodes you are going to update:

1.4.1. Open the **SYSTEM | CONFIGURATION RECOVERY** page.

1.4.2. In the *Current System Configuration* pane, click **Save AS...** and save the current configuration to the system.

1.4.3. In the System Configurations sections, in the line with just saved configuration, click **Download**.

1.5. Make sure each node has actual date and time:

On each node, check out current date and time on the **SYSTEM | TIME SETTINGS** page. If necessary, click **SYNCRONIZE**.

1.6. Make sure the Heartbeat network is up:


On the **SYSTEM | NODES** page, both nodes are shown.

1.7. If you use Active Directory, make sure you have the information to connect to AD.


You can view the connection settings via:

- GUI on the **NAS | SHARES** page in the widget **Active Directory**.
- CLI with the command:

```
$ rdcli nas samba show
```

 After upgrading the node, you will need to connect the DC system to AD via the CLI.

- 1.8. If you use QoSmic, save the application signatures from the node you are going to update:
 - 1.8.1. Open the **HOSTS & INTERFACES | QOSMIC** page.
 - 1.8.2. In the *Application* section, click **Download** for each app.
- 1.9. Check that the system is ready for the update by performing the following on both nodes:

 This step verifies that the system is ready for the update. The step with the system update is located below in the instructions.

- 1.9.1. Open **MONITORING | SUPPORT**.
- 1.9.2. Click **Update service** and select the file *rdx-migrate-5.1.2-5.2.rpk*.

Click **Start Update**.


If the node is ready for the update, you will get the message:


Update Completed

You can check the remaining node or continue the update if both nodes are ready.

If the node is not ready, you will get a message with the reason explained. Fix the cause and check again if the node is ready.

2. The preparation of the first node to install the image.
 - 2.1. Run manual Failover of all the RAID5s from the node you are going to update:

 If you are updating the node at which all RAID5s are in the "passive" state, Failover for such node isn't required.

- 2.1.1. Open the **SYSTEM | NODES** page.
- 2.1.2. In the line of another node THAT YOU AREN'T UPDATING AT THE MOMENT, click  **Failover**.

- 2.2. Disconnect the drive enclosures from the node you are going to update.


See more in [Appendix A. Disconnecting and returning the drives with RAID5s](#).

3. Install the system from the *raidix-5.2-*x86_64.iso* image to the node you just have prepared (to learn more, see *RAIDIX 5.2 Software Installation and Configuration Guide*).


After installing the image, log in the system as admin.

4. Prepare the node you are updating to install the migration package.


- 4.1. Add license file(s) you obtained on the step 1.1:
 - 4.1.1. Open the **SYSTEM | LICENSE** page.
 - 4.1.2. Click **Add license file** and select the file you saved at the step 1.1.
- 4.2. Reconnect the drive enclosures to the node you are updating.
See more in [Appendix A. Disconnecting and returning the drives with RAIDs](#).
5. Run the migration on the node you are updating:

 Performing the migration may take up to 1 hour.


- 5.1. Open the **MONITORING | SUPPORT** page.
- 5.2. In the *Software Version* section, click **Go to the Update Service**.
- 5.3. In the opened window, select rdx-migrate-5.1.2-5.2.rpk.

 *Do not* reboot the system in the process of the system update.

After the node update is complete, the system will show the message “Update Completed”.

 After the migration package is applied, the password for the admin user will be the same as it was set in RAIDIX 5.1.2.

6. Make sure the Heartbeat network is up:
 - On the **SYSTEM | NODES** page, both nodes are shown.

 After the first node is updated, RAIDIX web interface might display incorrectly; both **RAID LIST** and **DRIVES** pages might be unavailable.
Full functionality of the web interface will be restored after updating the second node.

7. If you use AD, connect to AD (use the settings from the step 1.7) via CLI:

```
$ rdcli nas samba modify [--ads {0|1}] [--workgroup  
{<workgroup>|<domain>}] [--realm <domain>] [--user  
<user_that_can_connect>] [--password <user_pass>] [--trusts]  
--force
```

After the connection, reboot the node:

```
$ rdcli system reboot
```

8. If you use SAN, check the visibility of LUNs on the host.
If necessary, run Rescan Disks (Disk Management - Action - Rescan Disks) for Windows systems or rescan SCSI host for Linux systems.
9. The MPIO configuration for Linux hosts has changed in RAIDIX 5.2. Replace the multipath.conf file on the hosts with the recommended one (to learn more, see appendix B in *RAIDIX 5.2 Administrator's Guide*).

10. Repeat steps 2-8 on the second (non-updated) node.
11. Actions after the both nodes were updated.
 - 11.1. If necessary, perform Failback on any node:
 - 11.1.1. Open the **SYSTEM | NODES** page.
 - 11.1.2. Click **Failback**.
 - 11.2. Enable target synchronization on each node:
 - 11.2.1. Open **HOSTS & INTERFACES | ADAPTERS**.
 - 11.2.2. Click **Target Synchronization**.
 - 11.2.3. Turn on target synchronization.
 - 11.3. If the target synchronization is configured over SAS, reboot the SAS adapter used for synchronization:
 - 11.3.1. On any node, via CLI, run

```
$ managesas
```
 - 11.3.2. Select the target that is used for the synchronization.
 - 11.3.3. Run the command **99**.
 - 11.4. If you have disabled SSD cache, reconfigure it (to learn more, see the document *RAIDIX 5.2 Administrator's Guide*).
 - 11.5. If you have saved the QoSmic app signatures, re-upload them on each node (to learn more, see the document *RAIDIX 5.2 Administrator's Guide*).

SYSTEM UPDATE THROUGH THE COMMAND LINE INTERFACE

System Update in SC

! Before you start the update, fulfill the requirements, and review the limitations for the update, which are pointed in the chapter "[Requirements and Limitations](#)".

1. Prepare the system to install the image.

1.1. Obtain a new license file(s) for the node.

RAIDIX 5.2 uses a new license file format. Contact your support team for the new license.

1.2. If SSD cache is using in the system, turn it off until the update is complete:

i After the update, you should reconfigure SSD cache. Before turning SSD cache off, make sure you have info about its configuration settings.

- If SSD cache is using for reading and writing:

```
$ rdcli ssdcache delete --name <ssd_cache_name> --force_wait
```

i If SSD cache contains data, which has not been flushed to the main RAID, SSD cache disabling may take a long time due to the flush of cached data.

- If SSD cache is using in the *Read Only* mode:

```
$ rdcli ssdcache delete --name <ssd_cache_name>
```

1.3. Save the configuration file `raidixcfg.json`:

```
$ scp /var/lib/raidix/raidixcfg.json [<user>@]<host>[:<path>]
```

1.4. If you use Active Directory, make sure you have the information to reconnect to AD, and disconnect the system from AD.

To view the connection settings, run

```
$ rdcli nas samba show
```

To disconnect the system from AD, run

```
$ rdcli nas samba modify -u <adm_user> -p <pass> -a 0
```

1.5. If you use QoSmic, save the application signatures:

```
$ scp /var/lib/raidix/qosmic/signatures/<app_name>
[<user>@]<host>[:<path>]
```

1.6. Check that the system is ready for the update:

1.6.1. Copy the file `rdx-migrate-5.1.2-5.2.rpk` to the node:

```
$ scp [<user>@]host:[<path>]rdx-migrate-5.1.2-5.2.rpk ~/
```

1.6.2. Start the check:

```
$ rdupdate ~/rdx-migrate-5.1.2-5.2.rpk
```

If the system is ready for the update, you will get the message:

```
RAIDIX 5.1.2 is ready to migrate to the version 5.2
```

You can continue the update.

If the system is not ready, you will get a message with the reason explained. Fix the cause and check again if the system is ready.

1.7. Disconnect the drive enclosures from the node.

See more in [Appendix A. Disconnecting and returning the drives with RAIDs](#).

2. Install the system from the `raidix-5.2-*x86_64.iso` image (to learn more, see *RAIDIX 5.2 Software Installation and Configuration Guide*).

After installing the image, log in the system as admin.

3. Prepare the system to install the migration package.

3.1. Add license file(s) you obtained on the step 1.1:

```
$ scp [<user>@]<host>[:<path_to>]<license> <path>
```

```
$ rdcli system license create --filename <path>
```

3.2. Reconnect the drive enclosures to the node.


See more in [Appendix A. Disconnecting and returning the drives with RAIDs](#).

4. Run the migration:

 Performing the migration may take up to 1 hour.

```
$ scp [<user>@]host:[<path>]rdx-migrate-5.1.2-5.2.rpk ~/
```

```
$ rdupdate ~/rdx-migrate-5.1.2-5.2.rpk
```

 *Do not* reboot the system during the update.

After the update is complete, the system will show the message "Update Completed".



After the migration package is applied, the password for the admin user will be the same as it was set in RAIDIX 5.1.2.

5. If you use Active Directory, reconnect to it (to learn more, see the document *RAIDIX 5.2 Administrator's Guide* or run `rdcli nas samba modify -h`).

After connecting to AD, reboot the node.

6. Actions after the update.



If you use SAN, check the visibility of LUNs on the host. If necessary, run Rescan Disks (Disk Management - Action - Rescan Disks) for Windows systems or rescan SCSI host for Linux systems.

- 6.1. If you have disabled SSD cache, reconfigure it (to learn more, see the document *RAIDIX 5.2 Administrator's Guide*).
- 6.2. If you have saved the QoSmic app signatures, re-upload them (to learn more, see the document *RAIDIX 5.2 Administrator's Guide*).
- 6.3. The MPIO configuration for Linux hosts has changed in RAIDIX 5.2. If needed, replace the `multipath.conf` file on the hosts with the recommended one (to learn more, see appendix B in *RAIDIX 5.2 Administrator's Guide*).

System Update in DC

! Before you start the update, fulfill the requirements, and review the limitations for the update, which are pointed in the chapter "[Requirements and Limitations](#)".

1. The common preparation of both nodes to install the image.

1.1. Obtain new license files for the nodes.

RAIDIX 5.2 uses a new license file format. Contact your support team for the new licenses.

1.2. Disable cache synchronization between the nodes:

i After the update, you should turn on target synchronization. Before turning the synchronization off, make sure you have info about its configuration settings.

You can see the info by running

```
$ rdcli dc show
```

```
$ rdcli dc modify --targets ""
```

```
$ rdcli dc modify --targets "" --remote
```

1.3. If SSD cache is using in the system, turn it off until the update is complete on each node:

i After the update, you should reconfigure SSD cache. Before turning SSD cache off, make sure you have info about its configuration settings.

- If SSD cache is using for reading and writing:

```
$ rdcli ssdcache delete --name <ssd_cache_name> --force_wait
```

i If SSD cache contains data, which has not been flushed to the main RAID, SSD cache disabling may take a long time due to the flush of cached data.

- If SSD cache is using in the *Read Only* mode:

```
$ rdcli ssdcache delete --name <ssd_cache_name>
```

1.4. Save the configuration file `raidixcfg.json` from all the nodes you are going to update:

```
$ scp /var/lib/raidix/raidixcfg.json [<user>@]<host>[:<path>]
```

1.5. Make sure each node has actual date and time:

```
$ rdcli param time show
```

1.6. Make sure that the Heartbeat network is up:

```
$ rdcli dc show
```

The *heartbeat* value must be *1*.

- 1.7. If you use Active Directory, make sure you have the information to connect to AD.

You can view the connection settings via

```
$ rdcli nas samba show
```

- 1.8. If you use QoSmic, save the application signatures from the node you are going to update:

```
$ scp /var/lib/raidix/qosmic/signatures/<app_name>  
[<user>@]<host>[:<path>]
```

- 1.9. Check that the system is ready for the update performing the following on both nodes:

- 1.9.1. Copy the file *rdx-migrate-5.1.2-5.2.rpk* to the node:

```
$ scp [<user>@]host:[<path>]rdx-migrate-5.1.2-5.2.rpk ~/
```

- 1.9.2. Start the check:

```
$ rdupdate ~/rdx-migrate-5.1.2-5.2.rpk
```

If the node is ready for the update, you will get the message:

```
RAIDIX 5.1.2 is ready to migrate to the version 5.2
```

You can check the remaining node or continue the update if both nodes are ready.

If the node is not ready, you will get a message with the reason explained. Fix the cause and check again if the node is ready.

2. The preparation of the first node to install the image.

- 2.1. Run manual Failover of all the RAID's from the node you are going to update:

i If you are updating the node at which all RAID's are in the "passive" state, Failover for such node isn't required.
If you try to Failover, the system shows the message "There are no RAID's to failover".

```
$ rdcli dc failover --remote
```

- 2.2. Disconnect the drive enclosures from the node you are going to update.

See more in [Appendix A. Disconnecting and returning the drives with RAID's](#).

3. Install the system from the *raidix-5.2-*x86_64.iso* image to the node you just have prepared (to learn more, see *RAIDIX 5.2 Software Installation and Configuration Guide*).

After installing the image, log in the system as admin.

4. Prepare the node you are updating to install the migration package.

- 4.1. Add the license file(s) you obtained on the step 1.1:


```
$ scp [<user>@]<host>[:<path_to>]<license> <path>
```

```
$ rdcli system license create --filename <path>
```

4.2. Reconnect the drive enclosures to the node you are updating.


See more in [Appendix A. Disconnecting and returning the drives with RAIDs](#).

5. Run the migration on the node you are updating:


 Performing the migration may take up to 1 hour.

```
$ scp [<user>@]host:[<path>]rdx-migrate-5.1.2-5.2.rpk ~/
```

```
$ rdupdate ~/rdx-migrate-5.1.2-5.2.rpk
```

 *Do not* reboot the system in the process of the system update.

After the node update is complete, the system will show the message “Update Completed”.

 After the migration package is applied, the password for the admin user will be the same as it was set in RAIDIX 5.1.2.

6. Make sure the Heartbeat network is up:

```
$ rdcli dc show
```

The value of the *heartbeat* parameter must be *1*.

7. If you use AD, connect to AD (use the settings from the step 1.7):

```
$ rdcli nas samba modify [--ads {0|1}] [--workgroup
{<workgroup>|<domain>}] [--realm <domain>] [--user
<user_that_can_connect>] [--password <user_pass>] [--trusts]
--force
```

After the connection, reboot the node:

```
$ rdcli system reboot
```

8. If you use SAN, check the visibility of LUNs on the host.

If necessary, run Rescan Disks (Disk Management - Action - Rescan Disks) for Windows systems or rescan SCSI host for Linux systems.

9. The MPIO configuration for Linux hosts has changed in RAIDIX 5.2. Replace the multipath.conf file on the hosts with the recommended one (to learn more, see appendix B in *RAIDIX 5.2 Administrator's Guide*).

10. Repeat steps 2-8 on the second (non-updated) node.

11. Actions after the update of both nodes.

11.1. If necessary, on a required node, perform Failback:

```
$ rdcli dc failback
```

11.2. Enable target synchronization by running on each node:

```
$ rdcli dc modify -t <targets> [-a <iscsi_ip>]
```

where <targets> are:

- for iSCSI: **iscsi** (also requires the `-a` parameter with the value of the remote IP address for synchronization);
- for InfiniBand: one or more comma-separated GUID values;
- for SAS: one or more comma-separated SAS address values.

11.3. If the target synchronization is configured over SAS, reboot the SAS adapter used for synchronization:

11.3.1. On any node, run

```
$ managesas
```

11.3.2. Select the target that is used for the synchronization.

11.3.3. Run the command **99**.

11.4. If you have disabled SSD cache, reconfigure it (to learn more, see the document *RAIDIX 5.2 Administrator's Guide*).

11.5. If you have saved the QoSmic app signatures, re-upload them on each node (to learn more, see the document *RAIDIX 5.2 Administrator's Guide*).

11.6. The MPIO configuration for Linux hosts has changed in RAIDIX 5.2. Replace the `multipath.conf` file on the hosts with the recommended one (to learn more, see appendix B in *RAIDIX 5.2 Administrator's Guide*).

APPENDIX A. DISCONNECTING AND RETURNING THE DRIVES WITH RAIDS

During the upgrade, before installing from the RAIDIX image, in order to avoid data loss, we recommend leaving only the system drive (or drives in case of mirroring) on the system, disconnecting drive enclosures that have RAIDs.

Specifics

- There is no need to shut down the node before disconnecting the drives.
- If the drives are connected via cable and/or the enclosure, physically disconnect the cables from the system.
- If drives cannot be physically disconnected, disconnect them programmatically via `managesas`.

i To programmatically disconnect a drive enclosure, you must have root access.

The `managesas` utility only works for Broadcom (LSI) HBAs.

Before programmatically disconnecting the drives from a node, we recommend to stop the service `raidix.target` on this node:

```
# systemctl stop raidix.target
```

After the enclosure is programmatically reconnected to a node, start the service `raidix.target` on this node:

```
# systemctl start raidix.target
```

The example of using `managesas`

i In this example, the drive enclosure is connected via the SAS2008 target.

1. Run the utility:

```
$ managesas
```

2. Enter the index of the target:

```
LSI Logic MPT Configuration Utility, Version 1.70, July 30, 2013
```

```
2 MPT Ports found
```

	Port Name	Chip Vendor/Type/Rev	MPT Rev	Firmware Rev	IOC
1.	ioc0	LSI Logic SAS2008 B1	200	04000000	0
2.	ioc1	LSI Logic 00d1 02	206	03000400	0

```
Select a device: [1-2 or 0 to quit] 1
```

3. Enter the option **13**:

```
Main menu, select an option: [1-99 or e/p/w or 0 to quit] 13
```

4. Disabling and enabling of a phy:

- To disable a phy, set the *Link* value to **0** (Disabled) and leave the other values unchanged:

```
SATA Maximum Queue Depth: [0 to 255, default is 32]
SAS Max Queue Depth, Narrow: [0 to 65535, default is 0]
SAS Max Queue Depth, Wide: [0 to 65535, default is 0]
Device Missing Report Delay: [0 to 2047, default is 0]
Device Missing I/O Delay: [0 to 255, default is 0]
```

PhyNum	Link	MinRate	MaxRate	Initiator	Target	Port
0	Enabled	1.5	6.0	Enabled	Disabled	Auto
1	Enabled	1.5	6.0	Enabled	Disabled	Auto
2	Enabled	1.5	6.0	Enabled	Disabled	Auto
3	Enabled	1.5	6.0	Enabled	Disabled	Auto
4	Enabled	1.5	6.0	Enabled	Disabled	Auto
5	Enabled	1.5	6.0	Enabled	Disabled	Auto
6	Enabled	1.5	6.0	Enabled	Disabled	Auto
7	Enabled	1.5	6.0	Enabled	Disabled	Auto

```
Select a Phy: [0-7, 8=AllPhys, RETURN to quit] 5
Link: [0=Disabled, 1=Enabled, default is 1] 0
```

- To enable a phy, set the *Link* value to **1** (Enable) in the same way as for the disabling.

5. Return to the main menu and reset the target by the option **99**:

```
.
.
.
Select a Phy: [0-7, 8=AllPhys, RETURN to quit]

Main menu, select an option: [1-99 or e/p/w or 0 to quit] 99
Resetting port...
```
