

BRIT Systems

Roentgen Files

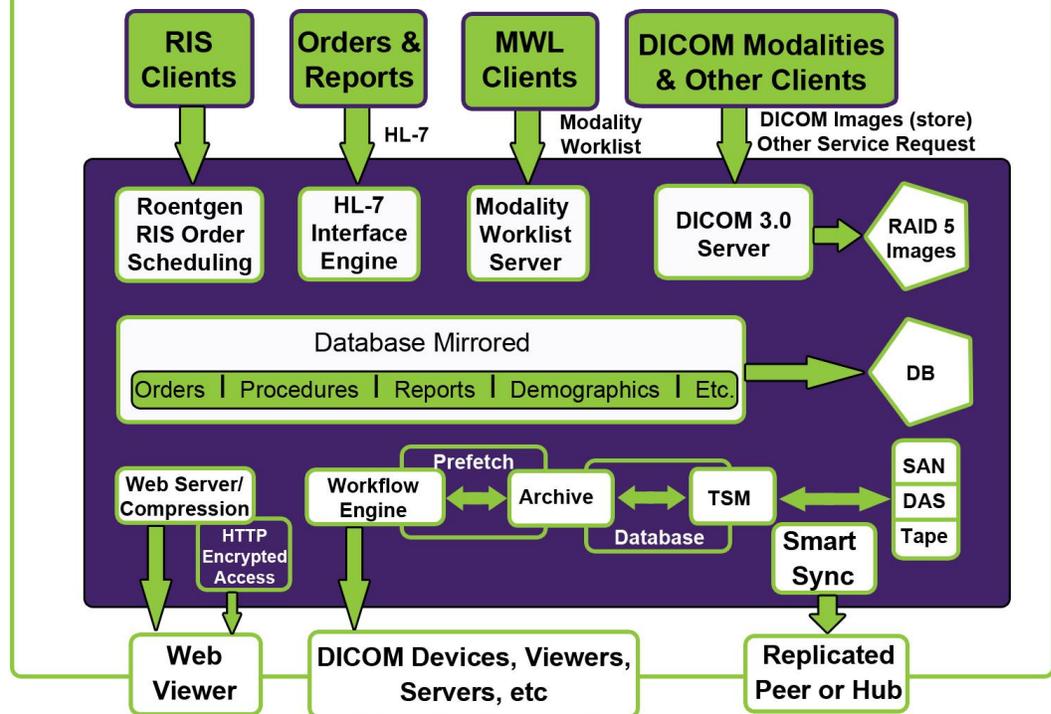
The Roentgen Files provides a modular, single database solution for Enterprise-wide PACS and/or RIS built to the latest DICOM and IHE standards. It's extremely flexible disaster recovery and business continuity architecture supports a wide variety of peer-to-peer and hub and spoke configurations and allows for near immediate failovers of all services.

The base product for both RIS and PACS include:

- Multiple facility support
- Multiple user and patient IDs
- Granular user access and permission, including by facility
- Advanced HIPAA logging – by patient and by user
- Extremely flexible worklist / searching capabilities
- Dashboard for ease of system management
- Exam Loop for tracking of studies through the system

See The Roentgen RIS Specification Sheet for more information on that module.

Roentgen Files Modules



Modules available to add onto the PACS include:

- A DICOM archive with configurable retention policies
- Modality Worklist server with BRIT's own "over-rides" to repair poor or inadequate modality queries
- A bi-directional HL-7 engine that can support simultaneous connections to many information systems

The Roentgen Files combines commercial off the shelf (COTS) hardware components and middleware for databases and hierarchical storage management with BRIT's industry specific applications. It scales from very small to enterprise sized systems, supporting needs as diverse as a simple DICOM router to running a distributed PACS/RIS cluster

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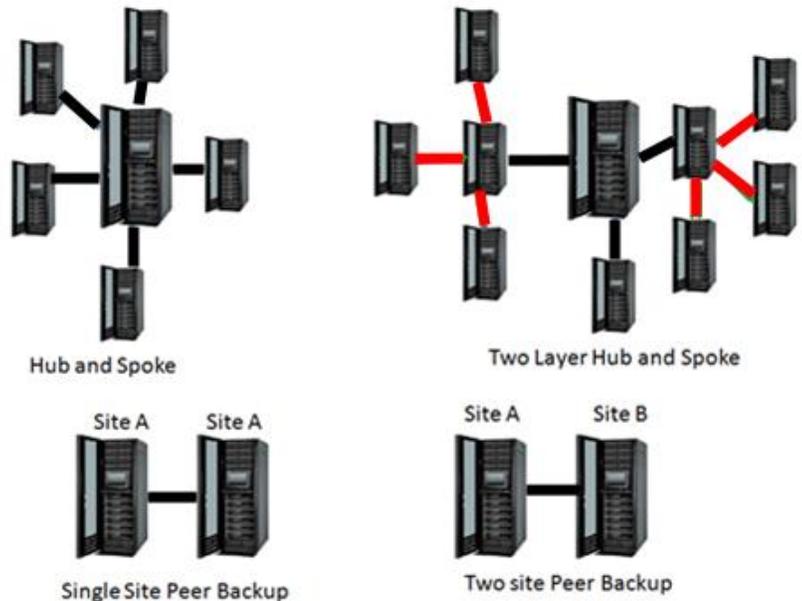
across large geographic areas for multiple healthcare systems. Using a modular design, systems can expand as needs evolve.

Archive systems support two main levels of storage: cache and archive, both typically stored on RAID 5 configured drives. Cache is stored by the operating system's filesystem and provides faster access. The archive is typically supported by IBM's TSM (Tivoli Storage Manager) running on slower drive. Through the use of TSM, IBM's key storage product, The Roentgen Files can support a tremendous variety of archive devices and can readily support the migration from older to newer devices. TSM provides much more efficient storage than an operating system's filesystem and it allows the archive to grow nearly without limit.

Redundant Roentgen Files systems can be built in real-time via BRIT's SmartSynch technology. SmartSynch replicates database objects intelligently, so that replicated elements behave correctly in the backup environment. For example:

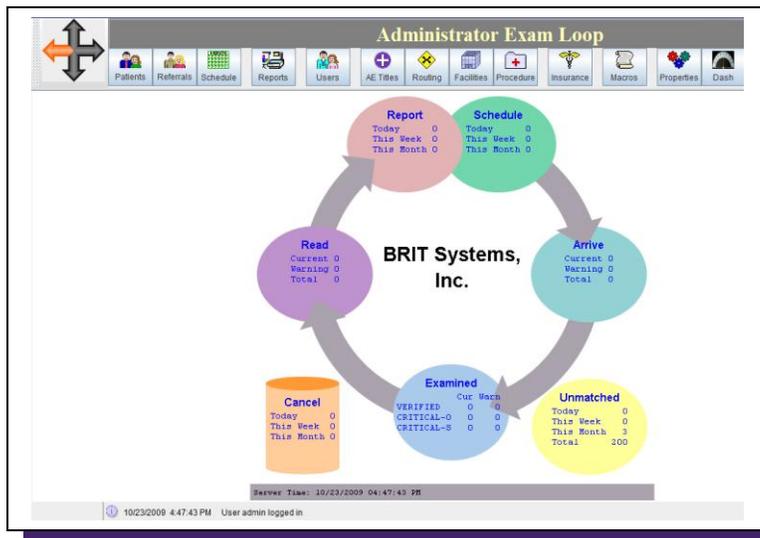
Distributed Configurations of Roentgen Files Servers

- In a hub and spoke configuration, users with all privileges at a spoke will only have privileges for their spoke when running from the hub
- Replicate Routing Rules are placed in a "paused" status to prevent routing loops
- Ownership of objects is observed, so that changes made by non-owners are not replicated.
- SmartSynch supports replication without expensive and inflexible SAN software: Each replicating system can have a unique architecture: one may utilize direct attached disk, another a fiber attached SAN and one an iSCSi, all from different vendors.



Institutions may set up their own disaster recovery server or purchase this as a service from BRIT.

Exam Loop



The Roentgen Files supports advanced features for all user types.

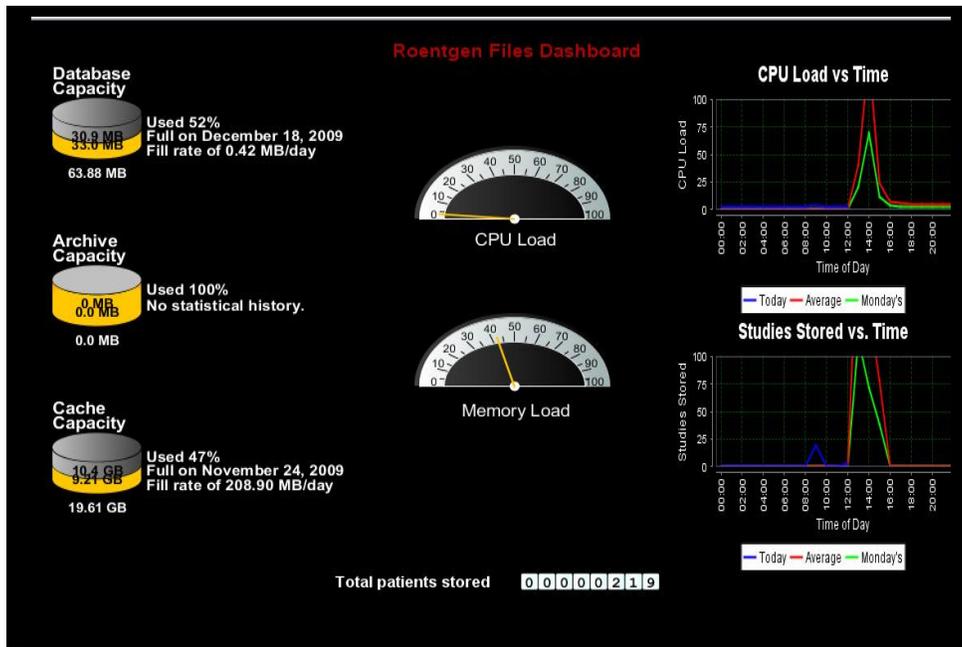
For department managers: the Exam Loop technology provides a highly customizable GUI that tracks each exam from the time it is ordered through the time the report becomes available and assists in finding and correcting broken studies and other problems in the process. A sophisticated report generator allows managers to build and periodically schedule activity reports based on a wide set of study, order or report criteria. Extensive information can also be downloaded into excel for further evaluation.

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For chief technologists: in addition to the Exam Loop tracking, extensive tools allow for the correction of patient and study information. The system also allows for user defined statuses, so different workflows are readily supported. For example, a status of “QC’ed” can be added if all studies go through a QC step before being read by the radiologists.

For system managers: The Roentgen Files provides an advanced GUI, called The Dashboard, for monitoring system activities and problems. It also includes an extensive system of alerts based on user-established thresholds. All Roentgen Files are continuously monitored from BRIT’s support center via On Patrol 24 x 7 (specification sheet available) to determine problems that may only be observable from outside the system. It also supports a pro-active approach to support. A flexible password utility ensures the system can support even the most rigorous password policies. The AE Titles facility allows DICOM devices to be readily added and categorized by device type (modality, server, viewer, CD burner, QC Workstation). A highly evolved DICOM router allows systems auto-routing and prefetching of studies, triggered by receipt of order or study information and change of status. All routes are monitored, failures by image are recorded and managers can be alerted based on thresholds (See Roentgen Route specification sheet).

Dashboard



For end-users: BRIT Lite provides a highly functional and easy to deploy and use viewer for images and reports. Flexible queries allow them to find their patients on their main system and other remote systems in the networks. Through the use of CCOW or a URL, BRIT Lite can be made available from EMRs (See BRIT Lite specification sheets).

The chart below shows sample configurations for three different levels of systems:

Component	Simple Server	Small Archive	Medium Hub
User Environment	DICOM Server/Viewer 20-30 modalities/ 20 concurrent users	PACS with 30 modalities/ 40 concurrent users	Hub supporting DR/BC for 5 or 6 sites, each performing 50,000 studies/year
Computing Environment	Dell PowerEdge 210 Dualcore, 4 GB memory/ Liinus/DB-2	Dell T610 Quadcore/6 GB memory/ Linux /DB-2	Two x Dell PowerEdge T710s/ 16 GB memory Linux/DB-2/TSM
Disk Subsystem for Image Storage	Internal SCSI or SATA up to 8 TB	Internal SCSI or SATA, Externally expandable	Dell EquaLogic iSCSI, Unlimited Expansion