

# SAM farm upgrade

2004-09-09 suen

- Migration is a must
- run like any CAF job,  
apply SAM, do what FPS does and better

# Migration to SAM/CAF (I)

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## MySQL+ dfarm reach its limit

- current dfarm is operating on 2TB/day peak  
scaling is a doubt for > 20 TB, 200 CPU
- MySQL has limited contents/functionality  
recovery is not built in, heavy manpower cleaning
- system is isolated

## Migration to SAM/CAF (II)

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### Upgrade to common CDF SAM/CAF platform

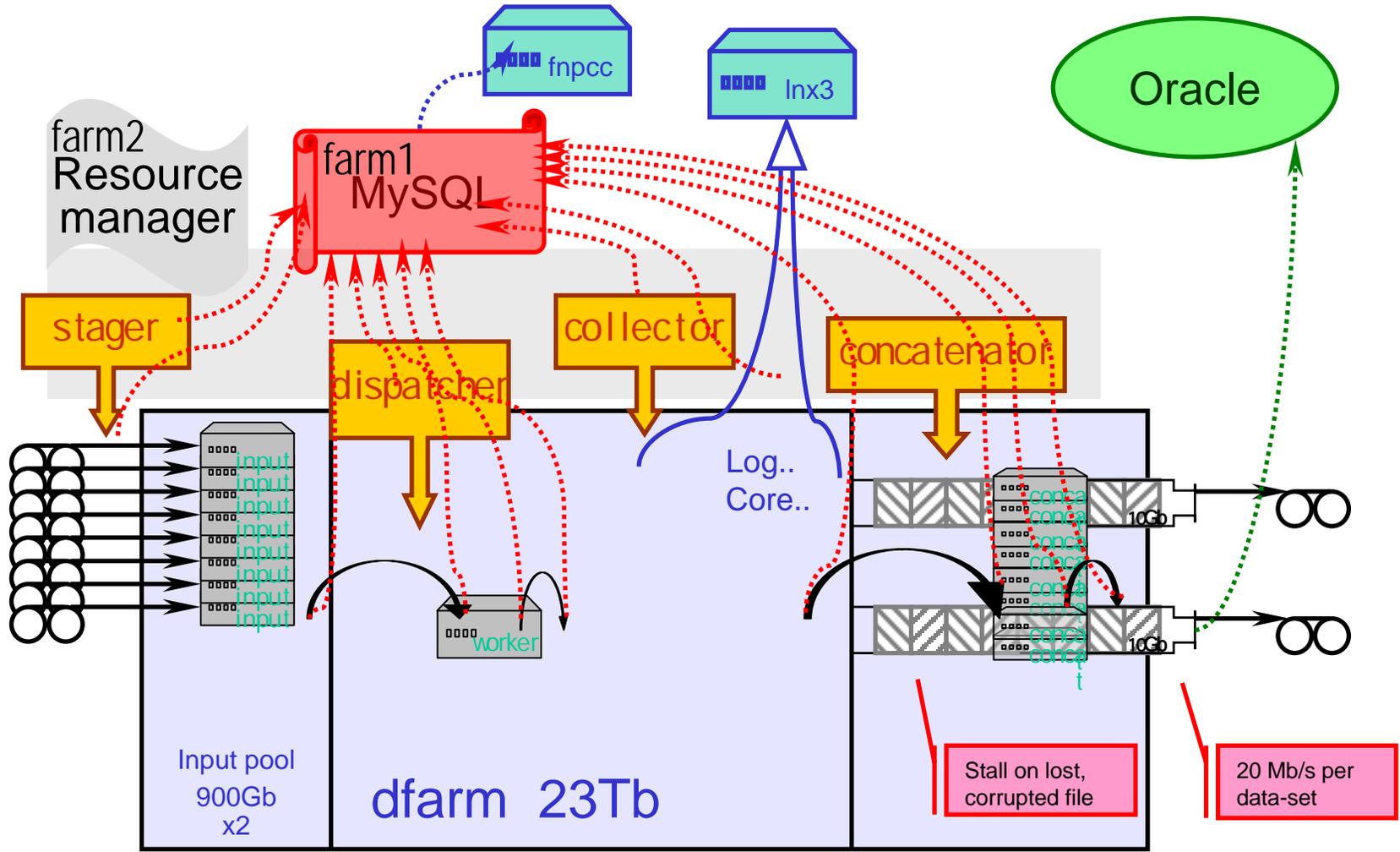
- build on old tarball / book keeping
  - use SAM, add **recovery** function
- loosening concatenation constraints
  - merge files, enhance **parentage** relation

### ➔ Migration is for system flow control

(whatever “cdfopr” couldn’t do without the book!)

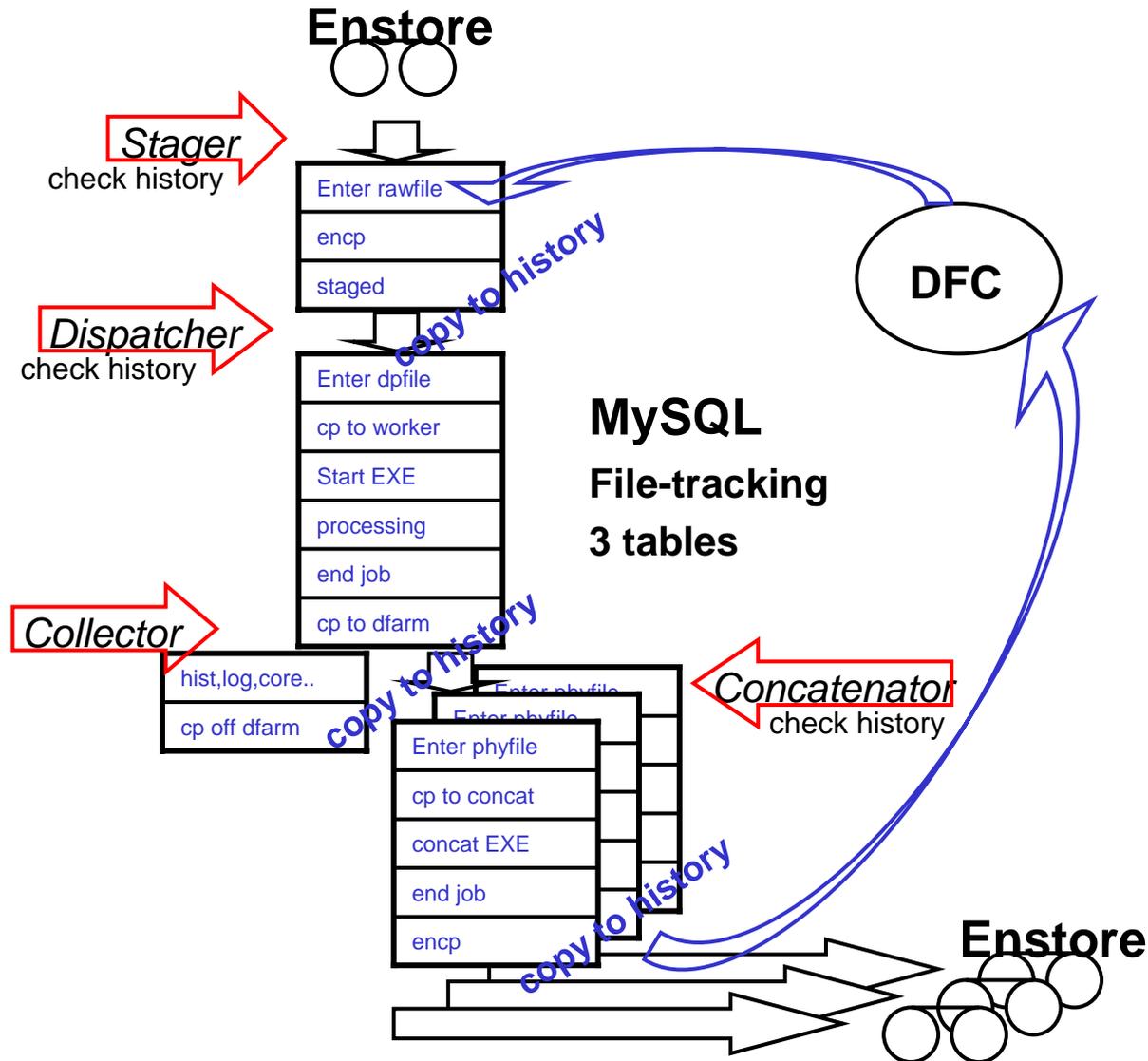
### ➔ use SAM for book keeping

# FPS farm

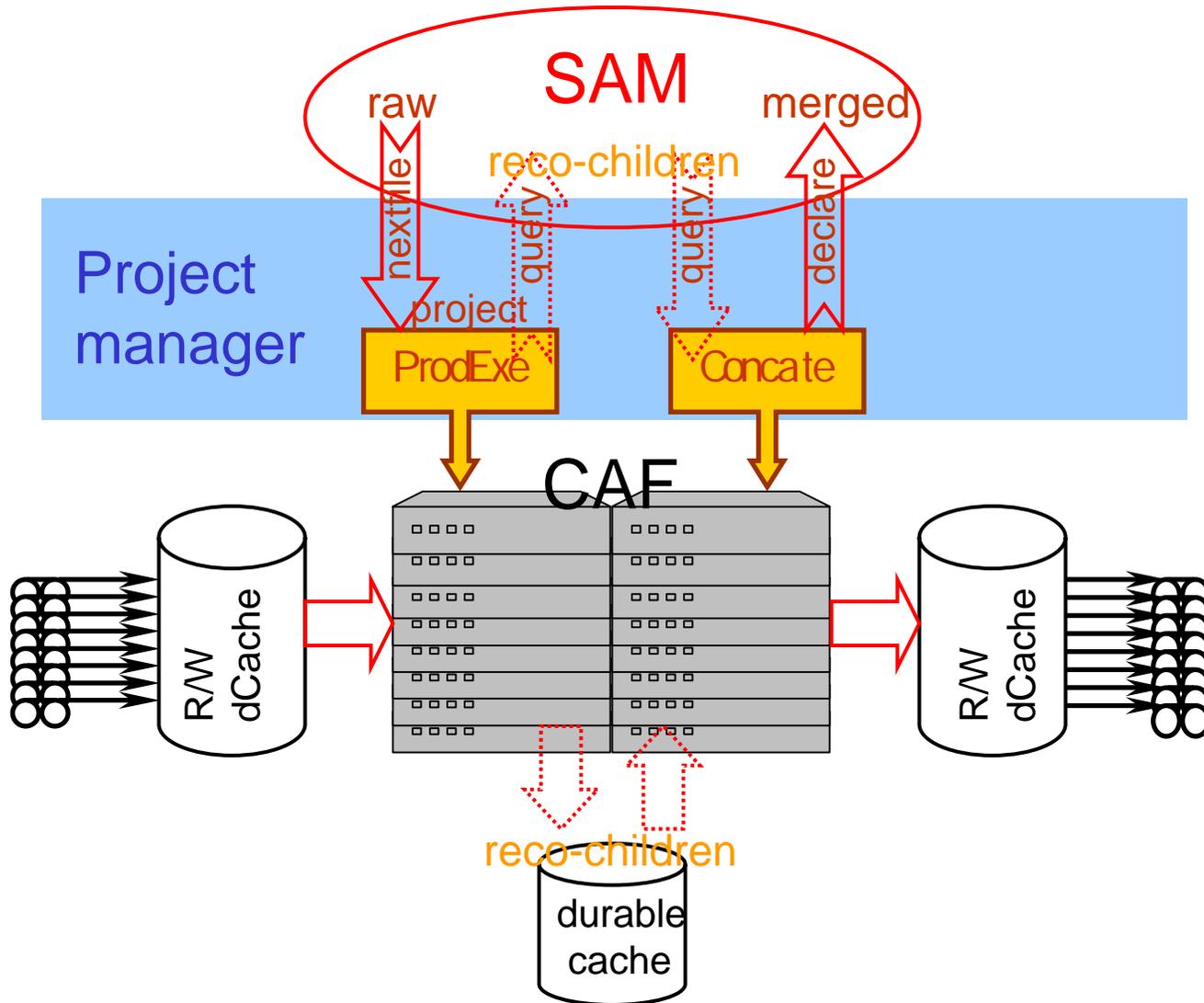


Filename in sequence

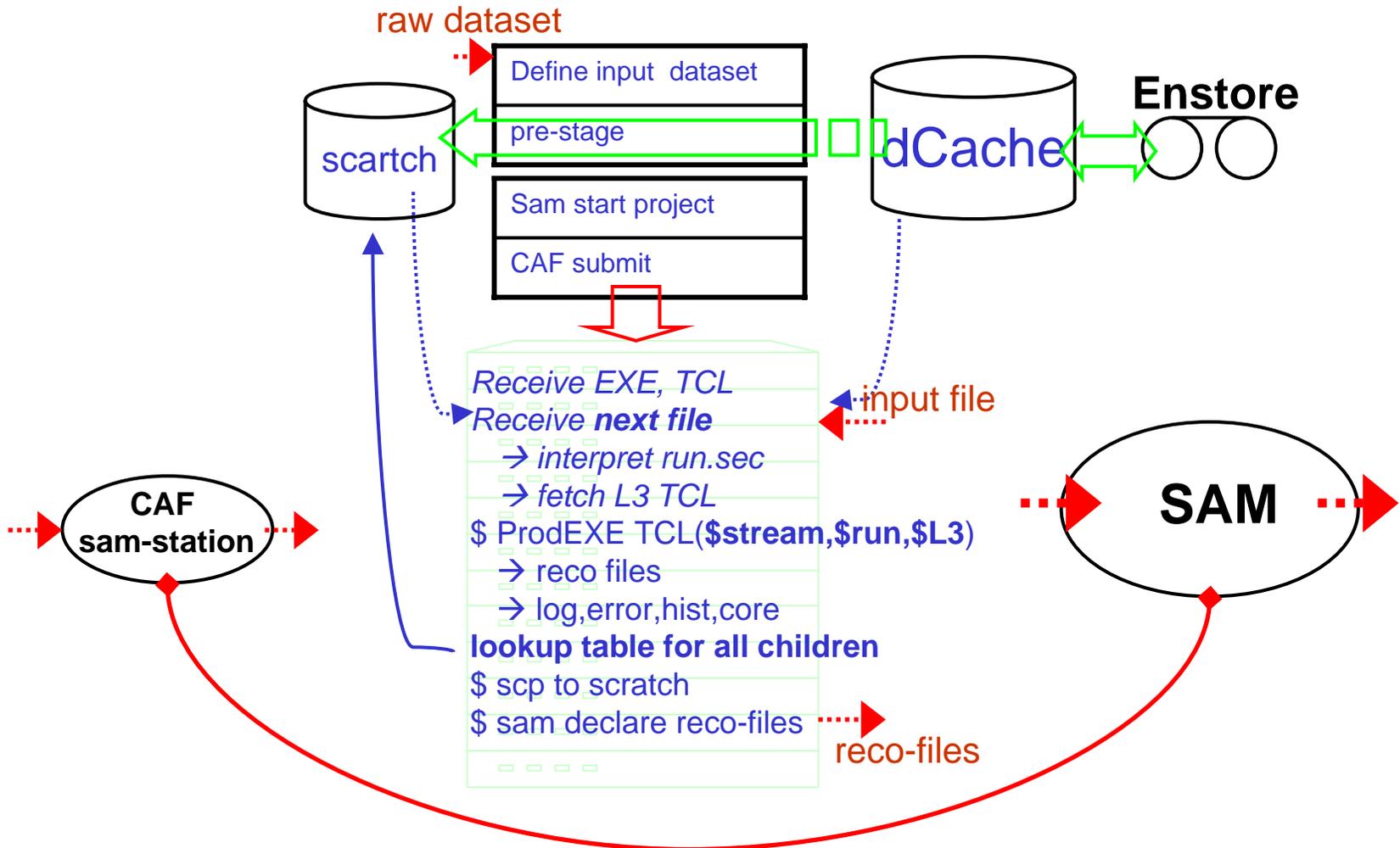
# FPS farm : file tracking



# Farm upgrade



# Raw data production model



# SAM for ProdExe

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- ❑ Define input dataset
  - in units of tape/run-range/files per project)
- ❑ Beginning/Recovery of a job (one input file)
  - Receive next-file from SAM
  - skip if children exist ← lookup table + sam locate
  - skip if release ok ? (not yet implemented)
  - register event/redo for crash (not yet implemented)
- ❑ End of a job
  - Release ok/ 4-crash, failed
  - look up all children ← lookup table
  - scp children/log to durable cache
  - declare children to SAM

# ProdExe known exception

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## ❑ Known exception

Bad runs ← lookup online DB

Bad file / 4 crashes ← register events

Filename section change ← check up section range in file

Incomplete children from trigger table

## ❑ Look up table = physics trigger table

```
# for aphysr
```

```
[aphysr]
```

```
default=aexp0e
```

```
#for example, run number after 185031 changes its child to be "aprd0e"
```

```
185031==aprd0e
```

```
# for cphysr
```

```
[cphysr]
```

```
default=cphb0e,cdip0e,cpjj0e,cphc0e,cph10e,gdif0e
```

```
#for example, run number between 185300 and 185399 has one more children "cph20e"
```

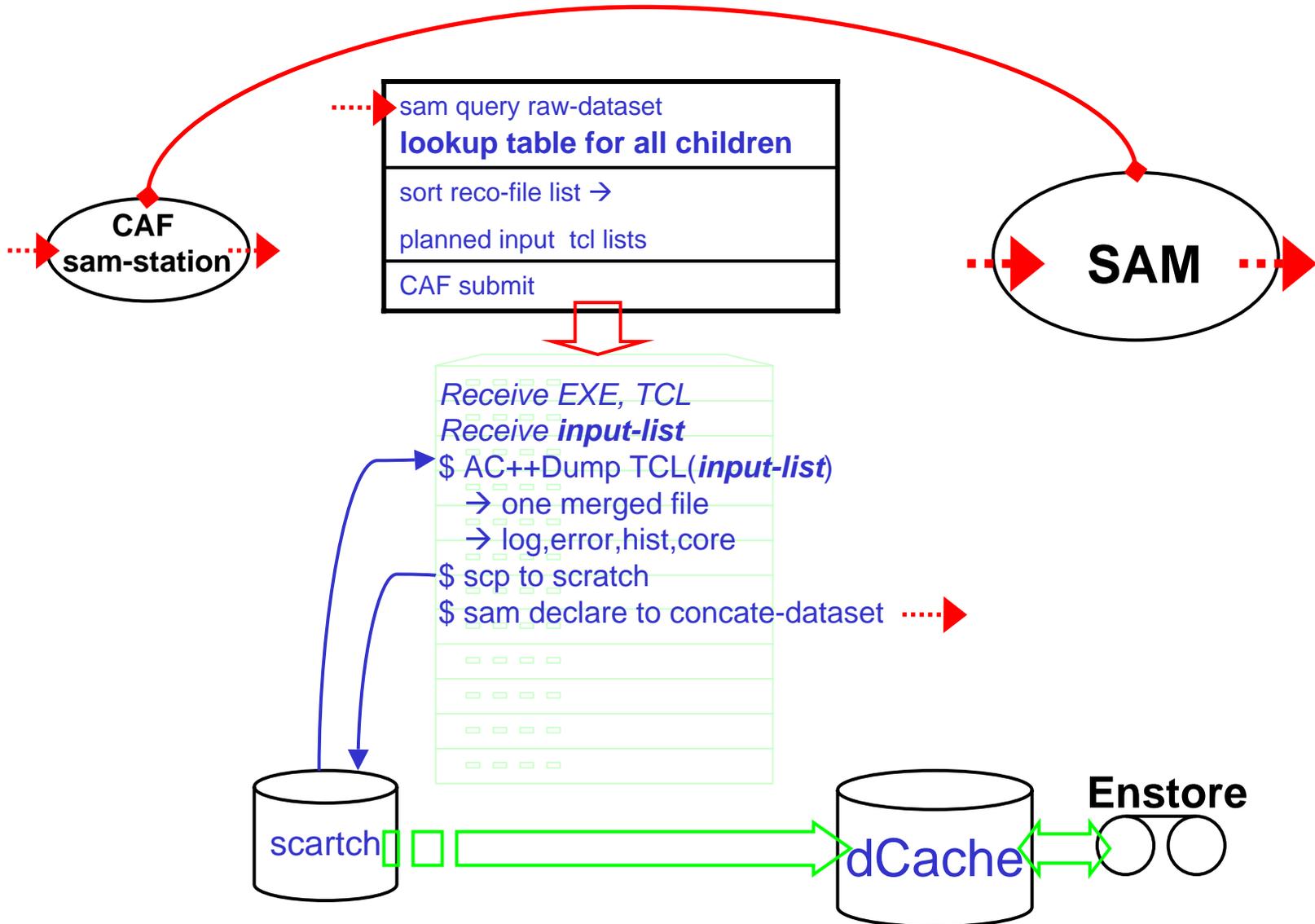
```
185300-185399=cphb0e,cdip0e,cpjj0e,cphc0e,cph10e,gdif0e, cph20e
```

# Offline: tarball cleanup

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```
total 2368152
drwx----- 12 suen      suen      4096 Aug 12 11:42 ./
drwxr-xr-x  28 suen      suen      4096 Aug 18 21:14 ../
drwxr-xr-x   3 suen      suen      4096 Aug  7 23:3X CLHEP/
drwxr-xr-x   3 suen      suen      4096 Aug  7 23:3X DBManager/
-rw-r--r--   1 suen      suen        154 Aug  7 23:35 GNUmakefile
drwxr-xr-x   2 suen      suen      4096 Aug 12 12:50 Production/
-rw-r--r--   1 suen      suen    103750 Aug  7 23:34 ProductionSplitter185971.tcl
drwxr-xr-x   3 suen      suen      4096 Aug  7 23:35 bin/
drwxr-xr-x   8 suen      suen      4096 Aug  7 23:3X cdfopr/
drwxr-xr-x   3 suen      suen      4096 Aug  7 23:36 cint/
drwxr-xr-x   2 suen      suen      4096 Aug  7 23:36 dbt/
-rw-r--r--   1 suen      suen    19422651 Aug  7 23:53 he02d673.0051bck0
-rw-r--r--   1 suen      suen    1028985542 Aug  7 23:52 he02d673.0051bhd0
-rw-r--r--   1 suen      suen     22930083 Aug  7 23:52 he02d673.0051bpp0
-rw-r--r--   1 suen      suen    1029176865 Aug  7 23:35 hr02d673.0051phys
drwxr-xr-x   2 suen      suen      4096 Aug  7 23:36 include/
drwxr-xr-x   2 suen      suen      4096 Aug  7 23:36 lib/
drwxr-xr-x   8 suen      suen      4096 Aug  7 23:5X rcpdb/
-rw-r--r--   1 suen      suen     348323 Aug  7 23:34 rec.log.hr02d673.0051phys
-rw-r--r--   1 suen      suen      1283 Aug  7 23:34 run_1091901923.72.6.tcl
-rw-r--r--   1 suen      suen       966 Aug  7 23:51 source_me
-rw-r--r--   1 suen      suen     5917609 Aug  7 23:52 xe02d673.0051bck0
-rw-r--r--   1 suen      suen    308378082 Aug  7 23:53 xe02d673.0051bhd0
-rw-r--r--   1 suen      suen     7227691 Aug  7 23:35 xe02d673.0051bpp0.58980.6
-rw-r--r--   1 suen      suen           0 Aug  7 23:53 xe02d673.0051bpp0.58980.6^%local%stage1^fncdf114.fnal.gov^7227691
```

# Concatenation model



# SAM for Concatenation

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- ❑ SAM list file raw-dataset

  - search children ← lookup table

  - sort children of each concate-dataset

  - cumulate files into TCL's up to 1 GB

  - if <.5 GB attach to previous file (up to 1.5 GB) ?

- ❑ CafSubmit

  - merge by AC++Dump TCL (no SAM)

- ❑ End of a job

  - SAM declare merged file to concate-dataset

  - clean up durable storage (← durable cache / sam\_upload ?)

# AC++Dump merge-tcl

---

```
path create NULL
path enable NULL
useRCP set false

module input DHInput
talk DHInput
  input file /scratch2/samcache/boo/bd02bb63.06a1hmu0
  input file /scratch2/samcache/boo/bd02bb6f.016ehmu0
  input file /scratch2/samcache/boo/bd02bb6f.04afhmu0
  input file /scratch2/samcache/boo/bd02bb6f.07d8hmu0
  source /scratch2/Concat/Production/read_fast.tcl
  report set 1000
  show
exit
module output FileOutput
talk FileOutput
  dhCache set KAHUNA
  output create mystream ./
  mystream
  writeSingleBranch set f
  fileSize set 1013760
  flushToDBAtClose set false
  compression set true
  dataSetId set bhmu0d
  dataBaseId set production_file_catalog_write
  # zero completely disables check pointing which wastes time in this mode
  eventFlushFrequency set 0
  show
  exit
  output path mystream NULL
exit
begin
show
exit
```



Input reco-files

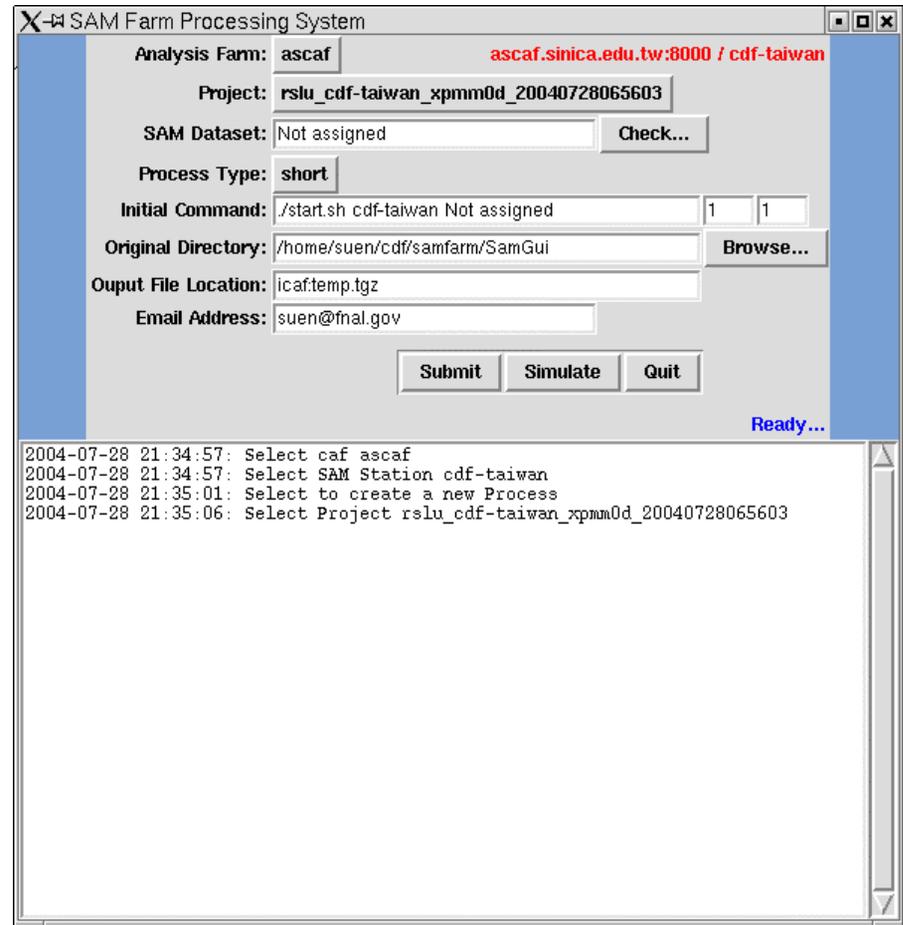


Concat output file size

# SamGUI project submission

- Provided a directory for EXE, TCL, job-script
- Choose SAM dataset
- Choose CAF/SAM-station

A cron of CAF GUI  
with python SAM API interface



# Project monitor

SAM-TV+ ganglia, for book keeping, history archive



reported at 2004/09/09 13:05:20

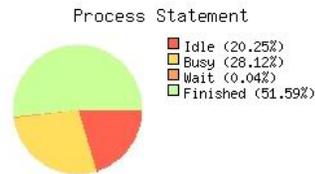
[get fresh data](#)

SAM Project monitoring page [Home](#) , [SAM Wrap API](#) , [Flowchart](#) , [SamGui](#)

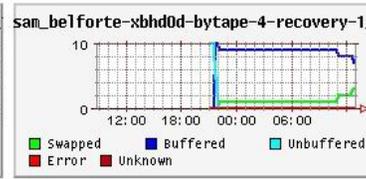
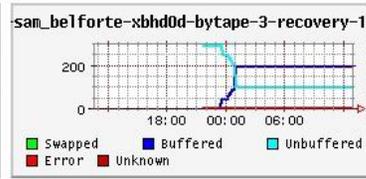
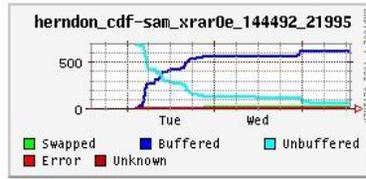
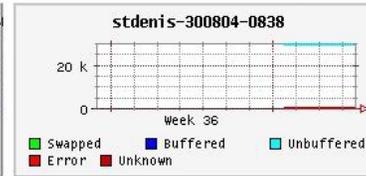
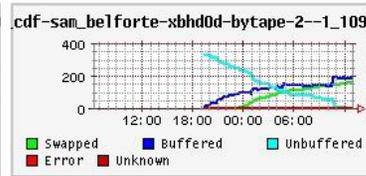
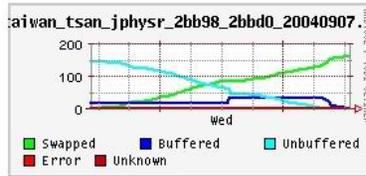
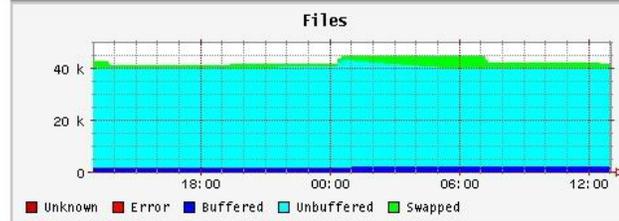
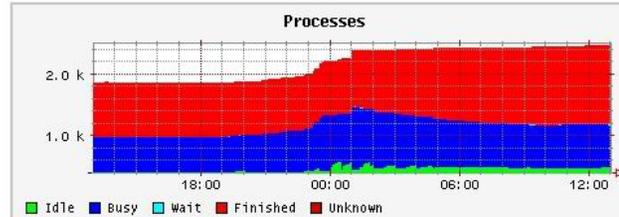
[View history](#)

## overview

Total Projects: 10  
Total Processes: 2454  
Total Files: 41700



All



# To practice on CAF

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- new account on fcdflnx3  
cdfprd, access to fcdpdata033 scratch disk
- practice on Stream-D  
ProExe ready to go  
concatenate, sam store ← in preparation  
durable cache /sam upload ← will try  
dCache IO ← no clue yet

# summary

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- cdfsoft, tarball stay the same
- Launch on CAF, no system demand yet
- Major concern
  - clean recovery for ProdExe
  - clean clean-up after Concate