From Example 12-11 on page 427, the host adapter port `21:00:00:24:ff:7d:37:98` has been zoned to two target ports on storage, `50:05:07:60:5e:8c:4b:53` and `50:05:07:60:5e:8c:4b:73`. The other host port also is detecting two other IBM FlashSystem 900 ports.

## 12.6.13  NVMe behavior during Link Down/Up

Using the Fibre Channel switch management GUI, turning off and on ports causes pathing loss from the server to the storage. The **dmesg** command can be used to show what occurs when the server is disconnected from storage on a port, as shown in Example 12-12.

*Example 12-12   Turning off an NVMe switch port messages*

```
...
[  912.194492] lpfc 0000:13:00.0: 0:1305 Link Down Event x2 received Data: x2 x20
x800110 x0 x0
[  912.194636] nvme nvme0: NVME-FC{0}: controller connectivity lost. Awaiting
Reconnect
[  912.194648] nvme nvme1: NVME-FC{1}: controller connectivity lost. Awaiting
Reconnect
[  927.180604] device-mapper: multipath: Failing path 259:0.
[  927.187216] device-mapper: multipath: Failing path 259:1.
[  942.221350]  rport-4:0-1: blocked FC remote port time out: removing rport
[  942.221433]  rport-4:0-0: blocked FC remote port time out: removing rport
[  972.204286] nvme nvme1: NVME-FC{1}: dev_loss_tmo (60) expired while waiting for
remoteport connectivity.
[  972.204298] nvme nvme0: NVME-FC{0}: dev_loss_tmo (60) expired while waiting for
remoteport connectivity.
[  972.204306] nvme nvme1: Removing ctrl: NQN
"nqn.2017-12.com.ibm:nvme:mt:9840:guid:5005076061D31310:cid:000002006F362044"
[  972.204322] nvme nvme0: Removing ctrl: NQN
"nqn.2017-12.com.ibm:nvme:mt:9840:guid:5005076061D31310:cid:000002006F362044"
...
```

Upon detecting a link down, there is a 30 seconds duration where the server awaits a reconnect, followed by the multipathing device driver failing those paths. Eventually the ports reported as blocked are removed, as shown in Example 12-13.

When activating the switch port, the detection and recovery happen fairly rapidly.

*Example 12-13   Turning on an NVMe switch port messages*

```
...
[ 1162.268562] lpfc 0000:13:00.0: 0:1303 Link Up Event x3 received Data: x3 x0 x80
x0 x0 x0 0
[ 1162.435843] nvme nvme0: NVME-FC{0}: controller connect complete
[ 1162.435893] nvme nvme0: NVME-FC{0}: new ctrl: NQN
"nqn.2014-08.org.nvmexpress.discovery"
[ 1162.436642] nvme nvme0: Removing ctrl: NQN
"nqn.2014-08.org.nvmexpress.discovery"
[ 1162.443044] nvme nvme1: NVME-FC{1}: controller connect complete
[ 1162.443432] nvme nvme1: NVME-FC{1}: new ctrl: NQN
"nqn.2014-08.org.nvmexpress.discovery"
[ 1162.444364] nvme nvme1: Removing ctrl: NQN
"nqn.2014-08.org.nvmexpress.discovery"
[ 1162.464550] nvme nvme0: NVME-FC{0}: controller connect complete
```