Critical Service Review

IT-RCS Critical Services Review

- **Recap** where we started
  - Kicked-off **9th** RCS ICT **November 2023**
    - Categorize services for LHC experiments
    - Criticality of many services are already covered by WLCG MoU agreements
    - Metrics based on WLCG criticality
- **First** results
  - Initial Criticality Ranking which showed some unlikely discrepancies and inconsistencies

- **Follow-Up** Procedure
  - Based on first results invite every IT group to provide feedback and clarifications on detailed input given by communities
    - IT CD ✓ ICT-14
    - IT SD ✓ ICT-15
    - IT CS ✓ ICT-16 - today
    - IT PW ☐ ICT-17 - 6,9. → 13.9.
    - IT DA/CA ☐ ICT-18 - 4.10.

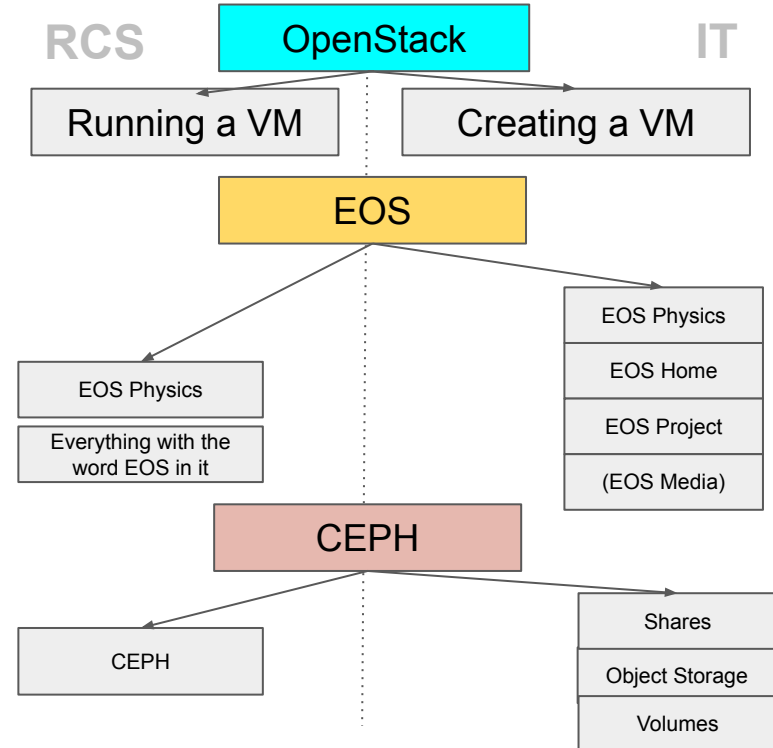   For now this is only a proposal - to be agreed with IT groups

IT-RCS Critical Services Review

Some service definitions have not been clear/detailed enough

Some Examples

- **OpenStack ≠ OpenStack API**
  - Service to create and configure a new virtual machine
  - Not platform to run an existing VM
- **EOS**
  - EOS Physics Services
  - EOS Home Space != CERNBOX
  - EOS Project Space != CERNBOX
  - EOS Media Space != CERNBOX
- **CEPH**
  - Ceph **Shares** CephFS
  - Ceph **Object Storage** S3
  - Ceph Block Storage RBD **Volumes**

RCS   **OpenStack**   IT

Running a VM   Creating a VM

EOS

EOS Physics

EOS Physics

EOS Physics

EOS Home

Everything with the word EOS in it

EOS Project

(EOS Media)

CEPH

CEPH

Shares

Object Storage

Volumes

IT-RCS Critical Services Review

Some service definitions are too unspecific

Some Examples

- **Network** is likely a too generic term …

IT-RCS Critical Services Review

No need to add back-end dependencies but direct dependencies

Example

lxplus
AFS

VS.

lxplus → AFS ← Something else

- **lxplus + AFS**
  - If you use lxplus just to login from outside to CERN to hop on another node, you don't have to refer to AFS for this use-case - you can use/indicate lxtunnel for this use case
    (however there is no possibility to store credentials, .ssh etc.)

  - If you login on lxplus to publish data on AFS and lxplus is the only place for you to do so, you would flag lxplus + AFS

  - If you login on lxplus to have access to AFS but you have the same access elsewhere you should not flag lxplus in the same way

  - If you login on lxplus to publish data on AFS, which is consumed in another service, you should also flag AFS, not only lxplus
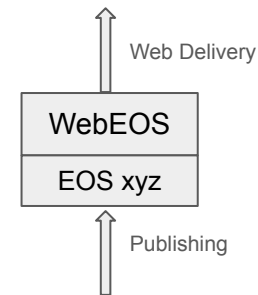
IT-RCS Critical Services Review

Ambiguity in direct dependencies

Web Delivery

↑

WebEOS
EOS xyz

↑

Publishing

Example

- **WebEOS**
  - If you have critical monitoring on WebEOS you depend directly on WebEOS
    - WebEOS requires an EOS back-end to display a web page, this is an indirect dependency

  - To publish data on a web page you need direct access to a given EOS Service (Physics, Home, Project …) - in this case EOS is not anymore a second-level dependency, it is a direct dependency

  - If you do this using EOS access on lxplus using *acron*, **acron** is equally a direct dependency

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Should we keep this in the table?

Service	Service Details	IT Group	from WLCG
Inspire	https://inspirehep.net/	External	☐
ROOT & Geant4	(not in IT)	External	☐
Rucio	(only partially now in IT)	External	☐
GGUS	(not in IT)	External	☐

IT-RCS Critical Services Review

Can we merge lxbatch/dedicated batch/HTCondor or is there added value in these distinctions?

lxbatch		IT-CD ▾	☑
BOINC		IT-CD ▾	☐
CEs	WLCG component	IT-CD ▾	☑
Configuration Management	Puppet++	IT-CD ▾	☐
Dedicated batch		IT-CD ▾	☑
HammerCloud		IT-CD ▾	☐
HPC		IT-CD ▾	☐
HTCondor		IT-CD ▾	☐

IT-RCS Critical Services Review

Suggest to separate **lxplus** and **lxtunnel** use cases …

lxplus	Interactive usage	IT-CD ▼	☑
lxtunnel	For external access	IT-CD ▼	☐

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Suggest to separate **API** from **Infrastructure** for OpenStack

OpenStack API	Web/CLI for VM managemer	IT-CD	☐
OpenStack Cloud Infrastructure	Infrastructure running VMs	IT-CD	☑

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Suggestion …

GitLab	Refers to the repository	IT-PW ▼	☐
GitLab CI/CD	Refers to CI/CD, runners etc.	IT-PW ▼	☐

If you deploy artefacts from GitLab directly from S3, you might also flag the CEPH S3 service !

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Suggest to merge these two …

K8S		IT-PW ▼	☐
Kubernetes	Kubernetes Infrastructure	IT-PW ▼	☑

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Suggest clearer distinction …

CEPH FS Shares	IT-SD ▼	☐
CEPH RBD Volumes	IT-SD ▼	☐
CEPH S3 Object Storage	IT-SD ▼	☐
CERNBox Samba CIFS	IT-SD ▼	☐
CERNBox Sync&Share / Web	IT-SD ▼	☐
EOS Home	IT-SD ▼	☐
EOS Physics	IT-SD ▼	☑
EOS Project/Media	IT-SD ▼	☐

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To be clarified …

Remote Access	→lxtunnel/External access	Various ▼	☐
ATLAS Windows Terminal Cluster	Who is responsible?	▼	☐
DCS Data Visualisation Service	Who is responsible?	▼	☐
Development, Deployment, Distribution	would remove ...	▼	☐
DIM	would remove ...	▼	☐
Discourse / CMS Talk	Responsible ...	▼	☐
Mathematics Tools	Responsible ...	▼	☐
Spectrum	Responsible ..	▼	☐

IT-RCS Critical Services Review

Current status of critical services table …

Service	IT Group	ALICE	ATLAS	CMS	LHCB	SME	TH	ME	∑	max	σ (LHC)	σ (ALL)
OracleDB Online	IT-DA	100	100	100	100	100	0		500	100	0.00	40.82
EOS Physics	IT-SD	70	70	70	49	100	100		459	100	10.50	19.94
Network	IT-CS	100	70	70	100	100	0		440	100	17.32	38.82
OpenStack Cloud Infrastructure	IT-CD	0	100	49	100	100	0	49	398	100	47.96	45.04
Authentication (Kerberos, SSO, A	IT-PW	70	100	100	100	0	0		370	100	15.00	49.16
AFS	IT-SD	0	100	70	0	100	100		370	100	50.58	49.16
lxplus	IT-CD	70	28	70	70	0	100		338	100	21.00	35.90
Configuration Management	IT-CD	28	100	0	100	100	0		328	100	50.95	50.70
OracleDB Offline	IT-DA	28	100	70	100	0	16		314	100	34.07	43.61
PX-CC network	IT-CS	100	70	40	100	0	0		310	100	28.72	45.79
CVMFS Stratum 0	IT-SD	70	70	28	40	100	0		308	100	21.35	35.70
GitLab	IT-PW	16	100	0	70	70	49		305	100	46.57	37.29
CERNPhone	IT-CS	100	100	49	49	0	0		298	100	29.44	44.72
lxbatch	IT-CD	49	70	28	28	0	100		275	100	20.11	35.40
CEPH FS Shares	IT-SD	0	100	0	0	0	100	49	249	100	50.00	47.51
Mattermost	IT-CA	100	49	49	49	0	0		247	100	25.50	37.51
Zoom	IT-CA	49	100	49	49	0	0		247	100	25.50	37.51
CTA	IT-SD	28	49	28	28	100	0		233	100	10.50	33.78
IAM	IT-PW	40	70	40	70	0	0		220	70	17.32	31.41
DBoD	IT-DA	0	70	40	0	100	0		210	100	34.03	42.78
FTS	IT-SD	0	100	49	40	16	0		205	100	41.11	38.09
Remote Access	Various	100	100	0	0	0	0		200	100	57.74	51.64
HammerCloud	IT-CD	0	100	28	0	70	0		198	100	47.22	42.78
ServiceNow / Ticketing	IT-TD	100	49	49	0	0	0		198	100	40.83	40.66
GitLab CI/CD	IT-PW	49	16	49	70	0	0		184	70	22.32	29.38
Indico	IT-CA	4	100	28	49	0	0		181	100	40.87	39.35

Critical Services
Communication Systems Groups

IT-RCS Critical Services Review - CS Group

Confusing nomenclature…

ATC Network Point1	ATLAS Network P1	IT-CS ▼	☐
CERNPhone		IT-CS ▼	☐
eduroam		IT-CS ▼	☐
External network access to CERN	Is that the same as remote a	IT-CS ▼	☐
landb	Network Database and Regis	IT-CS ▼	☐
LHC-OPN/LHC-ONE/GPN	LHC Networks, Campus Netv	IT-CS ▼	☑
Network		IT-CS ▼	☐
PX-CC network	Point X network to Computer	IT-CS ▼	☑
Web browsing/operations inside GPN	Is this not implicit in others?	IT-CS ▼	☐
WIFI	Wireless Network	IT-CS ▼	☐

IT-RCS CERN Network - CS Group
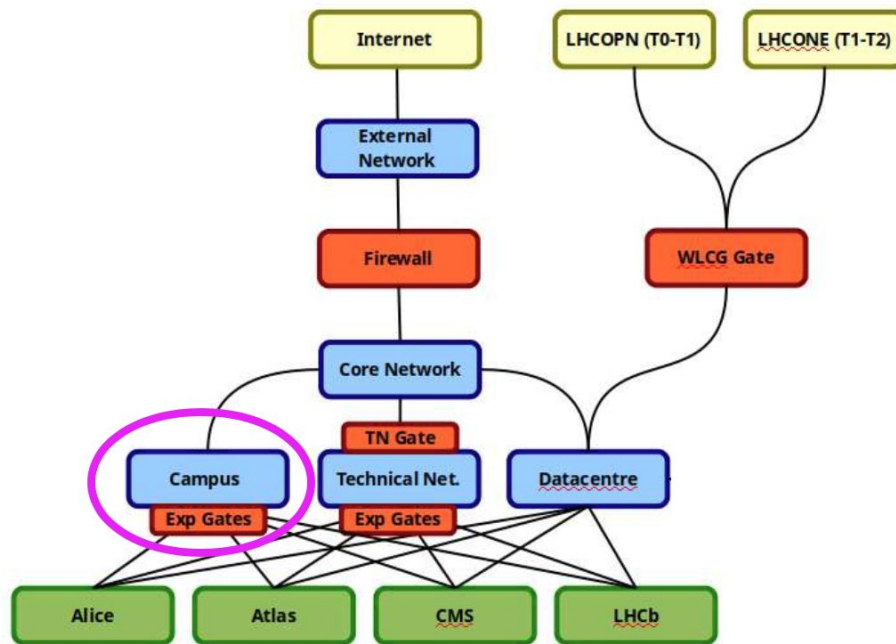
E.Martelli (2018)

IT-RCS Critical Services Review - CS Group
Suggestion for CS services …

- Technical Network **TN**
- Campus Network **GPN**
- **Pˣ →CC** Links
- LHC-**OPN**, LHC-**ONE**
- **WIFI**
- **Eduroam**
- **External Network** = external Access to CERN Networks
- CERN**Phone**
- **LanDB**

- Data Centre Network
Implied dependency for every IT service?

IT-CS ▼	☐
IT-CS ▼	☐
IT-CS ▼	☐
IT-CS ▼	☐
IT-CS ▼	☐
IT-CS ▼	☑
IT-CS ▼	☐
IT-CS ▼	☑
IT-CS ▼	☐
IT-CS ▼	☐

IT-RCS Critical Services Review
Current State for CS services …

Service	IT Group	ALICE	ATLAS	CMS	LHCB	SME	TH	ME	∑	max	σ (LHC)	σ (ALL)
Network	IT-CS	100	70	70	100	100	0		440	100	17.32	38.82
PX-CC network	IT-CS	100	70	40	100	0	0		310	100	28.72	45.79
CERNPhone	IT-CS	100	100	49	49	0	0		298	100	29.44	44.72
LHC-OPN/LHC-ONE/GPN	IT-CS	49	100	0	0	0	0		149	100	47.79	41.72
ATC Network Point1	IT-CS	0	100	0	0	0	0		100	100	50.00	40.82
External network access to CERN	IT-CS	0	100	0	0	0	0		100	100	50.00	40.82
Web browsing/operations inside	IT-CS	70	0	0	0	0	0		70	70	35.00	28.58
WIFI	IT-CS	28	0	0	0	0	0		28	28	14.00	11.43
landb	IT-CS	0	16	0	0	0	0		16	16	8.00	6.53
eduroam	IT-CS	0	4	0	0	0	0		4	4	2.00	1.63

IT-RCS Critical Services Review
Feedback from Control System Group

- **Network**
  - **TN** considered critical
  - **P^x** →**CC** links considered critical as well
- For both
  - *Some* level of redundancy
  - **24x7** Piquet

- **CERNPhone**
  - not considered a critical service
  - Telephony as a whole is considered as essential
    - fixed & mobile installation provide mutual backup
  - Hardened CERNPhone installation for certain control rooms

Update on
TN & GPN Tenders

Tony Cass

Critical Service Review

Procedure - Proposal - Impact - Outcome

IT-RCS Critical Services Review

Further procedure

- We **extend/correct** the service nomenclature in the critical service table according to what was understood by now

- We will **finish the feedback sessions** with IT groups as planned and adapt further ambiguities during the process

Proposal

- We **split** the current state of the criticality table **into individual spreadsheets owned/editable by each experiment community**
  - You have access to directly review your entries and edit
  - Alternatively we can arrange a session with each community to go through the current table and review/correct these entries
  - We add a field where you can **express your impression** on the current IT support level
    - sufficient as is
    - could/should be improved
    - absolutely should be improved

- We **create an automatic overview table** out of the individually owned tables

- We **crosscheck** incompatibilities with the WLCG table and point you to them

IT-RCS Critical Services Review

Outcome

- For October we should **finish the correction process** and **produce a result** for the upcoming Program of Work (POW)

- We will connect back-end services to your direct dependencies and produce a **second spreadsheet** incorporating criticality dependencies

- Most likely there will be (too) **many critical services with high impact**

Impact

- It is **unlikely** there can be an immediate change in support of many services
  - it is not only a head count problem
  - based on the findings we can propose improvements to TD and via the steering committee
  - since many are known to be critical It is also likely that the support level of most services is considered sufficient

- One possible outcome might be a **reshuffling** of certain service dependencies and **recommendations** e.g.
  - is it a good choice to have critical experiment monitoring depend on LXPLUS, EOS Home and WebEOS(OpenShift)
    - an alternative measure can be to restructure services to be usable as a critical service

- In reality we (*you* and IT) have some room how to shape a use-case and/or the service used

"All roads lead to Rome" - might not be true here, but "several" should do it

All roads lead to Rome - but I want to go to Paris!