
Storage (Domain) Threshold Alerts

User Interface

Functional Specification

Version 0.1

NW

CASL



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Design Specification Revision History		
Version	Date	Changes
0.1	03/9/04	First draft for internal review

1. Introduction

1.1 Overview

This project is intended to provide a means for administrators and/or the system itself to respond to conditions of increased or decreased consumption beyond a predetermined (threshold) limit of a filesystem's available storage pool.

1.2 Proposed Functionality

This project implements the management of storage thresholds at the user command level. The thresholds will be managed and checked within the kernel and alerts will be made via generation of EVM events. The maintenance of storage thresholds will be accomplished via two existing user utilities. Storage thresholds values will be displayed via 'fsadm info' and storage threshold values will be set via 'fsadm chfs'.

2. Functional Description - fsadm info

This section describes new functionality for an existing utility.

2.1 Areas of Consideration

- * Security - 'fsadm info' will continue to require root privilege to run.
- * Internationalization - message catalog to be used.

2.2 Functional Description

2.2.1 Name

fsadm info

2.2.2 Synopsis

```
/usr/sbin/fsadm [-F advfs] [info] [-V] [-m] {special | fsname}
```

2.2.3 Description

There will be no change to the 'fsadm info' command line. The only impact this project has to 'fsadm info' is added displayed output pertaining to storage threshold values of a particular filesystem.

2.2.4 Example output

```
# fsadm -F advfs info test_fs

      Name : test_fs
      Id   : 00000000407d52ad.000000000007ef40
      Version : 5.0
      Log Blocks : 4096
      Upper Threshold : Limit = 80 Interval = 5
      Lower Threshold : Limit = 20 Interval = 5
      Set Name : default
      Set Tag : 00000001.00000001
      Date Created : Wed Apr 12 17:00:00 2004
      Total Blocks : 10485760
      Free Blocks : 10481016
      Files : 3
      Quota Status : off
      Blkclear : off
      Is Snapshot? : no
      Has Snapshot? : no

Vol   1K-Blks      Free  % Used  Rblks  Wblks  Vol Name
1L   10485760   10481016    0%   256   256  /dev/dsk/c4t4d4
```

2.2.5 Exit Values

'fsadm info' will exit with a value of 0 if successful, or a value of 1 if there was an error.

3. Functional Description - fsadm chfs

This section describes new functionality for an existing utility.

3.1 Areas of Consideration

- * Security - 'fsadm chfs' will continue to require root privilege to run.
- * Internationalization - message catalog to be used.

3.2 Functional Description

3.2.1 Name

fsadm chfs

3.2.2 Synopsis

```
/usr/sbin/fsadm [-F advfs] chfs [-V] -o option_list {special | fsname}
```

3.2.3 New options for 'fsadm chfs'

Options pertaining to storage thresholds:

`ulimit=percent`

Where percent equals percentage of total filesystem storage, that when storage consumption crosses, will generate a notification in the form of an EVM event. A valid `ulimit` is any integer from 0 to 100. `ulimit=0` has the effect of deactivating upper threshold functionality for the given filesystem.

`llimit=percent`

Where percent equals percentage of total filesystem storage, that when storage deletion crosses, will generate a notification in the form of an EVM event. A valid `llimit` is any integer from 0 to 100. `llimit=0` has the effect of deactivating lower threshold functionality for the given filesystem.

`uinterval=minutes`

Where minutes equal the number of minutes that must expire before subsequent upper limit threshold EVM events can be generated. A default value of 5 is assigned if no `uinterval` is given. A valid `uinterval` is an integer from 0 to 10080. (10080 minutes = 1 week)

`linterval=minutes`

Where minutes equal the number of minutes that must expire before subsequent lower limit threshold EVM events can be generated. A default value of 5 is assigned if no `linterval` is given. A valid `linterval` is an integer from 0 to 10080. (10080 minutes = 1 week)

3.2.4 Description

Four examples of 'fsadm chfs' follow:

```
# fsadm -F advfs chfs -o ulimit=80,uinterval=10 test_fs
```

This would result in the upper threshold limit being set to 80 percent and the upper threshold event interval being set to 10 minutes for filesystem `test_fs`.

```
# fsadm -F advfs chfs -o ulimit=70 test_fs
```

This would result in the upper threshold limit being set to 70 percent and the upper threshold event interval being set to the default 5 minutes for filesystem `test_fs`.

```
# fsadm -F advfs chfs -o ulimit=80,llimit=10,linterval=15 test_fs
```

This would result in the upper threshold limit being set to 80 percent, the upper threshold event interval being set to the default 5 minutes, the lower threshold limit being set to 10 percent, and the lower threshold event interval being set to 15 minutes for filesystem `test_fs`.

```
# fsadm -F advfs chfs -o ulimit=0,llimit=0 test_fs
```

This would have the effect of deactivating upper storage threshold monitoring for filesystem `test_fs`.

3.2.5 Side Effects

It's important to stress that `uinterval/linterval` values set below the default greatly increase the chance for a flood of threshold-events to be generated.

3.2.6 Exit Values

'fsadm chfs' will exit with a value of 0 if successful, or a value of 1 if there was an error.