

DMF Manager Feature Updates

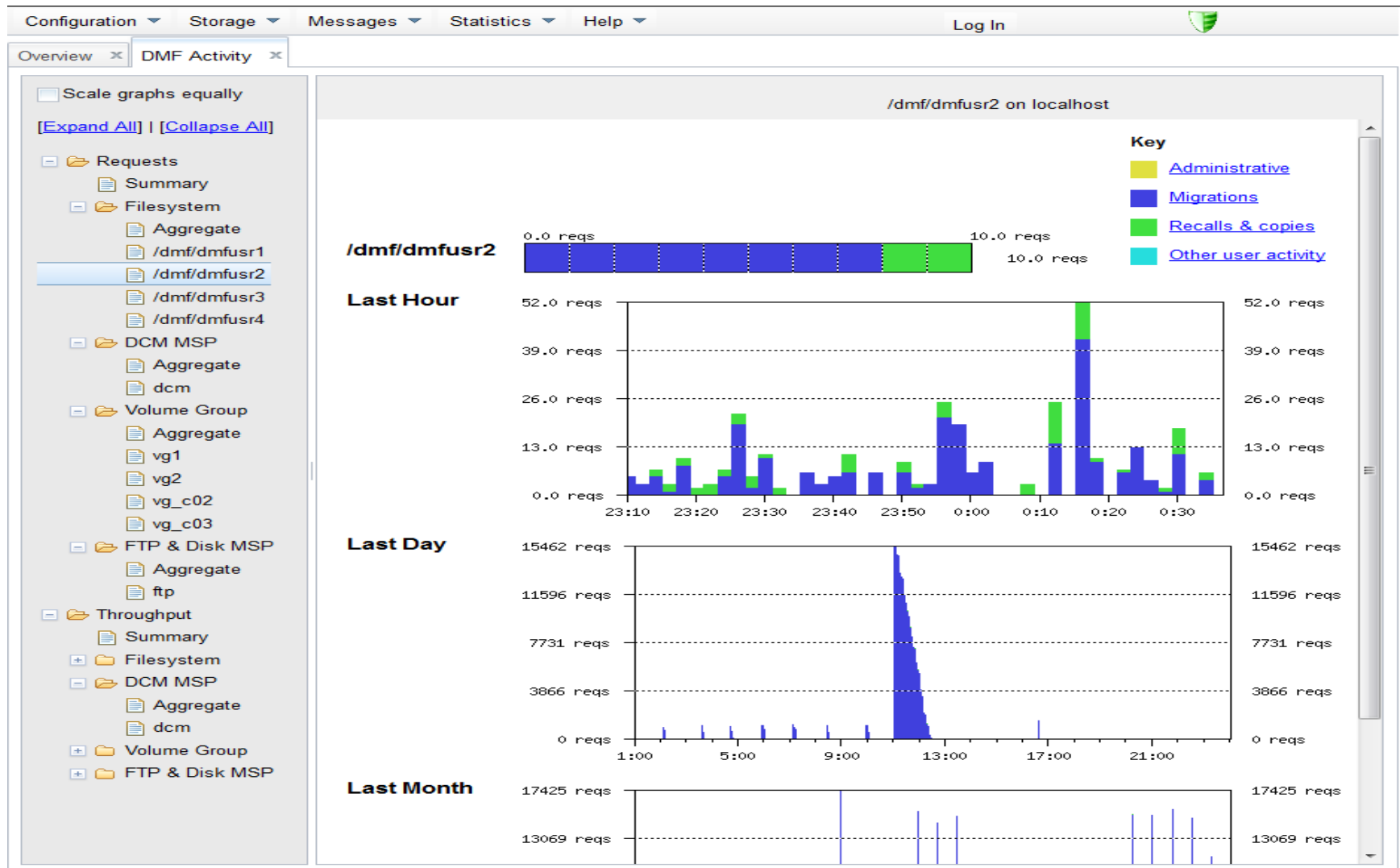
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Engineering**



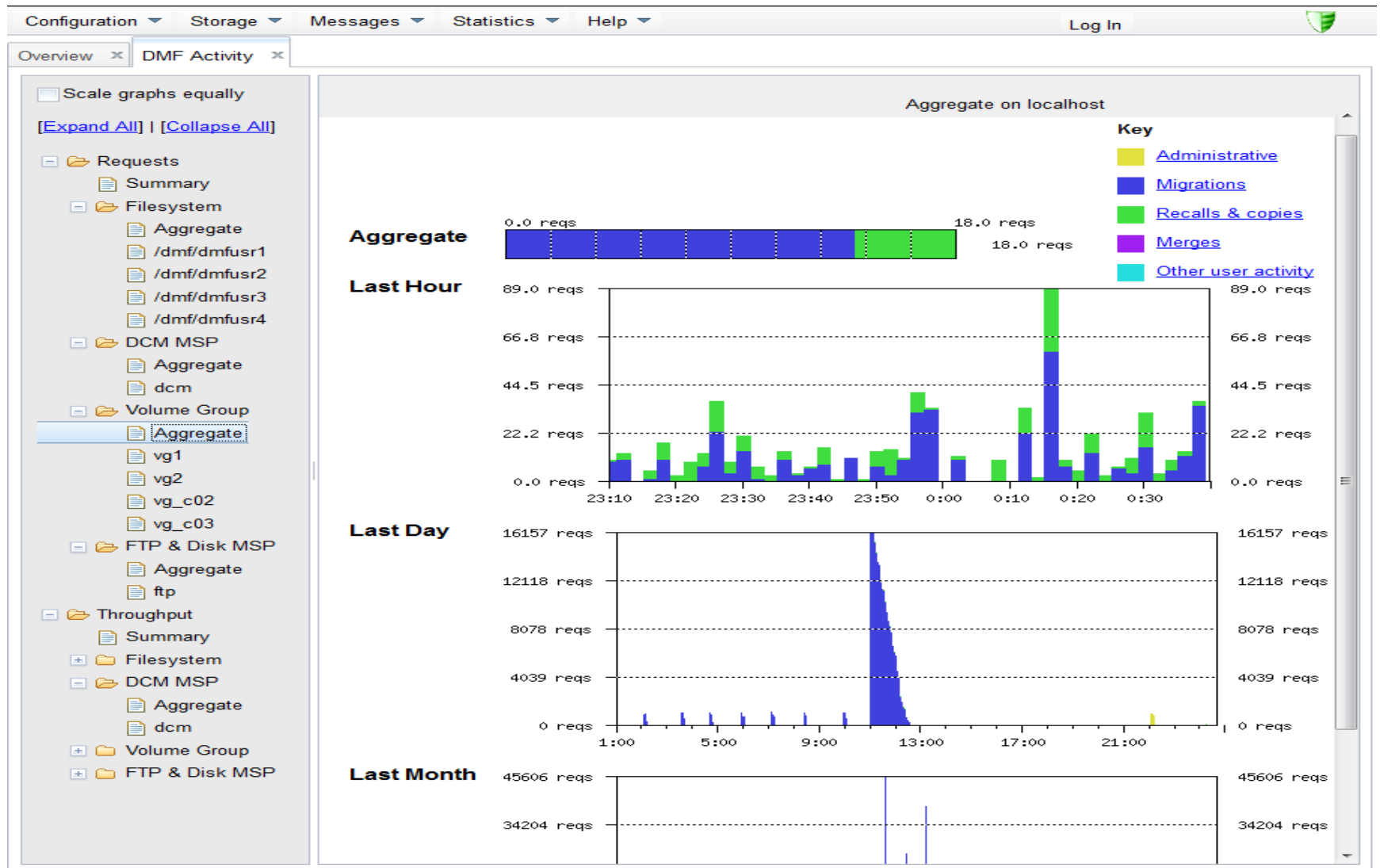
DMF Performance Metrics

- Movers send performance data to centralized dmperf_service using async CORBA RPCs.
- Some of the relevant fields are bytes transferred, io time, mover process identifiers, mover host etc.
- Data stored in Google LevelDB database in compressed format.
- DMFMAN performs analytics on the stored data and displays the relevant graphs in the I/O Panel.
- Dump tool being developed to extract LevelDB data in CSV format.
- Efforts underway to integrate PCP metrics into the I/O performance graphs.

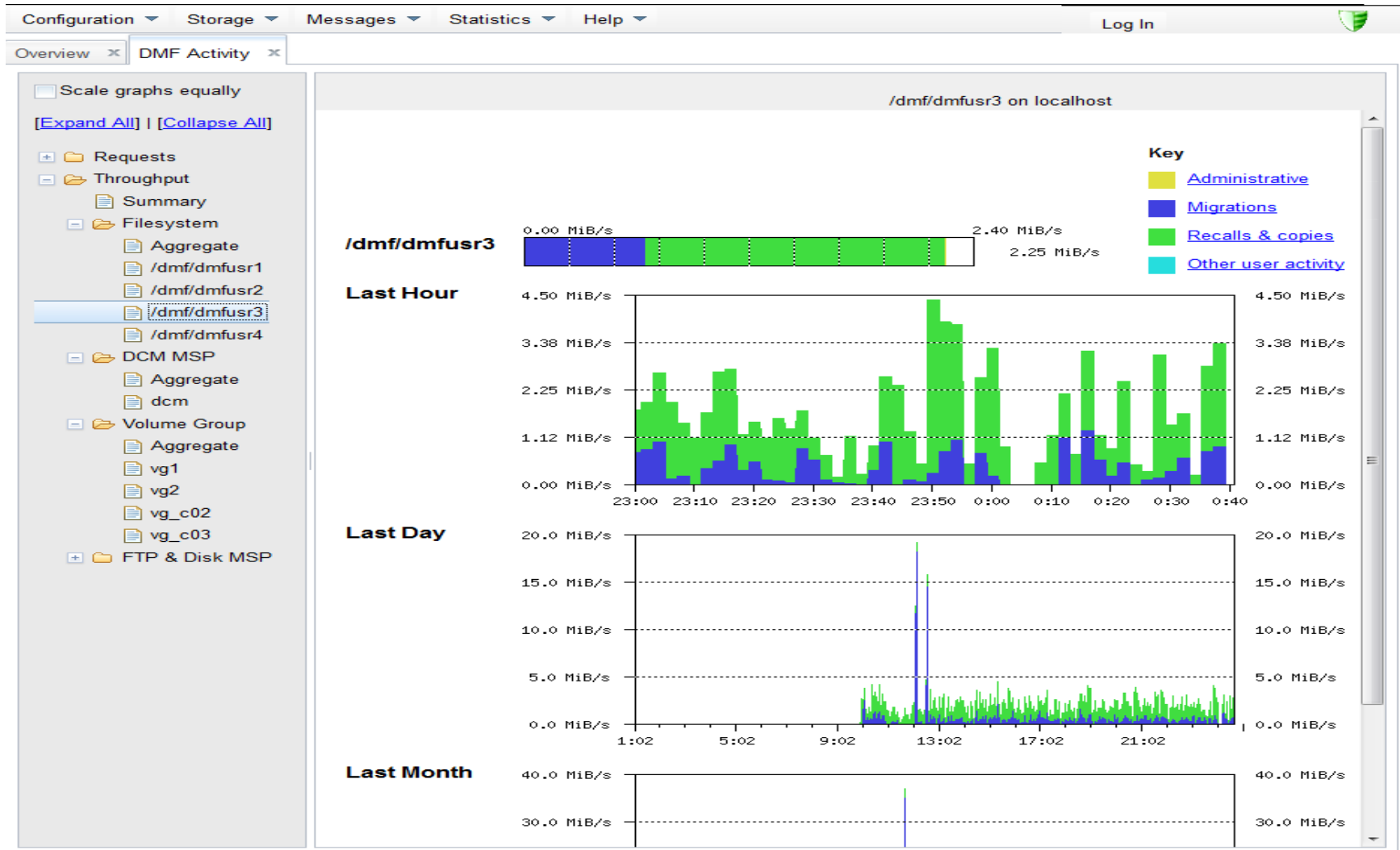
Activity : Filesystem Requests




Activity : VG Request Aggregates



Activity : Filesystem Throughput



I/O Panel : Custom charting

Configuration ▾ Storage ▾ Messages ▾ Statistics ▾ Help ▾ Log In 

Overview x DMF Activity x DMF Resources x DMF I/O x

[Expand A

Add Custom Chart

Select time range:

From Date: Time: 12:00 AM

To Date: Time: 11:59 PM

Select last minutes

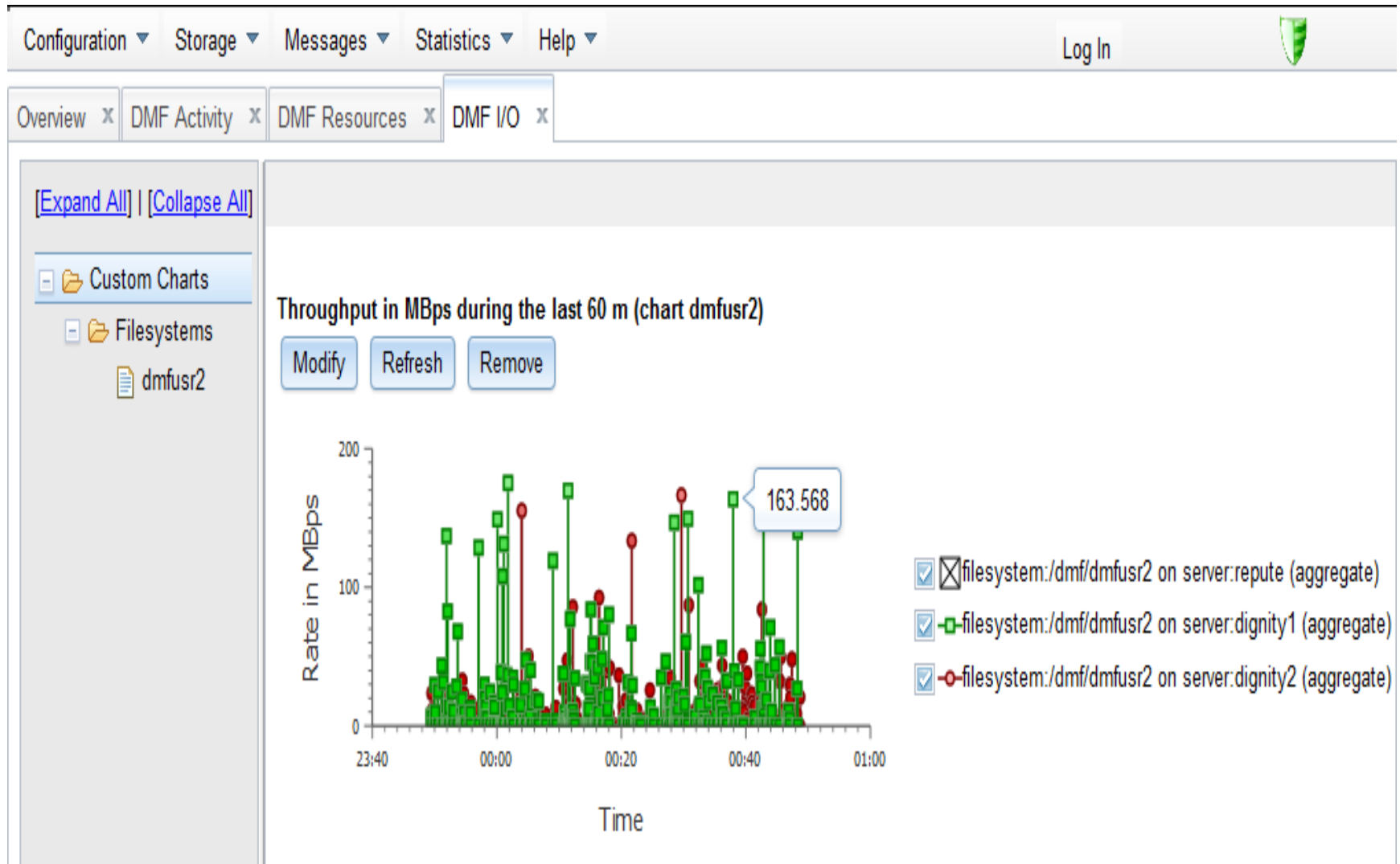
Refresh every: seconds

Group ID for placing custom chart:

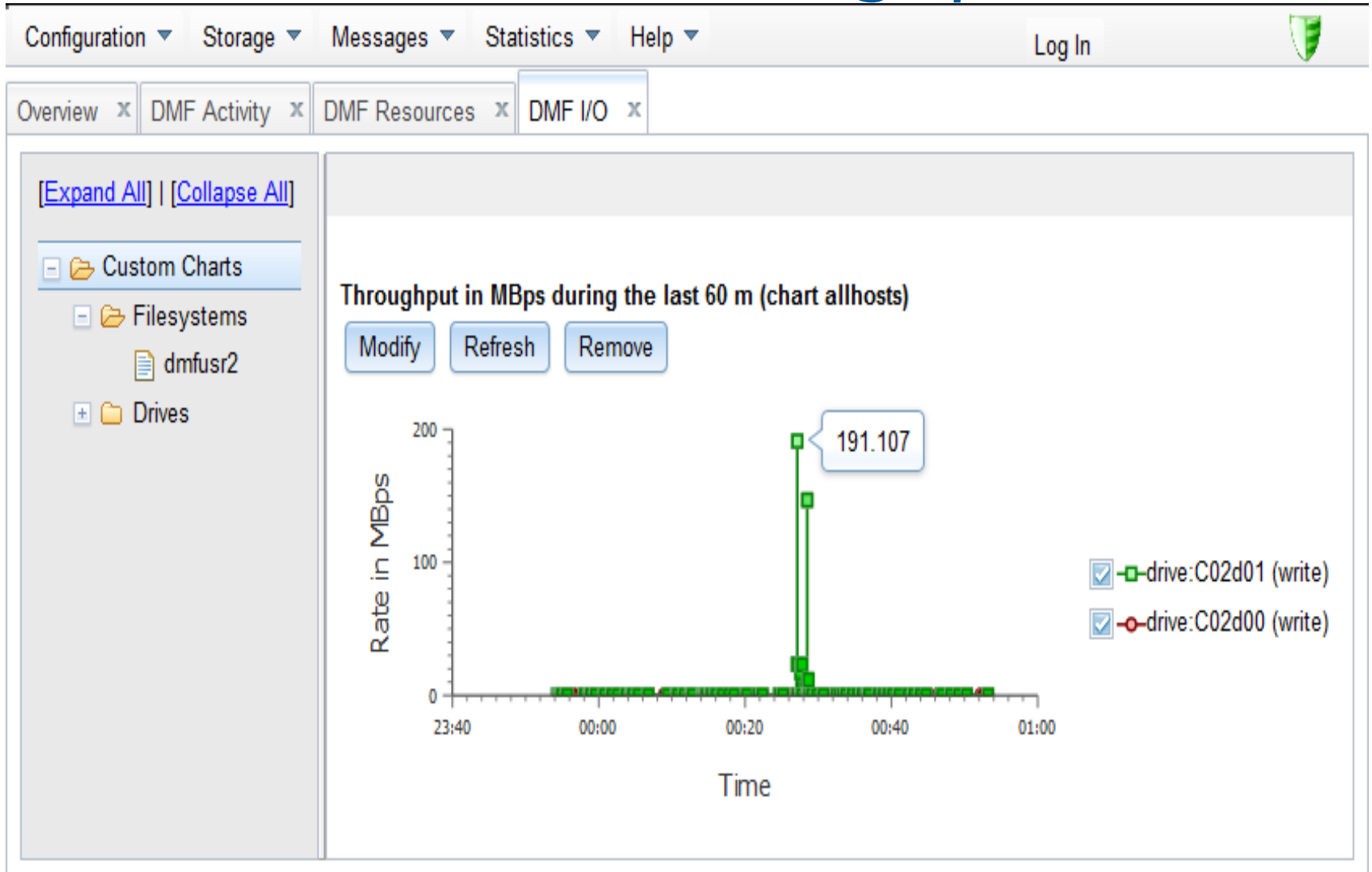
Chart ID for custom chart:

| | Target | Host | Read | Write | Aggr |
|--------------------------|--------------|-----------|--------------------------|-------------------------------------|--------------------------|
| <input type="checkbox"/> | drive:C02d01 | All hosts | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/> | drive:C02d00 | All hosts | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |


I/O Panel : Filesystem Throughput



I/O Panel : Drive Throughput



Resources Panel : Drive Group

Configuration ▾ Storage ▾ Messages ▾ Statistics ▾ Help ▾ Log In 

Overview x DMF Activity x DMF Resources x

Scale graphs equally
[\[Expand All\]](#) | [\[Collapse All\]](#)

- [-] Filesystem
 - /dmf/dmfusr1
 - /dmf/dmfusr2
 - /dmf/dmfusr3
 - /dmf/dmfusr4
- Libraries
- [-] Drive Group
 - [-] dg1
 - [-] dg_c02**
 - [-] dg_c03
- [-] Volume Group
 - [-] vg1
 - [-] vg2
 - [-] vg_c02
 - [-] vg_c03
- [-] DCM MSP
 - [-] dcm

Library server **ls_copan**, drive group **dg_c02** on localhost

| Drive | State | Activity | Purpose | VSN | Zone | Block | Host | PID |
|--------|-------|------------|-----------|--------|------|-------|------------------|-------|
| C02d00 | Idle | -- | (UNKNOWN) | -- | -- | -- | -- | 0 |
| C02d01 | Busy | Waiting | Recall | C02P04 | 260 | 0 | dignity1 (mover) | 26213 |
| C02d02 | Busy | Waiting | Recall | C02M04 | 34 | 0 | dignity1 (mover) | 26112 |
| C02d03 | Busy | Waiting | Migrate | C02Q07 | 304 | (EOT) | dignity1 (mover) | 19908 |
| C02d04 | Busy | Unmounting | Recall | C02P00 | BOT | -- | dignity1 (mover) | 26179 |
| C02d05 | Busy | Waiting | Recall | C02P08 | 224 | 0 | dignity1 (mover) | 26279 |
| C02d06 | Busy | Waiting | Recall | C02M00 | 42 | 0 | dignity1 (mover) | 26249 |

- Base**
 - Drive
 - State
 - Activity
 - Purpose
 - VG
 - VSN
 - Zone
 - Block
 - Host
 - PID
- Current**
 - Access time
 - Idle time
 - Mount time
 - Positioning time
 - Zone time
 - I/O time
 - Unmount time
 - I/O rate (MB/s)
 - Bytes moved
 - Compressed byte
 - Queued items
 - Queued bytes
 - File ID
 - Filesystem
 - File inode
 - Request number
 - Chunk number
 - Chunk bytes
 - Merge port
 - Effective I/O rate
- Total**
 - Total read mounts
 - Total write mounts
 - Total bytes read
 - Total bytes written
 - Total compressed
 - Compression %
- Averages**
 - Avg idle time
 - Avg mount time
 - Avg positioning time
 - Avg zone time

Library Server Capacity Panel

The screenshot shows the DMF Manager interface in Mozilla Firefox. A context menu is open over the 'vtl_ag' volume group, with 'Show Capacity...' selected. The 'Show Capacity' panel displays a report for the 'Library Server vtl_Is'.

| Volume Group | Size (MB) | Active (MB) | % Active | Avail (MB) | % Avail |
|-----------------------|---------------|--------------|-----------|---------------|------------|
| C00_vg0 | 100000 | 14037 | 14% | 73547 | 74% |
| C00_vg0a | 120000 | 13226 | 11% | 84832 | 71% |
| vtl_ag | 680000 | 0 | 0% | 680000 | 100% |
| Library Total: | 900000 | 27263 | 3% | 838378 | 93% |

** There are 2 RESERVED_VOLUMES in C00_vg0.
** There are 2 RESERVED_VOLUMES in C00_vg0a.
Because RESERVED_VOLUMES is set, some of this space will not be available for migrations.
There are 1 locked volumes. No writes can be made to these volumes.

Help

Volume Usage Panel

The screenshot shows the DMF Manager interface in Mozilla Firefox. The browser address bar shows 'sgi DMF Manager'. The navigation menu includes Configuration, Storage, Messages, Statistics, and Help. The 'Volumes' tab is active, showing a list of 45 volumes. The left sidebar displays a tree view of library servers, including 'stk9710', 'stk_ag', 'vtl_ls', 'C00_vg0', 'C00_vg0a', 'vtl_ag', 'Hold Flag Reports', 'hoa', 'hextern', and 'hsite4'. The main table displays volume usage data, with a tooltip for the selected volume C00B23.

Values are presented in (MB)

1 - 45 of 45 items 10 | 25 | 50 | 100

| <input type="checkbox"/> | Volume ID | Summary | Hold Flags | Update Age |
|-------------------------------------|-----------|---------|------------|------------|
| <input type="checkbox"/> | C00C0Q | | ----- | 4d |
| <input type="checkbox"/> | C00F03 | | --o----- | 5d |
| <input type="checkbox"/> | C00A0O | | -----4 | 5d |
| <input type="checkbox"/> | C00A22 | | ----- | 11d |
| <input checked="" type="checkbox"/> | C00B23 | | ----- | 11d |
| <input type="checkbox"/> | C00F0T | | ----- | ... |
| <input type="checkbox"/> | C00F1H | | ----- | ... |
| <input type="checkbox"/> | C00F27 | | ----- | ... |
| <input type="checkbox"/> | C00C00 | | ----- | ... |
| <input type="checkbox"/> | C00B0P | | ----- | 42d |
| <input type="checkbox"/> | C00C24 | | ----- | 42d |
| <input type="checkbox"/> | C00J1L | | ----- | 47d |
| <input type="checkbox"/> | C00J2B | | ----- | 47d |
| <input type="checkbox"/> | C00J07 | | ----- | 47d |
| <input type="checkbox"/> | C00L09 | | ----- | 47d |
| <input type="checkbox"/> | C00K1M | | ----- | 47d |
| <input type="checkbox"/> | C00C1E | | ----- | 47d |

Tooltip for C00B23:

| Description | Percent | Value (MB) | Key |
|-------------------|---------|------------|--------------------------|
| Volume Size | 100% | 20000 | <input type="checkbox"/> |
| Data Written | 80% | 15975 | |
| Active Data | 25% | 4948 | |
| Reclaimable Space | 55% | 11028 | |

Volume Operations Panel

The screenshot shows the DMF Manager interface in Mozilla Firefox. The main window displays a list of volumes with columns for Volume ID, Summary, Hold Flags, and Update Age. A modal dialog box titled "Change Hold Flags" is open, allowing the user to toggle various hold flags for a selected volume. The dialog includes a table with columns for "Select", "On", "Off", and "hflag".

Change Hold Flags Dialog Table:

| Select | On | Off | hflag |
|-------------------------------------|-------------------------------------|--------------------------|-----------------------------------|
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | (e) herr -- I/O Error |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | (f) hfree -- Free (*unsafe) |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | (o) hoa -- Operator/Administrator |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | (r) hro -- Read-only |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | (v) hvfy -- Append error |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | (l) hlock -- Temporarily Locked |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | (u) hfull -- Full (*unsafe) |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | (s) hsparse -- Sparse |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | (x) hextern -- Not in library |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | (1) hsite1_name -- Site Flag 1 |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | (2) hsite2_name -- Site Flag 2 |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | (3) hsite3 -- Site Flag 3 |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | (4) hsite4 -- Site Flag 4 |

Buttons: Apply, Help, Cancel

Main Volume List Table:

| Volume ID | Summary | Hold Flags | Update Age |
|-----------|---------|------------|------------|
| C00C0Q | | | 4d |
| | | | 5d |
| | | | 4 5d |
| | | | 11d |
| | | | 11d |
| | | | 42d |
| | | | 42d |
| | | | 47d |
| | | | 47d |
| | | | 47d |
| | | | 47d |
| | | | 47d |
| | | | 47d |
| C00C1E | | | 47d |

Prioritized Recall

- Priorities range from 1-1024 with 512 being the default and 1024 being the highest priority.
- Root can specify priority during file recall and increase priority after queue submission.
- Priority handled only by Library Server for now.
- Requests with equal priority are ordered by arrival time.
- Within VG, recall requests grouped by source tape.
- Tape's mount priority is assigned from the highest priority recall request.
- Once tape is mounted, all recall requests for it are allowed to run to completion.
- DMF manager allows change of recall priorities via SOAP interface.

Out-of-Library support

- Support for OPERATOR REQUEST alerts in ISSP 3.0.
- **OPER_ADDCART_RQ** – Recall requested on removed cartridge from the library.
- **OPER_MOVECART_RQ** – Recall requested on cartridge moved to a different library.

DMF High Availability (HA)

- Status of DMF HA configuration indicated (Green Star)
- Support for Active/Passive and Active/Active Configuration status.
- DMF Services Start / Stop support for Active / Passive nodes.
- Services support for mover nodes and Active / Active configurations in future releases.

DMF High Availability (HA) Panel

The screenshot shows the DMF Manager web interface in a Mozilla Firefox browser window. The browser address bar shows 'sgi DMF Manager'. The interface includes a navigation menu with 'Configuration', 'Storage', 'Messages', 'Statistics', and 'Help'. A 'Show HA Details' dialog box is open, displaying the following information:

Show HA Details

Resource List

Resource Group: dmfGroup

- CXFS (ocf:sgi:cxfs): Started poke
- VirtualIP (ocf:heartbeat:IPaddr2): Started poke
- OpenVault (ocf:sgi:openvault): Started poke
- DMF (ocf:sgi:dmf): Started poke
- DMFMAN (ocf:sgi:dmfman): Started poke
- DMFSOAP (ocf:sgi:dmfsoap): Started poke

Clone Set: stonith-l2network-set [stonith-l2network]

- Started: [prod poke]

A 'Help' button is located at the bottom of the dialog box. The background interface shows a tree view with nodes like 'DMF', '64 A', 'poke', 'prod', and 'slam', along with various icons and a status bar at the bottom.

Tool consumable output

```
burn# dmcapacity -w 0
```

```
Report of Library Server vtl_ls
```

| | Size (MB) | Active (MB) | % Active | Avail (MB) | % Avail |
|----------------|-----------|-------------|----------|------------|---------|
| Library Total: | 900000 | 27263 | 3% | 838378 | 93% |

```
burn# dmcapacity -vg -w 0
```

```
Report of Library Server vtl_ls
```

| Volume Group | Size (MB) | Active (MB) | % Active | Avail (MB) | % Avail |
|--------------|-----------|-------------|----------|------------|---------|
| C00_vg0 | 100000 | 14037 | 14% | 73547 | 74% |
| C00_vg0a | 120000 | 13226 | 11% | 84832 | 71% |

Tool consumable output

```
burn# /usr/lib/dmf/dmoverview
```

```
DMF State: DEGRADED
```

```
Messages:
```

```
ERROR: OpenVault server is not up or client is misconfigured.
```

```
There are 54 priority 1 alerts
```

```
There are 3 priority 2 alerts
```

```
Last Update: 2012-10-16T09:57:41
```

```
burn# /usr/lib/dmf/dmoverview -f XML
```

```
<DMF_SERVER_STATUS><dmf_status msg=" ERROR: OpenVault server is not up or  
client is misconfigured.&#10;There are 54 priority 1 alerts&#10;There are 3 priority  
2 alerts" state="DEGRADED"/><timestamp>2012-10-  
16T09:57:41</timestamp></DMF_SERVER_STATUS>
```

DMF SOAP access support

- Introduced in ISSP 2.1 and enhanced in ISSP 3.0 with stable API.
- Basic access authentication via HTTPS.
- Simple client examples and sample PHP snippets provided for the API.
- SOAP service access supported for the following client commands :
 - dmattr
 - dmget
 - dmput
 - dmoper
 - dmtag
 - dmversion

DMF SOAP Service

NuSOAP: DMF Client SOAP Service - Mozilla Firefox

File Edit View History Bookmarks Tools Help

NuSOAP: DMF Client SOAP Ser...

DMF Client SOAP Service

View the [WSDL](#) for the service. Click on an operation name to view it's details.

- [ws_dmatrr](#)
- [ws_dmget](#)
- [ws_dmput](#)
- [ws_dmarchive](#)
- [ws_dmtag](#)
- [ws_dmoper](#)
- [ws_dmversion](#)

Close

Name: ws_dmatrr
Binding: DMF Client SOAP Service Binding
Endpoint: https://burn.americas.sgi.com:1180/server.php
SoapAction: https://burn.americas.sgi.com:1180/#ws_dmatrr
Style: rpc
Input:
use: encoded
namespace: https://burn.americas.sgi.com:1180/
encodingStyle: http://schemas.xmlsoap.org/soap/encoding/
message: ws_dmatrrRequest
parts:
dmattr: tns:dmattrRequest
Output:
use: encoded
namespace: https://burn.americas.sgi.com:1180/
encodingStyle: http://schemas.xmlsoap.org/soap/encoding/
message: ws_dmatrrResponse
parts:
response: tns:dmattrResponse
Namespace: https://burn.americas.sgi.com:1180/
Transport: http://schemas.xmlsoap.org/soap/http
Documentation:
Acquires DMF attributes of files via DMF SOAP web-service.

username:
A valid user name on the web-service machine.

names:
A list of filenames in the form:

```
<names xmlns="" xsi:type="SOAP-ENC:Array" SOAP-ENC:arrayType="xsd:string[]">
<item xsi:type="xsd:string"/>/dmf_fs/t1</item>
<item xsi:type="xsd:string"/>/dmf_fs/t2</item>
<item xsi:type="xsd:string"/>/dmf_fs/t3</item>
<item xsi:type="xsd:string"/>/dmf_fs/t4</item>
<item xsi:type="xsd:string"/>/dmf_fs/t5</item>
</names>
```

PHP Example Client - dmatrr.php

```
<?php
#
# Copyright 2012 SGI. All rights reserved.
#
# This is a simple example SOAP Client interface to the DMF SOAP
# Service supporting the dmatrr interface.
# Note: You may need to install the php curl and php openssl
# packages on your machine.
#
# Nothing SOAP related yet. Just set up some variables specific
# to dmatrr and parse the command line arguments
```

Transferring data from burn.americas.sgi.com...

