Computing and network environment at the RIKEN Nishina Center

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We are operating the Linux/Unix NIS/NFS cluster systems[1,2] at the RIKEN Nishina Center (RNC).

Figure 1 shows the current configuration of the Linux/Unix servers at the RNC. We have adopted Scientific Linux (SL), which is a clone of Red Hat Enterprise Linux (RHEL), as the operation system.

The host *RIBF.RIKEN.JP* is used as the mail server, NFS server of the user home directory /rarf/u/, and the NIS master server. This is the core server for the RNC Linux/Unix cluster with approximately 600 registered user accounts. The hosts *RIBF00/RIBF01* are used as SSH login servers to provide access to external users, and as general-purpose computational servers, printer servers, and gateways to the RIBF intranet.

An HP PloLiant DL-585 server was installed in 2006 as *RIBF00* and this was replaced by DL-320e G8 in January 2015. At the same time, the OS of *RIBF00* was upgraded from SL 5.11 to SL 6.6.
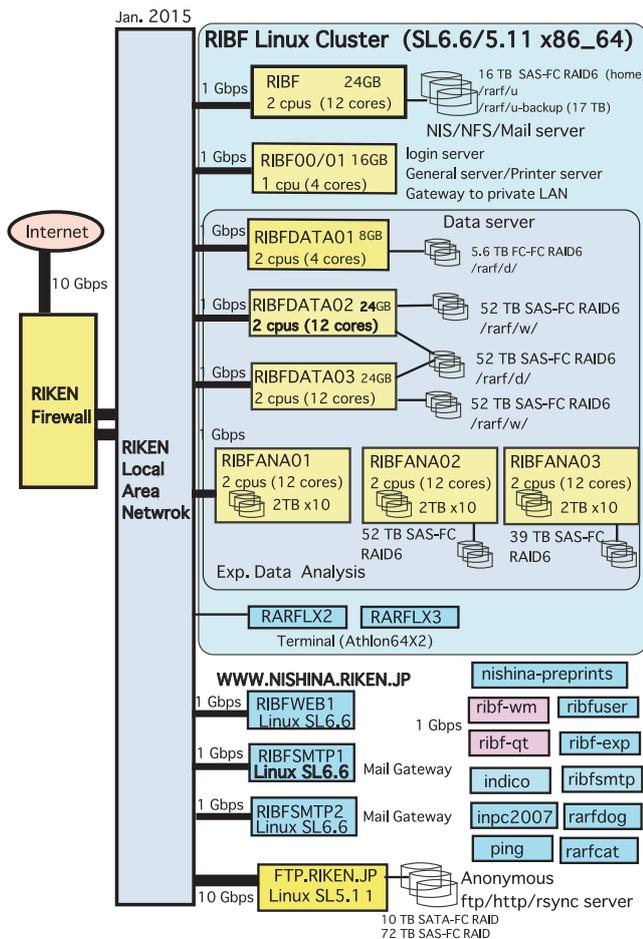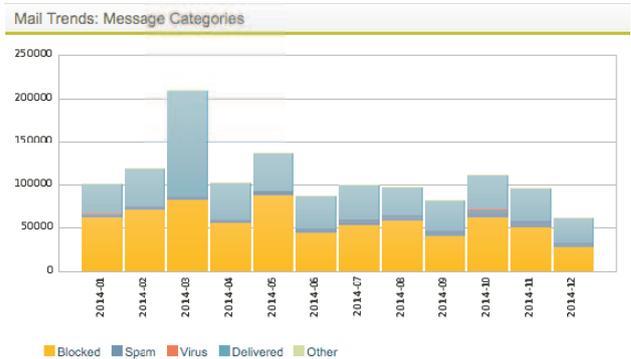

Fig. 2. Mail Trends: Message categories by PMX.

The data servers *RIBFDATA02/03* and analysis servers *RIBFANA01/02/03* are mostly used to store and analyze experimental data at RIBF. We have a 156 TB RAID system to store the experimental data as /rarf/w and /rarf/d/, which is connected to *RIBF-DATA02/03*. A 52 TB SAS-FC RAID was added to *RIBFANA02* for data analysis for the SAMURAI experiment in October 2014.

A new Web server *RIBFWEB1* was installed in April 2014 as the official Web server of RNC *WWW.NISHINA.RIKEN.JP* to replace the old Web server *RARFWWW*, which was installed in 2005. The *RIBFWEB1* also serves another Web service with using a virtual host function of the Apache http server[3].

The hosts *RIBFSMTP1/2* are the mail front-end servers, and they are used for tagging spam mails and isolating virus-infected mails. The latest version of the Sophos Email Protection-Advanced (PMX 6.2.1) has been installed on these. Figure 2 shows the Mail Trends by the PMX over 12 months in 2014. The orange bar indicates the number of spam mails blocked by the IP blocker; approximately 55 % of the incoming mails are blocked.

An anonymous ftp server, *FTP.RIKEN.JP*, is managed and operated at the RNC. Major Linux distributions, including Scientific Linux, Ubuntu, Debian, CentOS etc., are mirrored daily at the ftp server for the convenience of their users and for facilitating high-speed access. A new 72 TB RAID, which is capable of performing 1.3 M IO per second (IOPS), was installed in August 2014 to replace previous RAID to ensure the high performance and high reliability of the operation.

Fig. 1. Configuration of the RIBF Linux cluster.

References
1) http://ribf.riken.jp/comp/
2) T. Ichihara et al.: RIKEN Accel. Prog. Rep. 47, 236 (2014).
3) http://httpd.apache.org/docs/2.2/en/vhosts/

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