Site Status Board

Site Monitoring from the VO perspective

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CERN :: IT :: Experiment Support

5th User Forum, Uppsala
12 April 2010

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Motivation

- Single entry point for site performance monitoring picture from the perspective of the particular VO
- Performance is based on metrics defined by the VO
- The system should be very flexible and customizable (adding/deleting metrics, increasing/decreasing criticality of metrics, combining several metrics in a single one, creating alternative views)
- Straight forward navigation to the primary information source
- All information should be available in machine-readable format in order to be consumed by other applications (fabrics monitoring, etc…)
- History and metric evolution needs to be kept

Impact

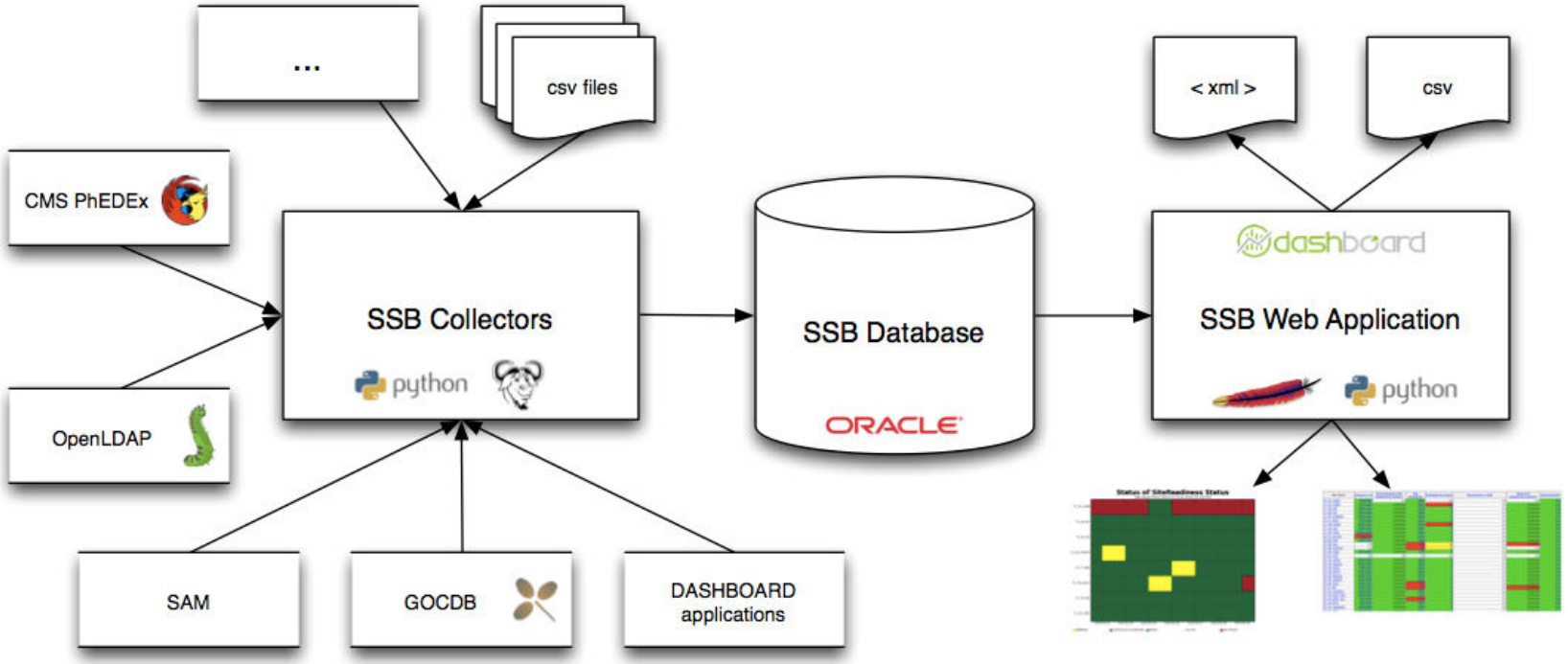
- **Developed under CMS request**
  - computing shifts
  - site commissioning
  - space monitoring
- **Also widely used by LHCb**
  - job monitoring
  - space monitoring
- **In evaluation by**
  - **ATLAS**
  - **ALICE**

- **100-150 unique visitors access SSB application daily just in CMS VO**
- **Over 170 different metrics stored for the four experiments**

Overview

- **Web application for site monitoring**
- **Sites are represented according to VO specific metrics**
- **Adding and editing metrics is easy**
- **Metrics can have different sources**
  - CSV files providing the values
  - Specific data collectors (BDII, PhEDEx, SAM...)
- **Configurable views for the different user profiles**
- **Keeps data history**

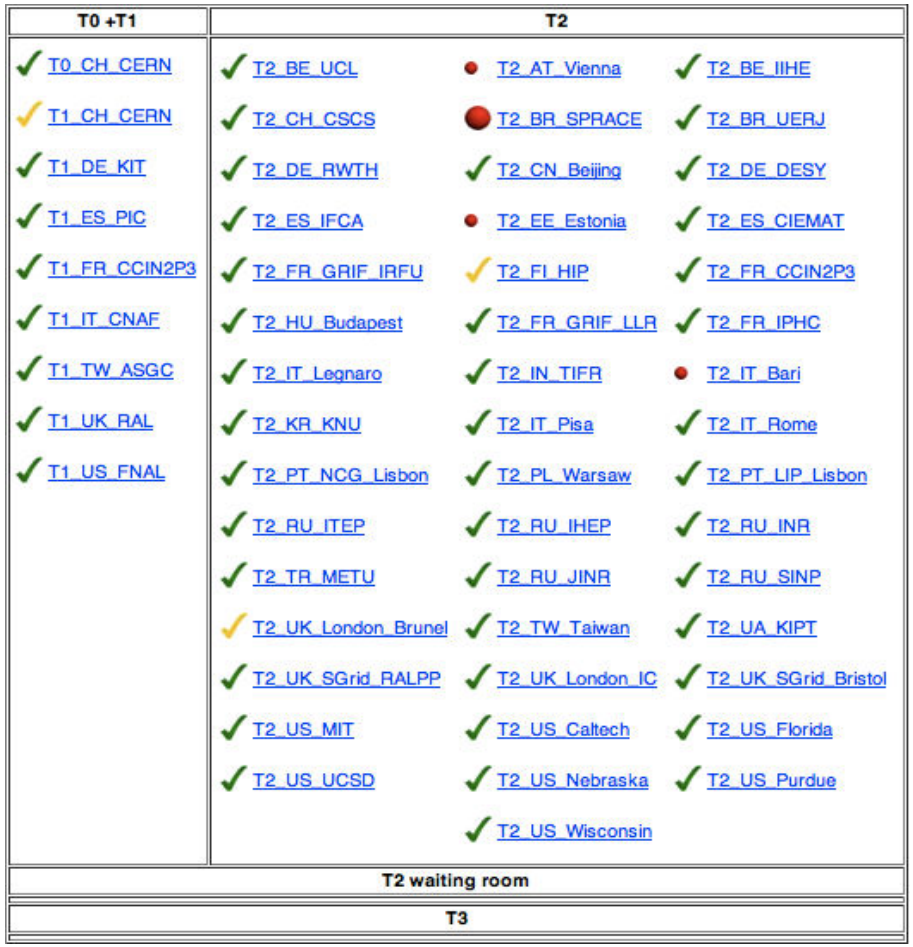
Architecture



Metrics and site global status

- **A metric can be any relevant information for the experiment**
  - *Data transfers, SAM results, BDII visibility, Maintenance info...*
- **Metrics use a color code and value to represent their status**
- **Site global status depends on metrics marked as critical**
- **Metric criticality can be redefined at any time**
- **Combination of metrics**
  - ***OK if all metrics are OK***
  - ***warning if at least one metric is in warning but none is failing***
  - ***error if at least one metric is failing but none is in maintenance***
  - ***maintenance if at least one metric is under maintenance***

Status at a glance

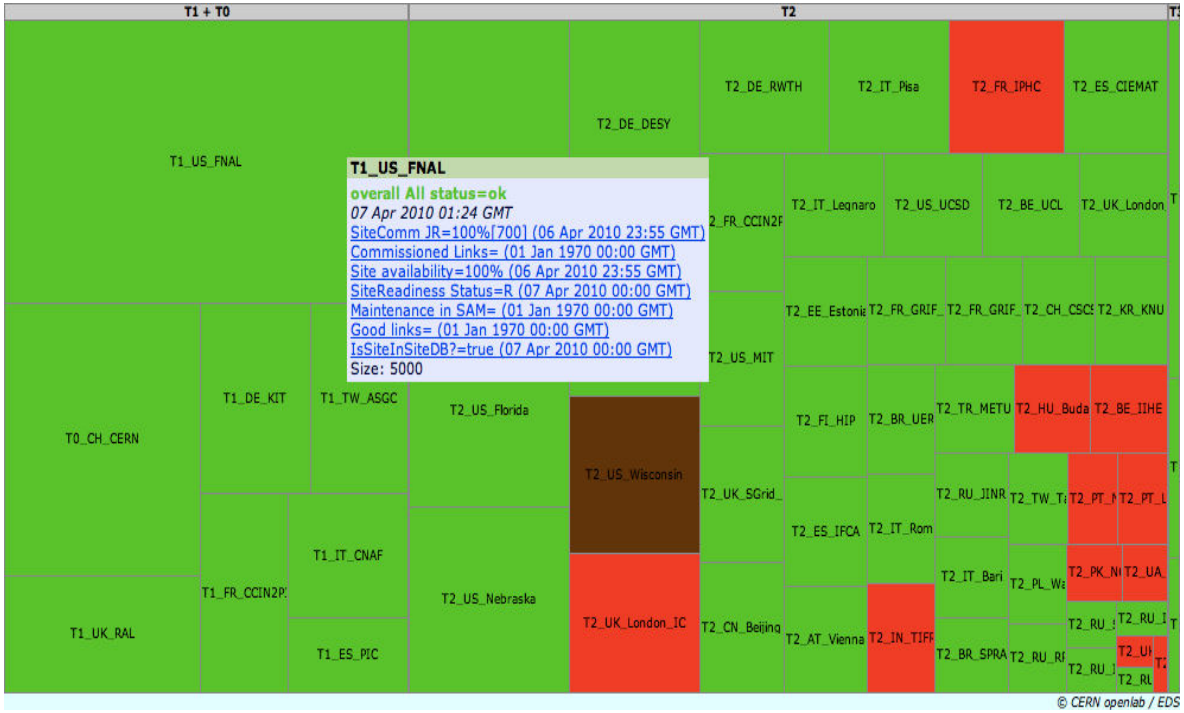


T0 +T1	T2		
T0_CH_CERN	T2_BE_UCL	T2_AT_Vienna	T2_BE_IIHE
T1_CH_CERN	T2_CH_CSCS	T2_BR_SPRACE	T2_BR_UERJ
T1_DE_KIT	T2_DE_RWTH	T2_CN_Beijing	T2_DE_DESY
T1_ES_PIC	T2_ES_IFCA	T2_EE_Estonia	T2_ES_CIEMAT
T1_FR_CCIN2P3	T2_FR_GRIF_IRFU	T2_FI_HIP	T2_FR_CCIN2P3
T1_IT_CNAF	T2_HU_Budapest	T2_FR_GRIF_LLR	T2_FR_IPHC
T1_TW_ASGC	T2_IT_Legnaro	T2_IN_TIFR	T2_IT_Bari
T1_UK_RAL	T2_KR_KNU	T2_IT_Pisa	T2_IT_Rome
T1_US_FNAL	T2_PT_NCG_Lisbon	T2_PL_Warsaw	T2_PT_LIP_Lisbon
	T2_RU_ITEP	T2_RU_IHEP	T2_RU_INR
	T2_TR_METU	T2_RU_JINR	T2_RU_SINP
	T2_UK_London_Brunel	T2_TW_Taiwan	T2_UA_KIPT
	T2_UK_SGrid_RALPP	T2_UK_London_IC	T2_UK_SGrid_Bristol
	T2_US_MIT	T2_US_Caltech	T2_US_Florida
	T2_US_UCSD	T2_US_Nebraska	T2_US_Purdue
		T2_US_Wisconsin	
T2 waiting room			
T3			

- Sites are arranged by groups
- Status is calculated from metrics defined as critical by VO
- Icon represents current status
- Site maintenance information
- Links to support tickets when site under investigation

Gridmap

- Site color represents global or metric status
- Weight sites by *job slots*, *disk space*, *site size* or *tier number*



Metric results

Site Name	SiteComm JR	Commissioned Links (expand this column)	Site availability	SiteReadiness Status	Maintenance in SAM	Good links (expand this column)	IsSiteInSiteDB?
T0_CH_CERN	94%(300)	n/a	100%	n/a	n/a	n/a	true
T1_CH_CERN	94%(300)	combined	100%	NR	n/a	combined	true
T1_DE_KIT	100%(300)	combined	100%	R	n/a	combined	true
T1_ES_PIC	100%(400)	combined	100%	R	n/a	combined	true
T1_FR_CCIN2P3	100%(300)	combined	100%	R	n/a	combined	true
T1_IT_CNAF	99%(300)	combined	100%	R	n/a	combined	true
T1_TW_ASGC	100%(100)	combined	100%	NR	n/a	combined	true
T1_UK_RAL	100%(300)	combined	100%	R	n/a	combined	true
T1_US_FNAL	100%(1000)	combined	100%	R	n/a	combined	true
T2_AT_Vienna	57%(100)	combined	100%	R	n/a	combined	true
T2_BE_IIHE	100%(400)	combined	100%	R	n/a	combined	true
T2_BE_UCL	n/a	combined	20%	W	n/a	combined	true
T2_BR_SPRACE	n/a	combined	0%	W	n/a	n/a	true
T2_BR_UERJ	100%(300)	combined	84%	R	n/a	combined	true
T2_CH_CAF	n/a	n/a	n/a	n/a	n/a	n/a	true
T2_CH_CSCS	100%(300)	combined	100%	R	n/a	combined	true
T2_CN_Beijing	100%(400)	combined	100%	R	n/a	combined	true
T2_DE_DESY	98%(400)	combined	100%	R	n/a	combined	true
T2_DE_RWTH	100%(600)	combined	100%	R	n/a	combined	true
T2_EE_Estonia	100%(500)	combined	100%	R	n/a	combined	true
T2_ES_CIEMAT	100%(300)	combined	100%	R	n/a	combined	true
T2_ES_IFCA	100%(400)	combined	72%	R	n/a	combined	true
T2_FI_HIP	100%(300)	combined	0%	R	n/a	combined	true
T2_FR_CCIN2P3	100%(500)	combined	100%	R	n/a	combined	true
T2_FR_GRIF_IRFU	100%(600)	combined	100%	R	n/a	combined	true
T2_FR_GRIF_LLR	85%(700)	combined	72%	R	n/a	combined	true
T2_FR_IPHC	98%(500)	combined	100%	R	n/a	combined	true
T2_HU_Budapest	100%(600)	combined	100%	R	n/a	combined	true
T2_IN_TIFR	100%(293)	combined	100%	R	n/a	combined	true

Metric results

Site Name	SiteComm JR
T0_CH_CERN	94%(300)

Site Name	SAM TESTS	
	CE	SRM
T1_DE_KIT	OK	OK

- Each column represents a metric
- Metric values can link to details
- Columns can be grouped, even from different sources
- Site and column names link to metric history
- Moving cursor over the header of the column results in showing the time stamp of latest update

Column combination

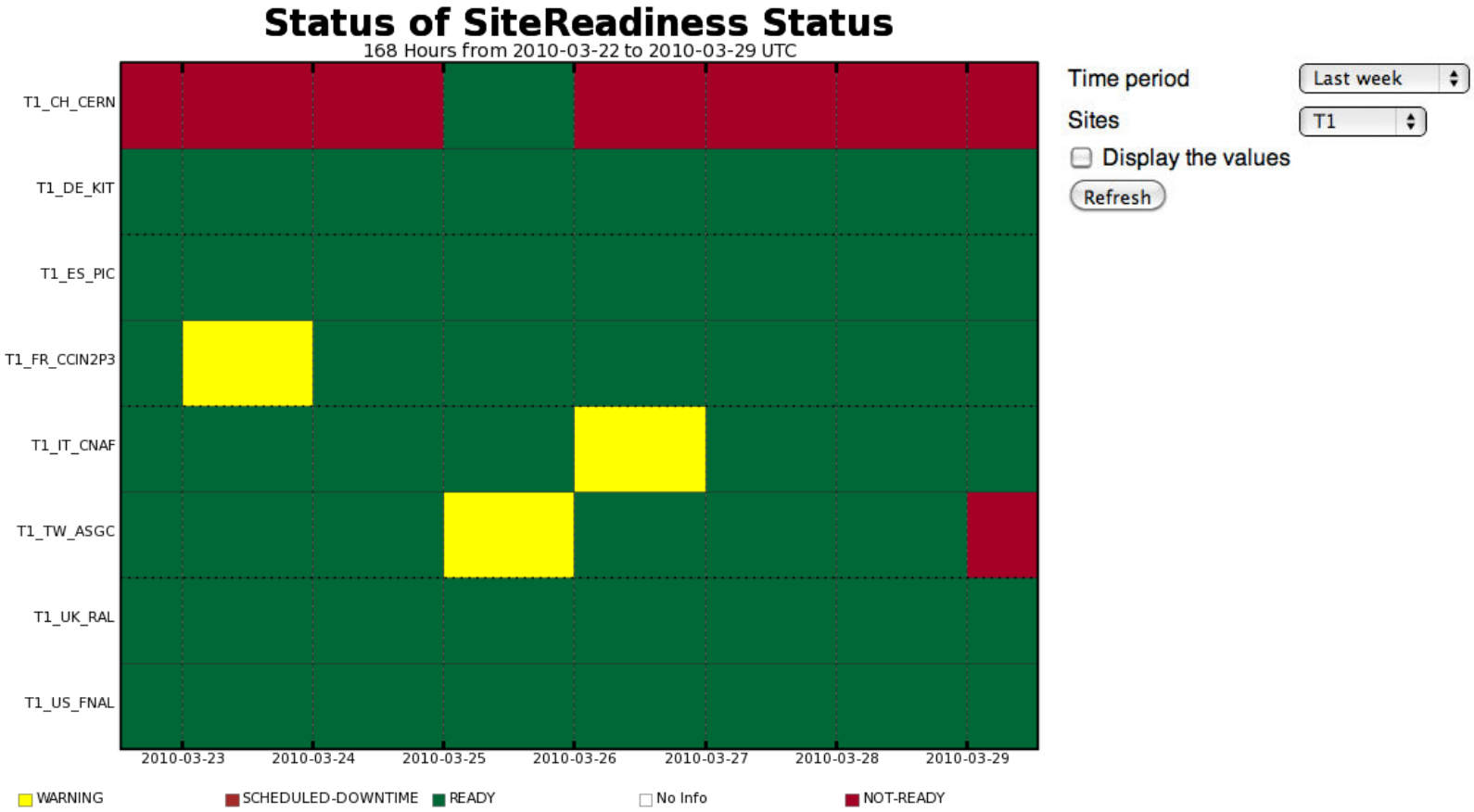
Site Name	Space Monitoring								Combined Space Monitoring (expand this column)
	Pledged, TB	subscription, TB	on site(phedex), TB	on site(DBS), TB	custodial subscription, TB	custodial on site, TB	Available BDII space	BDII used space	
T1_ES_PIC	1065	0.14	392.0	624.10	367.85	367.72	1650.42	13.04	combined
T1_FR_CCIN2P3	1535	85.43	616.7	893.96	809.82	790.95	1242.56	205.99	combined
T1_IT_CNAF	525	2.39	509.2	1057.65	789.17	787.02	1890.78	0.00	combined
T1_TW_ASGC	1080	6.54	243.4	258.25	171.47	170.92	49.28	125.20	combined

- Multiple metrics can be combined in one value
- Dynamic result. Refresh rate is defined by VO users individually for every column

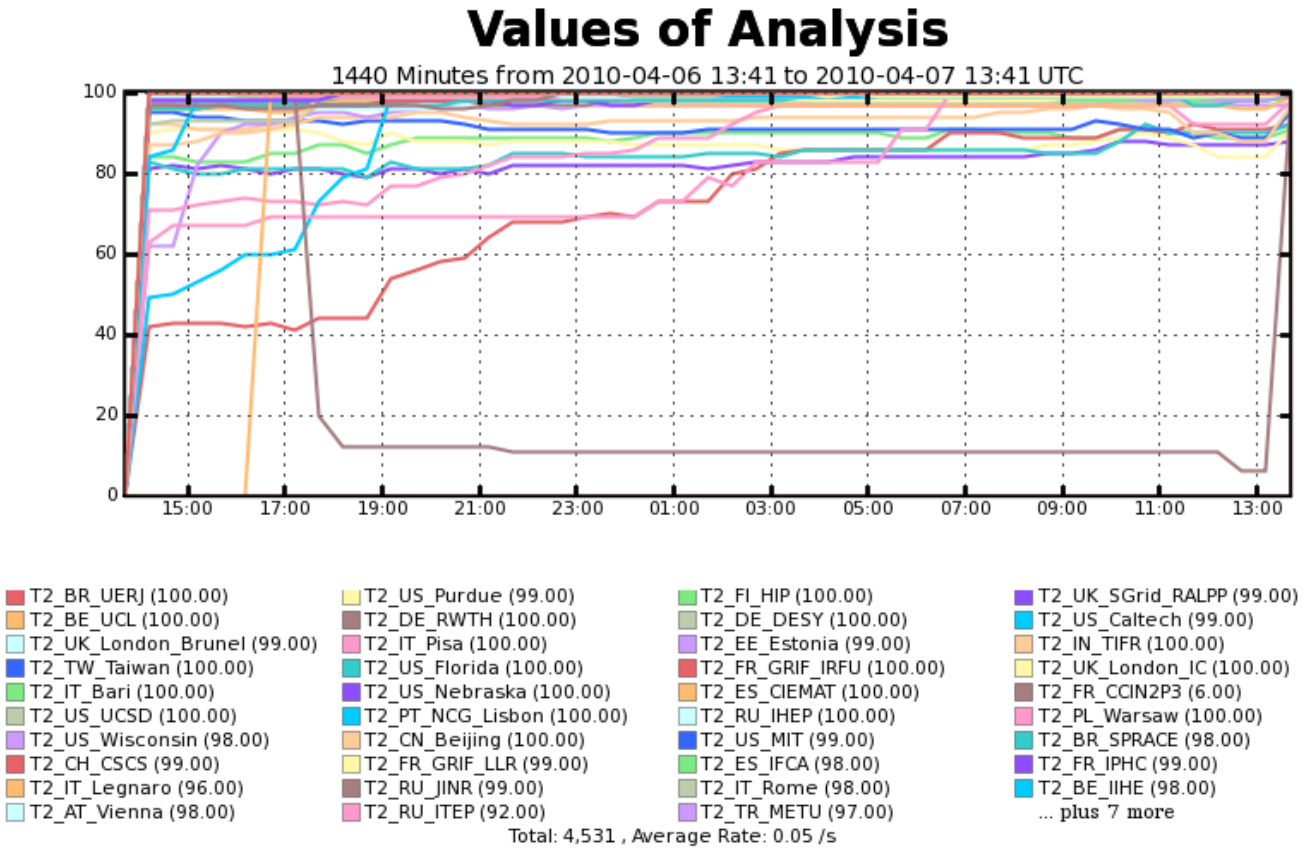
Historical view

- Time range configurable
- Display one or multiple sites
- Plots are clickable to see metric details
- Display all values or just value changes
- Force metrics to update information
- Discard current data

Historical view (status metrics)



Historical view (numeric metrics)



Alternative views

Existing views

View	Columns	Actions
default	all non-debug	
commission	SiteComm JR,Commissioned Links,Site availability,Good links,IsSiteInSiteDB?,Maintenance in SAM,SiteReadiness Status	modify remove
expert	Pledged, TB,Pledged slots,SiteSize	modify remove
space	on site(phedex), TB,on site(DBS), TB,Pledged, TB,onsite(Russia), TB,custodial subscription, TB,Combined Space Monitoring,subscribed(Russia), TB,custodial on site, TB,BDII used space,Available BDII space,subscription, TB	modify remove
maint	OSG downtime,Savannah,Maintenance in SAM,GOC downtime,Savannah CMS,Savannah manual,SAM Maintenance 2,Under investigation,Maintenance,CIC downtime	modify remove
transfers	# Links,To T0,In rate,To_T3_phedex,To_T0_phedex,In_rate_phedex,Transfer rate,To_T2_phedex,To_T1_phedex,Out_rate_phedex,Transfer_rate_phedex,To T3,To T2,To T1,Out rate	modify remove
jobrobot_debug	JobRobot_24h,JobRobot_1h	modify remove
storage	on site(DBS), TB,Pledged disk,Used tape,PhEDEx non-custodial,Pledged tape,Used disk,PhEDEx coming,Free tape,Free disk,Savannah CMS	modify remove
test	CE,Analysis	modify remove
develop		modify remove

Add new view:

Create View

- Users with special privileges can create custom views and define which metrics to include
- Views can be modified or removed without data loss

Alternative views

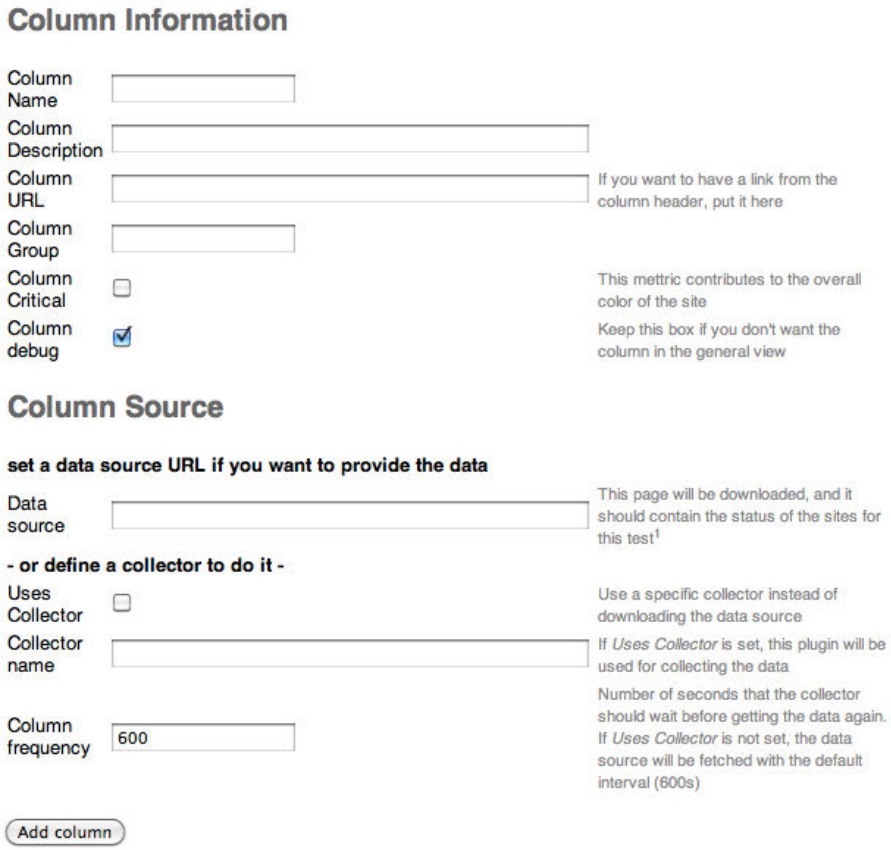
- CMS Site Commission view

Site Name	SiteComm JR	Commissioned Links (expand this column)	Site availability	SiteReadiness Status	Maintenance in SAM	Good links (expand this column)	IsSiteInSiteDB?
T0_CH_CERN	94%(300)	n/a	100%	n/a	n/a	n/a	true
T1_CH_CERN	94%(300)	combined	100%	NR	n/a	combined	true
T1_DE_KIT	100%(300)	combined	100%	R	n/a	combined	true
T1_ES_PIC	100%(400)	combined	100%	R	n/a	combined	true
T1_FR_CCIN2P3	100%(300)	combined	100%	R	n/a	combined	true

- ATLAS disclosed GRID view

Site Name	SRM SAM 48h	DDM 12h	DDM 48h	Ganga Robot 24h	Maintenance in SAM
AGLT2	100	100	100	100	3 SRMv2 up. 3 CE up.
ALBERTA-LCG2	n/a	n/a	n/a	n/a	All services in maint
Australia-ATLAS	100	100	100	47	3 SRMv2 up. 3 CE up.
BEIJING-LCG2	96	100	100	48	2 LFC_L up. 2 LFC up. 3 CE up. 3 SRMv2 up.
BNL-ATLAS	97	100	100	100	3 SRMv2 up. 1 FTS up. 6 CE up. 2 LFC up. 2 LFC_L up.
BU_ATLAS_Tier2	100	100	99	100	3 SRMv2 up. 3 CE up.

Adding new metrics

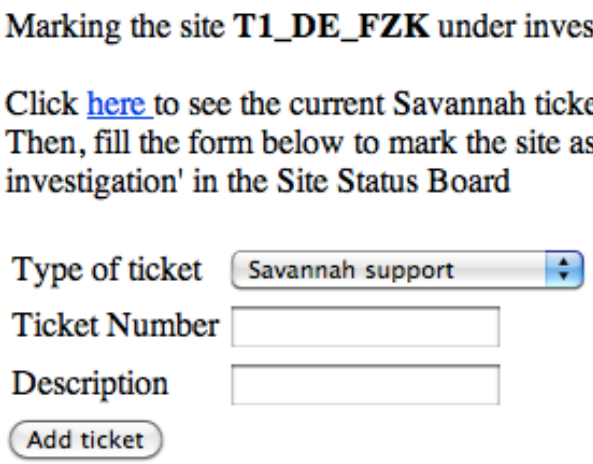


- Provide basic information
- Provide a data URI or set a collector to retrieve the values
- Column criticality

(to calculate the site global status)

- Debug columns won't show in the main table
- Restricted to users with special privileges
- Define frequency of column update

Under investigation



- Savannah integration
- Tickets can be manually or automatically closed
- History of all site issues
- Easily extendible to other systems using new metrics

Security

- Administration actions require login
- x509 Security
- Privileged users must access using personal certificate

Summary

- **What?**
  - Easy overview of site status
  - Access to investigation and maintenance information
  - Flexibility
- **How?**
  - Multiple data sources
  - Column grouping and combination
  - Customized alternative views
- **Who?**
  - VO users involved in the computing activities

Links

- **Dashboard**
  - http://dashboard.cern.ch
- **CMS production SSB**
  - http://dashb-ssb.cern.ch/ssb.html
- **CMS development SSB**
  - http://dashb-ssb-devel.cern.ch
- **LHCb production SSB**
  - http://dashb-lhcb-ssb.cern.ch
- **ATLAS evaluation SSB**
  - http://dashb-atlas-ssb.cern.ch
- **ALICE evaluation SSB**
  - http://dashb-alice-ssb.cern.ch