



FIDELITY NATIONAL
INFORMATION SERVICES

GT.M/Linux Robustness, Security, & Continuity of Business for VistA

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Objectives

- Correct information and usable functionality is available for those who need it, when they need it
 - Within limits of the design and implementation
- Not available otherwise



Layers

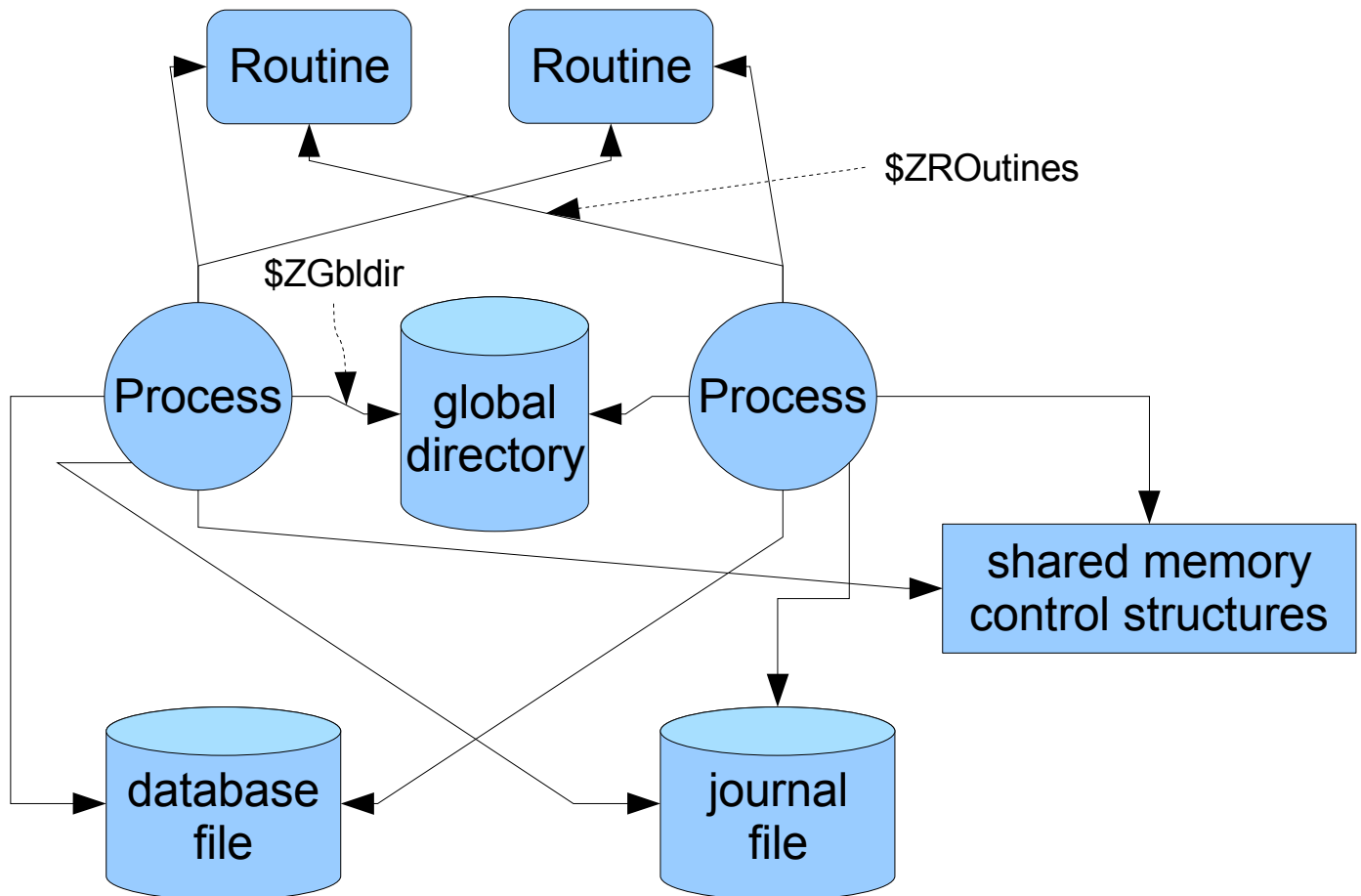
- VistA – separate topic, covered by Dave Whitten
- MUMPS [GT.M]
- Operating System [GNU/Linux]



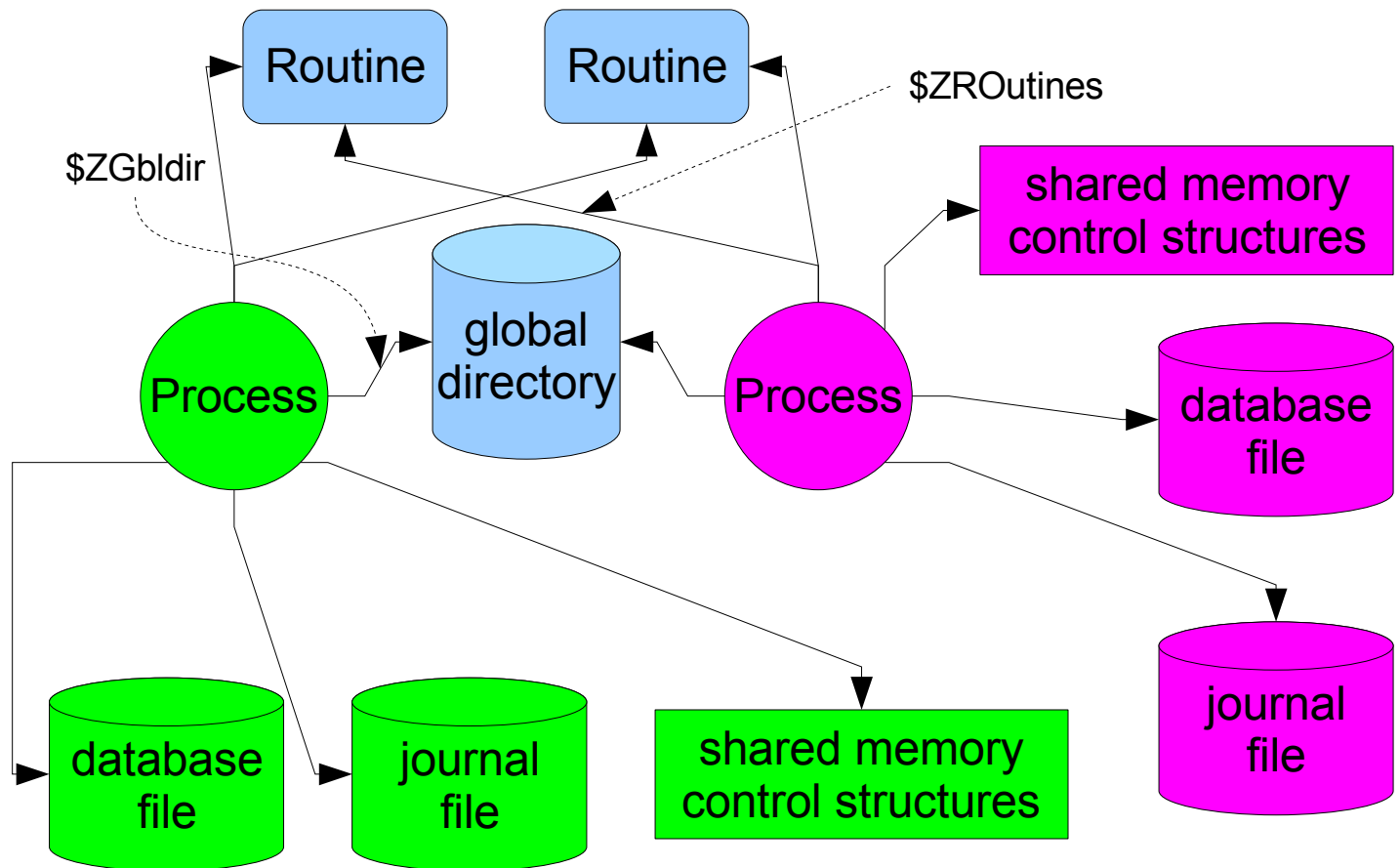
GT.M Security

- Daemonless architecture
 - Processes run with normal user ids
 - Processes can access database files if they have access permissions granted by the operating system
 - Enable / control using file ownership & permissions; user & group ids
 - Use Access Control Lists (ACLs) or SE Linux for finer grained control
- Published security model – read it, understand it, use it

GT.M Database and Routine Access



GT.M Security – ASP

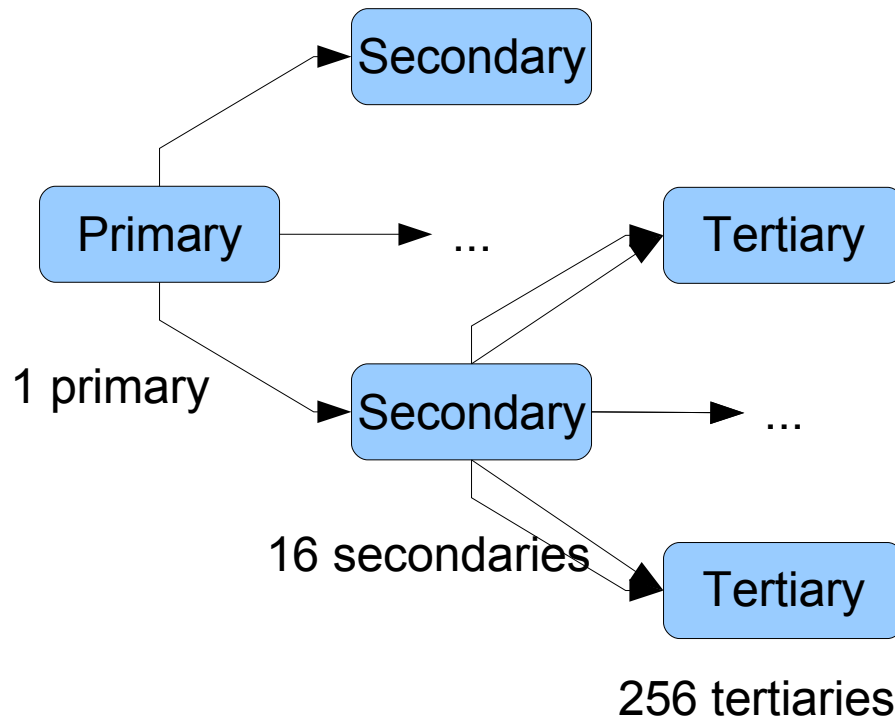


Robustness

- Journaling
 - Use before image journaling in production
 - Consider journaling even for development environments
 - NOBEFORE may suffice, unless replicated
- Backup early, backup often
- Integrity
 - Trust but verify



Logical multi-site operation



4096 quarternaries

Linux security

- Use Linux security!
 - Each user has own user id
 - Each group has own group id
 - ssh, xinetd, stunnel, etc. – build on standard security models and tools that the Internet infrastructure is built on



Encryption

- Use the loop-aes file system
 - Databases
 - Journal files
 - Swap files
- Remember to encrypt back-ups (e.g., with mcrypt)
 - Unencrypted backups are perhaps the most overlooked serious vulnerability
- You can't stop the National Security Agency from getting your patient data if they want to, but you can make it hard for them

What gives?

- The weakest link
 - If humans and strong passwords are your weakest link, you have done a good job of security
 - Absolute security does not exist – you just want to make it not a worthwhile investment of time and effort



Thank you

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