HP StorageWorks QLogic fibre channel host bus adapters for ProLiant and Integrity servers using Linux and VMware operating systems release notes
Description

These release notes contain driver, firmware, and other supplemental information for the QLogic fibre channel host bus adapters (HBAs) for ProLiant and Integrity servers using Linux® and VMware® operating systems. See Product models for a list of supported HBAs.

Update recommendation

Routine

Prerequisites

Before you perform HBA updates, you must:

- Ensure that the system is running one of the operating system versions in “Operating systems” on page 4.
- See the HP server PCI slot specifications to determine if your server is compatible with these HBAs.
- If you are installing the Linux operating system for the first time, load the operating system and then download and install the supported Linux HBA driver from the HP website http://welcome.hp.com/country/us/en/support.html.

Product models

The following HBAs and Mezzanine Cards Support Linux on ProLiant servers:

- HP StorageWorks FC1143 PCI-X 2.0 4Gb HBA (product number AB429A)
- HP StorageWorks FC1142SR PCI Express HBA (product number AE311A)
- HP StorageWorks FC1242SR PCI Express HBA (product number AE312A)
- HP StorageWorks FC1243 PCI-X 2.0 4Gb HBA (product number AE369A)
- HP QLogic QMH2462 4Gb FC HBA for HP c-Class BladeSystem (product number 403619-B21)
- HP StorageWorks FCA2214 PCI-X HBA (product number 281541-B2)
- HP StorageWorks FCA2214 DC PCI-X HBA (product number 321835-B21)
- HP BL20p G2 FC p-class Mezzanine Adapter (product number 300874-B21)
- HP BL20p G3, G4 p-class FC Mezzanine Adapter (product number 361426-B21)
- HP BL30p/BL35p p-class Dual-Port FC Mezzanine Adapter (product number 354054-B21)
- HP BL25p/BL45p p-class G2 FC Mezzanine Adapter (product number 381881-B21)

The following HBAs and Mezzanine HBAs support Linux on BOTH ProLiant and Integrity Servers:

- HP StorageWorks FC1143 PCI-X 2.0 4Gb HBA (product number AB429A)
- HP StorageWorks FC1142SR PCI Express HBA (product number AE311A)
- HP QLogic QMH2462 4Gb FC HBA for HP c-Class BladeSystem (product number 403619-B21)

The following HBAs support Linux only on Integrity servers:

- HP PCIe dual-port 4Gb FC adapter (product number AD300A)
- HP PCI-X dual-port 4Gb FC adapter (product number AB379A)
- HP PCI-X dual-port 4Gb FC adapter (product number AB379B)
- HP Q2300 PCI-X 2GB FC HBA (product number A7538A)
- HP A6826A PCI-X Dual Port 2GB FC HBA (product number A6826A)
Devices supported

The QLogic HBAs for Linux are supported on HP servers that:

- Support the Linux operating systems described in Operating systems.
- Support the following storage arrays for Linux:
  - Modular Smart Array 1000
  - Modular Smart Array 1500
  - Enterprise Virtual Array 3000/5000 GL
  - Enterprise Virtual Array 4000/6000/8000 XL
  - XP12000, XP1024/128, XP10000

Linux operating systems

Linux on ProLiant

The following versions of Linux are supported on ProLiant servers.

Table 1 This table lists software support with the following 2.6 versions of x86 and x64 Linux: RHEL 4 U4 and U5, SLES 9 SP2 and SP3, SLES 10 and SLES 10 SP1.

<table>
<thead>
<tr>
<th>HBAs</th>
<th>Driver</th>
<th>BIOS</th>
<th>Multi-boot image</th>
<th>SANsurfer Utility</th>
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</thead>
<tbody>
<tr>
<td>FC1242SR (AE312A)</td>
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<td>1.26</td>
<td>1.64</td>
<td>5.0.0b14</td>
</tr>
<tr>
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</tr>
<tr>
<td>QMH2462 c-Class Mezz</td>
<td>8.01.06.01</td>
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<td>1.64</td>
<td>5.0.0b14</td>
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<tr>
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<tr>
<td>FC1143 (AB429A)</td>
<td>8.01.06.01</td>
<td>1.26</td>
<td>1.64</td>
<td>5.0.0b14</td>
</tr>
<tr>
<td>FCA2214</td>
<td>8.01.06.01</td>
<td>1.45</td>
<td>n/a</td>
<td>5.0.0b14</td>
</tr>
<tr>
<td>FCA2214DC</td>
<td>8.01.06.01</td>
<td>1.45</td>
<td>n/a</td>
<td>5.0.0b14</td>
</tr>
<tr>
<td>HP BL20p G3, G4 FC</td>
<td>8.01.06.01</td>
<td>1.45</td>
<td>n/a</td>
<td>5.0.0b14</td>
</tr>
<tr>
<td>HP BL25p/BL45p G2</td>
<td>8.01.06.01</td>
<td>1.48</td>
<td>n/a</td>
<td>5.0.0b14</td>
</tr>
<tr>
<td>HP BL30p/BL35p Dual-Port FC Mezz</td>
<td>8.01.06.01</td>
<td>1.45</td>
<td>n/a</td>
<td>5.0.0b14</td>
</tr>
<tr>
<td>HP BL20p G2 FC Mezz</td>
<td>8.01.06.01</td>
<td>1.45</td>
<td>n/a</td>
<td>5.0.0b14</td>
</tr>
</tbody>
</table>
Table 2 This table lists software support with the RHEL 5

<table>
<thead>
<tr>
<th>HBAs</th>
<th>Driver</th>
<th>BIOS</th>
<th>Multi-boot image</th>
<th>SANsurfer Utility</th>
</tr>
</thead>
<tbody>
<tr>
<td>FC1242SR (AE312A)</td>
<td>8.01.07.16</td>
<td>1.26</td>
<td>1.64</td>
<td>Not supported</td>
</tr>
<tr>
<td>FC1142SR (AE311A)</td>
<td>8.01.07.16</td>
<td>1.26</td>
<td>1.64</td>
<td>Not supported</td>
</tr>
<tr>
<td>QMH2462 c-Class Mezz</td>
<td>8.01.07.16</td>
<td>1.26</td>
<td>1.64</td>
<td>Not supported</td>
</tr>
<tr>
<td>FC1243 (AE369A)</td>
<td>8.01.07.16</td>
<td>1.26</td>
<td>1.64</td>
<td>Not supported</td>
</tr>
<tr>
<td>FC1143 (AB429A)</td>
<td>8.01.07.16</td>
<td>1.26</td>
<td>1.64</td>
<td>Not supported</td>
</tr>
<tr>
<td>FCA2214</td>
<td>8.01.07.16</td>
<td>1.45</td>
<td>n/a</td>
<td>Not supported</td>
</tr>
<tr>
<td>FCA2214DC</td>
<td>8.01.07.16</td>
<td>1.45</td>
<td>n/a</td>
<td>Not supported</td>
</tr>
<tr>
<td>HP BL20p G3, G4 FC</td>
<td>8.01.07.16</td>
<td>1.45</td>
<td>n/a</td>
<td>Not supported</td>
</tr>
<tr>
<td>HP BL25p/BL45p G2</td>
<td>8.01.07.16</td>
<td>1.48</td>
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<tr>
<td>HP BL30p/BL35p Dual-Port FC Mezz</td>
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<tr>
<td>HP BL20p G2 FC Mezz</td>
<td>8.01.07.16</td>
<td>1.45</td>
<td>n/a</td>
<td>Not supported</td>
</tr>
</tbody>
</table>

**NOTE:**
The minimum supported version for the RHEL 5 kernel is 2.6.18-8.1.6.el5.
Table 3 This table lists software support with the following 2.4 versions of x86 and x64 Linux: RHEL 3 U8 and U9 and SLES 8 SP4.

<table>
<thead>
<tr>
<th>HBA</th>
<th>RHEL 3 Driver</th>
<th>SLES 8 Driver</th>
<th>BIOS</th>
<th>Multi-boot image</th>
<th>SANsurfer Utility</th>
</tr>
</thead>
<tbody>
<tr>
<td>FC1242SR (AE312A)</td>
<td>7.07.05.08</td>
<td>7.07.05.02</td>
<td>1.26</td>
<td>1.64</td>
<td>5.0.0b14 (.02 driver) 5.0.0b22 (.08 driver)</td>
</tr>
<tr>
<td>FC1142SR (AE311A)</td>
<td>7.07.05.08</td>
<td>7.07.05.02</td>
<td>1.26</td>
<td>1.64</td>
<td>5.0.0b14 (.02 driver) 5.0.0b22 (.08 driver)</td>
</tr>
<tr>
<td>QMH2462 c-Class Mezz</td>
<td>7.07.05.08</td>
<td>7.07.05.02</td>
<td>1.26</td>
<td>1.64</td>
<td>5.0.0b14 (.02 driver) 5.0.0b22 (.08 driver)</td>
</tr>
<tr>
<td>FC1243 (AE369A)</td>
<td>7.07.05.08</td>
<td>7.07.05.02</td>
<td>1.26</td>
<td>1.64</td>
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</tr>
<tr>
<td>FC1143 (AB429A)</td>
<td>7.07.05.08</td>
<td>7.07.05.02</td>
<td>1.26</td>
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<td>5.0.0b14 (.02 driver) 5.0.0b22 (.08 driver)</td>
</tr>
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<td>FCA2214</td>
<td>7.07.05.08</td>
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<td>n/a</td>
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<td>HP BL20p G3, G4 FC</td>
<td>7.07.05.08</td>
<td>7.07.05.02</td>
<td>1.45</td>
<td>n/a</td>
<td>5.0.0b14 (.02 driver) 5.0.0b22 (.08 driver)</td>
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<tr>
<td>HP BL30p/BL35p Dual-Port FC Mezz</td>
<td>7.07.05.08</td>
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<td>n/a</td>
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<td>HP BL20p G2 FC Mezz</td>
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<td>n/a</td>
<td>5.0.0b14 (.02 driver) 5.0.0b22 (.08 driver)</td>
</tr>
</tbody>
</table>
Linux on Integrity

The following versions of Linux are supported on Integrity servers:

Table 4 This table lists software support with the following 2.6 versions of Itanium Linux: RHEL 4 U4 and U5, SLES 9 SP2 and SP3, SLES 10 and SLES 10 SP1.

<table>
<thead>
<tr>
<th>HBA</th>
<th>Driver</th>
<th>EFI</th>
<th>EFI utility</th>
<th>Multi-boot image</th>
<th>SANsurfer utility</th>
</tr>
</thead>
<tbody>
<tr>
<td>AD300A</td>
<td>8.01.06.01</td>
<td>1.09</td>
<td>2.30</td>
<td>1.64</td>
<td>5.0.0b14</td>
</tr>
<tr>
<td>QMH2462 4Gb c-Class Mezz</td>
<td>8.01.06.01</td>
<td>1.09</td>
<td>2.30</td>
<td>1.64</td>
<td>5.0.0b14</td>
</tr>
<tr>
<td>AB379A</td>
<td>8.01.06.01</td>
<td>1.09</td>
<td>2.30</td>
<td>1.64</td>
<td>5.0.0b14</td>
</tr>
<tr>
<td>AB379B</td>
<td>8.01.06.01</td>
<td>1.09</td>
<td>2.30</td>
<td>1.64</td>
<td>5.0.0b14</td>
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<td>AB429A</td>
<td>8.01.06.01</td>
<td>1.09</td>
<td>2.30</td>
<td>1.64</td>
<td>5.0.0b14</td>
</tr>
<tr>
<td>A6826A</td>
<td>8.01.06.01</td>
<td>1.49</td>
<td>2.07</td>
<td>n/a</td>
<td>5.0.0b14</td>
</tr>
<tr>
<td>A7538A</td>
<td>8.01.06.01</td>
<td>1.49</td>
<td>2.07</td>
<td>n/a</td>
<td>5.0.0b14</td>
</tr>
</tbody>
</table>

Table 5 This table lists software support with the following 2.6 version of Itanium Linux: RHEL 5 initial release.

<table>
<thead>
<tr>
<th>HBA</th>
<th>Driver</th>
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<td>AD300A</td>
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<td>QMH2462 4Gb c-Class Mezz</td>
<td>8.01.07.16</td>
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<td>2.30</td>
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<td>8.01.07.16</td>
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<td>2.30</td>
<td>1.64</td>
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<td>AB379B</td>
<td>8.01.07.16</td>
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<td>n/a</td>
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<td>2.07</td>
<td>n/a</td>
<td>Not supported</td>
</tr>
</tbody>
</table>

Installing HP Supported QLogic driver

HP does not currently support the driver that comes with the Linux kernel. Instead, you need to install an appropriate driver from the Fibre Channel HBA website [http://h18006.www1.hp.com/storage/networking/index.html](http://h18006.www1.hp.com/storage/networking/index.html).

For RHEL 3/7.07.05.08 and RHEL 5 systems, download the appropriate driver RPM and fibreutils RPM for your operating system. For all other supported Linux distributions download the driver kit, [hp_qla2x00-yyyy-mmdd.tar.gz](http://h18006.www1.hp.com/storage/networking/index.html) for your operating system.
Driver failover mode

If you use the INSTALL command with no flags, the driver’s failover mode depends on whether a QLogic driver is already loaded in memory, (i.e. listed in the output of the lsmod command). Possible driver failover mode scenarios include:

- If an hp_qla2x00src driver RPM is already installed, then the new driver RPM will use the failover of the previous driver package.
- If there is no QLogic driver module (qla2xxx module) loaded, the driver will default to failover mode. This is also true if an inbox driver is loaded that does not list output in the /proc/scsi/qla2xxx directory.
- If there is a driver that is loaded in memory that lists the driver version in /proc/scsi/qla2xxx but no driver RPM has been installed, then the driver RPM will load the driver in the failover mode that the driver in memory is currently in.

RHEL 5 installation instructions

Currently, only the driver RPM and fibreutils RPMs are provided for RHEL 5. RHEL 5 support will be incorporated into a driver at a future date. To install the appropriate driver for RHEL 5, do the following:

1. Download the appropriate driver and fibreutils RPMs for RHEL 5.
2. Copy the RPMs to the target system.
3. Install the driver rpm using the following command:
   
   ```
   # rpm -Uvh hp_qla2x00src--<driver version>--<build>.linux.rpm
   This command will install and/or upgrade the driver RPM.
   ```

4. Set the failover mode of the driver RPM. If you are going to use the failover functionality of the driver, use the following command:
   
   ```
   # /opt/hp/src/hp_qla2x00src/set_parm -x
   If you are not going to use the failover functionality of the driver, enter the following command:
   # /opt/hp/src/hp_qla2x00src/set_parm -s
   ```

   **NOTE:**
   Answer Y when prompted to rebuild your initrd when using the set_parm script.

5. Install the fibreutils rpm using the following command:
   
   ```
   # rpm -Uvh fibreutils--<version>--<build>.linux.<arch>.rpm
   ```

   Once the RPMs are installed, you will either have to reload the QLogic driver modules (qla2xxx, qla2300, qla2400, qla2xxx_conf), or reboot your server.

   The commands to reload the driver are:
   
   ```
   # /opt/hp/src/hp_qla2x00src/unload.sh
   # modprobe qla2xxx_conf
   # modprobe qla2xxx
   # modprobe qla2300
   # modprobe qla2400
   ```

   The command to reboot the server is:
   
   ```
   # reboot
   ```

   If you want to verify which RPM versions are installed, you can use the `rpm` command with the `-q` option. For example:
   
   ```
   # rpm -q hp_qla2x00src
   # rpm -q fibreutils
   ```
RHEL 3/7.07.05.08 driver installation instructions

If you are using the 7.07.05.08 driver for RHEL 3, you will need to install the driver RPM and fibreutils packages manually. To install the driver RPM and fibreutils RPM,

1. Download the appropriate driver and fibreutils RPM.
2. Copy the RPMs to the target system.
3. Install the driver
   
   # rpm -Uvh hp_qla2x00src-<driver version>-<build>.linux.rpm
   
   This command will install and/or upgrade the driver RPM.

4. Set the failover mode of the driver RPM. If you are going to use the failover functionality of the driver, you can set the driver for failover mode by entering the following command:
   
   # /opt/hp/src/hp_qla2x00src/set_parm -x
   
   If you are not going to use the failover functionality of the driver, enter the following command:
   
   # /opt/hp/src/hp_qla2x00src/set_parm -s

5. Enter the following command to Install the fibreutils rpm:

   # rpm -Uvh fibreutils-<version>-<build>.linux.<arch>.rpm

   Once the RPMs are installed, you will either have to reload the QLogic driver modules (qla2300, qla2300_conf), or reboot your server. The commands to reload the driver are:

   # modprobe -r qla2300
   
   # modprobe -r qla2300_conf
   
   # modprobe qla2300_conf
   
   # modprobe qla2300

   The command to reboot the server is:

   # reboot

NOTE:
If your boot device is a SAN attached device you will have to reboot your server.

If you want to verify which RPM versions are installed, you can use the rpm command with the -q option. For example:

# rpm -q hp_qla2x00src
# rpm -q fibreutils

Installation instructions for other systems

1. Download the appropriate driver kit for your distribution, where the driver kit file will be in the form of hp_qla2x00-yyyy-mm-dd.tar.gz.
2. Copy the driver kit to the target system.
3. Uncompress and untar the driver kit using the following command:

   # tar zxvf hp_qla2x00-yyyy-mm-dd.tar.gz

4. Change directory to the hp_qla2x00-yyyy-mm-dd directory.
5. Execute the INSTALL command.
The INSTALL command syntax will vary depending on your configuration. If a previous driver kit is installed, you can invoke the INSTALL command without any arguments as the script will use the currently loaded configuration:

```
# ./INSTALL
```

To force the installation to failover mode, use the \-f flag:

```
# ./INSTALL -f
```

To force the installation to single-path mode, use the \-s flag:

```
# ./INSTALL -s
```

Use the \-h option of the INSTALL script for a list of all supported arguments. The INSTALL script will install the appropriate driver RPM for your configuration, as well as the appropriate fibreutils RPM. Once the INSTALL script is finished, you will either have to reload the QLogic driver modules (qla2xxx, qla2300, qla2400, qla2xxx_conf) or reboot your server. The commands to reload the driver are:

```
# /opt/hp/src/hp qla2x00src/unload.sh
# modprobe qla2xxx_conf
# modprobe qla2xxx
# modprobe qla2300
# modprobe qla2400
```

The command to reboot the server is:

```
# reboot
```

**NOTE:**

If your boot device is a SAN attached device you will have to reboot your server.

If you want to verify which RPM versions are installed, you can use the rpm command with the \-q option. For example:

```
# rpm \-q hp qla2x00src
# rpm \-q fibreutils
```

**VMware**

HP fully supports the use of Windows and Linux as a guest OS on VMware ESX versions 2.5.x and 3.x. When running VMware, fibre channel HBAs are supported by embedded drivers supplied with ESX. Windows and Linux FC HBA drivers are not used. To ensure that your HBA is fully supported by HP and VMware, please refer to the appropriate VMware I/O Compatibility Guide for the version of VMware you are using at [http://www.vmware.com/pdf/vi3_io_guide.pdf for v3.x](http://www.vmware.com/pdf/vi3_io_guide.pdf) or [http://www.vmware.com/pdf/esx_SAN_guide.pdf](http://www.vmware.com/pdf/esx_SAN_guide.pdf).

**Languages**

American English

**Important information**

**Presenting LUNs to ProLiant Linux**

When presenting XP LUNs to a ProLiant Linux host, the LUNs must start with a LUN 0.
Dynamic Target Addition Not Supported

Dynamic target addition is defined as adding a new fibre channel target (such as adding a new storage array) to a SAN, presenting that new target to a fibre channel host bus adapter, and then prompting the operating system to do an online scan (such as using the hp_rescan utility that comes with fibreutil). This functionality is not supported with the QLogic failover driver. If you add a new fibre channel target to a host server, you must reboot that host server.

scsi_info command on older XP arrays

When running the scsi_info command on older XP arrays (such as the XP1024/128), you may see output similar to that shown in the following example. Ignore the error, and note that the XP array’s WWN is not all zeros.

The XP array returns INQUIRY data that differs slightly from that returned by EVA or MSA arrays.

```
[root@coco /]# scsi_info /dev/sdal SCSI_ID="4,0,8,0":VENDOR="HP":MODEL="OPEN-3":FW_REV="5005":WWN="0000000000000000":LUN="5235303020303030-3130353930203030"
[root@coco /]# scsi_info /dev/sdam SCSI_ID="4,0,8,1":VENDOR="HP":MODEL="OPEN-3":FW_REV="5005":WWN="0000000000000000":LUN="5235303020303030-3130353930203030"
[root@coco /]# scsi_info /dev/sdan SCSI_ID="4,0,9,0":VENDOR="HP":MODEL="OPEN-3":FW_REV="2114":WWN="03000000002018e9":LUN="5234353120303030-3330313033203030"
[root@coco /]# scsi_info /dev/sdao SCSI_ID="4,0,9,1":VENDOR="HP":MODEL="OPEN-3":FW_REV="2114":WWN="0b00000000600000":LUN="5234353120303030-3330313033203030"
```

SANsurfer limitations

- Refresh button functionality is not currently supported. If LUNS are added, you can either reload the application or disconnect, then reconnect.
- As a safety mechanism, the SANsurfer application does not retain any updates when the user abruptly quits using the Close/Exit button. Users must click on the Save button for any changes or edits made to the HBA.

Enabling extended error logging on 2GB cards

The Enable Extended Error Logging feature on 2GB cards sets the bit in the /sys/module/qla2xxx/parameters but does not clear it when disabled.

XP load balancing

Automatic static and dynamic load balancing are not supported on HP XP arrays. To manually set load balancing, use the SANsurfer FC HBA Manager to configure preferred paths.
Compatibility and interoperability

- The HBAs support the servers and switches described in “Devices supported” on page 4, and support the operating systems described in “Operating systems” on page 4.
- HP recommends that you implement zoning by HBA, as described in HP StorageWorks SAN design reference guide, available on the website http://h18006.www1.hp.com/products/storageworks/san/documentation.html.

Determining the current version

This section describes how to determine the HBA driver and firmware versions.

Using SANsurfer

To determine version information on Linux systems:

1. Open SANsurfer.
2. Click an HBA in the left pane to select it.
3. Click the Information tab in the right pane to view the HBA’s version information.

Using the Linux more command

To determine version information on Linux systems enter the following more command:

more /proc/scsi/qla2xxx/*

Effective date

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