

Troubleshooting Disk Space

Description

Geode JVMs use disk in several ways, including:

- Logging and statistics
- Region persistence and overflow
- Gateway queue persistence and overflow
- Client queue overflow

In an active system, these files (especially the region persistence files) can use a lot of disk space.

Determination

Disk Store Monitor

The Geode `Disk Store Monitor` runs in each JVM and monitors disk usage. For additional details, see the [Apache Geode Documentation](#).

It logs a warning like below in the Geode log file when the disk usage exceeds the usage threshold (default=80%).

```
[warning 2015/04/02 17:20:11.300 PDT server2 <DiskStoreMonitor> tid=0x33]
The disk volume . for disk store DEFAULT has exceeded the warning usage
threshold and is 80% full
```

It throws errors and warnings like below when the disk usage exceeds the critical threshold (default=99%) and shuts down the JVM.

```
[error 2015/04/02 16:29:12.051 PDT server1 <DiskStoreMonitor> tid=0x31]
The disk volume . for disk store DEFAULT has exceeded the critical usage
threshold and is 99% full

[error 2015/04/02 16:29:12.581 PDT server1 <DiskStoreMonitor> tid=0x31] A
DiskAccessException has occurred while writing to the disk for disk store
DEFAULT. The cache will be closed.
com.gemstone.gemfire.cache.DiskAccessException: For DiskStore: DEFAULT:
Critical disk usage threshold exceeded for volume /path/to/server1/.: 99%
full

[warning 2015/04/02 16:29:22.590 PDT server1 <DiskStoreMonitor> tid=0x31]
The disk volume /path/to/server1/. for log files has exceeded the warning
usage threshold and is 99% full.
```

In conjunction with the `Disk Store Monitor` warnings and errors, an `IOException` with the message **Not enough space left on device** like below may also be thrown either by a Geode thread or an application thread.

```
[error 2015/04/02 16:29:33.502 PDT server1 <ServerConnection on port 41310
Thread 18> tid=0x66] A DiskAccessException has occurred while writing to
the disk for region /__PR/_B__trades_68. The cache will be closed.
com.gemstone.gemfire.internal.InsufficientDiskSpaceException: For
DiskStore: DEFAULT: Could not pre-allocate file /path/to/server1/.
/BACKUPDEFAULT_2.crf with size=966,367,641, caused by java.io.IOException:
Not enough space left on device
...
Caused by: java.io.IOException: Not enough space left on device
    at com.gemstone.gemfire.internal.shared.
NativeCallsJNAImpl$POSIXNativeCalls.preBlow(NativeCallsJNAImpl.java:336)
    at com.gemstone.gemfire.internal.cache.Oplog.preblow(Oplog.java:1028)
```

df

One way to see disk space usage of a given disk is to use the operating system `df` command like:

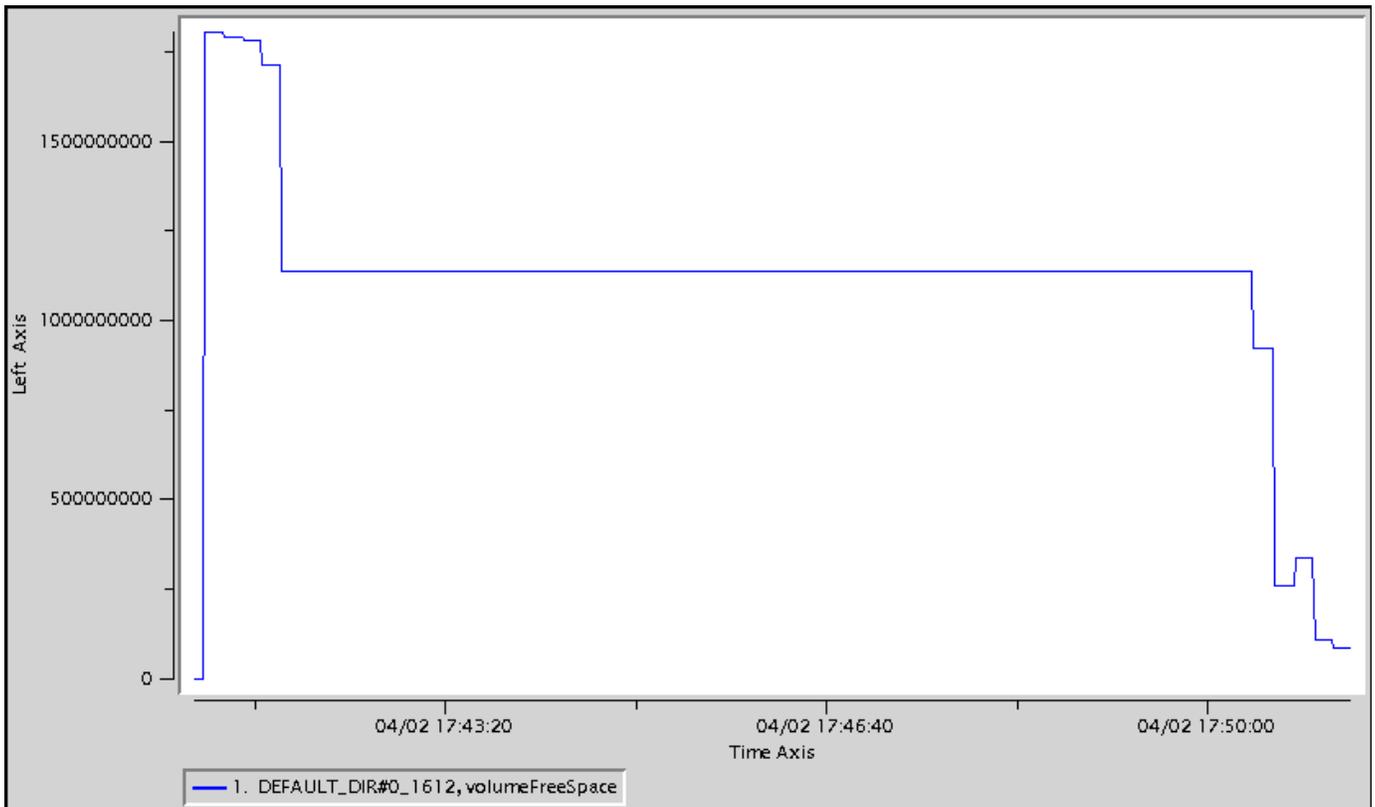
```
df -h .
Filesystem      Size  Used Avail Use% Mounted on
/dev/sdb1       68G   63G  1.1G  99% /disk1
```

vsd

Another way to determine whether there is a disk issue is to use `vsd` to display the disk free space values contained in a given Geode statistics archive.

VMStats

The chart below shows **DiskDirStats volumeFreeSpace** values. The **DiskDirStats volumeFreeSpace** values show the available usable space in the directory. In this case, the disk store ran out of disk space.



Action

There are several actions that can help alleviate disk issues issues, including:

- Remove old Geode log and statistics files
- Compact the Geode region and queue persistence files
- Configure Geode log and statistics rolling so earlier logs and statistics files are deleted
- Add additional disks for region and queue persistence and overflow

For additional details, see the [Apache Geode Documentation](#).