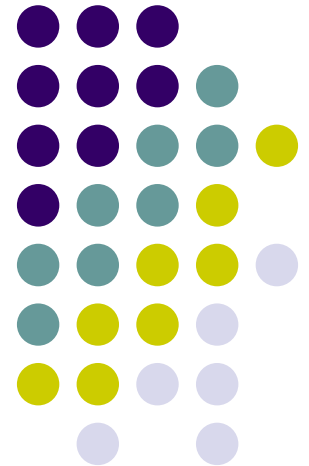


Current Grid System in Belle

H.Nakazawa
(National Central University)
sBelle
Computing/Network/Framework
Dec. 11, 2008



Motivation for Belle VO (Virtual Organization)



- Practice of de facto standard
 - KEKCC rather than Belle
- One of promising candidates of sBelle computing



Belle VO (Virtual Organization) History

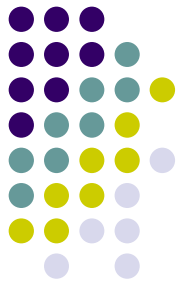
- Project start in 2005
- Participated in MC production in Sep. 2006
 - KEK + ASGC (Academia Sinica, Taiwan)
- June-July 2007, Nagoya, Melbourne and Krakow joined
- Aug. 2007, SRB (Storage Resource Broker) introduced
- Mar. 2008, M. Kaga graduated Nagoya. No successor.
- Sep-Oct. 2008, Karlsruhe and Ljubljana



Belle VO (Virtual Organization)

- Managed by KEKCC
- Sites (as of July)

CE		CPU (avail.)	gLite	SLC	arch	
dg14	KEK	12	3.0.2	3.0.8	i386	
rls01	KEK	40	3.1.?	4.?	x86_64	Since Oct
rls02	KEK	32	3.0.2	3.0.8	i386	extinct
f-ce01	ASGC	372(<120)	3.1.0	4.5	i386	
ce.cyf-kr	Krakow	396(<10)	3.1.0	4.5	x86_64	
Nagoya	Nagoya	12	3.0.?	3.0.8	i386	

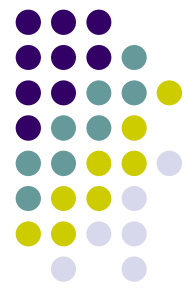


How Belle VO looks like ?

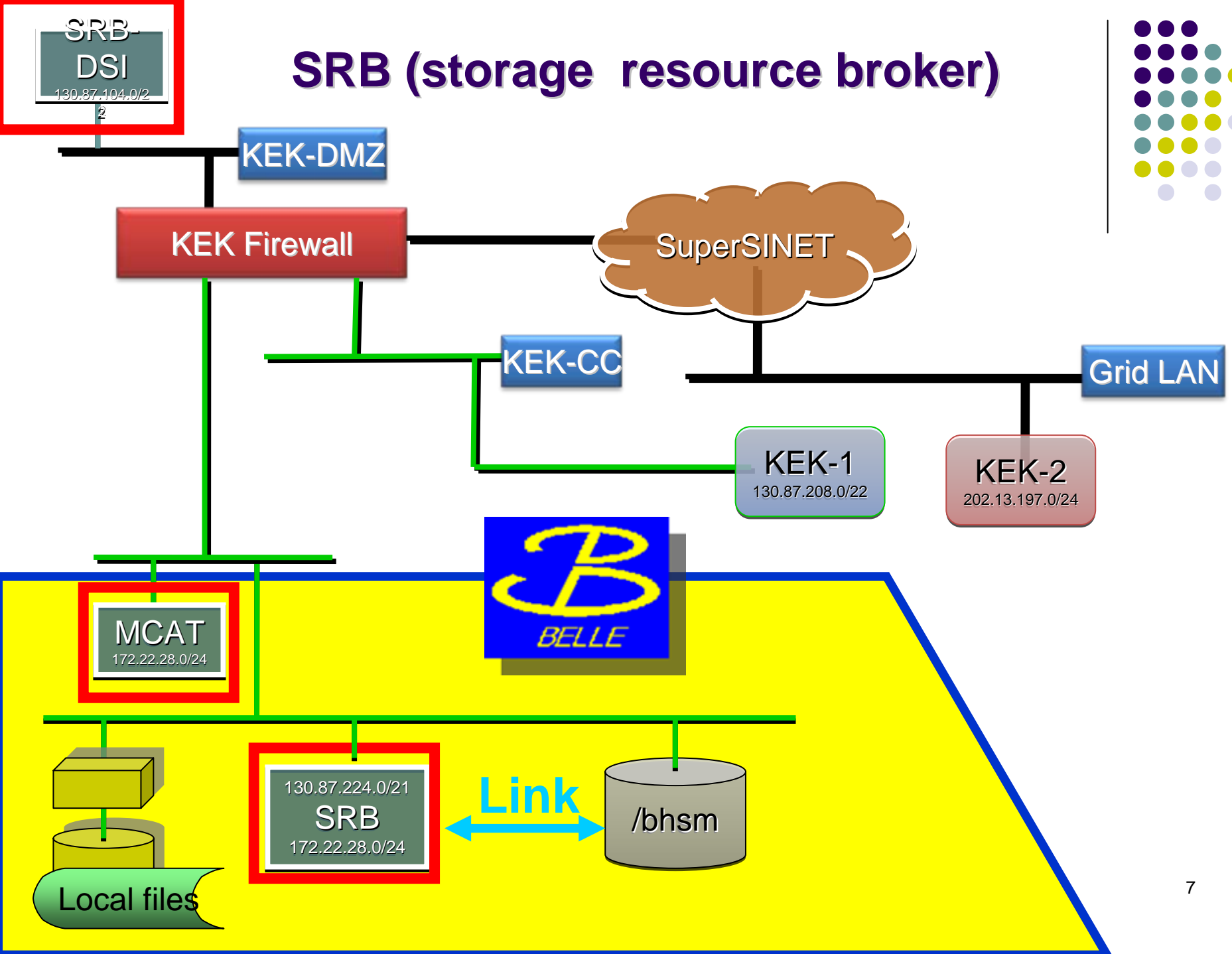


MC Production by Grid

- Belle MC data are produced by B system and institutes
- The only usage of Belle VO so far
- ~8% of MC data from institutes
- Data size has huge variation depending on exp run
 - Extremely long time compared to LHC MC -> extend wall time limit
- All data at /bhsm@bwg
 - Input = generator and bkg file, output = mdst
 - Read from /bhsm when job starts, written to /bhsm when finishes.



SRB (storage resource broker)





Library and Database

- **Library**
 - rpm file by Katayama-san
 - RHEL3, 4 (SLC3, 4 compatible)
 - i686, x86_64
- **Database**
 - Postgresql
- **Installation**
 - Installed to all sites by Grid job
 - 1 NFS per site, mounted on all CE (computer element)
 - No root privilege
- **10 GB in total.**
 - `rpm2cpio belle-b20050311_0738-debug-pl8-7.RHEL4.i686.rpm | cpio -id`



Some numbers of MC Production

File size

file	Average	Max
background	80MB	1GB
generator	10MB	400MB
mdst	200MB	7GB

Throughput

	Read	Write
Krakow	0.1MB/s	0.3MB/s
Nagoya	2MB/s	5MB/s
KEK	15MB/s	15MB/s

Total since SRB

Read	5.0TB	91 kfiles
Write	8.5TB	44 kfiles

Prospects



- **New sites**
 - **Ready**
 - Karlsruhe, 6000 x 6 CPUs (seen)
 - Ljubljana, 500 CPUs (seen)
 - **Started joining Belle VO**
 - Virginia, Hawaii --- need time to establish
 - KISTI --- already on LCG
- **To do**
 - **MC production will resume soon**
 - Test of scalability for many jobs
 - need to move SLC5 next year
- **Grand reprocess may be a chance to handle exp data**



How to join Belle VO

- Contact to Belle VO manager
 - Go Iwai <go.iwai@kek.jp>
- Sites
 - LCG sites
 - Easy to join. Just ask Go and your site manager
 - NFS and some parameter changes
 - Private sites
 - 2 years project. Good subject for master thesis
 - Soohyung Lee (Korea Univ) is trying