Use docker logs with remote logging drivers

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You can use the `docker logs` command to read container logs regardless of the configured logging driver or plugin. Docker Engine uses the `local` logging driver to act as cache for reading the latest logs of your containers. This is called dual logging. By default, the cache has log-file rotation enabled, and is limited to a maximum of 5 files of 20 MB each (before compression) per container.

Refer to the configuration options section to customize these defaults, or to the disable dual logging section to disable this feature.

Prerequisites

Docker Engine automatically enables dual logging if the configured logging driver doesn't support reading logs.

The following examples show the result of running a `docker logs` command with and without dual logging availability:

Without dual logging capability

When a container is configured with a remote logging driver such as `splunk`, and dual logging is disabled, an error is displayed when attempting to read container logs locally:

- Step 1: Configure Docker daemon

```
$ cat /etc/docker/daemon.json
{
  "log-driver": "splunk",
  "log-opts": {
    "cache-disabled": "true",
    ... (options for "splunk" logging driver)
  }
}
```

- Step 2: Start the container

```
$ docker run -d busybox --name testlog top
```

- Step 3: Read the container logs

```
$ docker logs 7d6ac83a89a0
Error response from daemon: configured logging driver does not support reading
```

With dual logging capability

With the dual logging cache enabled, the `docker logs` command can be used to read logs, even if the logging driver doesn't support reading logs. The following example shows a daemon configuration that uses the `splunk` remote logging driver as a default, with dual logging caching enabled:

- Step 1: Configure Docker daemon

```
$ cat /etc/docker/daemon.json
{
  "log-driver": "splunk",
  "log-opts": {
    ... (options for "splunk" logging driver)
  }
}
```

- Step 2: Start the container

```
$ docker run -d busybox --name testlog top
```

- Step 3: Read the container logs

```
$ docker logs 7d6ac83a89a0
2019-02-04T19:48:15.423Z [INFO]  core: marked as sealed
2019-02-04T19:48:15.423Z [INFO]  core: pre-seal teardown starting
2019-02-04T19:48:15.423Z [INFO]  core: stopping cluster listeners
2019-02-04T19:48:15.423Z [INFO]  core: shutting down forwarding rpc listeners
2019-02-04T19:48:15.423Z [INFO]  core: forwarding rpc listeners stopped
2019-02-04T19:48:15.599Z [INFO]  core: rpc listeners successfully shut down
2019-02-04T19:48:15.599Z [INFO]  core: cluster listeners successfully shut down
```

> For logging drivers that support reading logs, such as the `local`, `json-file` and `journald` drivers, there is no difference in functionality before or after the dual logging capability became available. For these drivers, Logs can be read using `docker logs` in both scenarios.

Configuration options

The dual logging cache accepts the same configuration options as the `local` logging driver, but with a `cache-` prefix. These options can be specified per container, and defaults for new containers can be set using the daemon configuration file.

By default, the cache has log-file rotation enabled, and is limited to a maximum of 5 files of 20MB each (before compression) per container. Use the configuration options described below to customize these defaults.

Option	Default	Description
`cache-disabled`	`"false"`	Disable local caching. Boolean value passed as a string (`true`, `1`, `0`, or `false`).
`cache-max-size`	`"20m"`	The maximum size of the cache before it is rotated. A positive integer plus a unit modifier (`k`, `m`, or `g`; case-insensitive).
`cache-max-file`	`"5"`	The maximum number of cache files that can be present. If rotating the logs creates excess files, the oldest file is removed. A positive integer.
`cache-compress`	`"true"`	Enable or disable compression of rotated log files. Boolean value passed as a string (`true`, `1`, `0`, or `false`).

Disable the dual logging cache

Use the `cache-disabled` option to disable the dual logging cache. Disabling the cache can be useful to save storage space in situations where logs are only read through a remote logging system, and if there is no need to read logs through `docker logs` for debugging purposes.

Caching can be disabled for individual containers or by default for new containers, when using the daemon configuration file.

The following example uses the daemon configuration file to use the `splunk` logging driver as a default, with caching disabled:

```
$ cat /etc/docker/daemon.json
{
  "log-driver": "splunk",
  "log-opts": {
    "cache-disabled": "true",
    ... (options for "splunk" logging driver)
  }
}
```

> For logging drivers that support reading logs, such as the `local`, `json-file` and `journald` drivers, dual logging isn't used, and disabling the option has no effect.

Limitations

- If a container using a logging driver or plugin that sends logs remotely has a network issue, no `write` to the local cache occurs.
- If a write to `logdriver` fails for any reason (file system full, write permissions removed), the cache write fails and is logged in the daemon log. The log entry to the cache isn't retried.
- Some logs might be lost from the cache in the default configuration because a ring buffer is used to prevent blocking the stdio of the container in case of slow file writes. An admin must repair these while the daemon is shut down.

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