

Chukwa Processes and Data Flow

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Overview

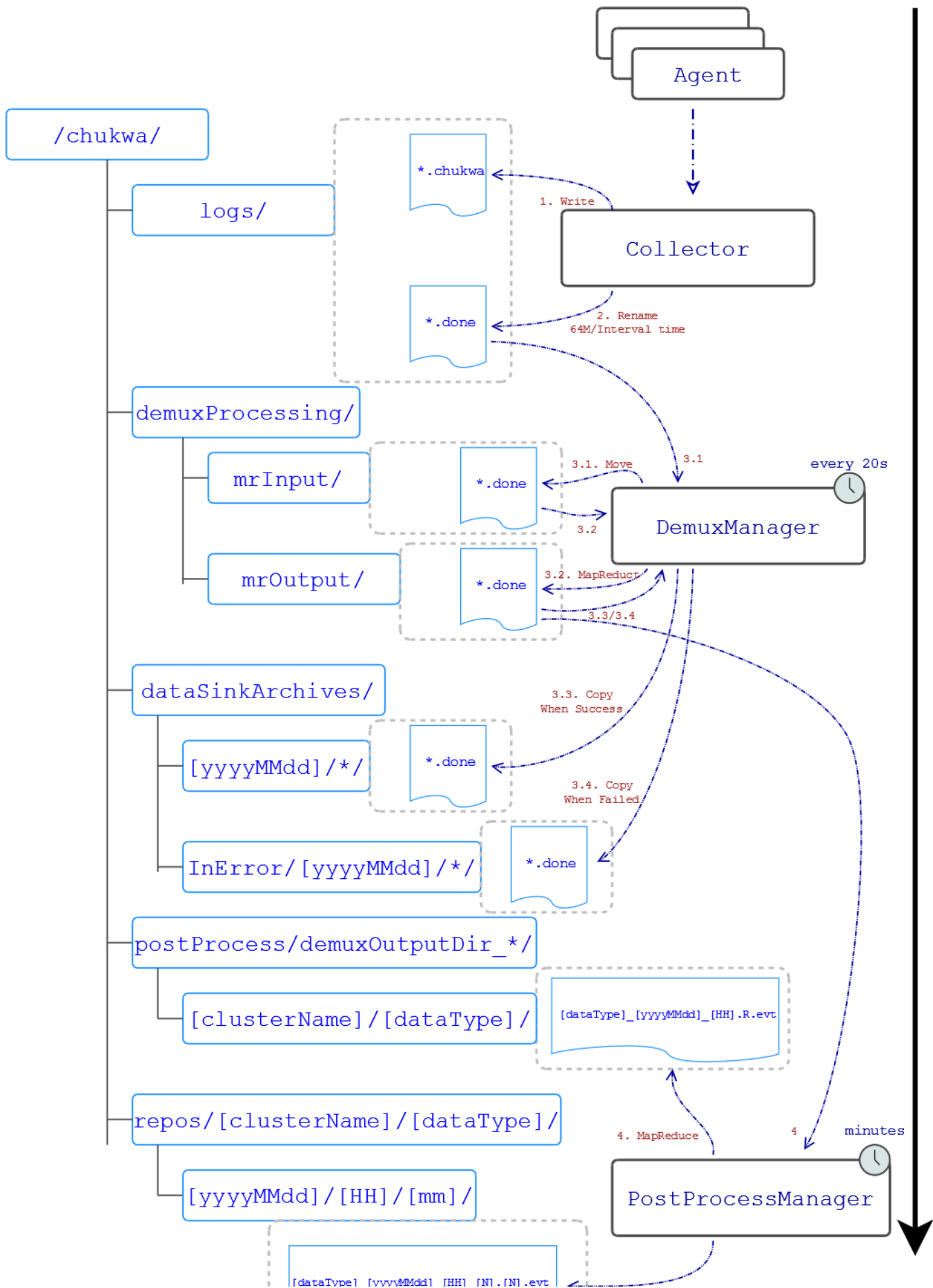
This document describes how Chukwa data is stored in HDFS and the processes that act on it.

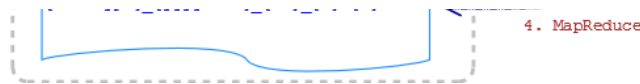
HDFS File System Structure

The general layout of the Chukwa filesystem is as follows.

```
/chukwa/  
  archivesProcessing/  
  dataSinkArchives/  
  demuxProcessing/  
  finalArchives/  
  logs/  
  postProcess/  
  repos/  
  rolling/  
  temp/
```

Raw Log Collection and Aggregation Workflow





What data is stored where is best described by stepping through the Chukwa workflow.

1. Collectors write chunks to `logs/*.chukwa` files until a 64MB chunk size is reached or a given time interval has passed.
 - to: `logs/*.chukwa`
2. Collectors close chunks and rename them to `*.done`
 - from: `logs/*.chukwa`
 - to: `logs/*.done`
3. [DemuxManager](#) checks for `*.done` files every 20 seconds.
 - a. If `*.done` files exist, moves files in place for demux processing:
 - from: `logs/*.done`
 - to: `demuxProcessing/mrInput`
 - b. If demux is successful within 3 attempts, archives the completed files:
 - from: `demuxProcessing/mrOutput`
 - to: `dataSinkArchives/[yyyyMMdd]/*/*.done`
 - c. Otherwise moves the completed files to an error folder:
 - from: `demuxProcessing/mrOutput`
 - to: `dataSinkArchives/InError/[yyyyMMdd]/*/*.done`
4. [PostProcessManager](#) wakes up every few minutes and aggregates, orders and de-dups record files.
 - from: `postProcess/demuxOutputDir_*/[clusterName]/[dataType]/[dataType][yyyyMMdd][HH].R.evt`
 - to: `repos/[clusterName]/[dataType]/[yyyyMMdd]/[HH]/[mm]/[dataType][yyyyMMdd][HH]_[N].[N].evt`
5. [HourlyChukwaRecordRolling](#) runs M/R jobs at 16 past the hour to group 5 minute logs to hourly.
 - from: `repos/[clusterName]/[dataType]/[yyyyMMdd]/[HH]/[mm]/[dataType][yyyyMMdd][mm].[N].evt`
 - to: `temp/hourlyRolling/[clusterName]/[dataType]/[yyyyMMdd]`
 - to: `repos/[clusterName]/[dataType]/[yyyyMMdd]/[HH]/[dataType]HourlyDone[yyyyMMdd]_[HH].[N].evt`
 - leaves: `repos/[clusterName]/[dataType]/[yyyyMMdd]/[HH]/rotateDone/`
6. [DailyChukwaRecordRolling](#) runs M/R jobs at 1:30AM to group hourly logs to daily.
 - from: `repos/[clusterName]/[dataType]/[yyyyMMdd]/[HH]/[dataType][yyyyMMdd][HH].[N].evt`
 - to: `temp/dailyRolling/[clusterName]/[dataType]/[yyyyMMdd]`
 - to: `repos/[clusterName]/[dataType]/[yyyyMMdd]/[dataType]DailyDone[yyyyMMdd].[N].evt`
 - leaves: `repos/[clusterName]/[dataType]/[yyyyMMdd]/rotateDone/`
7. [ChukwaArchiveManager](#) every half hour or so aggregates and removes `dataSinkArchives` data using M/R.
 - from: `dataSinkArchives/[yyyyMMdd]/*/*.done`
 - to: `archivesProcessing/mrInput`
 - to: `archivesProcessing/mrOutput`
 - to: `finalArchives/[yyyyMMdd]*/chukwaArchive-part-*`

Log Directories Requiring Cleanup

The following directories will grow over time and will need to be periodically pruned:

- `finalArchives/[yyyyMMdd]/*`
- `repos/[clusterName]/[dataType]/[yyyyMMdd]/*.evt`