

SPF+ Tests

- **Test environment**

- **Switch:** Aruba S2500

- **Server 1**

X9DRi-LN4F+
2 x E5-2630
192GB RAM
Chelsio T320
FreeNAS 11.1 U-6
autotune on

- **Server 2**

X8STE
i7 950
32GB RAM
Chelsio T320
FreeBSD 11.2

- **Workstation**

Gigabyte Z87-HD3
i7 4790
32 GB RAM
Linux Mint 19

- **Test box used**

Dell Optiplex 15 24GB RAM
Mellanox MT26448 and Chelsio T320

Aruba S2500

- Firmware upgrade
 - Download latest firmware
 - Reset to factory: From the front panel buttons navigate to Maintenance > Factory Default > ENTER
 - Enable switch DHCP: From the front panel buttons navigate to Maintenance > GUI Quick Setup > ENTER
 - Connect a workstation directly to one of the switch ports, set to DHCP client
 - Access switch GUI @ 172.16.0.254
 - Upload firmware
 - (*) used Windows 10 internet explorer; had to add switch IP to compatibility view
- Remove SPF ports from stack to allow use by regular server/workstation
 - List stack ports
 - show stacking interface brief***
 - Removing port from stack
 - delete stacking interface stack <module/port>***

- **iperf loopbacks**

- Server 1 - FreeNAS

```
root@backupnas:~ # iperf -c nas02
```

```
-----  
Client connecting to nas02, TCP port 5001  
TCP window size: 1.01 MByte (default)  
-----
```

```
[ 3] local 10.10.10.220 port 12326 connected with 10.10.10.220 port 5001  
[ ID] Interval      Transfer   Bandwidth  
[ 3] 0.0-10.0 sec 18.2 GBytes 15.6 Gbits/sec
```

- Server 2 - FreeBSD

```
root@bhyve:~ # iperf -c bhyve
```

```
-----  
Client connecting to bhyve, TCP port 5001  
TCP window size: 47.9 KByte (default)  
-----
```

```
[ 3] local 10.10.10.152 port 57738 connected with 10.10.10.152 port 5001  
[ ID] Interval      Transfer   Bandwidth  
[ 3] 0.0-10.0 sec 46.9 GBytes 40.3 Gbits/sec
```

- Workstation – Linux Mint

```
mello@olinda:~$ iperf -c olinda
```

```
-----  
Client connecting to olinda, TCP port 5001  
TCP window size: 2.50 MByte (default)  
-----
```

```
[ 3] local 127.0.0.1 port 54214 connected with 127.0.1.1 port 5001  
[ ID] Interval      Transfer   Bandwidth  
[ 3] 0.0-10.0 sec 36.5 GBytes 31.4 Gbits/sec
```

Mellanox MT26448 Tests

OS: ubuntu desktop 18.10

Installation notes:

BAU, both cards detected

iperf tests:

Workstation → Test box

```
mello@olinda:~$ iperf -c 10.10.10.78
```

```
-----  
Client connecting to 10.10.10.78, TCP port 5001  
TCP window size: 85.0 KByte (default)  
-----
```

```
[ 3] local 10.10.10.60 port 37838 connected with 10.10.10.78 port 5001  
[ ID] Interval    Transfer    Bandwidth  
[ 3] 0.0-10.0 sec 10.9 GBytes 9.35 Gbits/sec
```

Test box loopback

```
mello@optiplex:~$ iperf -c 10.10.10.78
```

```
-----  
Client connecting to 10.10.10.78, TCP port 5001  
TCP window size: 2.50 MByte (default)  
-----
```

```
[ 3] local 10.10.10.78 port 32974 connected with 10.10.10.78 port 5001  
[ ID] Interval    Transfer    Bandwidth  
[ 3] 0.0-10.0 sec 64.7 GBytes 55.6 Gbits/sec
```

Test box → FreeBSD server

```
root@bhyve:~ # iperf -s
```

```
-----  
Server listening on TCP port 5001  
TCP window size: 64.0 KByte (default)  
-----
```

```
[ 4] local 10.10.10.152 port 5001 connected with 10.10.10.78 port 33624  
[ ID] Interval    Transfer    Bandwidth  
[ 4] 0.0-10.0 sec 6.85 GBytes 5.88 Gbits/sec
```

OS: CentOS 7 18.04

Installation notes:

BIOS installation – No Go
Switched to UEFI installation
Both cards detected – proceeded with Mellanox selected

iperf tests:

```
[root@optiplex mello]# lspci
---
```

01:00.0 Ethernet controller: Mellanox Technologies MT26448 [ConnectX EN 10GigE, PCIe 2.0 5GT/s] (rev b0)

Workstation → Test box

```
[root@optiplex mello]# iperf3 -c olinda
Connecting to host olinda, port 5201
-----
[ ID] Interval      Transfer  Bandwidth  Retr          sender
[  4]  0.00-10.00 sec  10.9 GBytes 9.32 Gbits/sec  51          receiver
[  4]  0.00-10.00 sec  10.8 GBytes 9.32 Gbits/sec
```

Loopback

```
root@optiplex mello]# iperf3 -s
-----
Server listening on 5201
-----
Accepted connection from 10.10.10.78, port 52776
[  5] local 10.10.10.78 port 5201 connected to 10.10.10.78 port 52778
-----
[ ID] Interval      Transfer  Bandwidth
[  5]  0.00-10.04 sec  0.00 Bytes 0.00 bits/sec          sender
[  5]  0.00-10.04 sec  44.6 GBytes 38.1 Gbits/sec        receiver
-----
```

OS: Windows 10

Installation notes:

UEFI install
Card detected
No installations issues

iperf tests:

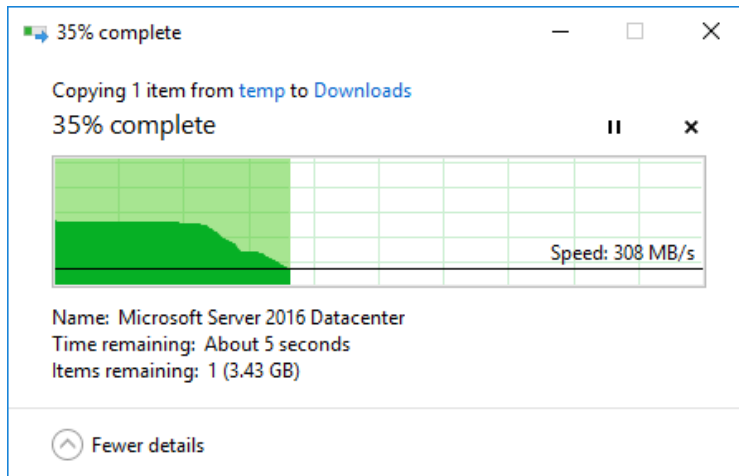
Workstation → Test box

```
mello@olinda:~$ iperf3 -c 10.10.10.78
Connecting to host 10.10.10.78, port 5201
-----
[ ID] Interval      Transfer  Bandwidth  Retr      sender
[ 4]  0.00-10.00  sec  8.64 GBytes  7.42 Gbits/sec  0
[ 4]  0.00-10.00  sec  8.63 GBytes  7.42 Gbits/sec      receiver
```

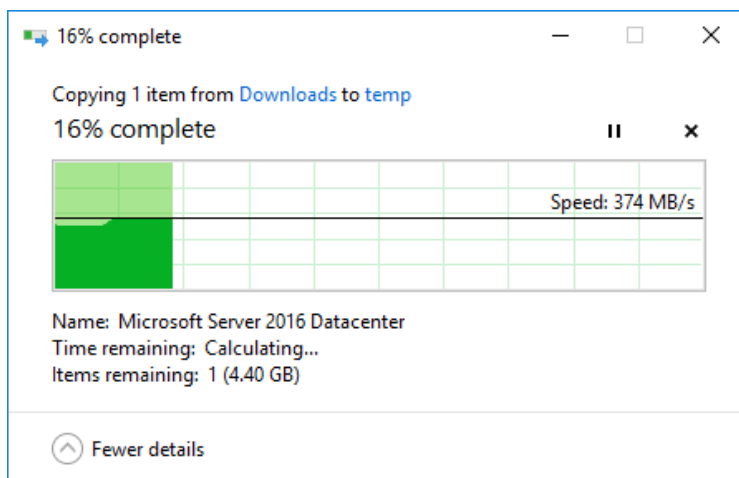
Test box → Workstation

```
mello@olinda:~$ iperf3 -s
-----
Server listening on 5201
-----
Accepted connection from 10.10.10.78, port 51195
-----
[ ID] Interval      Transfer  Bandwidth
[ 5]  0.00-10.05  sec  0.00 Bytes  0.00 bits/sec      sender
[ 5]  0.00-10.05  sec  7.36 GBytes  6.29 Gbits/sec      receiver
```

Copy from FreeNAS → Test box



Copy from Test Box → FreeNAS



OS: FreeNAS 11.1 U6

Installation notes:

installation proceed without issues
After installation both cards detected

iperf tests:

```
root@freenas:~ # ifconfig
em0: flags=8843<UP,BROADCAST,RUNNING,SIMPLEX,MULTICAST> metric 0 mtu 1500
options=209b<RXCSUM,TXCSUM,VLAN_MTU,VLAN_HWTAGGING,VLAN_HWCSUM,WOL_
MAGIC>
ether 18:03:73:b0:e4:dc
hwaddr 18:03:73:b0:e4:dc
inet 10.10.10.19 netmask 0xfffff00 broadcast 10.10.10.255
nd6 options=9<PERFORMNUD,IFDISABLED>
media: Ethernet autoselect (1000baseT <full-duplex>)
status: active
lo0: flags=8049<UP,LOOPBACK,RUNNING,MULTICAST> metric 0 mtu 16384
options=600003<RXCSUM,TXCSUM,RXCSUM_IPV6,TXCSUM_IPV6>
inet6 ::1 prefixlen 128
inet6 fe80::1%lo0 prefixlen 64 scopeid 0x2
inet 127.0.0.1 netmask 0xff000000
nd6 options=21<PERFORMNUD,AUTO_LINKLOCAL>
groups: lo
mlxen0: flags=8843<UP,BROADCAST,RUNNING,SIMPLEX,MULTICAST> metric 0 mtu 1500
options=ed07bb<RXCSUM,TXCSUM,VLAN_MTU,VLAN_HWTAGGING,JUMBO_MTU,VLAN_
HWCSUM,TSO4,TSO6,LRO,VLAN_HWFILTER,VLAN_HWTSO,LINKSTATE,RXCSUM_IPV6,T
XCSUM_IPV6>
ether 00:02:c9:54:b4:9e
hwaddr 00:02:c9:54:b4:9e
inet 10.10.10.78 netmask 0xfffff00 broadcast 10.10.10.255
nd6 options=9<PERFORMNUD,IFDISABLED>
media: Ethernet autoselect (10Gbase-SR <full-duplex,rxpause,txpause>)
status: active
```

Workstation → Test box

```
root@freenas:~ # iperf -s
```

```
-----  
Server listening on TCP port 5001  
TCP window size: 64.0 KByte (default)  
-----
```

```
[ 4] local 10.10.10.78 port 5001 connected with 10.10.10.60 port 54968  
[ ID] Interval      Transfer    Bandwidth  
[ 4] 0.0-10.0 sec  10.9 GBytes 9.40 Gbits/sec
```

Test box → Workstation

```
root@freenas:~ # iperf -c olinda
```

```
-----  
Client connecting to olinda, TCP port 5001  
TCP window size: 32.8 KByte (default)  
-----
```

```
[ 3] local 10.10.10.78 port 26631 connected with 10.10.10.60 port 5001  
[ ID] Interval      Transfer    Bandwidth  
[ 3] 0.0-10.0 sec  10.9 GBytes 9.34 Gbits/sec
```

OS: FreeNAS 11.2 RC1

Installation notes:

installation proceed without issues
After installation both cards detected

iperf tests:

Workstation → Test box

```
mello@olinda:~$ iperf -c 10.10.10.78
```

```
-----  
Client connecting to 10.10.10.78, TCP port 5001  
TCP window size: 85.0 KByte (default)  
-----
```

```
[ 3] local 10.10.10.60 port 48014 connected with 10.10.10.78 port 5001  
[ ID] Interval    Transfer    Bandwidth  
[ 3] 0.0-10.0 sec 10.9 GBytes 9.40 Gbits/sec
```

Test box → Workstation

```
mello@olinda:~$ iperf -s
```

```
-----  
Server listening on TCP port 5001  
TCP window size: 85.3 KByte (default)  
-----
```

```
[ 4] local 10.10.10.60 port 5001 connected with 10.10.10.78 port 15535  
[ ID] Interval    Transfer    Bandwidth  
[ 4] 0.0-10.0 sec 10.9 GBytes 9.33 Gbits/sec
```

OS: TrueOS 18.04

Installation notes:

- Mellanox not detected during installation
- Looking at: <https://www.trueos.org/blog/spring-cleaning-hardware-update-preview-upcoming-trueos-changes/>

Published 2017/04/21:

We're getting new hardware!

...

Mellanox ConnectX-2 HCA-30025 HCA 700Ex2-Q-1 Single Port QSFP 40Gb/s InfiniBand

- Posted question: <https://discourse.trueos.org/t/mellanox-mt26448/3407>
 - Not answered at the time of these tests

Note: - TrueOS team should get this support built and installation should detect card, so regular users can have that option.
- MT26448 Marked as not compatible

iperf tests:

Not performed

OS: FreeBSD 11.2

Installation notes:

- src installation selected to allow possible/needed changes
- Installation started 1Gb onboard disconnected
 - Installer detected NIC, no carrier
 - Mellanox not detected
 - Connected onboard NIC to proceed with installation

dmesg looking for Mellanox

```
root@optiplex:/usr/home/mello # dmesg | grep pci1
pci1: <ACPI PCI bus> on pcib1
pci1: <network, ethernet> at device 0.0 (no driver attached)
```

Found this: <https://wiki.freebsd.org/InfiniBand>

It says support for Infiniband was merged march 2011 and provide driver build/install directions:

1. Create script to build driver

```
#!/bin/sh -e
cd /usr/src/sys/modules
for module in mlx4 ibcore mlx4ib ipoib; do
    cd $module
    make
    make install
    sync
    kldload $module || true
    printf "${module}_load=\"YES\"\n" >> /boot/loader.conf
    cd ..
done
kldstat
```

2. Add **WITH_OFED="YES"** to /etc/src.conf

3. buildworld/installworld

Note: - FreeBSD team should get this support built and installation should detect card, so regular users can have that option.
- MT26448 Marked as not compatible

SPF+ Tests

Applications

App: Clonezilla

Installation notes: Application detected the SFP+ card and worked as designed to create image.

iperf tests: N/A