

BelleDIRAC: development and operation status

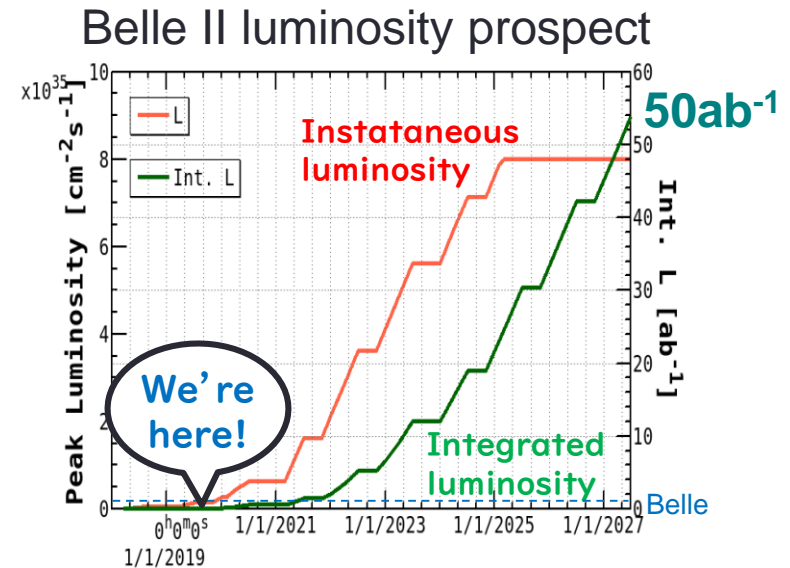
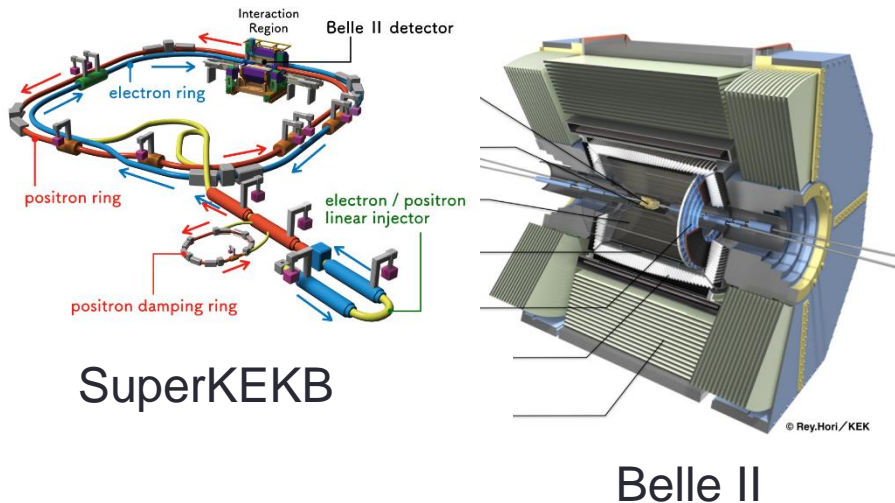
Hideki Miyake (KEK)



2019 May 16th, DIRAC users' workshop@London

Belle II: project status

- Second generation of B-factory experiment
- Toward new physics beyond the Standard Model using SuperKEKB energy asymmetric e^+e^- collider at Tsukuba, Japan
- Has begun beam data taking with full detector since last March



- Already reported the latest raw data management and distributed data management status and plan by Michel and Paul
- I'll cover the rest of topics

DIRAC nodes

- Mostly similar to last year

- Production



- KEK (6 DIRAC nodes, 1 WebApp) with 4 MySQL DB nodes
 - No ElasticSearch
 - No VM



- BNL (DDM)
- Nagoya (SSH SiteDirector, a part of B2Monitoring, ReqProxy)
- University of Victoria (local Condor job)
- Napoli (ReqProxy)

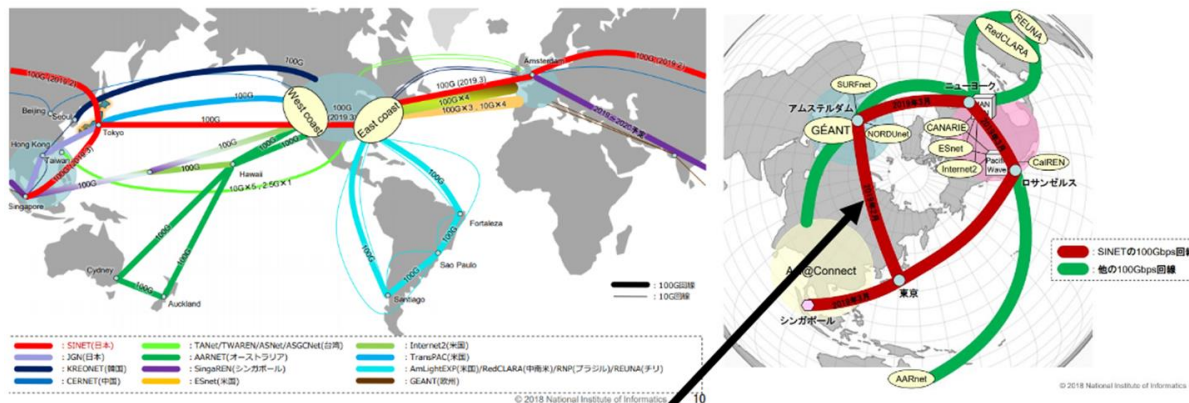
- Development

- Common development (hosted by BNL)
 - [Certification \(test new BelleDIRAC release\)](#)
 - [Migration \(test new DIRAC release\)](#)
- Each development
 - BNL: DDM
 - Nagoya: B2Monitoring
 - Melbourne: WebApp for data management
 - KEK: rest of above (basically WMS, TS, production system)

KEK DIRAC system will be replaced in 2021 (VM option: under consideration)

Topics since last DUW

- Belle II migrated to v6r20 since Mar 2019 (at last!)
 - Slow certification/migration due to insufficient person power
 - Reorganized to accelerate the processes
 - Dedicated certification and migration managers
 - Hopefully we'll move to r21 or r22 soon!
- Evaluation of policy based data distribution: started
- Evaluation of EL7: started
- 100G link upgrade among JP-EU, JP-US, US-EU



- **JP-EU link upgrade from 2x10G to 1x100G -Feb. 2019 (Tokyo to Amsterdam on NetherLight + L3 Peering GEANT-SINET)**
- **JP-NY link replaced by LA-NY 100G link . March 2019**
- **New Trans-Atlantic NY-EU 100G March 2019** : <https://kds.kek.jp/indico/event/28721/contribution/2/material/slides/0.pdf>
: https://www.nii.ac.jp/service/upload/1_meeting2018_sinet_20181029.pdf

Belle II Production System

reminder

Definition

- MC prod / data process
- Type (BB, τ , cobar..)
- # of events
- software version
- etc..



- Production
 - Distribution
 - Merge

Production manager (human)
- Define "Production"

Production Management System



Manage "link" btw Transformations

Belle DIRAC

Distributed data management system

DDM

- Check status of storages
- Define "Transfers"
- Gather outputs to major storage

Fabrication system

- Define jobs
- Re-define failed job
- Verify output files

Monitor

DIRAC

DIRAC Transfer management

DIRAC Job management



DMS



Resource

Destination storage

Temporally Storage

Computing site

"primary SE"

FTS3

Submit job on site
gbasf2

TS, WMS

Courtesy by Yuji Kato

What are added in our extension?

- Production System (ProductionManagement, Fabrication)
- DDM
- B2Monitoring
- Own UI (gbasf2, gb2 commands)
- WebApp modules

Extended systems existing in vanilla

- AccountingSystem
 - Own accounting quantities (e.g. production progress)
- ConfigurationSystem
 - scripts/dirac-configuration-get-{section|option}.py
- TransformationSystem
 - Orchestrated with FabricationSystem (MCExtensionAgent, TransformationAgent)
 - Set Task status as “Failed” if a Task failed to get JobID
 - Own Transformation plugin
- WMS
 - SiteDirector to apply more options (e.g. lcgBundles, pilot commands per site)
 - Pilot submission monitor (a part of B2Monitoring)
 - SE access monitor (download/upload of each job)
- RMS
 - Get request status for B2Monitoring (DDM and overall)
- DMS
 - RequestOperations for AMGA

Basically Belle II specific but some can be contributed to vanilla

Development model

- Based on git (Atlassian Stash)
- Tarball deployment
 - User: CVMFS + web
 - Pilot: CVMFS
- Longtime democratic or chaotic commit to master
- → JIRA and PR based commit
 - JIRA is also used to manage certification/migration status
- Single release tree so far
- Recently begun to create different tree per major release
- No continuous integration introduced yet
 - Simply by lack of human resource
 - By historical reason, DIRAC style and Belle II software style are mixed in BelleDIRAC (e.g. indentation)

Operation team

- Data production shift (one / 8 hours)
 - Collaboration-wide shifts covering 24 hours a day
 - Watch web based monitor created by B2Monitoring
 - Automatic Issue Detector
 - Share operation status by web (Confluence)
 - Report issue by JIRA



- Data production expert (one / a week)
 - Computing group shifts (not 24 hours a day)
 - Investigate the issue reported by shifts
 - Manage JIRA ticket
 - Submit a GGUS ticket, or directly contact with site expert

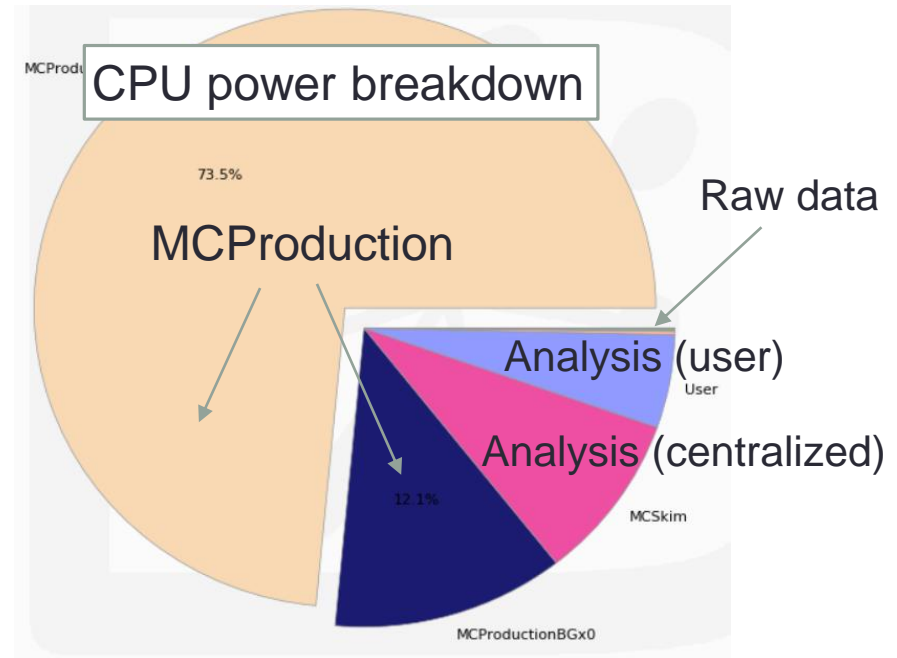
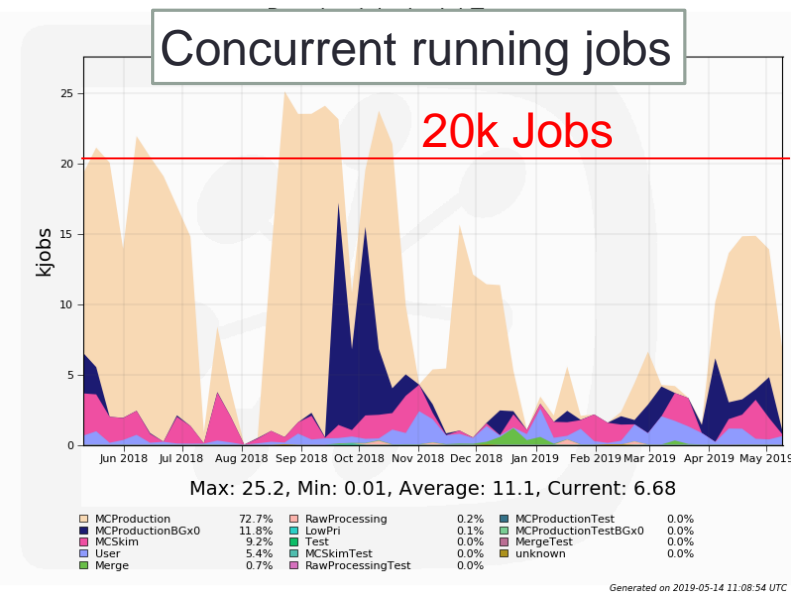


- DIRAC admins
 - Institute based administration...not 24 hours a day
 - KEK, BNL, Nagoya ~ a few peoples per site
 - Manage other sites if possible



+ computing group support based on JIRA and ML

Belle II computing performance in a year



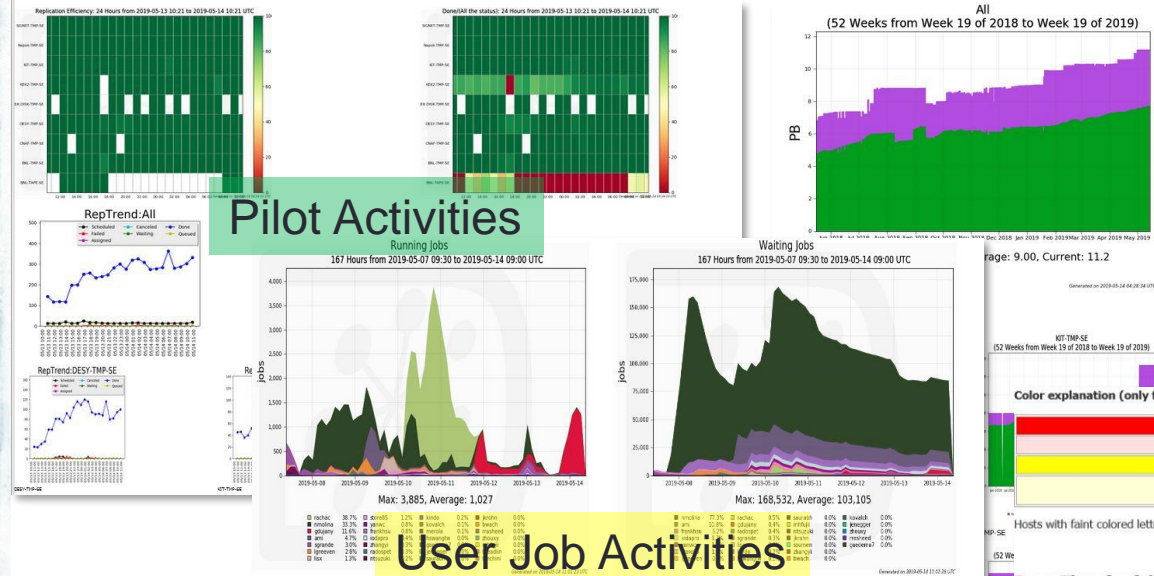
- Consumed CPU power is not so different from last year
- Resource usage is getting practical
 - Increasing analysis jobs
 - Increasing raw (beam and cosmic ray) data processing

Monitoring on WebApp

- Monitoring info taken by various probes and monitors are gathered into our WebApp extension

Pilot Trend Pilot Submission Pilot Processing Pilot Waiting Job Trend JobStatus UserAna Job Summary

Replication Trend DDM Trend DDM Task Trend Transfer SE Accounting All SE Accounting SE FreeSpace Production Progress DownTime AID



SE Accounting

Central Systems

Port Checker is not responding... Server error while serving E2M6getPortCheckResult: %2M6wcdE object has no attribute 'getPortCheckResult'

Primary SEs

- SE Health Check by CDM: Failure on upload have been observed since 2019-05-07 05:02:05 (3797 hours)
- Following 23RA tickets submitted: EIIDCO-1364, EIIDCO-948
- From Operation(Status):
 - NOTE: This site is banned, there is no need to create a ticket related to SE Health check
 - SE Health check by DDM EIIDCO-1364 - Getting issue details... STATUS
 - GDUS ticket https://uggw.eu/index.php?mode=ticket_info&ticket_id=137825 has submitted 2019-05-08 14:21
 - No new assignment of MC production data blocks to this destination EIIDCO-948 - Getting issue details... STATUS

Automatic Issue Detector

- "Pilot Submission Failure" has been observed since 2019-05-14 00:21 UTC (for 96 hours) [\(details\)](#)
- Following 23RA tickets submitted: EIIDCO-1831
- From Operation(Status):
 - Job submission check : Pilot submission failure has been found since 04:29:00 UTC on 2019/05/14. [\(details\)](#)
 - Health checker info. : "Short pilot job" has been found since 06:20:00 UTC on 2019/05/14. [\(details\)](#)
 - Job submission check : Pilot submission failure has been found since 04:22:00 UTC on 2019/05/13. [\(details\)](#) EIIDCO-1831 - Getting issue details... STATUS
 - Job submission check : Pilot submission failure has been found since 12:27:00 UTC on 2019/05/10. [\(details\)](#)
 - Job submission check : Pilot submission failure has been found since 21:26:00 UTC on 2019/05/08.
 - Health checker info. : "Short pilot job" has been found at 06:20:00 UTC on 2019/05/02. [\(details\)](#)
 - Data, Issue, Tickets...

DownTime for following Sites

Overview (Link for shift log)

Affected Sites

| Site name | Name |
|-----------|------------|
| Site | LCELLAL.fr |

Affected SEs

| SE name | Name |
|---------|-------------|
| SE | LAL-DATA-SE |
| SE | LAL-TMP-SE |

General information

| Start time (UTC) | End time (UTC) | Description | Link |
|------------------|------------------|-----------------------------------------------|----------------------------|
| 2019-04-22 09:00 | 2019-04-22 10:00 | Following 23RA tickets submitted: EIIDCO-1538 | GDODB page |

Hosts

What's next?

- Concerns in coming beam data era
 - A lot of experiment specific issues...
 - Beam background file distribution and management (collected by Belle II detector and applied to *each* MC simulation job)
 - Tape data processing (“staging”)
 - Further scalability for both workload and data management
 - Especially for Belle II own products
 - Which is “Scalable” or not...and how to resolve the issue?
 - etc. etc...
- Logging, monitoring (essential to deploy ES and MQ in my feeling)
- We're happy if we can share our knowledge and know-how
- Migrate to v6r21 (or r22) soon so that we can share topics relevant to the latest (and future) DIRAC releases
- Contribute BelleDIRAC products to upstream as much as possible

Backup

Monitoring: Pilot Trend

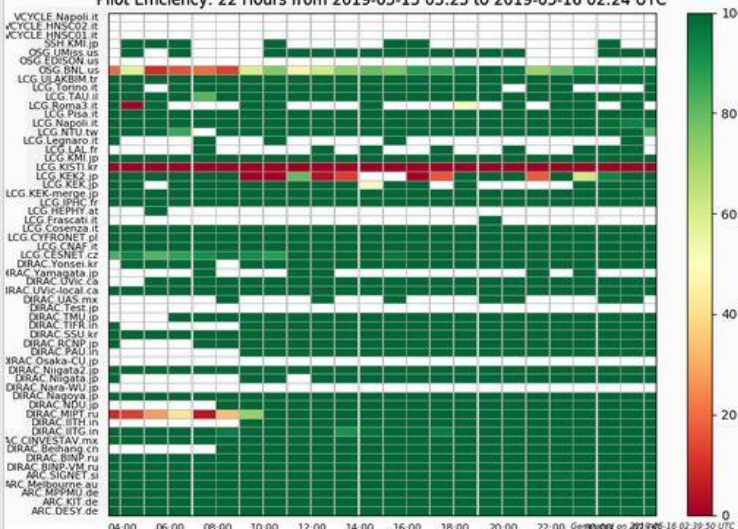
Pilot Trend | Pilot Submission | Pilot Processing | Pilot Waiting | Job Trend | JobStatus | UserAns | Job Summary | Replication Trend | DDM Trend | DDM Task Trend | Transfer | SE Accounting | All SE Accounting | SE FreeSpace | Production Progress | DownTime | AID

7 day

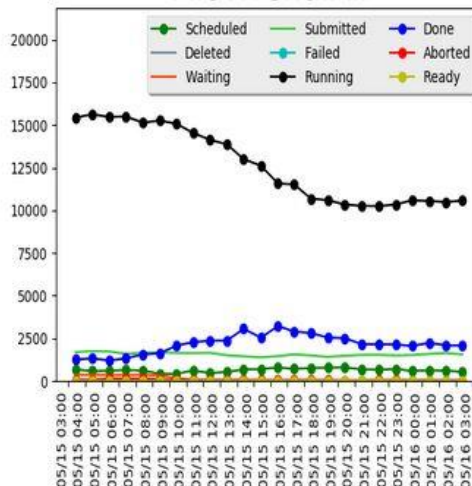
30 day

Pilot Trend figures with a range of 1day

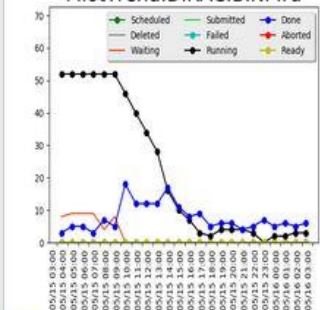
Pilot Efficiency: 22 Hours from 2019-05-15 03:25 to 2019-05-16 02:24 UTC



PilotTrend:All

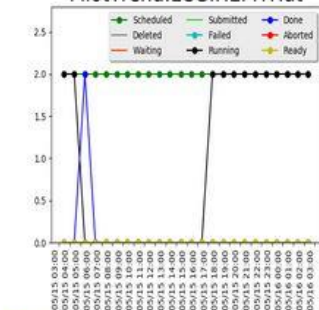


PilotTrend:DIRAC.BINP.ru



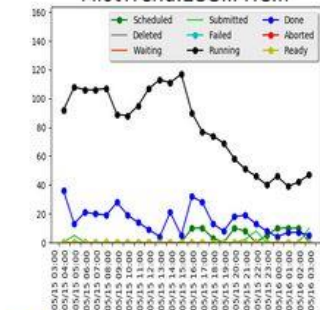
Each CE :DIRAC.BINP.ru

PilotTrend:LCG.HEPHY.at



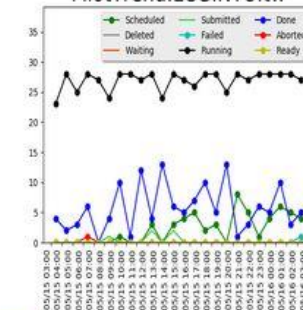
Each CE :LCG.HEPHY.at

PilotTrend:LCG.IPHC.fr



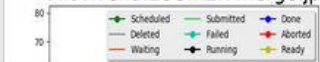
Each CE :LCG.IPHC.fr

PilotTrend:LCG.NTU.tw

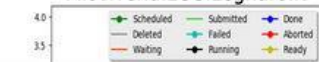


Each CE :LCG.NTU.tw

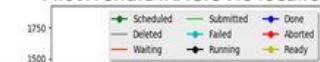
PilotTrend:LCG.KEK-merge.jp



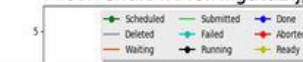
PilotTrend:LCG.Legnaro.it



PilotTrend:DIRAC.UVic-local.ca



PilotTrend:DIRAC.Niigata2.jp



Monitoring: Pilot Submission

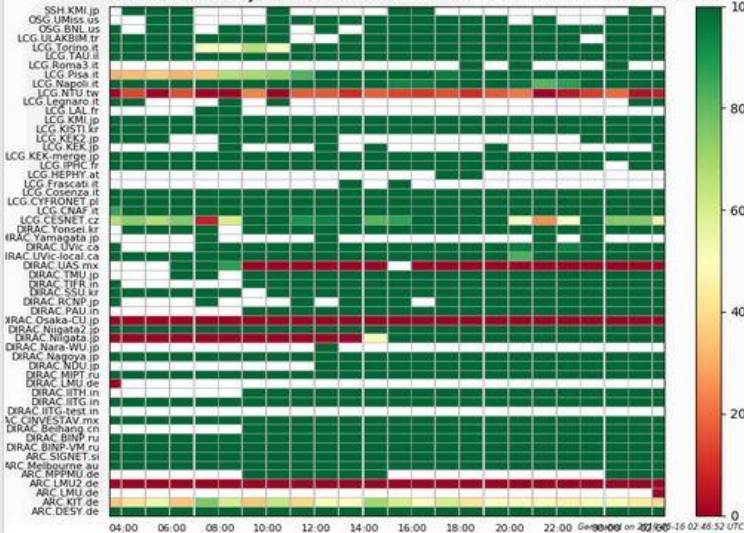
Pilot Trend | Pilot Submission | Pilot Processing | Pilot Waiting | Job Trend | JobStatus | UserAns | Job Summary | Replication Trend | DDM Trend | DDM Task Trend | Transfer | SE Accounting | All SE Accounting | SE FreeSpace | Production Progress | DownTime | AID

7 day

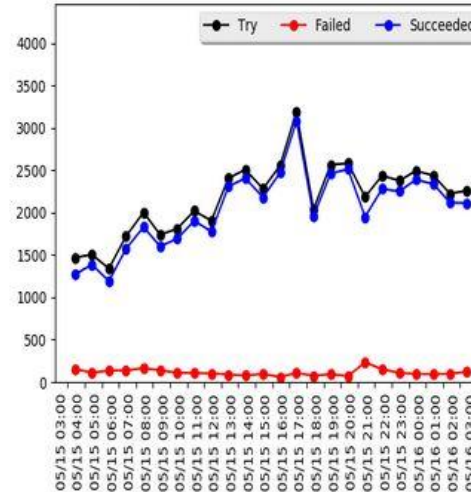
30 day

Pilot Submission figures with a range of 1day

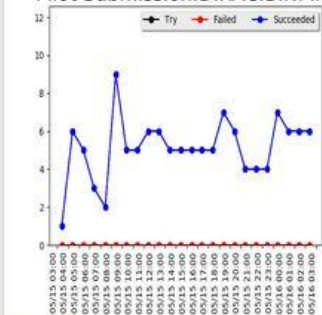
Pilot Submission Efficiency: 22 Hours from 2019-05-15 03:25 to 2019-05-16 02:24 UTC



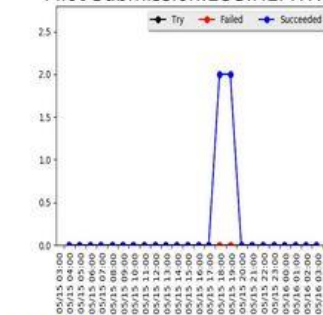
Pilot Submission:All



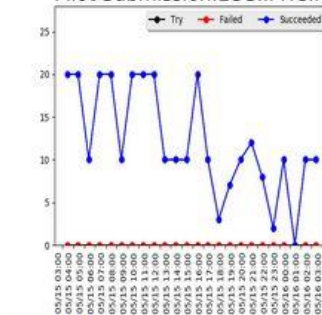
Pilot Submission:DIRAC.BINP.ru



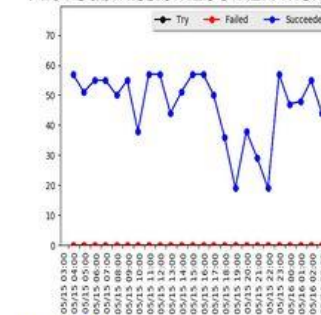
Pilot Submission:LCG.HEPHY.at



Pilot Submission:LCG.IPHC.fr



Pilot Submission:LCG.KEK-merge.jp



Each CE/Queue :DIRAC.BINP.ru

Each CE/Queue :LCG.HEPHY.at

Each CE/Queue :LCG.IPHC.fr

Each CE/Queue :LCG.KEK-merge.jp

Pilot Submission:LCG.Legnaro.it



Pilot Submission:DIRAC.Uvic-local.ca



Pilot Submission:DIRAC.Niigata2.jp



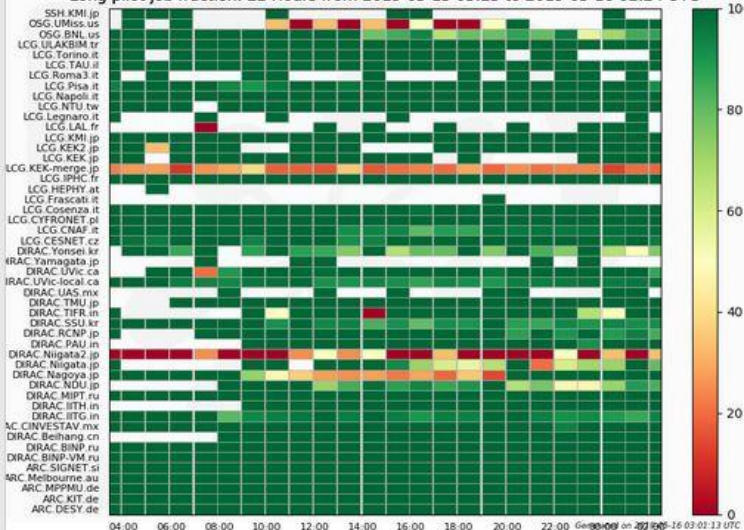
Pilot Submission:ARC.KIT.de



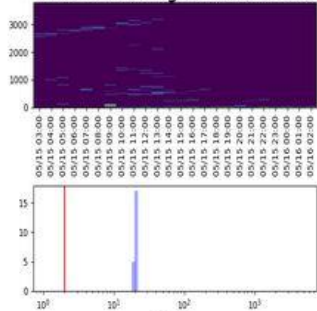
Monitoring: Pilot Processing

Pilot Trend | Pilot Submission | Pilot Processing | Pilot Waiting | Job Trend | JobStatus | UserAns | Job Summary | Replication Trend | DDM Trend | DDM Task Trend | Transfer | SE Accounting | All SE Accounting | SE FreeSpace | Production Progress | DownTime | AID

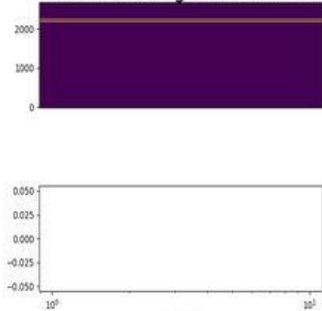
Long pilot job fraction: 22 Hours from 2019-05-15 03:25 to 2019-05-16 02:24 UTC



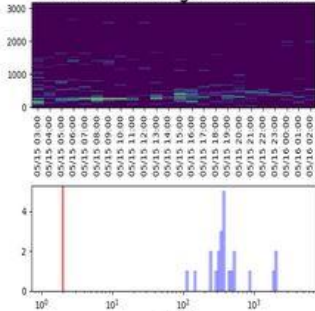
Pilot Processing:DIRAC.BINP.ru



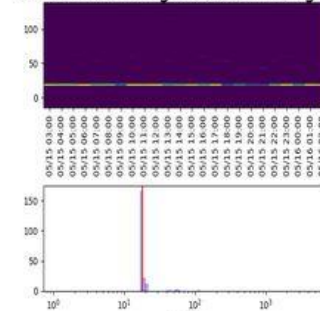
Pilot Processing:LCG.HEPHY.at



Pilot Processing:LCG.IPHC.fr



Pilot Processing:LCG.KEK-merge.jp



DIRAC.BINP.ru

Pilot Processing:LCG.Legnano.it



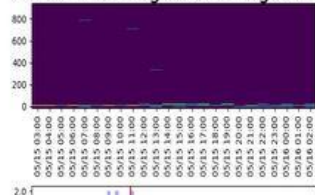
LCG.HEPHY.at

Pilot Processing:DIRAC.UVic-local.ca



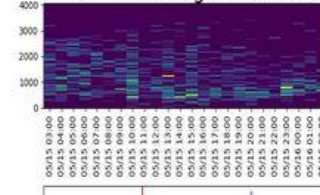
LCG.IPHC.fr

Pilot Processing:DIRAC.Niigata2.jp



LCG.KEK-merge.jp

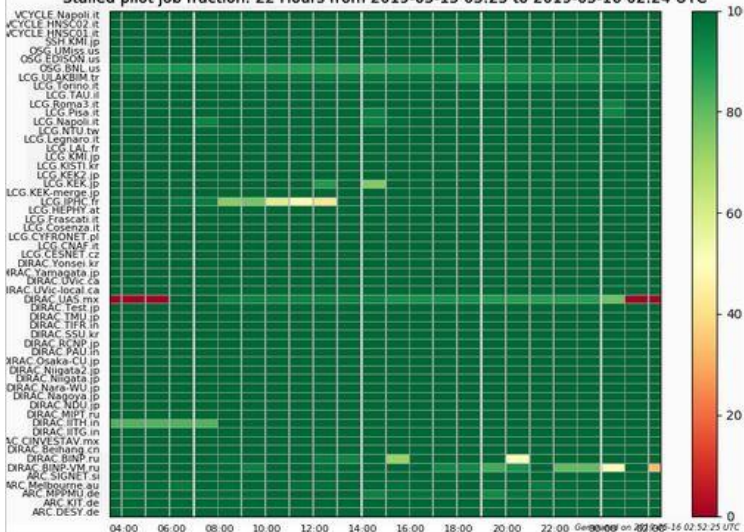
Pilot Processing:ARC.KIT.de



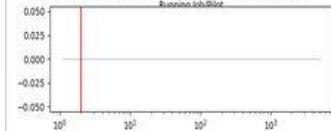
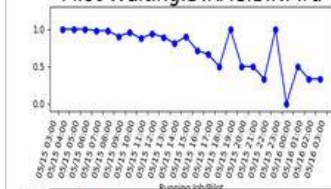
Monitoring: Pilot Waiting

Pilot Trend | Pilot Submission | Pilot Processing | **Pilot Waiting** | Job Trend | JobStatus | UserAna | Job Summary | Replication Trend | DDM Trend | DDM Task Trend | Transfer | SE Accounting | All SE Accounting | SE FreeSpace | Production Progress | DownTime | AID

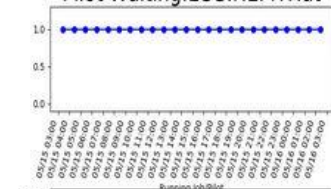
Stalled pilot job fraction: 22 Hours from 2019-05-15 03:25 to 2019-05-16 02:24 UTC



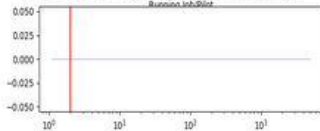
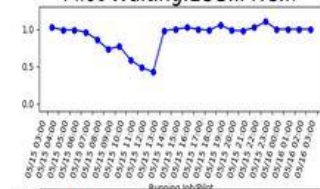
Pilot Waiting:DIRAC.BINP.ru



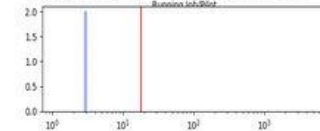
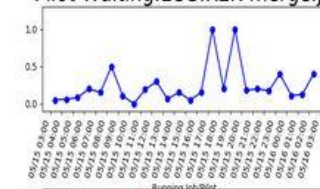
Pilot Waiting:LCG.HEPHY.at



Pilot Waiting:LCG.IPHC.fr

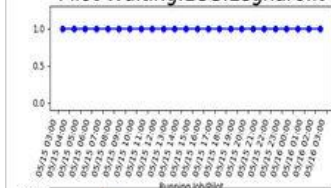


Pilot Waiting:LCG.KEK-merge.jp



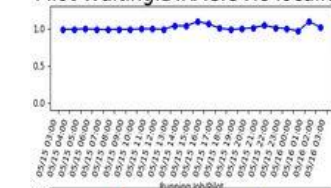
DIRAC.BINP.ru

Pilot Waiting:LCG.Legnaro.it



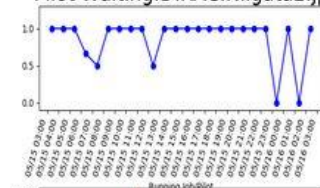
LCG.HEPHY.at

Pilot Waiting:DIRAC.UVic-local.ca



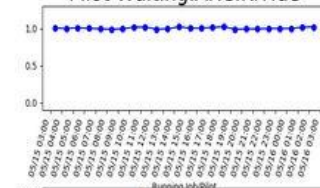
LCG.IPHC.fr

Pilot Waiting:DIRAC.Niigata2.jp



LCG.KEK-merge.jp

Pilot Waiting:ARC.KIT.de



Monitoring: Job Trend

Pilot Trend | Pilot Submission | Pilot Processing | Pilot Waiting | **Job Trend** | JobStatus | UserAna | Job Summary | Replication Trend | DDM Trend | DDM Task Trend | Transfer | SE Accounting | All SE Accounting | SE FreeSpace | Production Progress | DownTime | AID

7 day

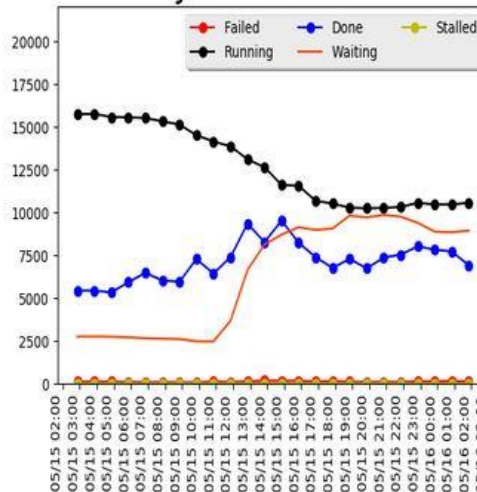
30 day

Job Trend figures with a range of 1day

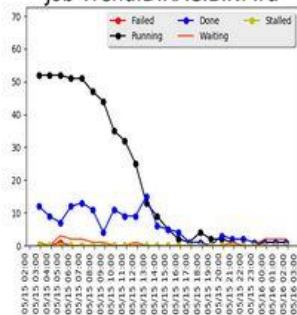
Job Efficiency: 23 Hours from 2019-05-15 02:51 to 2019-05-16 01:51 UTC



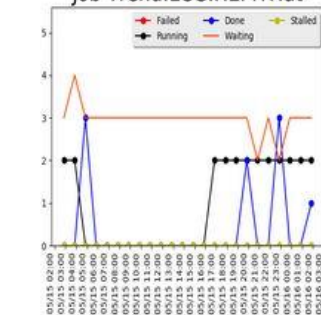
Job Trend:All



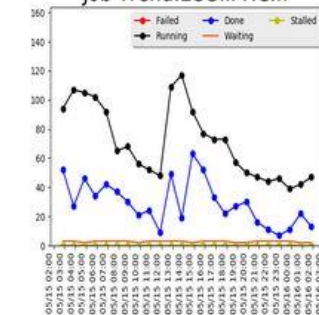
Job Trend:DIRAC.BINP.ru



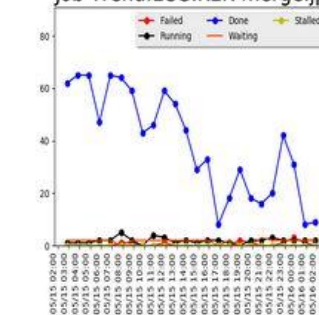
Job Trend:LCG.HEPHY.at



Job Trend:LCG.IPHC.fr



Job Trend:LCG.KEK-merge.jp



Job Trend:LCG.Legnaro.it



Job Trend:DIRAC.UVic-local.ca



Job Trend:DIRAC.Niigata2.jp



Job Trend:ARC.KIT.de



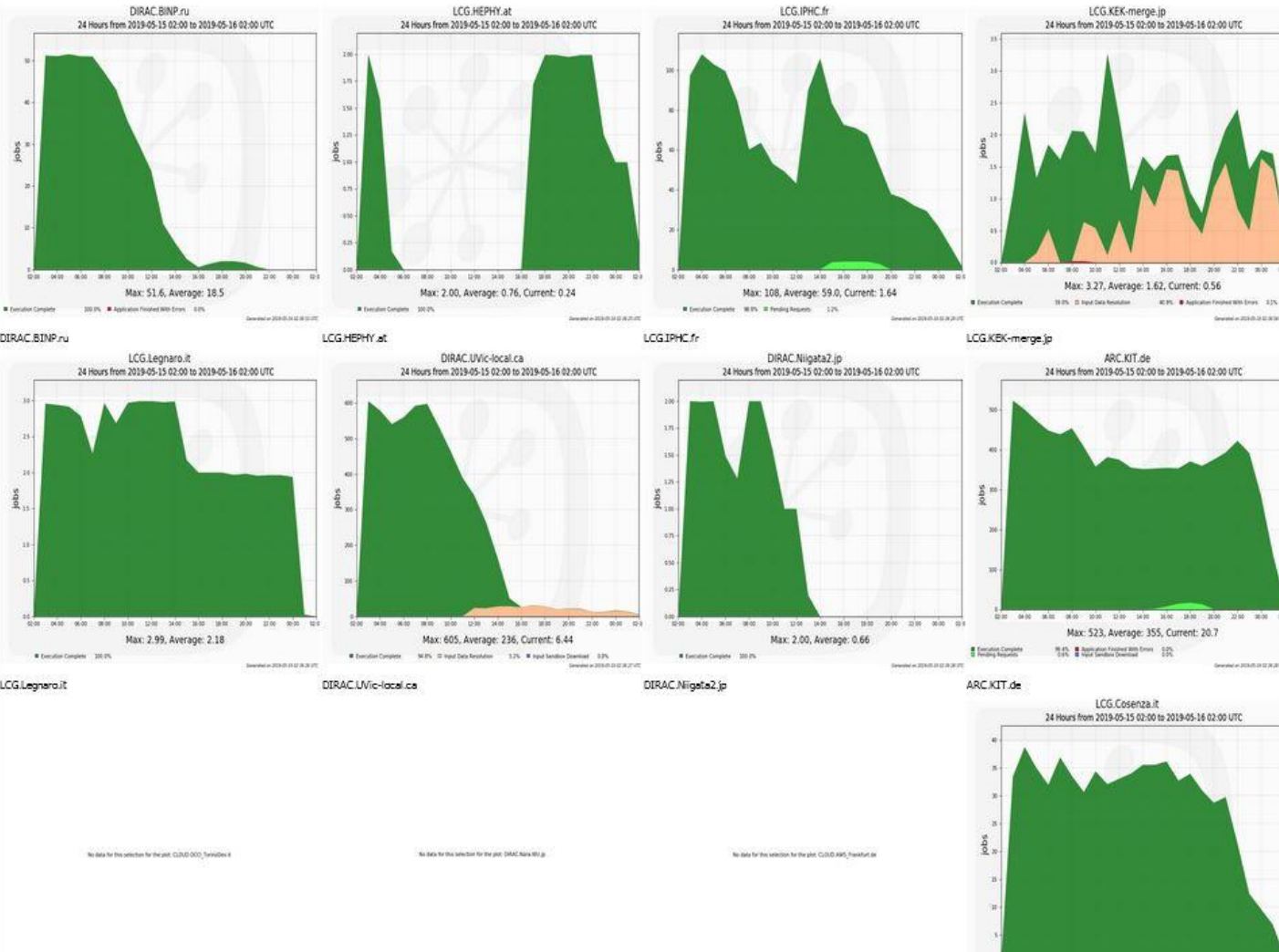
Monitoring: Job Status

Pilot Trend Pilot Submission Pilot Processing Pilot Waiting Job Trend **JobStatus** UserAna Job Summary Replication Trend DDM Trend DDM Task Trend Transfer SE Accounting All SE Accounting SE FreeSpace Production Progress DownTime AID

7 day

30 day

Job Status figures with a range of 1day



Monitoring: User Jobs

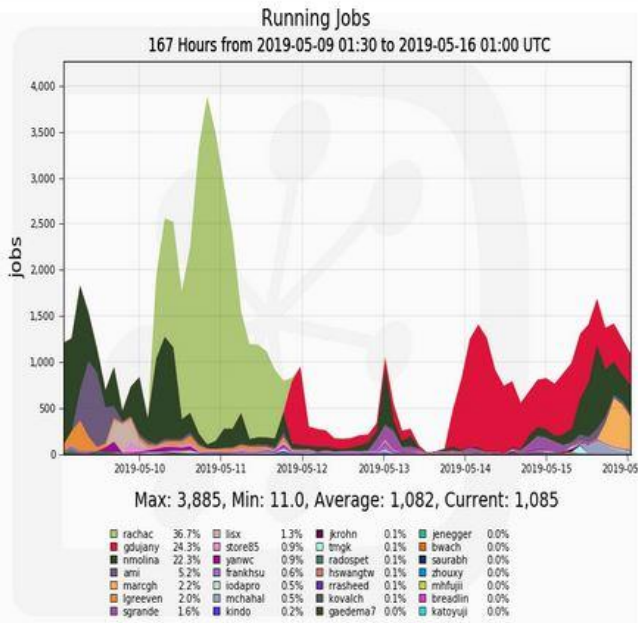
Pilot Trend Pilot Submission Pilot Processing Pilot Waiting Job Trend Job Status **UserAna** Job Summary Replication Trend DDM Trend DDM Task Trend Transfer SE Accounting All SE Accounting SE FreeSpace Production Progress DownTime AID

1 day

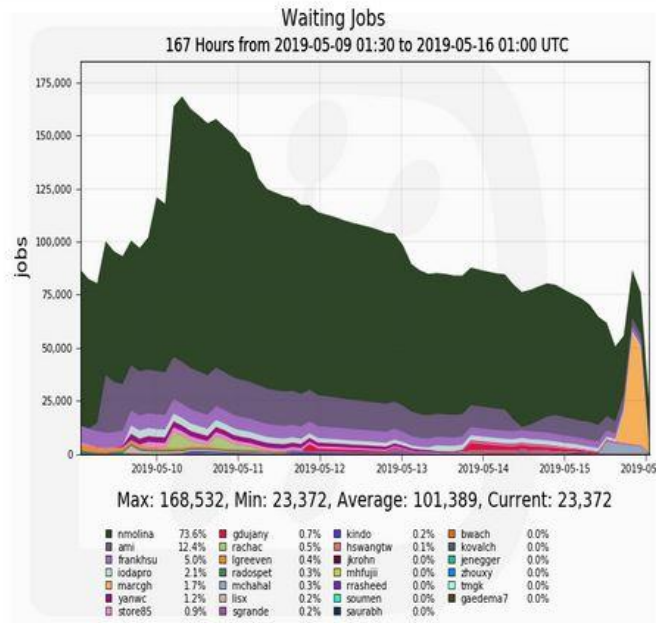
30 day

User Job Status figures with a range of 7 day

Running/Waiting jobs

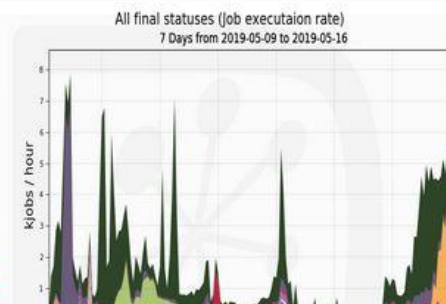
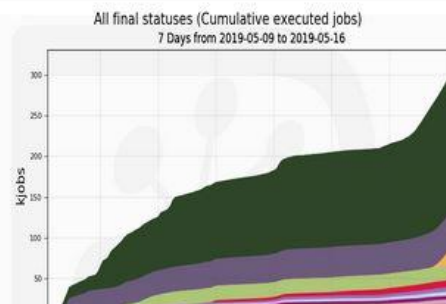
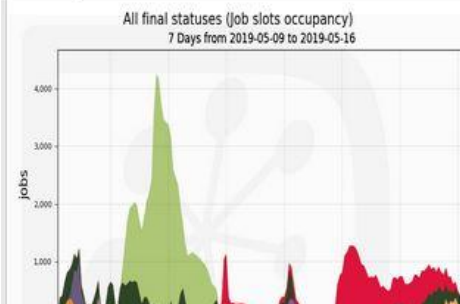


Generated on 2019-05-16 02:25:43 UTC



Generated on 2019-05-16 02:25:46 UTC

All final/active statuses



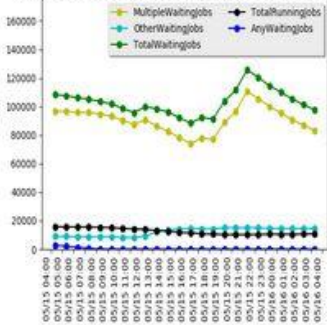
2019/5/16

BelleDIRAC: development and operation status

Monitoring: Job Summary

Pilot Trend | Pilot Submission | Pilot Processing | Pilot Waiting | Job Trend | JobStatus | UserAna | **Job Summary** | Replication Trend | DDM Trend | DDM Task Trend | Transfer | SE Accounting | All SE Accounting | SE FreeSpace | Production Progress | DownTime | AID

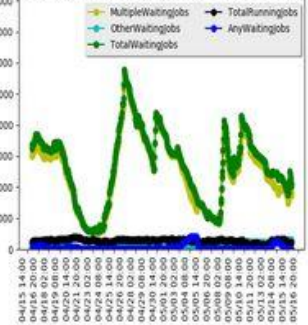
Total Running/Waiting jobs (1 day)



Total Running/Waiting jobs (7 day)



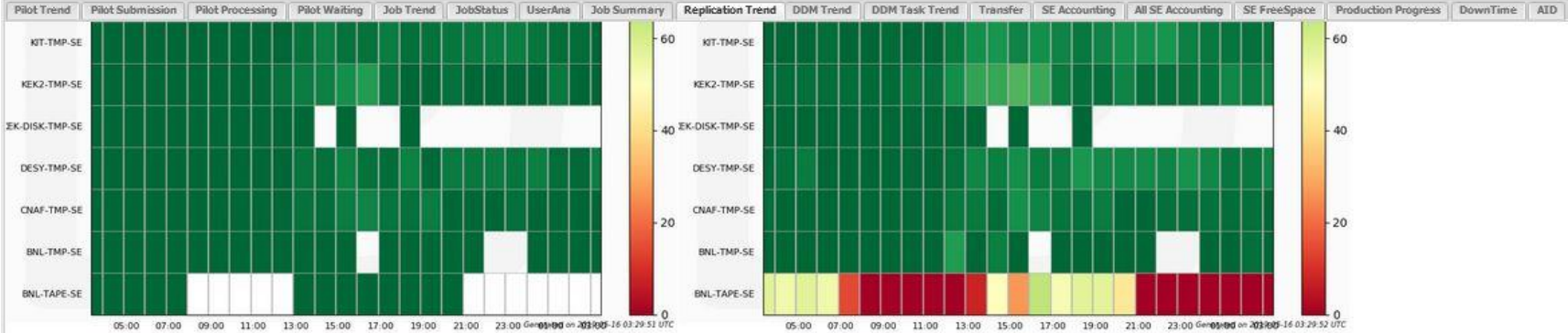
Total Running/Waiting jobs (30 day)



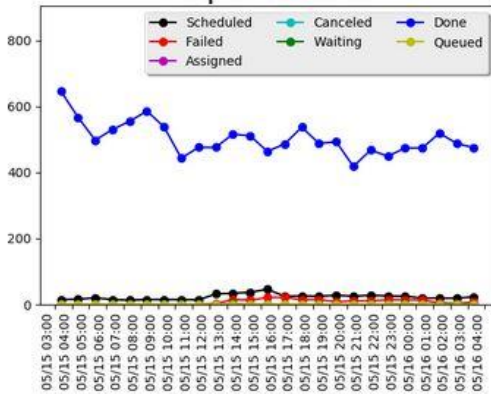
Total Running Job = 10846

Total Waiting Job = 97792

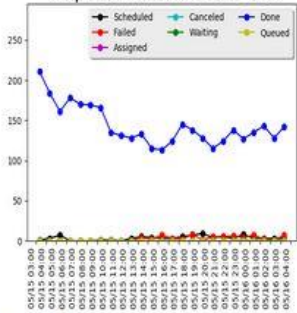
Monitoring: Replication Trend



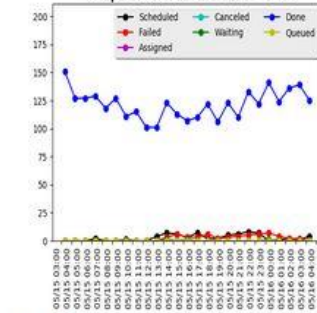
RepTrend:All



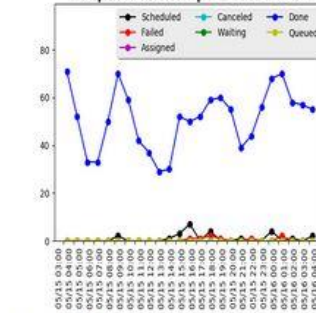
RepTrend:DESY-TMP-SE



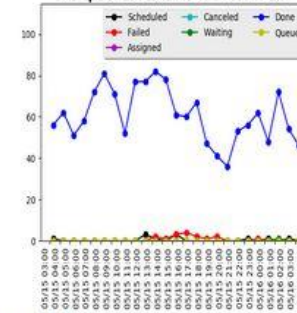
RepTrend:KIT-TMP-SE



RepTrend:Napoli-TMP-SE



RepTrend:CNAF-TMP-SE



Monitoring: DDM Task Trend

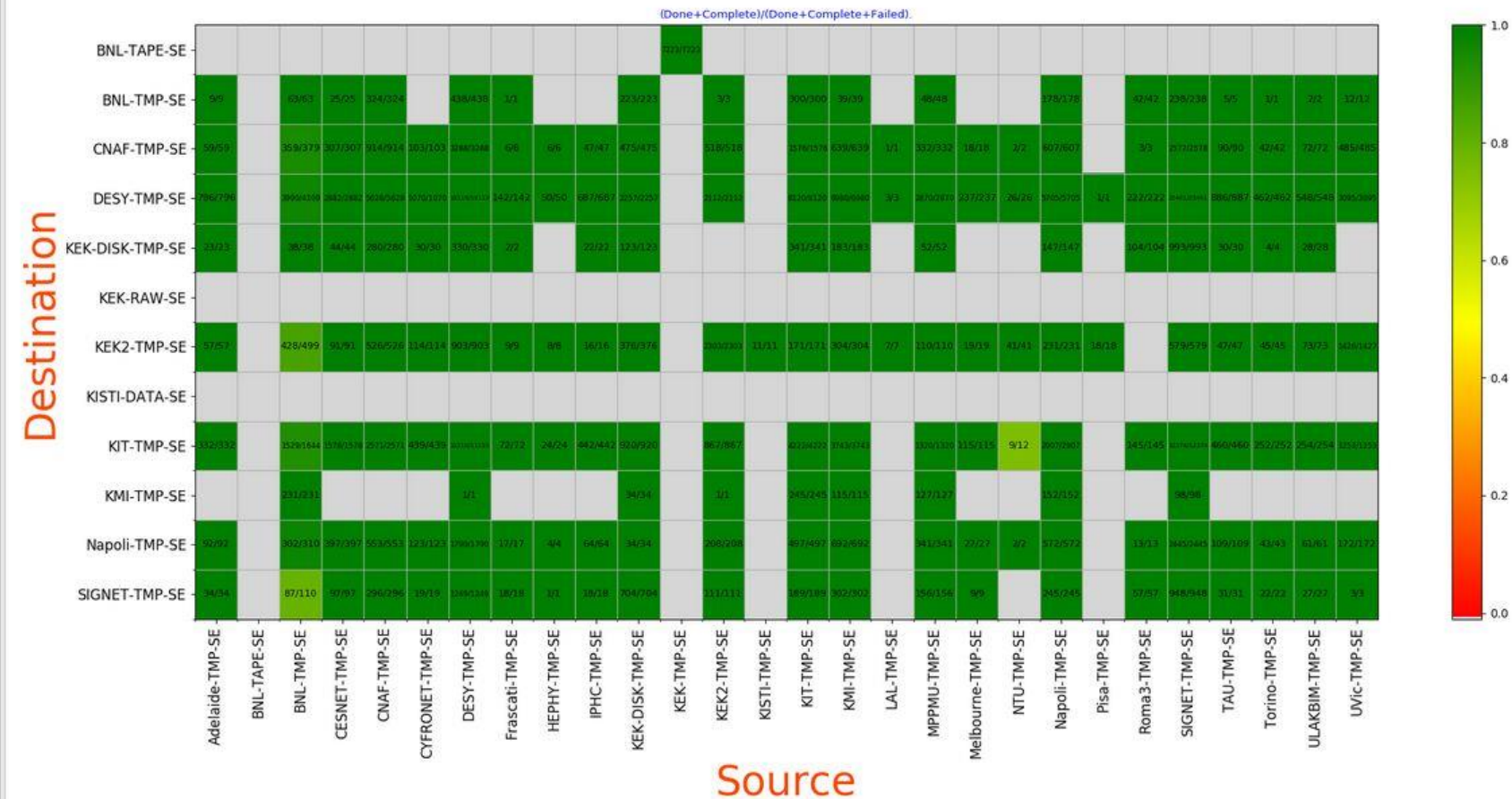
Pilot Trend | Pilot Submission | Pilot Processing | Pilot Waiting | Job Trend | JobStatus | UserAna | Job Summary | Replication Trend | DDM Trend | **DDM Task Trend** | Transfer | SE Accounting | All SE Accounting | SE FreeSpace | Production Progress | DownTime | AID

7 day

30 day

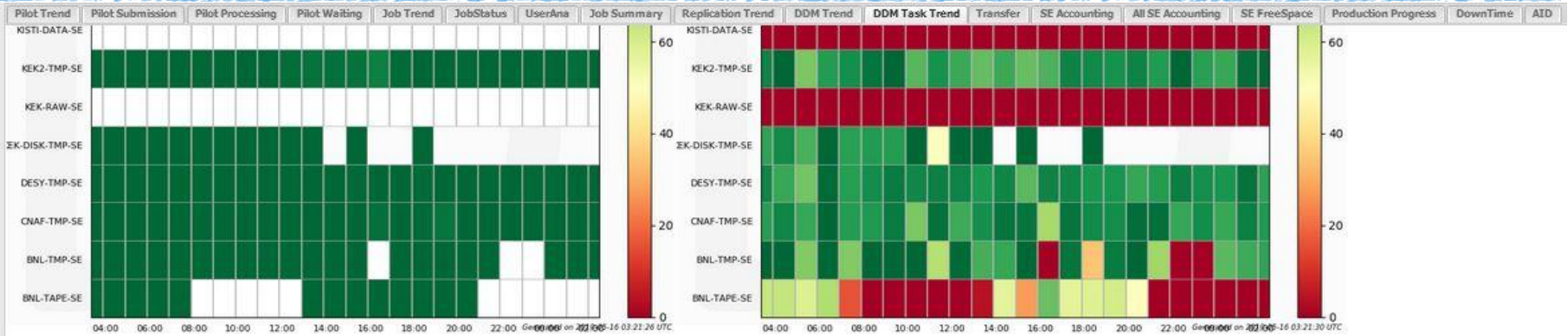
DDM Task Trend figures with a range of 1day

Task Operation Type: ReplicateAndRegister

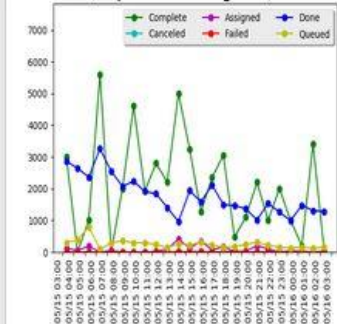


Destination SEs

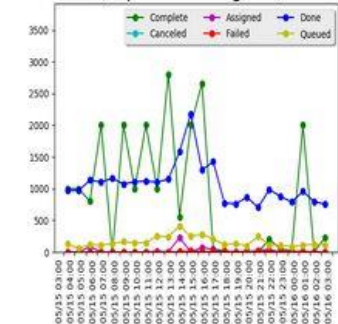
Monitoring: DDM Task Trend (cont'd)



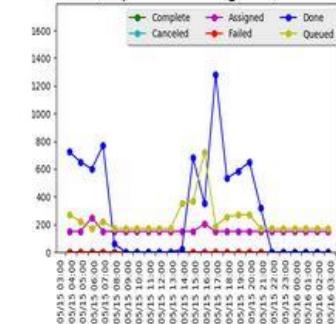
DDM Task (ReplicateAndRegister):DESY-TMP-S DDM Task (ReplicateAndRegister):KIT-TMP-SEDDM Task (ReplicateAndRegister):BNL-TAPE-S)DDM Task (ReplicateAndRegister):Napoli-TMP-S



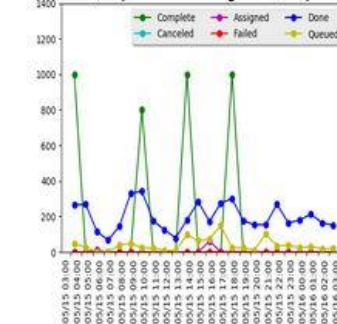
DESY-TMP-SE



KIT-TMP-SE

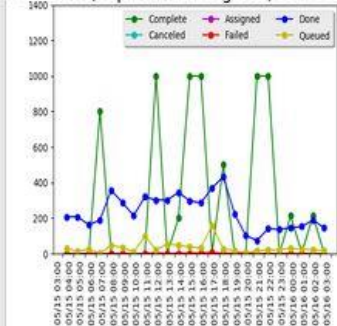


BNL-TAPE-SE

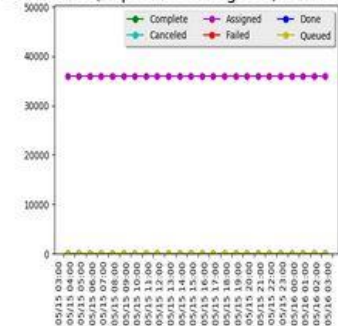


Napoli-TMP-SE

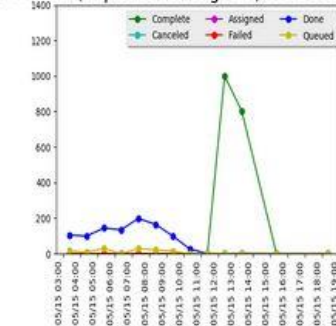
DDM Task (ReplicateAndRegister):CNAF-TMP-S DDM Task (ReplicateAndRegister):KEK-RAW-S)M Task (ReplicateAndRegister):KEK-DISK-TMPDDM Task (ReplicateAndRegister):KISTI-DATA-S



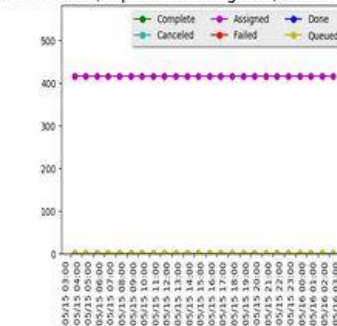
CNAF-TMP-SE



KEK-RAW-SE



KEK-DISK-TMP-SE



KISTI-DATA-SE

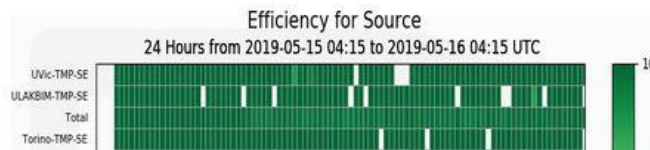
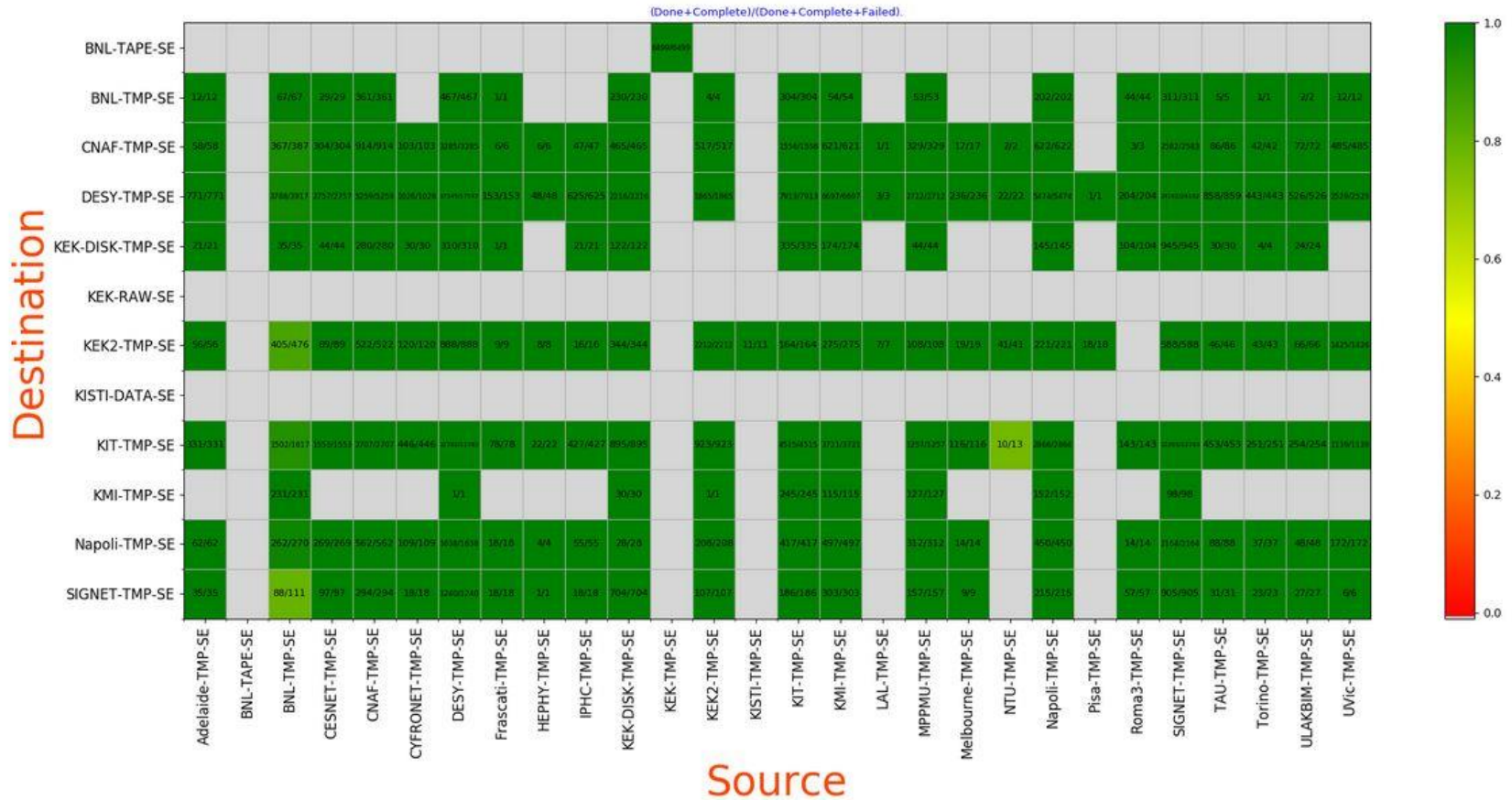
Monitoring: Transfer

Pilot Trend | Pilot Submission | Pilot Processing | Pilot Waiting | Job Trend | JobStatus | UserAna | Job Summary | Replication Trend | DDM Trend | DDM Task Trend | **Transfer** | SE Accounting | All SE Accounting | SE FreeSpace | Production Progress | DownTime | AID

7 day

30 day

Transfer figures with a range of 1day

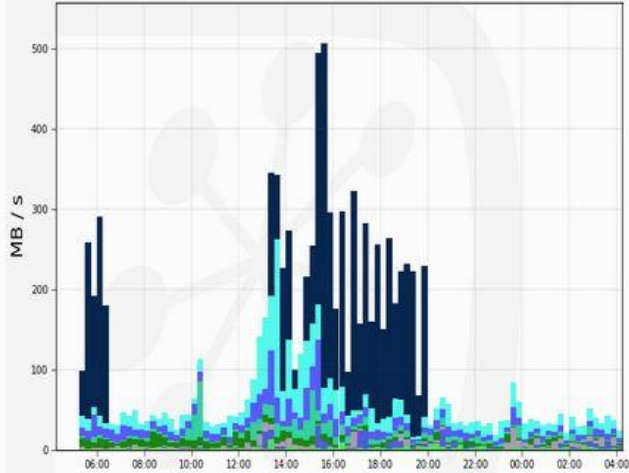


Monitoring: Transfer (cont'd)

Pilot Trend | Pilot Submission | Pilot Processing | Pilot Waiting | Job Trend | JobStatus | UserAna | Job Summary | Replication Trend | DDM Trend | DDM Task Trend | **Transfer** | SE Accounting | All SE Accounting | SE FreeSpace | Production Progress | DownTime | AID

Throughput for Destination

24 Hours from 2019-05-15 04:15 to 2019-05-16 04:15 UTC



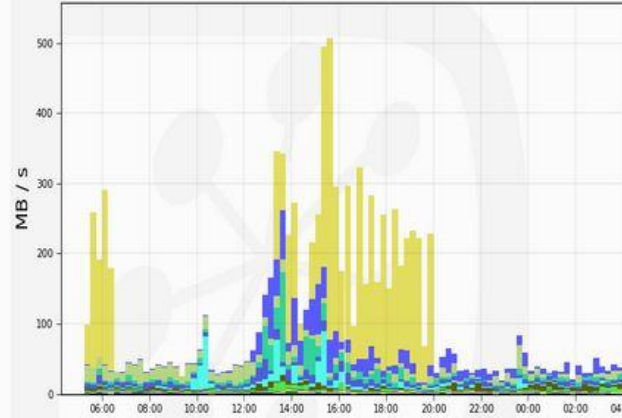
Max: 507, Average: 105, Current: 17.3

| | | | | | |
|-------------|-------|-------------|------|-----------------|------|
| BNL-TAPE-SE | 49.4% | CNAF-TMP-SE | 6.8% | SIGNET-TMP-SE | 2.6% |
| KIT-TMP-SE | 19.4% | KEK2-TMP-SE | 5.7% | Napoli-TMP-SE | 1.5% |
| DESY-TMP-SE | 11.5% | BNL-TMP-SE | 3.0% | KEK-DISK-TMP-SE | 0.1% |

Generated on 2019-05-16 04:24:20 UTC

Throughput for Source

24 Hours from 2019-05-15 04:15 to 2019-05-16 04:15 UTC



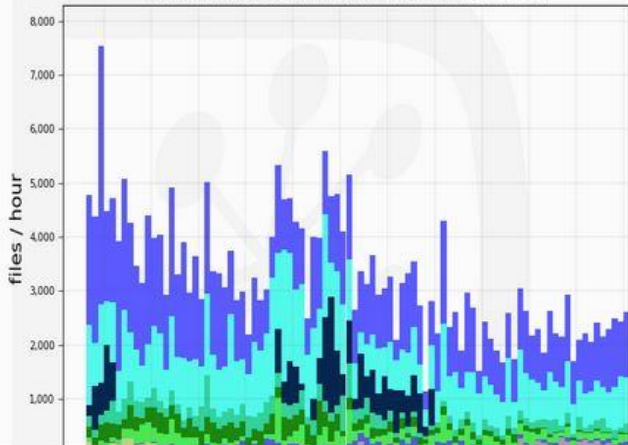
Max: 507, Average: 105, Current: 17.3

| | | | | | | | |
|-----------------|-------|-----------------|------|-----------------|------|------------------|------|
| KEK-TMP-SE | 49.4% | Napoli-TMP-SE | 1.7% | Adelaide-TMP-SE | 0.1% | Melbourne-TMP-SE | 0.0% |
| DESY-TMP-SE | 12.6% | KMI-TMP-SE | 1.0% | TAU-TMP-SE | 0.1% | LAL-TMP-SE | 0.0% |
| KEK-DISK-TMP-SE | 9.3% | BNL-TMP-SE | 0.7% | ULAKSIN-TMP-SE | 0.1% | HEPHY-TMP-SE | 0.0% |
| CNAF-TMP-SE | 8.1% | MPPMU-TMP-SE | 0.5% | Torino-TMP-SE | 0.1% | NTU-TMP-SE | 0.0% |
| SIGNET-TMP-SE | 6.0% | CESNET-TMP-SE | 0.4% | PHC-TMP-SE | 0.1% | | |
| KIT-TMP-SE | 5.5% | KEK2-TMP-SE | 0.3% | Roma3-TMP-SE | 0.1% | | |
| UVic-TMP-SE | 3.2% | CYFRONET-TMP-SE | 0.2% | Frascati-TMP-SE | 0.0% | | |

Generated on 2019-05-16 04:24:21 UTC

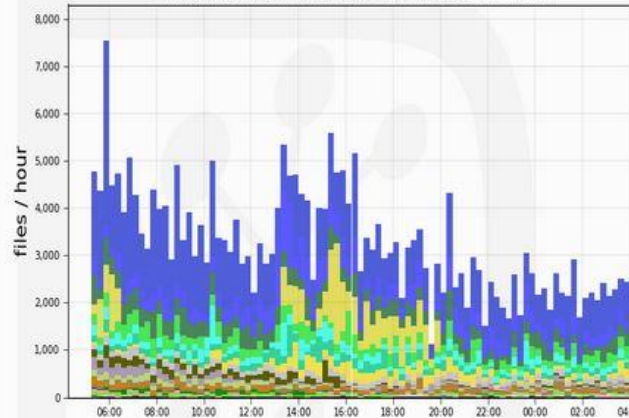
Successful transfers for Destination

24 Hours from 2019-05-15 04:15 to 2019-05-16 04:15 UTC



Successful transfers for Source

24 Hours from 2019-05-15 04:15 to 2019-05-16 04:15 UTC



Max: 7.544 Average: 3.085 Current: 784

Monitoring: SE Accounting

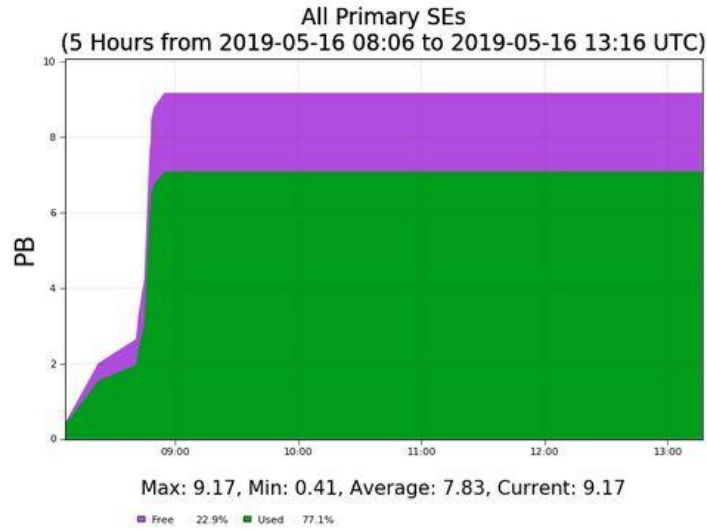
Pilot Trend | Pilot Submission | Pilot Processing | Pilot Waiting | Job Trend | JobStatus | UserAna | Job Summary | Replication Trend | DDM Trend | DDM Task Trend | Transfer | **SE Accounting** | All SE Accounting | SE FreeSpace | Production Progress | DownTime | AID

7 day

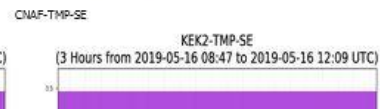
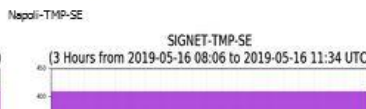
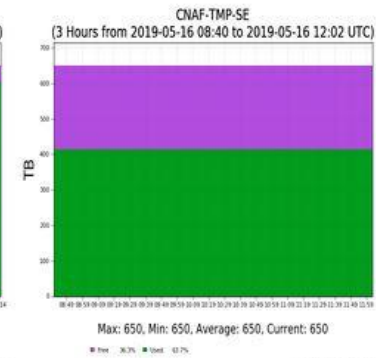
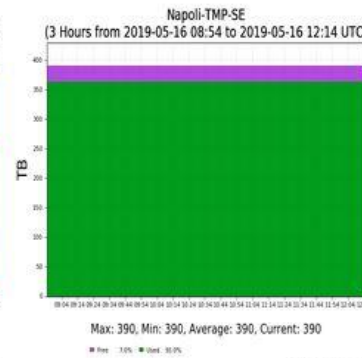
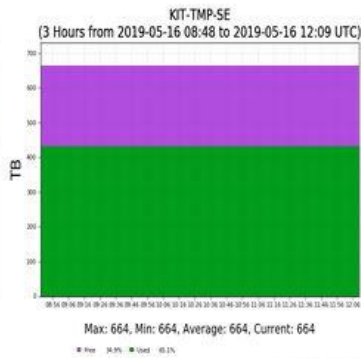
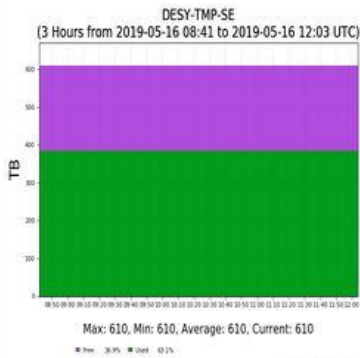
30 day

365 day

Storage Accounting figures with a range of 1day



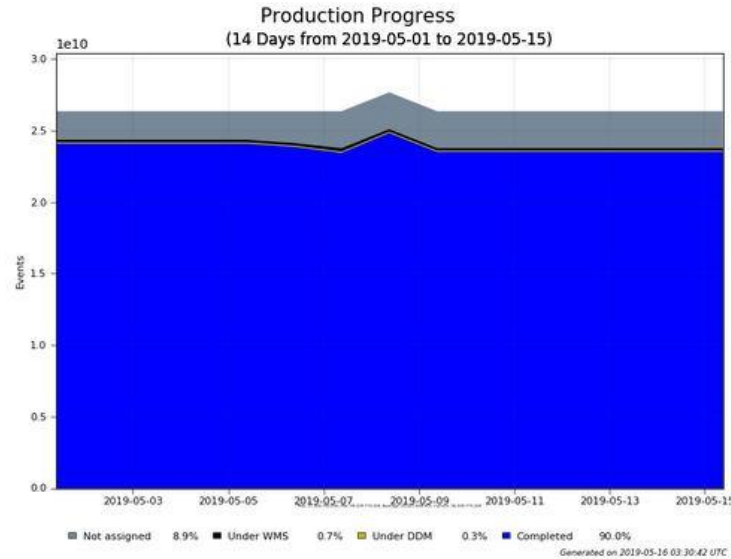
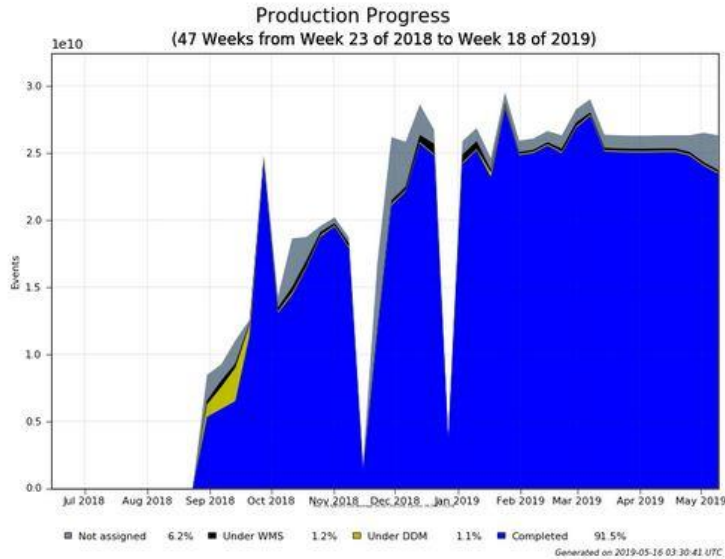
Generated on 2019-05-16 04:24:27 UTC



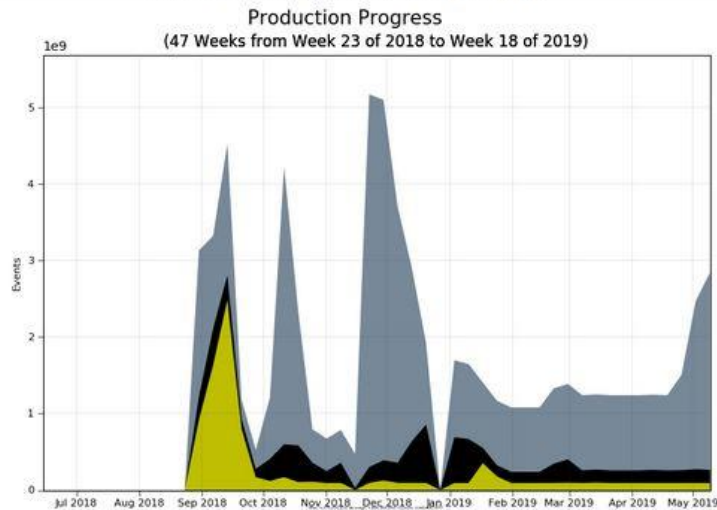
Monitoring: Production Progress

Pilot Trend | Pilot Submission | Pilot Processing | Pilot Waiting | Job Trend | JobStatus | UserAns | Job Summary | Replication Trend | DDM Trend | DDM Task Trend | Transfer | SE Accounting | All SE Accounting | SE FreeSpace | **Production Progress** | DownTime | AID

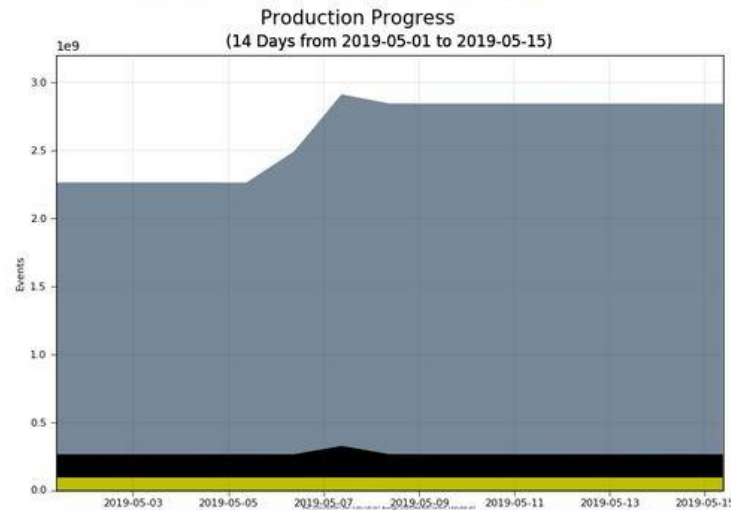
Campaign:MC11



MC11:MCProduction, Range:All (Including 'Finished')



MC11:MCProduction, Range>Last two weeks (Including 'Finished')



Monitoring: Downtime

Pilot Trend | Pilot Submission | Pilot Processing | Pilot Waiting | Job Trend | JobStatus | UserAns | Job Summary | Replication Trend | DDM Trend | DDM Task Trend | Transfer | SE Accounting | All SE Accounting | SE FreeSpace | Production Progress | **DownTime** | AID

DownTime for folowing Sites/SEs

Overview ([Link for shift log](#))

Affected Sites

| Site name | Name | Down/ Total CE |
|-----------|-------------|----------------|
| Site | LCG.Pisa.it | 0/4 |

Affected SEs

| SE name | Name | "Down" or "Not down" |
|---------|--------------|----------------------|
| SE | Pisa-TMP-SE | Down |
| SE | Pisa-DATA-SE | Down |

General information

| Start time (UTC) | End time (UTC) | Description | Link |
|------------------|------------------|-----------------|----------------------------|
| 2019-05-14 08:00 | 2019-05-16 08:00 | Storage problem | GOCD8 page |

Hosts

| Service | Host name | Severity |
|---------|----------------------|----------|
| SRM | gridsrm.pi.infn.it | OUTAGE |
| XRootD | stornmgf2.pi.infn.it | OUTAGE |
| SRM | stornmf1.pi.infn.it | OUTAGE |
| XRootD | stornmgf3.pi.infn.it | OUTAGE |
| XRootD | stornmgfL.pi.infn.it | OUTAGE |

DownTime for folowing Sites/SEs

Overview ([Link for shift log](#))

Affected Sites

| Site name | Name | Down/ Total CE |
|-----------|------------|----------------|
| Site | LCG.NTU.tw | 1/2 |

Affected SEs

| SE name | Name | "Down" or "Not down" |
|---------|------|----------------------|
|---------|------|----------------------|

Monitoring: Automatic Issue Detector

Pilot Trend | Pilot Submission | Pilot Processing | Pilot Waiting | Job Trend | JobStatus | UserAna | Job Summary | Replication Trend | DDM Trend | DDM Task Trend | Transfer | SE Accounting | All SE Accounting | SE FreeSpace | Production Progress | DownTime | AID

Central Systems

Port Checker is not responding... Server error while serving B2MigetPortCheckResult: 'B2MmiscDB' object has no attribute 'getPortCheckResult'

Primary SEs

KISTI-TMP-SE

- SE Health Check by DDM: Failure on upload have been observed since 2018-12-07 05:52:05 (3838 hours)
- Following JIRA tickets submitted: [BIIDCO-1364](#) , [BIIDCO-948](#)
- From OperationStatus:

LOG.KISTI.kr

- NOTE: This site is
- SE Health check by GGUS ticket <https://u>
- No new assignment
- "BLAH Error" has been observed since 2019-05-16 05:21:18 UTC (for 162 hours)
- Following JIRA tickets submitted: [BIIDCO-1380](#) , [BIIDCO-1259](#) , [BIIDCO-773](#)
- From OperationStatus:

Sites

DIRAC.Nigata2.jp

- "Short Pilot" has been obsr

ARC.KIT.de

- "Pilot Submission Failure" |
- Following JIRA tickets sub
- From OperationStatus:
 - Job submission che
 - Health checker info
 - Job submission che
 - Job submission che
 - Job submission che
 - Health checker info
 - Date, Issue, Tickets...

- Jobs slots are disabled for SE maintenace from 2018-10-19 to 2018-10-23 [BIIDCO-1380](#) - Getting issue details... STATUS

- Health checker info. : "BLAH ERROR" has been found since 06:20:00 UTC on 2018/10/19.([details](#))

- "Short pilot jobs" has been found at 06:20:00 UTC on 2018/10/09.([details](#))

- BLAH error seems to be happen if jobs exceed the allocated # of queues, not a problem (Site specific feature) 20 Sep 2018 [BIIDCO-1259](#) - Getting issue details... STATUS

- 15 Feb 2018 A large number of Merge jobs in waiting status [BIIDCO-773](#) - Getting issue details... STATUS

LOG.KISTI.kr

- "BLAH Error" has been observed since 2019-05-16 04:21:18 UTC (for 161 hours)
- Following JIRA tickets submitted: [BIIDCO-1380](#) , [BIIDCO-1259](#) , [BIIDCO-773](#)
- From OperationStatus:
 - Jobs slots are disabled for SE maintenace from 2018-10-19 to 2018-10-23 [BIIDCO-1380](#) - Getting issue details... STATUS
 - Health checker info. : "BLAH ERROR" has been found since 06:20:00 UTC on 2018/10/19([details](#))
 - "Short pilot jobs" has been found at 06:20:00 UTC on 2018/10/09([details](#))
 - BLAH error seems to be happen if jobs exceed the allocated # of queues, not a problem (Site specific feature) 20 Sep 2018 [BIIDCO-1259](#) - Getting issue details... STATUS
 - 15 Feb 2018 A large number of Merge jobs in waiting status [BIIDCO-773](#) - Getting issue details... STATUS

LOG.NTU.tw

- "Pilot Submission Failure" has been observed since 2019-05-04 13:15 UTC (for 279 hours) ([details](#)).
- Following JIRA tickets submitted: [BIIDCO-1815](#) , [BIIDCO-1808](#)
- From OperationStatus:

Data Management Block

- A unit of Belle II data handling
 - All files stored on same SE
 - Dataset can consist of multiple DMBs (= different SEs)
- A DMB contains fixed number of files (say 1000 files)
 - If one file is unavailable by any reason, replaced by alternative
 - Job failure, SE down before transfer...

Fabrication System

Job goes to data location
No input data relocation for now

- Each file is stored on temporary “local” SE → assembled by DDM

Distribution System (DDM)

Dataset: /xx/yy/BdecayA

/xx/yy/BdecayA/sub1

XXX_120_YYY_task120.root
XXX_121_YYY_task121.root
XXX_122_YYY_task122.root
XXX_123_YYY_task123.root
XXX_121_YYY_task128.root

/xx/yy/BdecayA/sub2

XXX_124_YYY_task124.root
XXX_125_YYY_task125.root
XXX_126_YYY_task126.root
XXX_127_YYY_task127.root

Convention: Serial ID_Task ID

Fabrication System

- A kind of wrapper to DIRAC Transformation System
 - Provide DMB and output file management
 - A Fabrication is associated to specific Transformation
 - Practically make Fabrication instance with same Transformation ID
 - Designate output LFN when TS Task is initialized (“Created”→”Submitted”)

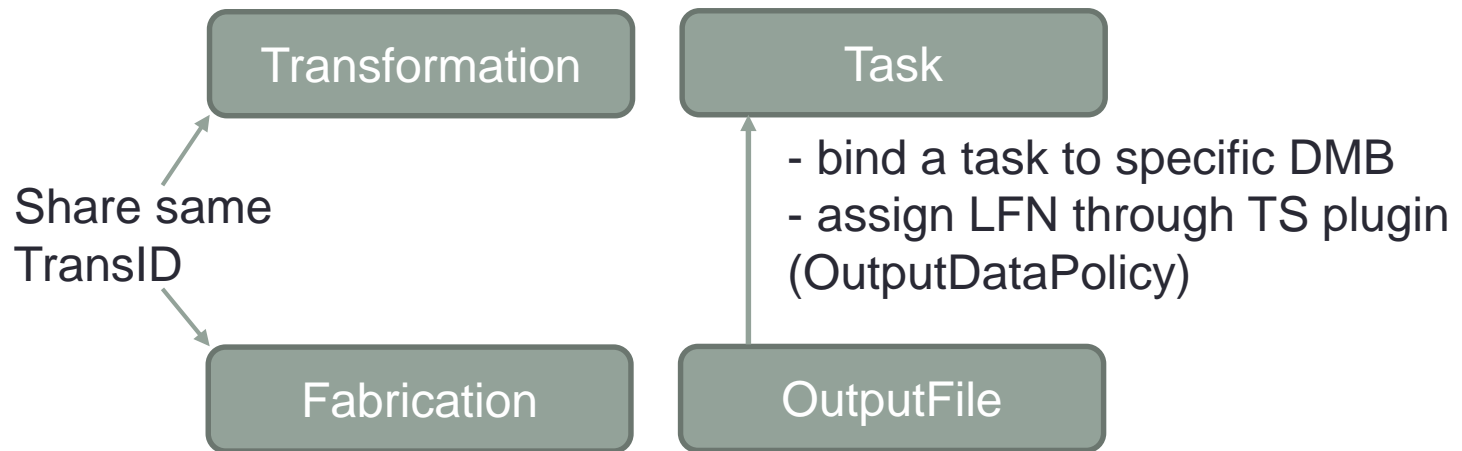


Table structure: Fabrication
DataBlock
Outputfile

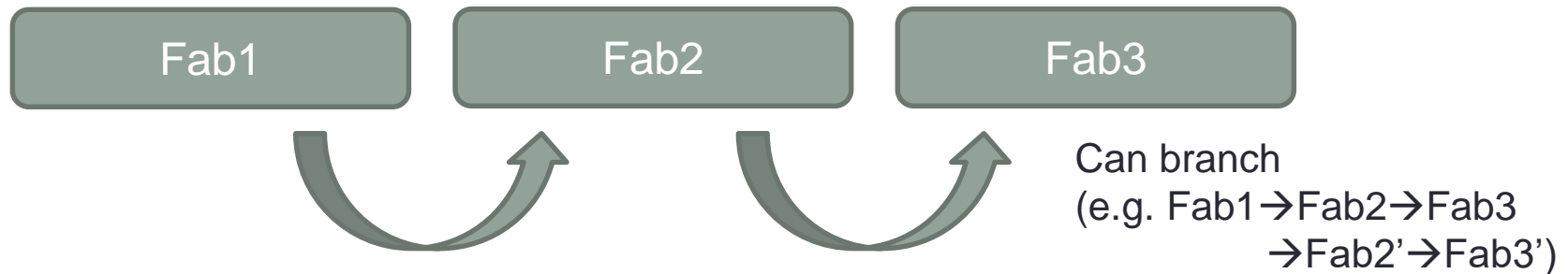
DMB1: /a/b/c/.../sub00/xxx1~1000.root
DMB2: /a/b/c/.../sub01/xxx1~1000.root

Fabrication Agent

- Take over the role of ValidateOutputDataAgent
 - Validate file metadata (checksum of SE and LFC entry)
 - Wait for processing if any RMS request is open
- Ask DDM to transfer output file
 - Watch transfer status
- Failure recovery:
 - Task failure
 - Failed task is not rescheduled but replaced by new Task (new LFN)
 - Release assigned input files (
 - Check “removed” but used as input files too)
 - Transfer failure
 - Drop the Task and generate new
- Manage data block
 - Remove unnecessary files (corrupted, wrong production definition...)
 - Fill datablock/dataset metadata
 - Fix DB inconsistency (including file status of TransformationFiles)

Production Management System

- Belle II PMS manages various tasks
 - Generate/monitor Transformation and Fabrication instances based on production request (written in json)
 - Chain output files generated by former Transformation to next (take over InputDataAgent...but not by metadata but by timestamp)
 - After data transfer by DDM (thus latter TS Task runs on limited number of sites)

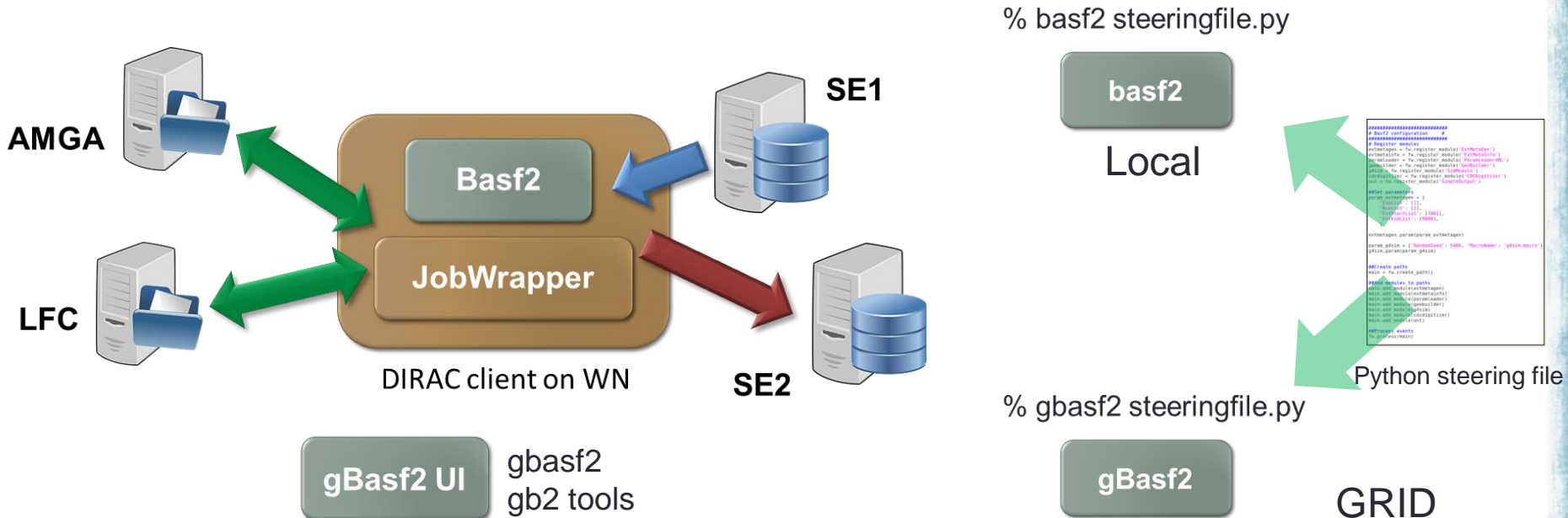


- Verify production which consumed all input files
 - Check consistency among input and output data files (e.g. not doubly used)

Automatize misc management tasks: flush, additional WMS priority control (long waiting job or very last Tasks in TS), diagnosis/fix of stuck production

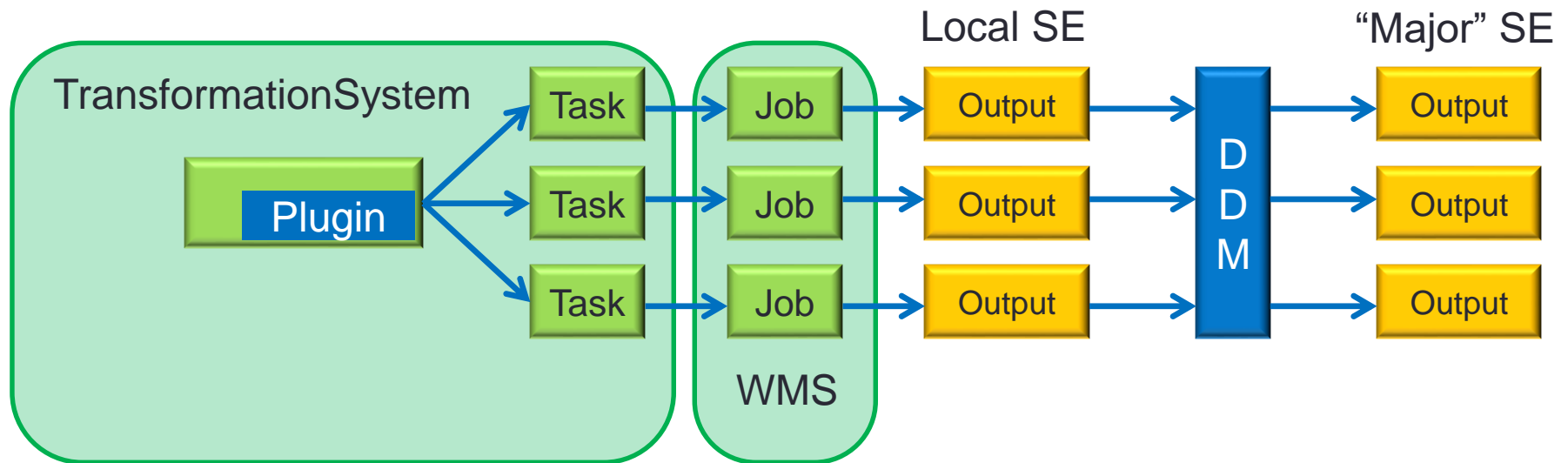
gBASF2



- Basf2 is our analysis software framework
 - Modular basis job executing platform
- Interface to distributed computing is given by **gBASF2** (grid Basf2)
 - Provide transparent job execution on DC environment
 - Data input/output, file catalog/metadata registration...
 - Provide also collection of tools to handle job and data through DIRAC API (gb2 tools)

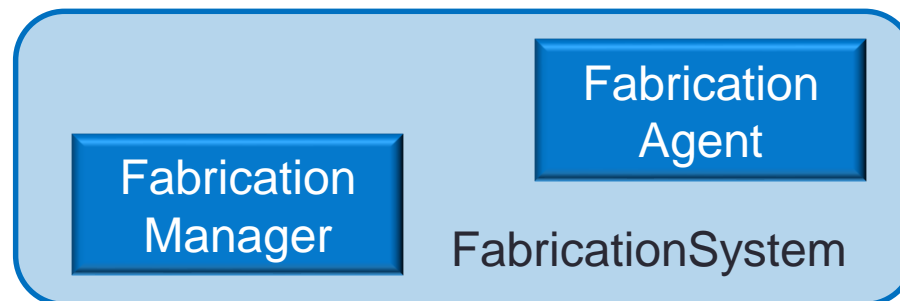


Workflow: overview

- Fabrication System exploits existing DIRAC components; TransformationSystem (TS) and WorkloadManagementSystem (WMS)
- TS is controlled by our plugin extension

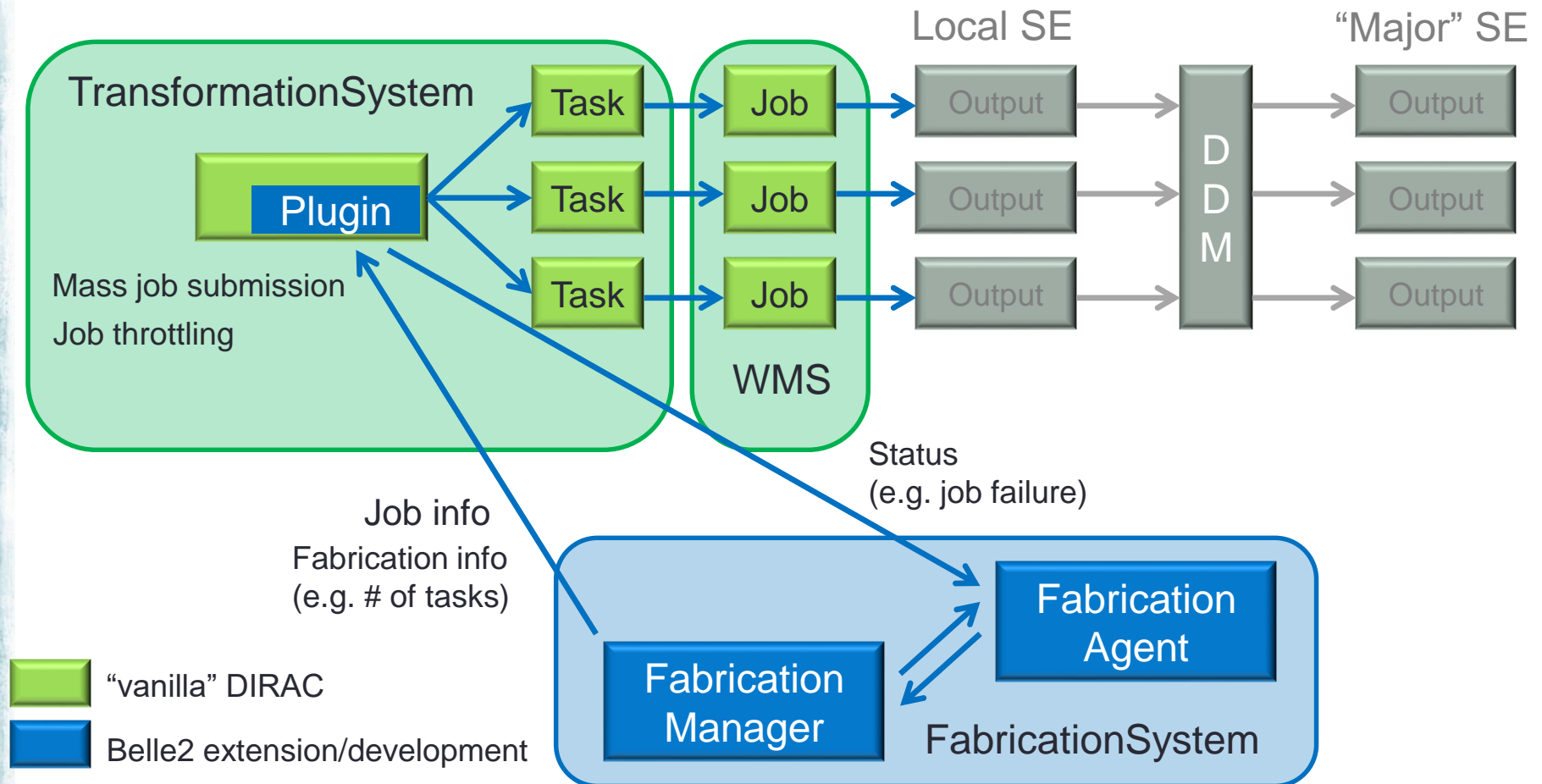


 "vanilla" DIRAC
 Belle2 extension/development



Workflow: job management

- FS controls both job submission and failure job resubmission
- Each job status is monitored through TS



Workflow: file management

- Once output file is created by GRID job, verifies each
- If file status is good, ask for DDM to transfer the file

