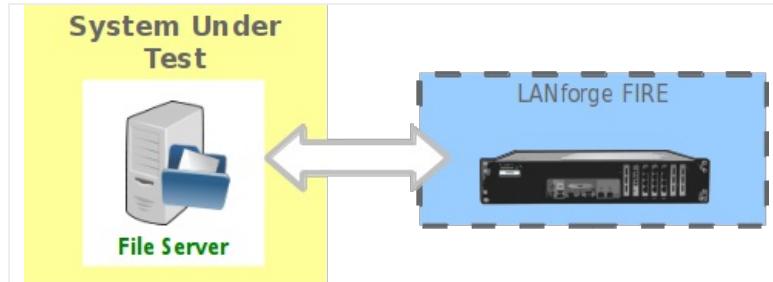


LANforge File-IO with CIFS and NFS

Goal: Create a series of MAC-VLAN based clients to emulate CIFS and NFS traffic.

This cookbook connects a LANforge system to a file server with CIFS and NFS shares available. The file server in this example will be 10.26.1.3. It will be sharing `smb://10.26.1.3/fileio` and `10.26.1.3:/home/fileio`. We will create ten readers and ten writers for each file sharing protocol. This demonstrates using the **Batch Create** tool in the **FileIO** tab.



1. Create initial MAC VLANs for our emulated endpoints. In the **Port Mgr** tab, highlight a **non-management** port on your LANforge FIRE system and click **Create**.

LANforge Manager Version(5.2.11)

Control Reporting Tear-Off Info Plugins

Stop All Restart Manager Refresh HELP

Layer-4 Generic Test Mgr Test Group Resource Mgr PPP-Links Event Log Alerts Port Mgr Messages

Status Layer-3 L3 Endps VolP/RTP VolP/RTP Endps Armageddon WanLinks Attenuators Collision-Domains File-IO

Disp: 192.168.100.27:0.0 Sniff Packets Clear Counters Reset Port Delete

Rpt Timer: medium (8 s) Apply View Details Create Modify Batch Modify

All Ethernet Interfaces (Ports) for all Resources.

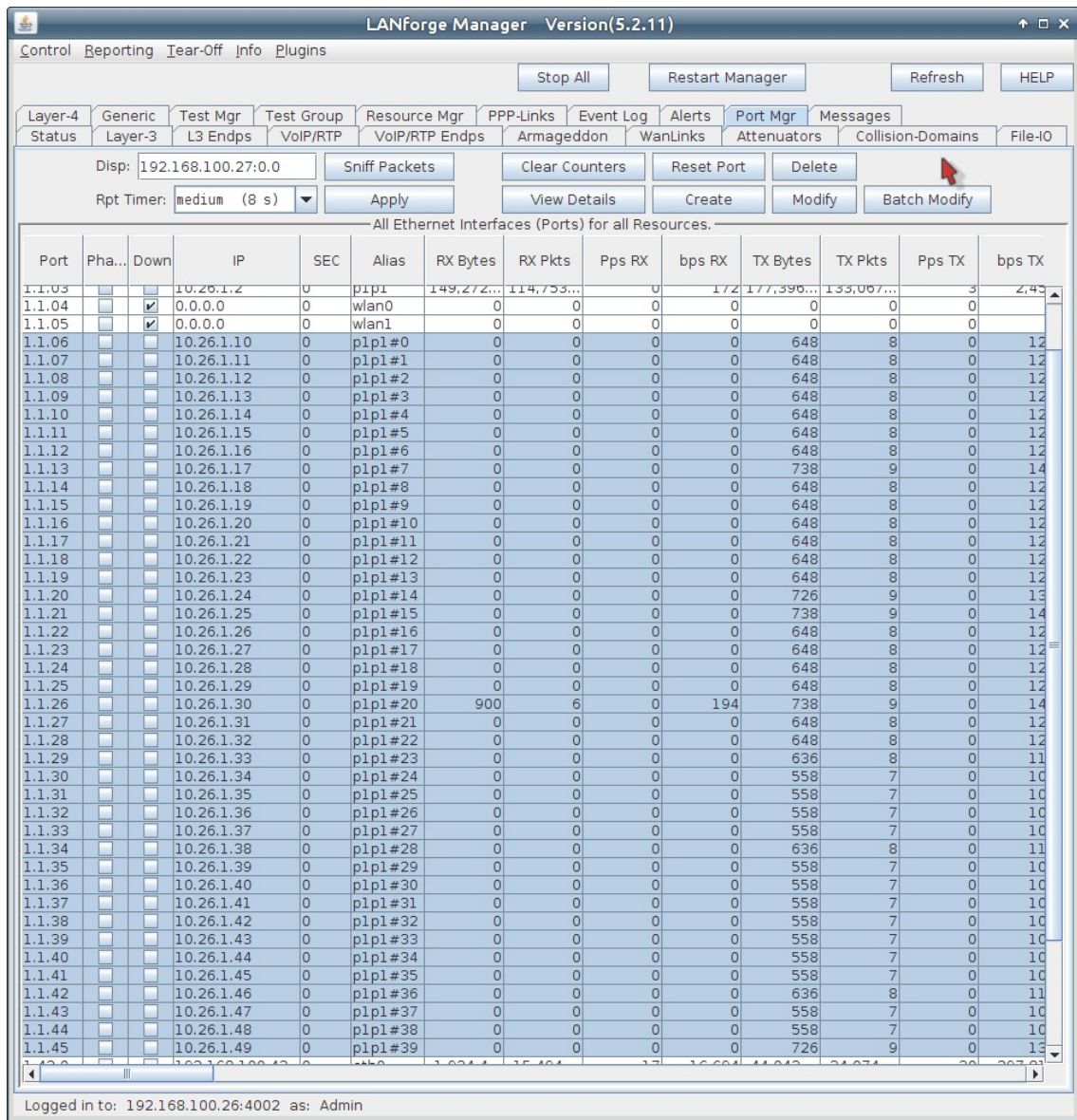
Port	Pha...	Down	IP	SEC	Alias	RX Bytes	RX Pkts	Pps RX	bps RX	TX Bytes	TX Pkts	Pps TX	bps TX
1.1.00			192.168.100.26	0	p33p1	46,720,...	54,270,...	65	339,564	52,813,...	55,429,...	86	689,10...
1.1.01			0.0.0.0	0	wiphy0	123,118,...	433,631,...	0	0	19,431,...	103,820,...	0	0
1.1.02			0.0.0.0	0	wiphy1	7,878	54	0	0	0	0	0	0
1.1.03			10.26.1.2	0	p1p1	149,272,...	114,753,...	0	17	177,396,...	133,066,...	0	0
1.1.04		<input checked="" type="checkbox"/>	0.0.0.0	0	wlan0	0	0	0	0	0	0	0	0
1.1.05		<input checked="" type="checkbox"/>	0.0.0.0	0	wlan1	0	0	0	0	0	0	0	0

Logged in to: 192.168.100.26:4002 as: Admin

A. Create 40 MAC VLANs with IPs starting at 10.26.1.10.

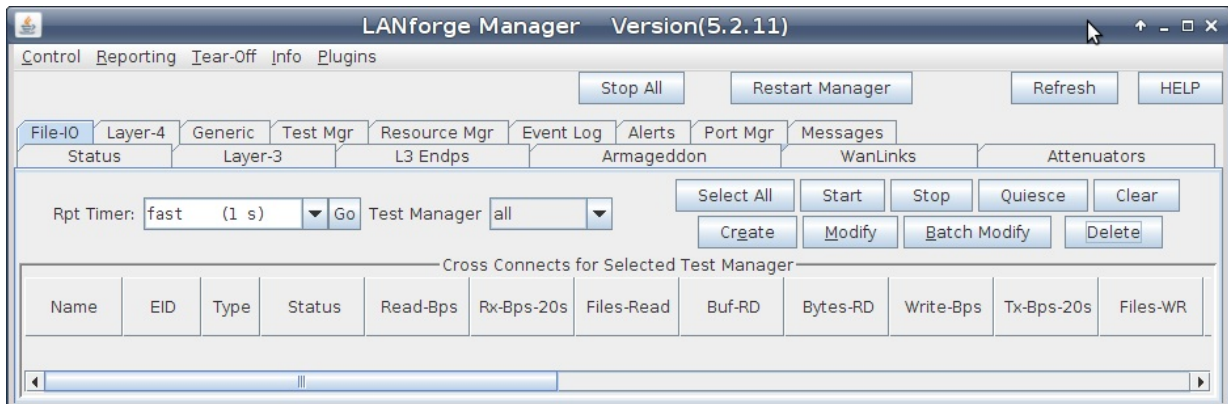
- A. Select **MAC-VLAN**
- B. Choose either `*:*:*:*:*` (random) or select a starting MAC address, like `00:26:*:*:*`
- C. Enter `10.26.1.10` and `255.255.255.0` for the IP and netmask.
- D. Set **Quantity** to `40`.
- E. Click **Apply** to create the MAC VLANs.
- F. Click **Cancel** to close the **Create** window.

B. See the 40 MAC VLANs in the **Ports** tab.



For more information see [GUI Users Guide](#)

2. Create your first FileIO NFS Endpoint. In the **FileIO** tab, click **Create**.



A. Use the following settings to create a NFS reader writer endpoint.

The 'Create/Modify File Endpoint' dialog box contains the following settings:

- Name: nfs-writer
- Rpt Timer: fast (1 s)
- FS-Type: NFS
- Test Manager: default_tm
- Shelf: 1
- Resource: 1 (jedtest)
- Port: 3 (p1p1)
- Endp ID: 37
- Min-RW-Size: 2k (2 KB)
- Max-RW-Size: 1MB (1 MB)
- Min File Size: small (10 KB)
- Max File Size: 25M (25 MB)
- Min Read Rate: T1 (1.544 Mbps)
- Max Read Rate: T1 (1.544 Mbps)
- Min Write Rate: 100M (100 Mbps)
- Max Write Rate: 1G (1 Gbps)
- File #: 2
- Directory: AUTO
- Mount-Dir: AUTO
- Server: 10.26.1.3:/home/fileio
- Options: (empty)
- ISCSI-Volume: (empty)
- Retry-Timer: 1s (1 s)
- Read/Write: Write
- Quiesce: 3
- Pattern: increasing
- Prefix: AUTO
- Sync-after-Write Sync-before-Close Use O_DIRECT Use O_LARGEFILE Do-CRC Unlink
- Verify-Mount Auto-Mount Un-Mount Lazy Unmount Force Unmount
- Custom payload (in HEX): (empty text area)

Buttons at the bottom: Apply, OK, Batch-Create, Cancel

- A. Enter **nfs-writer** for the name.
- B. Select **NFS** for **FS-Type**
- C. Use the first MAC-VLAN **p1p1#0** for **Port**
- D. Select **2KB** for the **Min-RW Size**
- E. Choose **1MB** for the **Max-RW Size**
- F. For **Min File Size** choose **10KB**
- G. Then for **Max File Size** choose **25MB**
- H. The **Min Write Rate** is the minimum inbound line rate, start at **100Mbps**
- I. Then set the **Max Write Rate** at **1Gbps**
- J. Set the number of files written per connection: set **File #** to 2
- K. Now we specify the NFS server: set **Server** to **10.26.1.3:/home/fileio**
- L. You can leave **Directory**, and **Mount-Dir** at **AUTO**
- M. Click **OK** to commit the settings.

3. In the **File-IO** tab, select the endpoint you just created and click **Modify**

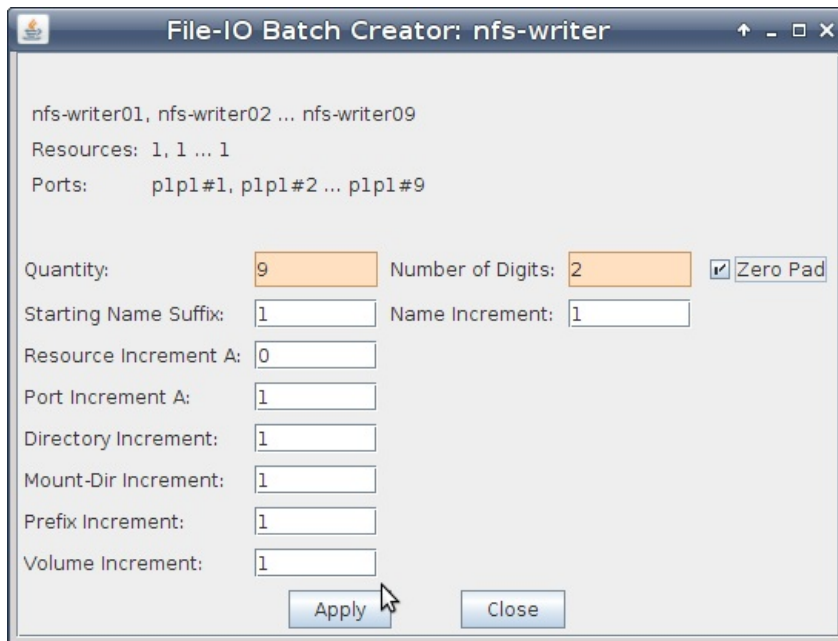
The LANforge Manager interface shows the following details:

- Version: 5.2.11
- Control Reporting Tear-Off Info Plugins
- Buttons: Stop All, Restart Manager, Refresh, HELP
- File-IO tab selected. Other tabs: Layer-4, Generic, Test Mgr, Resource Mgr, Event Log, Alerts, Port Mgr, Messages.
- Sub-tabs: Status, Layer-3, L3 Endps, Armageddon, WanLinks, Attenuators
- Rpt Timer: fast (1 s) Go Test Manager: all
- Buttons: Select All, Start, Stop, Quiesce, Clear, Create, Modify, Batch Modify, Delete
- Section: Cross Connects for Selected Test Manager

Name	EID	Type	Status	Read-Bps	Rx-Bps-20s	Files-Read	Buf-RD	Bytes-RD	Write-Bps	Tx-Bps-20s	Files-W
nfs-writer	1.1.6.37	NFS	Stopped	0	0	0	0	0	0	0	0

Logged in to: 192.168.100.26:4002 as: Admin

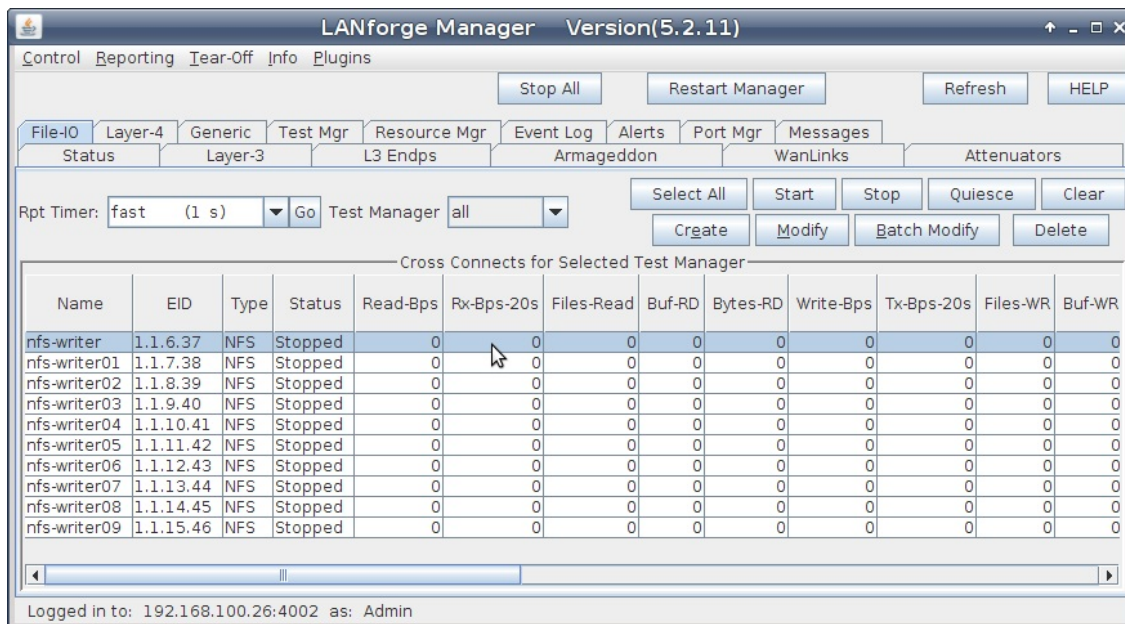
A. The **File-IO Details** dialog appears. Click the **Batch Create** button at the bottom of the screen.



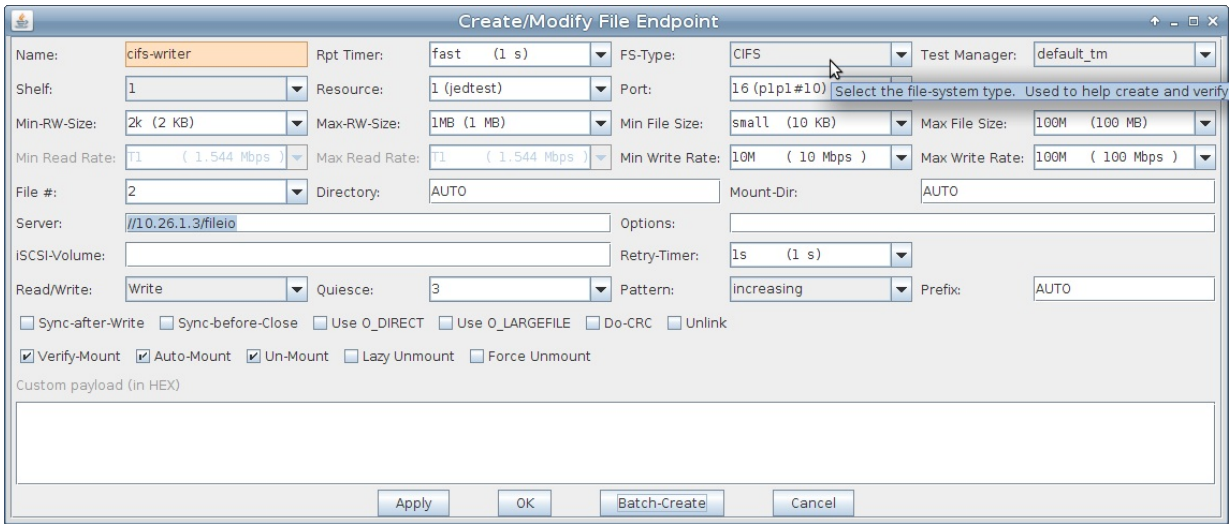
B. Enter these values into the Batch Create dialog:

- A. **Quantity** should be 9
- B. **Number of Digits** should be 2
- C. Click **Apply**

C. Close the Batch Create window. You will see the new endpoints.



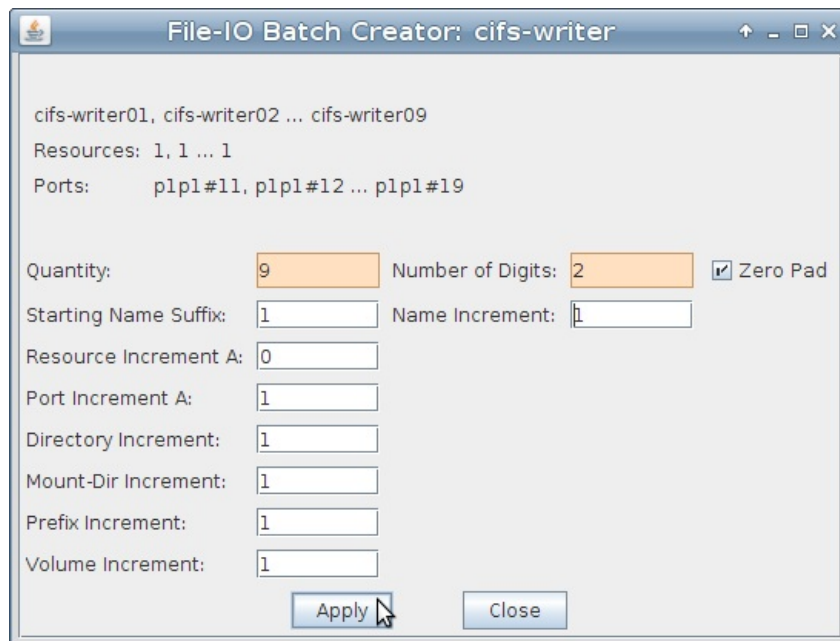
4. Create initial endpoint for CIFS writer.



- A. Name the endpoint **cifs-writer**
- B. Set **FS-Type** to **CIFS**
- C. Then set the **Port** to the next open MAC VLAN: **p1p1#10**
- D. Set the **Min-RW Size** and **Max-RW Size** to **2k** and **1M**
- E. For the **Min File Size** and **Max File Size** enter **10KB** and **100MB**
- F. The **Min Write Rate** and the **Max Write Rate** should be **10 Mbps** and **100 Mbps**
- G. Enter **//10.26.1.3/fileio** for **Server**
- H. Supply the credentials for the CIFS mount point in **Options**. For this example, our username and password are 'lanforge' and 'lanforge'. Write them as options to the mount command: **user=lanforge,passwd=lanforge**
- I. Click **Apply**

5. Use Batch Create to create nine more CIFS endpoints. You do not actually need to close the **Create/Modify** window. Click on **Batch Create** directly.

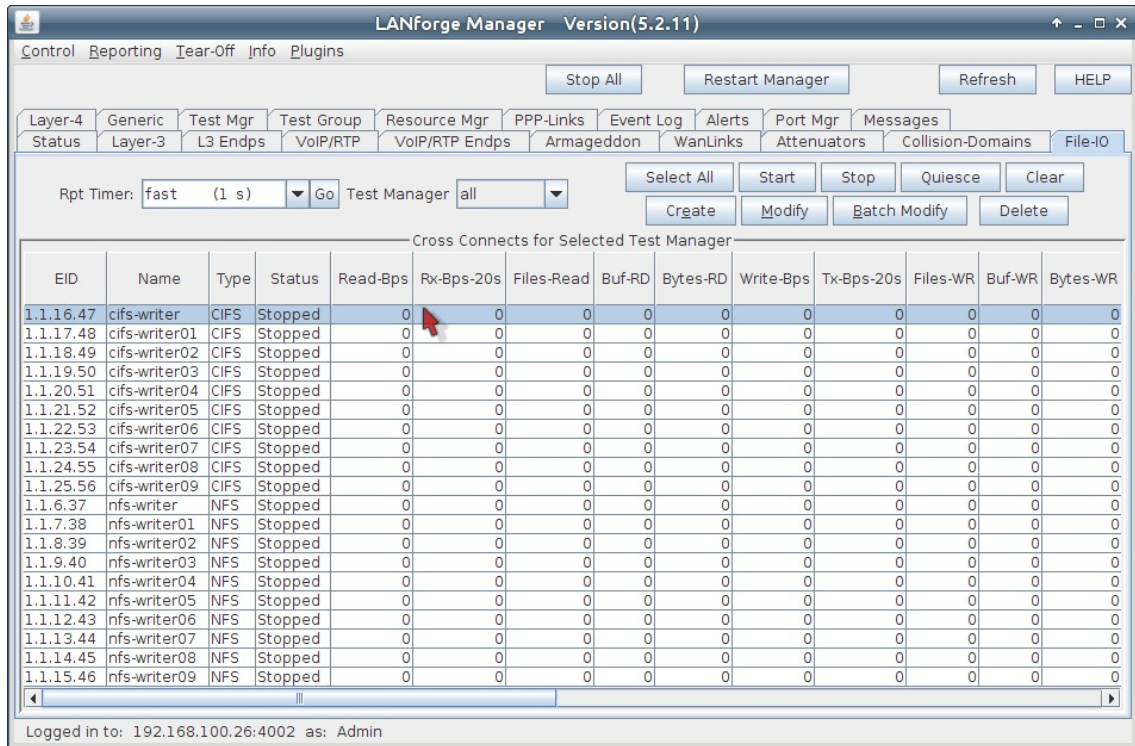
- A. In the **Batch Create** window, Enter:



- A. **Quantity** is **9**
- B. **Number of Digits** is **2**
- C. Then click **Apply**

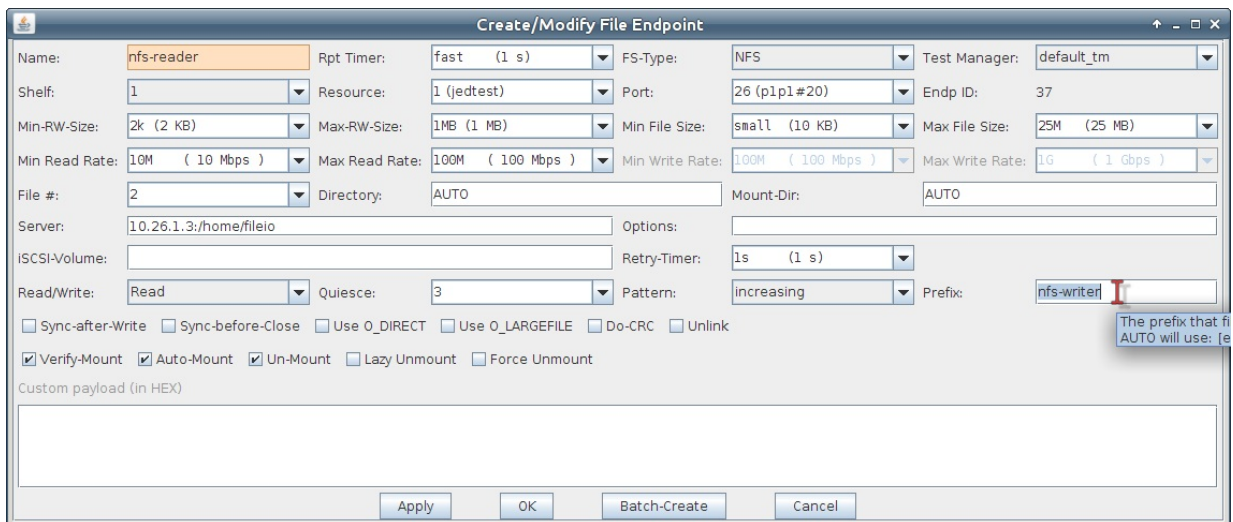
B. In **Create/Modify** click **Cancel**

C. In the **File-IO** tab, you will see ten more endpoints.



6. We will proceed to creating the same number of **NFS reader endpoints** by using a writer as a template for a reader:

7. Open the Modify window of the endpoint **nfs-writer**



A. Change the **Name** to **nfs-reader**

B. Set the **Port** to the next unused MAC VLAN, **p1p1#20**

C. Change **Read/Write** to **Read**

D. Set the **Min Read Rate** and **Max Read Rate** to **10 Mbps** and **100 Mbps**

E. To match this reader to a writer, set the **Prefix** field to **nfs-writer**

F. Click **Apply**

8. Before closing the Modify windows we can use Batch Create to create nine more NFS endpoints:

9. Click on the **Batch Create** window of the endpoint **nfs-reader**

- A. Open the Modify window of the endpoint `cifs-writer`

- Change the **Name** to `cifs-reader`
- Set the **Port** to the next unused MAC VLAN, `p1p1#30`
- Change **Read/Write** to **Read**
- Set the **Min Read Rate** and **Max Read Rate** to `10 Mbps` and `100 Mbps`
- To match this reader to a writer, set the **Prefix** field to `cifs-writer`
- Supply the credentials for the CIFS mount point in **Options**. For this example, our username and password are 'lanforge' and 'lanforge'. Write them as options to the mount command: `user=lanforge,passwd=lanforge`
- Click **Apply**

- B. Before closing the Modify windows we can use Batch Create to create nine more CIFS reader endpoints:

- C. Click on the **Batch Create** window of the endpoint `cifs-reader`

- Change the **Quantity** to `9`
- Set the **Number of Digits** to `2`
- Click **Apply**
- Click **Close**
- In the **Modify** window, click **Cancel**

11. In the **File-IO** tab, we see our newly created reader endpoints.

LANforge Manager Version(5.2.11)

Control Reporting Tear-Off Info Plugins

Stop All Restart Manager Refresh HELP

File-IO Layer-4 Generic Test Mgr Test Group Resource Mgr PPP-Links Event Log Alerts Port Mgr Messages
 Status Layer-3 L3 Endps VoIP/RTP VoIP/RTP Endps Armageddon WanLinks Attenuators Collision-Domains

Rpt Timer: fast (1 s) Go Test Manager all Select All Start Stop Quiesce Clear
 Create Modify Batch Modify Delete

Cross Connects for Selected Test Manager

EID	Name	Type	Status	Read-Bps	Rx-Bps-20s	Files-Read	Buf-RD	Bytes-RD	Write-Bps	Tx-Bps-20s	Files-WF
1.1.16.67	cifs-reader	CIFS	Stopped	0	0	0	0	0	0	0	0
1.1.17.68	cifs-reader01	CIFS	Stopped	0	0	0	0	0	0	0	0
1.1.18.69	cifs-reader02	CIFS	Stopped	0	0	0	0	0	0	0	0
1.1.19.70	cifs-reader03	CIFS	Stopped	0	0	0	0	0	0	0	0
1.1.20.71	cifs-reader04	CIFS	Stopped	0	0	0	0	0	0	0	0
1.1.21.72	cifs-reader05	CIFS	Stopped	0	0	0	0	0	0	0	0
1.1.22.73	cifs-reader06	CIFS	Stopped	0	0	0	0	0	0	0	0
1.1.23.74	cifs-reader07	CIFS	Stopped	0	0	0	0	0	0	0	0
1.1.24.75	cifs-reader08	CIFS	Stopped	0	0	0	0	0	0	0	0
1.1.25.76	cifs-reader09	CIFS	Stopped	0	0	0	0	0	0	0	0
1.1.16.47	cifs-writer	CIFS	Stopped	0	0	0	0	0	0	0	0
1.1.17.48	cifs-writer01	CIFS	Stopped	0	0	0	0	0	0	0	0
1.1.18.49	cifs-writer02	CIFS	Stopped	0	0	0	0	0	0	0	0
1.1.19.50	cifs-writer03	CIFS	Stopped	0	0	0	0	0	0	0	0
1.1.20.51	cifs-writer04	CIFS	Stopped	0	0	0	0	0	0	0	0

Logged in to: 192.168.100.26:4002 as: Admin

12. Start the reader/writer testing.
 - A. In the **File-IO** tab, begin by starting the NFS writers

LANforge Manager Version(5.2.11)

Control Reporting Tear-Off Info Plugins

Stop All Restart Manager Refresh HELP

File-IO Layer-4 Generic Test Mgr Test Group Resource Mgr PPP-Links Event Log Alerts Port Mgr Messages
 Status Layer-3 L3 Endps VoIP/RTP VoIP/RTP Endps Armageddon WanLinks Attenuators Collision-Domains

Rpt Timer: fast (1 s) Go Test Manager all

Select All Start Stop Quiesce Clear
 Create Modify Batch Modify Delete

Cross Connects for Selected Test Manager

EID	Name	Type	Status	Read-Bps	Rx-Bps-20s	Files-Read	Buf-RD	Bytes-RD	Write-Bps	1
1.1.30.07	cifs-reader	CIFS	Stopped	0	0	0	0	0	0	0
1.1.37.86	cifs-reader01	CIFS	Stopped	0	0	0	0	0	0	0
1.1.38.87	cifs-reader02	CIFS	Stopped	0	0	0	0	0	0	0
1.1.39.88	cifs-reader03	CIFS	Stopped	0	0	0	0	0	0	0
1.1.40.89	cifs-reader04	CIFS	Stopped	0	0	0	0	0	0	0
1.1.41.90	cifs-reader05	CIFS	Stopped	0	0	0	0	0	0	0
1.1.42.91	cifs-reader06	CIFS	Stopped	0	0	0	0	0	0	0
1.1.43.92	cifs-reader07	CIFS	Stopped	0	0	0	0	0	0	0
1.1.44.93	cifs-reader08	CIFS	Stopped	0	0	0	0	0	0	0
1.1.45.94	cifs-reader09	CIFS	Stopped	0	0	0	0	0	0	0
1.1.16.47	cifs-writer	CIFS	Stopped	0	0	0	0	0	0	0
1.1.17.77	cifs-writer01	CIFS	Stopped	0	0	0	0	0	0	0
1.1.18.78	cifs-writer02	CIFS	Stopped	0	0	0	0	0	0	0
1.1.19.79	cifs-writer03	CIFS	Stopped	0	0	0	0	0	0	0
1.1.20.80	cifs-writer04	CIFS	Stopped	0	0	0	0	0	0	0
1.1.21.81	cifs-writer05	CIFS	Stopped	0	0	0	0	0	0	0
1.1.22.82	cifs-writer06	CIFS	Stopped	0	0	0	0	0	0	0
1.1.23.83	cifs-writer07	CIFS	Stopped	0	0	0	0	0	0	0
1.1.24.84	cifs-writer08	CIFS	Stopped	0	0	0	0	0	0	0
1.1.25.85	cifs-writer09	CIFS	Stopped	0	0	0	0	0	0	0
1.1.26.57	nfs-reader	NFS	Stopped	0	0	0	0	0	0	0
1.1.27.58	nfs-reader01	NFS	Stopped	0	0	0	0	0	0	0
1.1.28.59	nfs-reader02	NFS	Stopped	0	0	0	0	0	0	0
1.1.29.60	nfs-reader03	NFS	Stopped	0	0	0	0	0	0	0
1.1.30.61	nfs-reader04	NFS	Stopped	0	0	0	0	0	0	0
1.1.31.62	nfs-reader05	NFS	Stopped	0	0	0	0	0	0	0
1.1.32.63	nfs-reader06	NFS	Stopped	0	0	0	0	0	0	0
1.1.33.64	nfs-reader07	NFS	Stopped	0	0	0	0	0	0	0
1.1.34.65	nfs-reader08	NFS	Stopped	0	0	0	0	0	0	0
1.1.35.66	nfs-reader09	NFS	Stopped	0	0	0	0	0	0	0
1.1.6.37	nfs-writer	NFS	Stopped	0	0	0	0	0	0	0
1.1.7.38	nfs-writer01	NFS	Stopped	0	0	0	0	0	0	0
1.1.8.39	nfs-writer02	NFS	Stopped	0	0	0	0	0	0	0
1.1.9.40	nfs-writer03	NFS	Stopped	0	0	0	0	0	0	0
1.1.10.41	nfs-writer04	NFS	Stopped	0	0	0	0	0	0	0
1.1.11.42	nfs-writer05	NFS	Stopped	0	0	0	0	0	0	0
1.1.12.43	nfs-writer06	NFS	Stopped	0	0	0	0	0	0	0
1.1.13.44	nfs-writer07	NFS	Stopped	0	0	0	0	0	0	0
1.1.14.45	nfs-writer08	NFS	Stopped	0	0	0	0	0	0	0
1.1.15.46	nfs-writer09	NFS	Stopped	0	0	0	0	0	0	0

Logged in to: 192.168.100.26:4002 as: Admin

- Click on the **Name** column header to sort the rows of readers and writers
- You can use **control-left-click** and drag to select the group of writers
- Click the **Start** button at the top.

B. Next, start the CIFS writers

LANforge Manager Version(5.2.11)

Control Reporting Tear-Off Info Plugins

Stop All Restart Manager Refresh HELP

File-I/O Layer-4 Generic Test Mgr Test Group Resource Mgr PPP-Links Event Log Alerts Port Mgr Messages
 Status Layer-3 L3 Endps VoIP/RTP VoIP/RTP Endps Armageddon WanLinks Attenuators Collision-Domains

Rpt Timer: fast (1 s) Go Test Manager all

Select All Start Stop Quiesce Clear
 Create Modify Batch Modify Delete

Cross Connects for Selected Test Manager

EID	Name	Type	Status	Read-Bps	Rx-Bps-20s	Files-Read	Buf-RD	Bytes-RD	Write-Bps	1
1.1.30.07	cifs-reader	CIFS	Stopped	0	0	0	0	0	0	0
1.1.37.86	cifs-reader01	CIFS	Stopped	0	0	0	0	0	0	0
1.1.38.87	cifs-reader02	CIFS	Stopped	0	0	0	0	0	0	0
1.1.39.88	cifs-reader03	CIFS	Stopped	0	0	0	0	0	0	0
1.1.40.89	cifs-reader04	CIFS	Stopped	0	0	0	0	0	0	0
1.1.41.90	cifs-reader05	CIFS	Stopped	0	0	0	0	0	0	0
1.1.42.91	cifs-reader06	CIFS	Stopped	0	0	0	0	0	0	0
1.1.43.92	cifs-reader07	CIFS	Stopped	0	0	0	0	0	0	0
1.1.44.93	cifs-reader08	CIFS	Stopped	0	0	0	0	0	0	0
1.1.45.94	cifs-reader09	CIFS	Stopped	0	0	0	0	0	0	0
1.1.16.47	cifs-writer	CIFS	Run	0	0	0	0	0	0	0
1.1.17.77	cifs-writer01	CIFS	Run	0	0	0	0	0	0	0
1.1.18.78	cifs-writer02	CIFS	Run	0	0	0	0	0	0	0
1.1.19.79	cifs-writer03	CIFS	Run	0	0	0	0	0	0	0
1.1.20.80	cifs-writer04	CIFS	Run	0	0	0	0	0	0	0
1.1.21.81	cifs-writer05	CIFS	Run	0	0	0	0	0	0	0
1.1.22.82	cifs-writer06	CIFS	Run	0	0	0	0	0	0	0
1.1.23.83	cifs-writer07	CIFS	Run	0	0	0	0	0	0	0
1.1.24.84	cifs-writer08	CIFS	Run	0	0	0	0	0	0	0
1.1.25.85	cifs-writer09	CIFS	Run	0	0	0	0	0	0	0
1.1.26.57	nfs-reader	NFS	Stopped	0	0	0	0	0	0	0

Logged in to: 192.168.100.26:4002 as: Admin

C. Then the NFS readers

LANforge Manager Version(5.2.11)

Control Reporting Tear-Off Info Plugins

Stop All Restart Manager Refresh HELP

Attenuators Collision-Domains File-I/O Layer-4 Generic Test Mgr Test Group Resource Mgr PPP-Links Event Log Alerts Port Mgr Messages
 Status Layer-3 L3 Endps VoIP/RTP VoIP/RTP Endps Armageddon WanLinks

Rpt Timer: fast (1 s) Go Test Manager all

Select All Start Stop Quiesce Clear
 Create Modify Batch Modify Delete

Cross Connects for Selected Test Manager

EID	Name	Type	Status	Read-Bps	Rx-Bps-20s	Files-Read	Buf-RD	Bytes-RD	Write-Bps	Tx-Bps-20s	Files-WR	Buf-WR	Bytes-WR	IO Fail	CRC Fail	Min-RW-SZ	Max-R*
1.1.15.46	nfs-writer09	NFS	Run	0	0	0	0	0	84,798,986	67,750,124	182	4,898	2,503,446,293	0	0	2,048	1,048
1.1.14.45	nfs-writer08	NFS	Run	0	0	0	0	0	80,111,598	75,492,716	177	4,653	2,379,514,742	0	0	2,048	1,048
1.1.13.44	nfs-writer07	NFS	Run	0	0	0	0	0	78,159,749	56,074,204	172	4,523	2,317,622,209	0	0	2,048	1,048
1.1.12.43	nfs-writer06	NFS	Run	0	0	0	0	0	84,934,263	64,517,225	192	4,919	2,517,908,077	0	0	2,048	1,048
1.1.11.42	nfs-writer05	NFS	Run	0	0	0	0	0	83,771,507	82,106,898	180	4,862	2,485,730,987	0	0	2,048	1,048
1.1.10.41	nfs-writer04	NFS	Run	0	0	0	0	0	85,548,436	82,844,860	175	4,974	2,539,897,811	0	0	2,048	1,048
1.1.9.40	nfs-writer03	NFS	Run	0	0	0	0	0	84,031,635	58,227,702	178	4,885	2,490,729,181	0	0	2,048	1,048
1.1.8.39	nfs-writer02	NFS	Run	0	0	0	0	0	80,542,426	73,085,678	171	4,656	2,379,303,832	0	0	2,048	1,048
1.1.7.38	nfs-writer01	NFS	Run	0	0	0	0	0	85,890,064	77,248,204	183	4,963	2,537,901,085	0	0	2,048	1,048
1.1.6.37	nfs-writer	NFS	Run	0	0	0	0	0	88,212,731	61,166,724	198	5,112	2,622,134,473	0	0	2,048	1,048
1.1.35.66	nfs-reader09	NFS	Run	0	0	0	0	0	0	0	0	0	0	0	0	2,048	1,048
1.1.34.65	nfs-reader08	NFS	Run	0	0	0	0	0	0	0	0	0	0	0	0	2,048	1,048
1.1.33.64	nfs-reader07	NFS	Run	0	0	0	0	0	0	0	0	0	0	0	0	2,048	1,048
1.1.32.63	nfs-reader06	NFS	Run	0	0	0	0	0	0	0	0	0	0	0	0	2,048	1,048
1.1.31.62	nfs-reader05	NFS	Run	0	0	0	0	0	0	0	0	0	0	0	0	2,048	1,048
1.1.30.61	nfs-reader04	NFS	Run	0	0	0	0	0	0	0	0	0	0	0	0	2,048	1,048
1.1.29.60	nfs-reader03	NFS	Run	0	0	0	0	0	0	0	0	0	0	0	0	2,048	1,048
1.1.28.59	nfs-reader02	NFS	Run	0	0	0	0	0	0	0	0	0	0	0	0	2,048	1,048
1.1.27.58	nfs-reader01	NFS	Run	0	0	0	0	0	0	0	0	0	0	0	0	2,048	1,048
1.1.26.57	nfs-reader	NFS	Run	0	0	0	0	0	0	0	0	0	0	0	0	2,048	1,048
1.1.25.95	cifs-writer09	CIFS	Run	0	0	0	0	0	27,003,432	28,589,822	6	586	317,752,769	0	0	2,048	1,048
1.1.24.84	cifs-writer08	CIFS	Run	0	0	0	0	0	19,192,507	18,890,990	3	427	227,282,469	0	0	2,048	1,048
1.1.23.83	cifs-writer07	CIFS	Run	0	0	0	0	0	27,322,461	31,211,766	5	600	324,382,506	0	0	2,048	1,048
1.1.22.82	cifs-writer06	CIFS	Run	0	0	0	0	0	17,580,963	16,063,070	3	392	210,052,955	0	0	2,048	1,048
1.1.21.81	cifs-writer05	CIFS	Run	0	0	0	0	0	20,350,998	25,887,050	4	464	244,921,657	0	0	2,048	1,048
1.1.20.80	cifs-writer04	CIFS	Run	0	0	0	0	0	31,235,097	35,927,108	5	676	361,932,790	0	0	2,048	1,048
1.1.19.79	cifs-writer03	CIFS	Run	0	0	0	0	0	19,983,524	23,666,647	3	445	234,157,752	0	0	2,048	1,048
1.1.18.78	cifs-writer02	CIFS	Run	0	0	0	0	0	17,909,626	25,633,750	3	399	212,864,862	0	0	2,048	1,048
1.1.17.77	cifs-writer01	CIFS	Run	0	0	0	0	0	17,093,196	10,296,858	3	378	203,720,993	0	0	2,048	1,048
1.1.16.47	cifs-writer	CIFS	Run	0	0	0	0	0	21,981,955	26,039,648	4	496	262,546,976	0	0	2,048	1,048
1.1.45.94	cifs-reader09	CIFS	Stopped	0	0	0	0	0	0	0	0	0	0	0	0	2,048	1,048
1.1.44.93	cifs-reader08	CIFS	Stopped	0	0	0	0	0	0	0	0	0	0	0	0	2,048	1,048

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D. Finally, start the CIFS readers

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Control Reporting Tear-Off Info Plugins

Attenuators Collision-Domains File-IO Layer-4 Generic Test Mgr Test Group Resource Mgr PPP-Links Event Log Alerts Port Mgr Messages

Status Layer-3 L3 Endps VoIP/RTP VoIP/RTP Endps Armageddon WanLinks

Rpt Timer: fast (1 s) Go Test Manager: all

Select All Start Stop Quiesce Clear

Crgate Modify Batch Modify Delete

Cross Connects for Selected Test Manager

EID	Name	Type	Status	Read-Bps	Rx-Bps-20s	Files-Read	Buf-RD	Bytes-RD	Write-Bps	Tx-Bps-20s	Files-WR	Buf-WR	Bytes-WR	IO Fail	CRC Fail	Min-RW-SZ	Max-R
1.1.7.38	nfs-writer01	NFS	Run	0	0	0	0	0	85,412,167	39,261,700	197	5,323	4,729,673,006	0	0	2,048	1,04
1.1.6.37	nfs-writer	NFS	Run	0	0	0	0	0	86,156,569	58,547,724	211	5,443	2,790,859,002	0	0	2,048	1,04
1.1.35.66	nfs-reader09	NFS	Run	48,262,735	59,547,082	26	283	144,546,893	0	0	0	0	0	0	0	2,048	1,04
1.1.34.65	nfs-reader08	NFS	Run	54,766,403	57,332,646	190	306	160,164,347	0	0	0	0	0	0	0	2,048	1,04
1.1.33.64	nfs-reader07	NFS	Run	23,766,778	24,355,354	23	133	69,502,972	0	0	0	0	0	0	0	2,048	1,04
1.1.32.63	nfs-reader06	NFS	Run	23,548,642	24,043,150	7	124	68,567,760	0	0	0	0	0	0	0	2,048	1,04
1.1.31.62	nfs-reader05	NFS	Run	23,173,845	23,945,204	16	124	67,763,220	0	0	0	0	0	0	0	2,048	1,04
1.1.30.61	nfs-reader04	NFS	Run	23,712,476	24,087,000	35	137	69,516,089	0	0	0	0	0	0	0	2,048	1,04
1.1.29.60	nfs-reader03	NFS	Run	48,861,298	57,016,308	16	279	145,930,377	0	0	0	0	0	0	0	2,048	1,04
1.1.28.59	nfs-reader02	NFS	Run	22,552,753	22,828,259	65	137	67,077,527	0	0	0	0	0	0	0	2,048	1,04
1.1.27.58	nfs-reader01	NFS	Run	22,449,453	22,622,993	12	124	66,767,481	0	0	0	0	0	0	0	2,048	1,04
1.1.26.57	nfs-reader	NFS	Run	50,775,338	58,383,575	21	287	147,800,663	0	0	0	0	0	0	0	2,048	1,04
1.1.25.85	cifs-writer09	CIFS	Run	0	0	0	0	0	25,098,421	14,054,825	6	696	373,624,517	0	0	2,048	1,04
1.1.24.84	cifs-writer08	CIFS	Run	0	0	0	0	0	17,308,423	10,264,226	4	489	258,879,928	0	0	2,048	1,04
1.1.23.83	cifs-writer07	CIFS	Run	0	0	0	0	0	24,406,634	9,960,396	6	678	363,835,795	0	0	2,048	1,04
1.1.22.82	cifs-writer06	CIFS	Run	0	0	0	0	0	17,755,472	19,758,886	4	493	262,454,742	0	0	2,048	1,04
1.1.21.81	cifs-writer05	CIFS	Run	0	0	0	0	0	11,669,662	29,415,953	5	598	323,040,488	0	0	2,048	1,04
1.1.20.80	cifs-writer04	CIFS	Run	0	0	0	0	0	11,338,255	28,611,490	8	874	463,399,512	0	0	2,048	1,04
1.1.19.79	cifs-writer03	CIFS	Run	0	0	0	0	0	21,537,880	32,505,763	5	600	322,152,854	0	0	2,048	1,04
1.1.18.78	cifs-writer02	CIFS	Run	0	0	0	0	0	16,498,178	11,188,422	3	461	245,117,556	0	0	2,048	1,04
1.1.17.77	cifs-writer01	CIFS	Run	0	0	0	0	0	16,041,831	11,482,263	3	443	234,519,538	0	0	2,048	1,04
1.1.16.47	cifs-writer	CIFS	Run	0	0	0	0	0	22,511,927	12,854,347	5	619	334,189,557	0	0	2,048	1,04
1.1.45.94	cifs-reader09	CIFS	Run	0	0	0	0	0	0	0	0	0	0	0	0	2,048	1,04
1.1.44.93	cifs-reader08	CIFS	Run	0	0	0	0	0	0	0	0	0	0	0	0	2,048	1,04
1.1.43.92	cifs-reader07	CIFS	Run	0	0	0	0	0	0	0	0	0	0	0	0	2,048	1,04
1.1.42.91	cifs-reader06	CIFS	Run	0	0	0	0	0	0	0	0	0	0	0	0	2,048	1,04
1.1.41.90	cifs-reader05	CIFS	Run	0	0	0	0	0	0	0	0	0	0	0	0	2,048	1,04
1.1.40.89	cifs-reader04	CIFS	Run	0	0	0	0	0	0	0	0	0	0	0	0	2,048	1,04
1.1.39.88	cifs-reader03	CIFS	Run	0	0	0	0	0	0	0	0	0	0	0	0	2,048	1,04
1.1.38.87	cifs-reader02	CIFS	Run	0	0	0	0	0	0	0	0	0	0	0	0	2,048	1,04
1.1.37.86	cifs-reader01	CIFS	Run	0	0	0	0	0	0	0	0	0	0	0	0	2,048	1,04
1.1.36.67	cifs-reader	CIFS	Run	0	0	0	0	0	0	0	0	0	0	0	0	2,048	1,04

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13. We can inspect the traffic in the Dynamic Report window and the File-IO tab:

- A. Select a group of endpoints and right click on them, select **Dynamic Report**

LANforge Manager Version(5.2.11)

Control Reporting Tear-Off Info Plugins

Attenuators Collision-Domains File-IO Layer-4 Generic Test Mgr Test Group Resource Mgr PPP-Links Event Log Alerts Port Mgr Messages

Status Layer-3 L3 Endps VoIP/RTP VoIP/RTP Endps Armageddon WanLinks

Rpt Timer: fast (1 s) Go Test Manager: all

Select All Start Stop Quiesce Clear

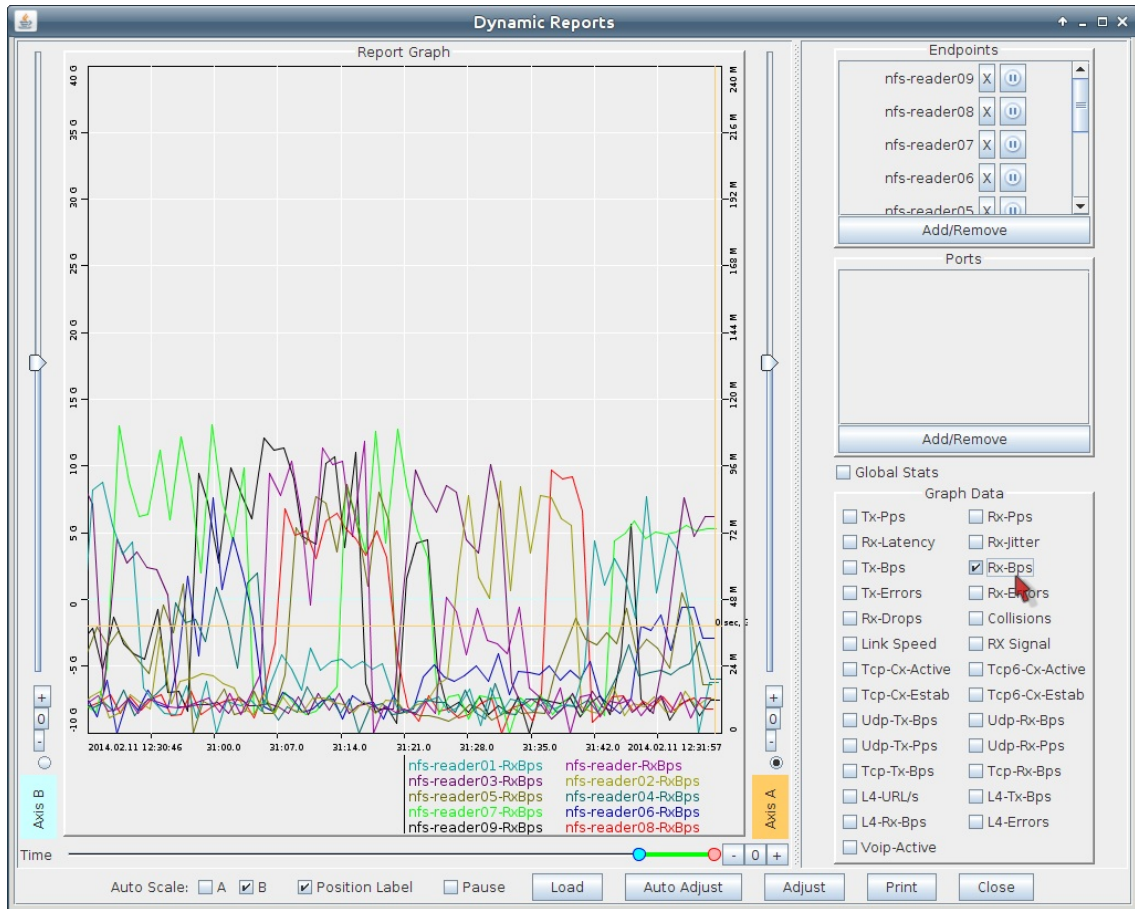
Crgate Modify Batch Modify Delete

Cross Connects for Selected Test Manager

EID	Name	Type	Status	Read-Bps	Rx-Bps-20s	Files-Read	Buf-RD	Bytes-RD	Write-Bps	Tx-Bps-20s	Files-WR	Buf-WR	Bytes-WR	IO Fail	CRC Fail	Min-RW-SZ	Max-R
1.1.7.38	nfs-writer01	NFS	Run	0	0	0	0	0	81,860,655	86,167,659	330	8,741	4,455,266,192	0	0	2,048	1,04
1.1.6.37	nfs-writer	NFS	Run	0	0	0	0	0	84,895,036	84,387,524	351	9,060	4,615,552,098	0	0	2,048	1,04
1.1.35.66	nfs-reader09	NFS	Stopped	24,641,640	7,868,550	86	551	262,910,907	0	0	0	0	0	1,096	0	2,048	1,04
1.1.34.65	nfs-reader08	NFS	Stopped	40,725,709	34,507,982	284	499	254,764,336	0	0	0	0	0	1,105	0	2,048	1,04
1.1.33.64	nfs-reader07	NFS	Stopped	17,949,296	5,022,042	198	430	204,690,293	0	0	0	0	0	1,051	0	2,048	1,04
1.1.32.63	nfs-reader06	NFS	Stopped	16,778,849	5,920,170	77	390	179,221,182	0	0	0	0	0	1,089	0	2,048	1,04
1.1.31.62	nfs-reader05	NFS	Stopped	18,936,4	177,296,453	0	0	0	0	0	0	0	0	1,054	0	2,048	1,04
1.1.30.61	nfs-reader04	NFS	Stopped	19,886,4	119,338,802	0	0	0	0	0	0	0	0	1,071	0	2,048	1,04
1.1.29.60	nfs-reader03	NFS	Stopped	25,581,4	276,051,861	0	0	0	0	0	0	0	0	1,142	0	2,048	1,04
1.1.28.59	nfs-reader02	NFS	Stopped	15,752,4	95,481,894	0	0	0	0	0	0	0	0	1,098	0	2,048	1,04
1.1.27.58	nfs-reader01	NFS	Stopped	15,773,4	173,715,355	0	0	0	0	0	0	0	0	1,118	0	2,048	1,04
1.1.26.57	nfs-reader	NFS	Stopped	27,127,4	261,739,027	0	0	0	0	0	0	0	0	1,142	0	2,048	1,04
1.1.25.85	cifs-writer09	CIFS	Stopped	Table Report	0	0	0	0	23,506,141	17,949,132	7	818	427,620,779	1,122	0	2,048	1,04
1.1.24.84	cifs-writer08	CIFS	Stopped	Count Selected	0	0	0	0	18,907,273	28,158,644	6	812	418,722,852	1,129	0	2,048	1,04
1.1.23.83	cifs-writer07	CIFS	Stopped	Calculations	0	0	0	0	24,472,917	27,814,367	7	839	439,010,489	1,096	0	2,048	1,04
1.1.22.82	cifs-writer06	CIFS	Stopped	View Logs	0	0	0	0	18,417,358	24,697,811	5	621	330,752,736	1,063	0	2,048	1,04
1.1.21.81	cifs-writer05	CIFS	Stopped	Add/Remove Table Columns	0	0	0	0	19,016,929	12,225,040	7	773	404,592,315	1,022	0	2,048	1,04
1.1.20.80	cifs-writer04	CIFS	Stopped	Add/Remove Table Report Columns	0	0	0	0	31,219,319	27,151,284	9	1,069	561,218,005	1,082	0	2,048	1,04
1.1.19.79	cifs-writer03	CIFS	Stopped	Save Table Layout	0	0	0	0	20,912,307	19,034,982	5	732	379,021,683	1,068	0	2,048	1,04
1.1.18.78	cifs-writer02	CIFS	Stopped	Reset Table Layout	0	0	0	0	17,160,858	16,797,544	5	704	369,844,393	1,115	0	2,048	1,04
1.1.17.77	cifs-writer01	CIFS	Stopped	Auto-Resize Columns	0	0	0	0	16,907,704	8,240,832	5	739	382,746,053	1,075	0	2,048	1,04
1.1.16.47	cifs-writer	CIFS	Stopped		0	0	0	0	20,671,007	10,961,905	6	701	371,458,002	1,079	0	2,048	1,04
1.1.45.94	cifs-reader09	CIFS	Run	20,112,5	12,855,337	10	1,165	440,190,741	0	0	0	0	0	0	0	2,048	1,04
1.1.44.93	cifs-reader08	CIFS	Run	28,121,283	12,855,337	11	1,123	615,114,012	0	0	0	0	0	0	0	2,048	1,04
1.1.43.92	cifs-reader07	CIFS	Run	27,148,188	11,333,184	11	1,123	593,825,605	0	0	0	0	0	0	0	2,048	1,04
1.1.42.91	cifs-reader06	CIFS	Run	25,554,560	16,648,233	14	1,054	558,964,494	0	0	0	0	0	0	0	2,048	1,04
1.1.41.90	cifs-reader05	CIFS	Run	22,741,333	17,281,215	15	936	497,426,871	0	0	0	0	0	0	0	2,048	1,04
1.1.40.89	cifs-reader04	CIFS	Run	25,011,119	31,341,051	9	1,037	547,387,106	0	0	0	0	0	0	0	2,048	1,04
1.1.39.88	cifs-reader03	CIFS	Run	35,888,427	34,330,205	12	1,490	785,436,181	0	0	0	0	0	0	0	2,048	1,04
1.1.38.87	cifs-reader02	CIFS	Run	28,745,964	41,568,572	9	1,194	629,116,213	0	0	0	0	0	0	0	2,048	1,04
1.1.37.86	cifs-reader01	CIFS	Run	21,076,284	13,690,550	6	863	462,579,658	0	0	0	0	0	0	0	2,048	1,04
1.1.36.67	cifs-reader	CIFS	Run	34,942,834	24,419,738	22	1,468	764,296,888	0	0	0	0	0	0	0	2,048	1,04

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B. In the **Dynamic Report** window, select the checkbox **Rx-Bps**



C. In the **File-IO** window, we can watch for Files Written and IO Errors:

The screenshot shows the 'File-IO' window in LANforge Manager. It displays a table with columns for EID, Name, Type, Status, Read-Bps, Rx-Bps-20s, Files-Read, Buf-RD, Bytes-RD, Write-Bps, Tx-Bps-20s, Files-WR, Buf-WR, Bytes-WR, IO Fail, and CRC Fail. The table lists data for multiple NFS readers and writers, showing their current status and performance metrics.

EID	Name	Type	Status	Read-Bps	Rx-Bps-20s	Files-Read	Buf-RD	Bytes-RD	Write-Bps	Tx-Bps-20s	Files-WR	Buf-WR	Bytes-WR	IO Fail	CRC Fail
1.1.36.67	cifs-reader	CIFS	Run	25,841,282	32,956,888	281	16,967	8,839,330,454	0	0	0	0	0	0	0
1.1.37.86	cifs-reader01	CIFS	Run	28,286,071	14,503,130	331	18,607	9,676,279,819	0	0	0	0	0	0	0
1.1.38.87	cifs-reader02	CIFS	Run	25,675,793	44,278,014	747	17,188	8,783,659,977	0	0	0	0	0	0	0
1.1.39.88	cifs-reader03	CIFS	Run	27,594,195	24,030,192	357	18,168	9,438,222,103	0	0	0	0	0	0	0
1.1.40.89	cifs-reader04	CIFS	Run	26,060,901	27,351,891	228	17,123	8,912,460,367	0	0	0	0	0	0	0
1.1.41.90	cifs-reader05	CIFS	Run	28,310,079	29,781,046	354	18,639	9,684,835,795	0	0	0	0	0	0	0
1.1.42.91	cifs-reader06	CIFS	Run	26,734,750	18,958,957	236	17,586	9,145,577,151	0	0	0	0	0	0	0
1.1.43.92	cifs-reader07	CIFS	Run	25,631,059	15,824,970	880	17,351	8,765,450,813	0	0	0	0	0	0	0
1.1.44.93	cifs-reader08	CIFS	Run	28,755,631	13,630,115	784	19,257	9,835,806,246	0	0	0	0	0	0	0
1.1.45.94	cifs-reader09	CIFS	Run	25,375,171	32,458,818	671	16,914	8,678,251,608	0	0	0	0	0	0	0
1.1.16.47	cifs-writer	CIFS	Run	0	0	0	0	24,582,068	39,241,944	156	16,300	8,450,614,614	0	0	0
1.1.17.77	cifs-writer01	CIFS	Run	0	0	0	0	24,212,583	13,250,644	156	16,033	8,323,402,487	0	0	0
1.1.18.78	cifs-writer02	CIFS	Run	0	0	0	0	23,573,318	11,294,775	154	15,612	8,104,713,265	0	0	0
1.1.19.79	cifs-writer03	CIFS	Run	0	0	0	0	23,197,964	10,028,251	160	15,364	7,975,953,149	0	0	0
1.1.20.80	cifs-writer04	CIFS	Run	0	0	0	0	25,282,407	20,389,431	166	16,760	8,691,800,799	0	0	0
1.1.21.81	cifs-writer05	CIFS	Run	0	0	0	0	23,829,723	9,727,229	167	15,771	8,192,858,495	0	0	0
1.1.22.82	cifs-writer06	CIFS	Run	0	0	0	0	25,771,019	28,708,930	170	17,075	8,860,672,626	0	0	0
1.1.23.83	cifs-writer07	CIFS	Run	0	0	0	0	24,227,740	14,016,350	168	16,043	8,326,962,238	0	0	0
1.1.24.84	cifs-writer08	CIFS	Run	0	0	0	0	24,148,403	20,125,470	167	15,975	8,301,508,644	0	0	0
1.1.25.85	cifs-writer09	CIFS	Run	0	0	0	0	23,940,453	17,748,442	157	15,865	8,231,221,802	0	0	0
1.1.26.57	nfs-reader	NFS	Run	25,519,784	18,538,109	1,901	17,457	8,705,493,994	0	0	0	0	0	0	0
1.1.27.58	nfs-reader01	NFS	Run	26,988,912	50,637,873	2,160	18,571	9,206,646,759	0	0	0	0	0	0	0
1.1.28.59	nfs-reader02	NFS	Run	24,737,794	17,466,818	1,863	16,964	8,439,348,051	0	0	0	0	0	0	0
1.1.29.60	nfs-reader03	NFS	Run	31,585,354	58,091,747	2,406	21,668	10,775,011,883	0	0	0	0	0	0	0
1.1.30.61	nfs-reader04	NFS	Run	24,496,473	30,221,523	1,528	16,594	8,356,751,497	0	0	0	0	0	0	0
1.1.31.62	nfs-reader05	NFS	Run	25,284,042	57,079,233	2,039	17,376	8,625,379,172	0	0	0	0	0	0	0
1.1.32.63	nfs-reader06	NFS	Run	27,692,893	36,695,103	1,781	18,868	9,446,779,665	0	0	0	0	0	0	0
1.1.33.64	nfs-reader07	NFS	Run	25,605,000	40,952,544	1,667	17,381	8,735,184,445	0	0	0	0	0	0	0
1.1.34.65	nfs-reader08	NFS	Run	26,896,961	10,219,038	1,977	18,415	9,175,259,779	0	0	0	0	0	0	0
1.1.35.66	nfs-reader09	NFS	Run	26,340,784	33,699,461	1,793	17,976	8,988,170,532	0	0	0	0	0	0	0
1.1.6.37	nfs-writer	NFS	Run	0	0	0	0	69,072,346	70,775,166	1,794	46,540	23,694,232,453	0	0	0
1.1.7.38	nfs-writer01	NFS	Run	0	0	0	0	69,224,662	94,370,884	1,810	46,626	23,746,845,433	0	0	0
1.1.8.39	nfs-writer02	NFS	Run	0	0	0	0	68,307,607	66,255,251	1,805	45,962	23,428,826,152	0	0	0
1.1.9.40	nfs-writer03	NFS	Run	0	0	0	0	69,525,951	68,162,006	1,805	46,808	23,850,182,538	0	0	0
1.1.10.41	nfs-writer04	NFS	Run	0	0	0	0	68,217,295	82,009,505	1,799	45,947	23,396,988,910	0	0	0
1.1.11.42	nfs-writer05	NFS	Run	0	0	0	0	69,222,734	60,897,830	1,851	46,601	23,746,140,829	0	0	0
1.1.12.43	nfs-writer06	NFS	Run	0	0	0	0	69,879,015	68,930,863	1,836	47,020	23,965,121,851	0	0	0
1.1.13.44	nfs-writer07	NFS	Run	0	0	0	0	69,680,073	72,513,302	1,798	46,927	23,909,105,809	0	0	0
1.1.14.45	nfs-writer08	NFS	Run	0	0	0	0	68,314,303	68,199,526	1,806	45,987	23,434,487,597	0	0	0
1.1.15.46	nfs-writer09	NFS	Run	0	0	0	0	69,702,357	83,031,826	1,823	46,922	23,910,635,593	0	0	0

Advanced File-IO Tunings

System tuning is desirable when determining machine performance. The following topics can apply to NFS or

CIFS clients:

15. Tuning network card ring-buffers

- A. Network cards often have tunable memory buffers that can be modified using `ethtool`
- B. Read the available capacities using `ethtool -g eth1`
- C. Adjust the tx and rx parameters using `ethtool -G eth1 tx 4096 rx 4096`
- D. This feature depends on the card driver and system state. Not all cards are tunable.
- E. The efficacy of this technique is difficult to measure, but some manufacturer's websites show this step being done in their white papers.

16. Matching buffer sizes to negotiated transfer size

- A. NFS mount parameters can be inspected using either of two commands:
- B. `mount | grep nfs` or `grep nfs /proc/mounts`
- C. Notice the rsize and wsize parameters might not match your request values in the Modify Properties box for the mount point.
- D. Setting your Min/Max Read and Min/Max Write sizes to these negotiated values will maximize efficiency by reducing memcopy activity in the kernel.

17. Tuning TCP window sizes

- A. While you can modify Layer 3 TCP window size and buffers, you cannot directly change those settings using the LANforge GUI for the system. This [Discussion on NFS4 performance](#) is worth a read.
- B. The commands below are suggested to increase your buffer sizes to 8-16 megabytes:
`sysctl net.core.rmem_default=8388608`
`sysctl net.core.rmem_max=16777216`
`sysctl net.core.wmem_default=8388608`
`sysctl net.core.wmem_max=16777216`