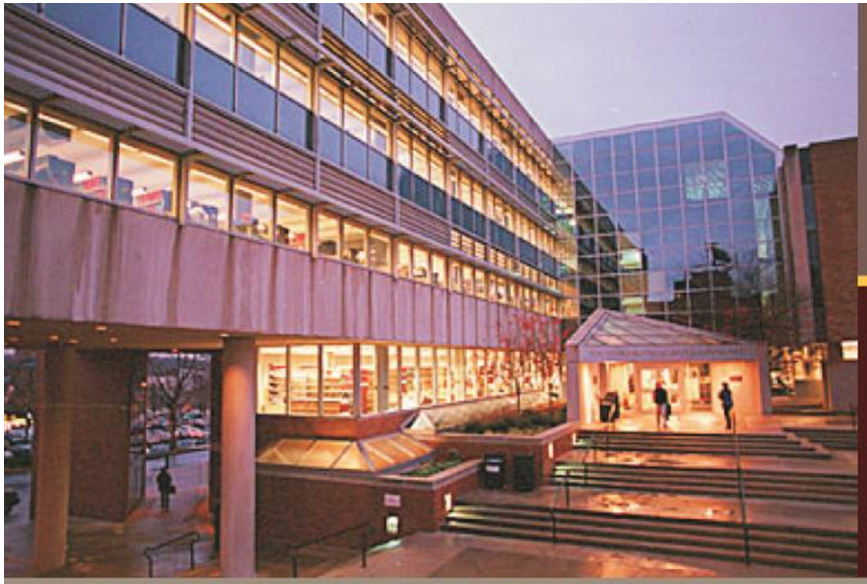

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PGP Whole Disk Encryption Implementation

Educause National Conference
October 29, 2008

Gale Fritsche

Tim Foley

Lehigh University
Library and Technology Services

Lehigh Overview

- Founded in 1865. Private research university located 90 miles west of NYC
- Ranked 35th in US News and World Report 2009 “Guide to America’s Best Colleges.”
- Approx 4700 undergraduates, 1200 graduate students, 450 faculty and 1200 staff
- Approx 80% Windows PCs, 15% Mac and 5% other (Linux etc.)

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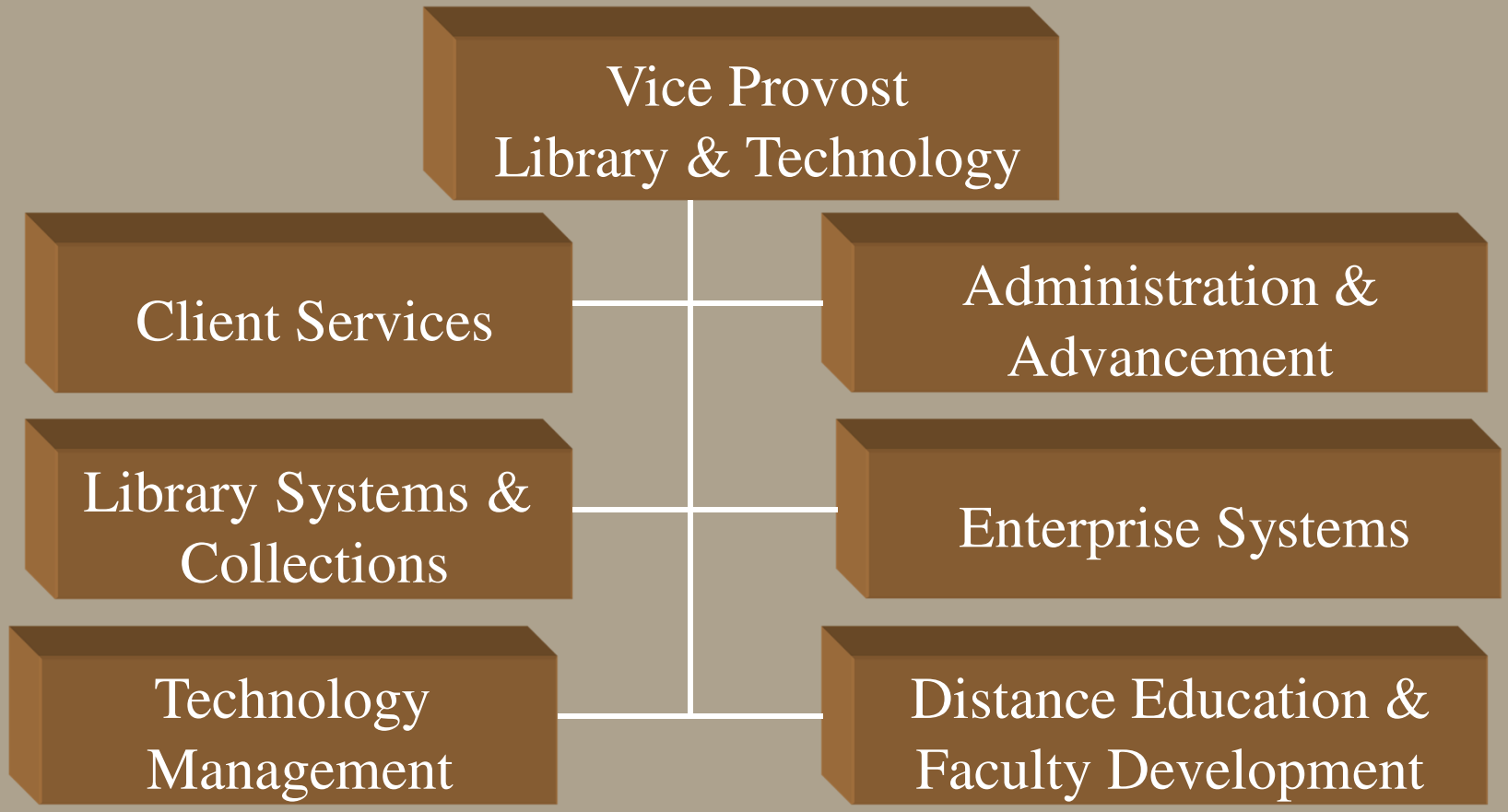
Library & Technology Services Organizational Structure



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Presentation Agenda

- Why Encrypt?
- Lehigh's Committee Structure
- PGP Pilot Program
- PGP Implementation Plan
- Issues and Roadblocks

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Why do we need encrypted information in educational institutions?

- University of Iowa College of Engineering - Some students are being notified by the college that their personal information may have been exposed in a recent computer breach. The compromised computer contained a file with names and Social Security numbers of students stored on its hard drive. (Sept 11, 2008)

- Tennessee State University - A flash drive containing the financial information and Social Security numbers of students was reported missing. The flash, which contained financial records of TSU students dating back to 2002**.** (Sept 12, 2008)

- A hacker attacked the University of Indianapolis' computer system and gained access to personal information and Social Security numbers for 11,000 students, faculty and staff. (Sept 30, 2008).

Source: Privacy Rights Clearinghouse

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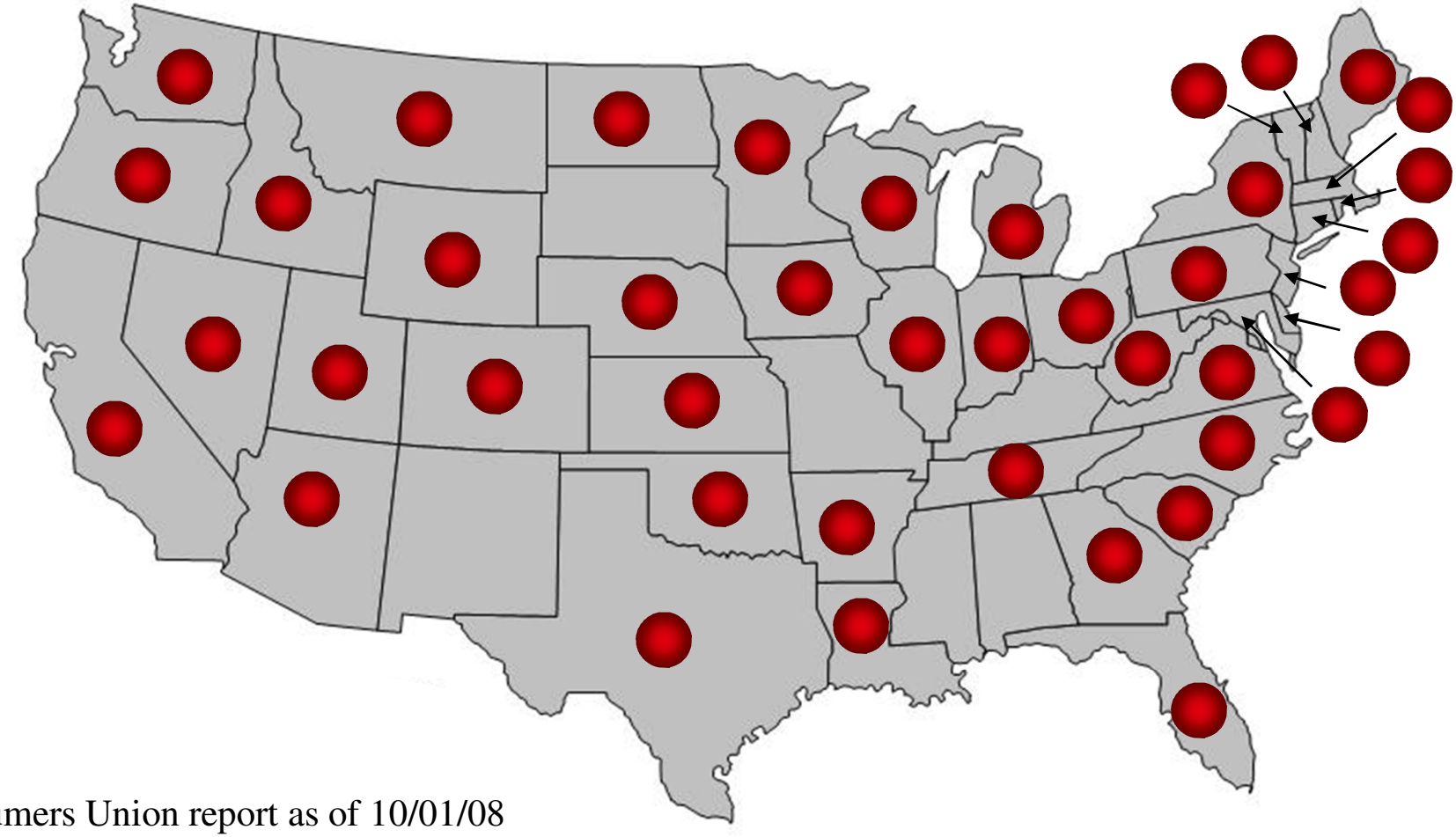
44 states with security breach laws (as of 10/1/2008)

(Puerto Rico and District of Columbia also have laws)



Consumers Union report as of 10/01/08

Reported breaches - **245,044,535** people affected since 1/15/05

see: http://www.privacyrights.org/ar/ChronDataBreaches.htm

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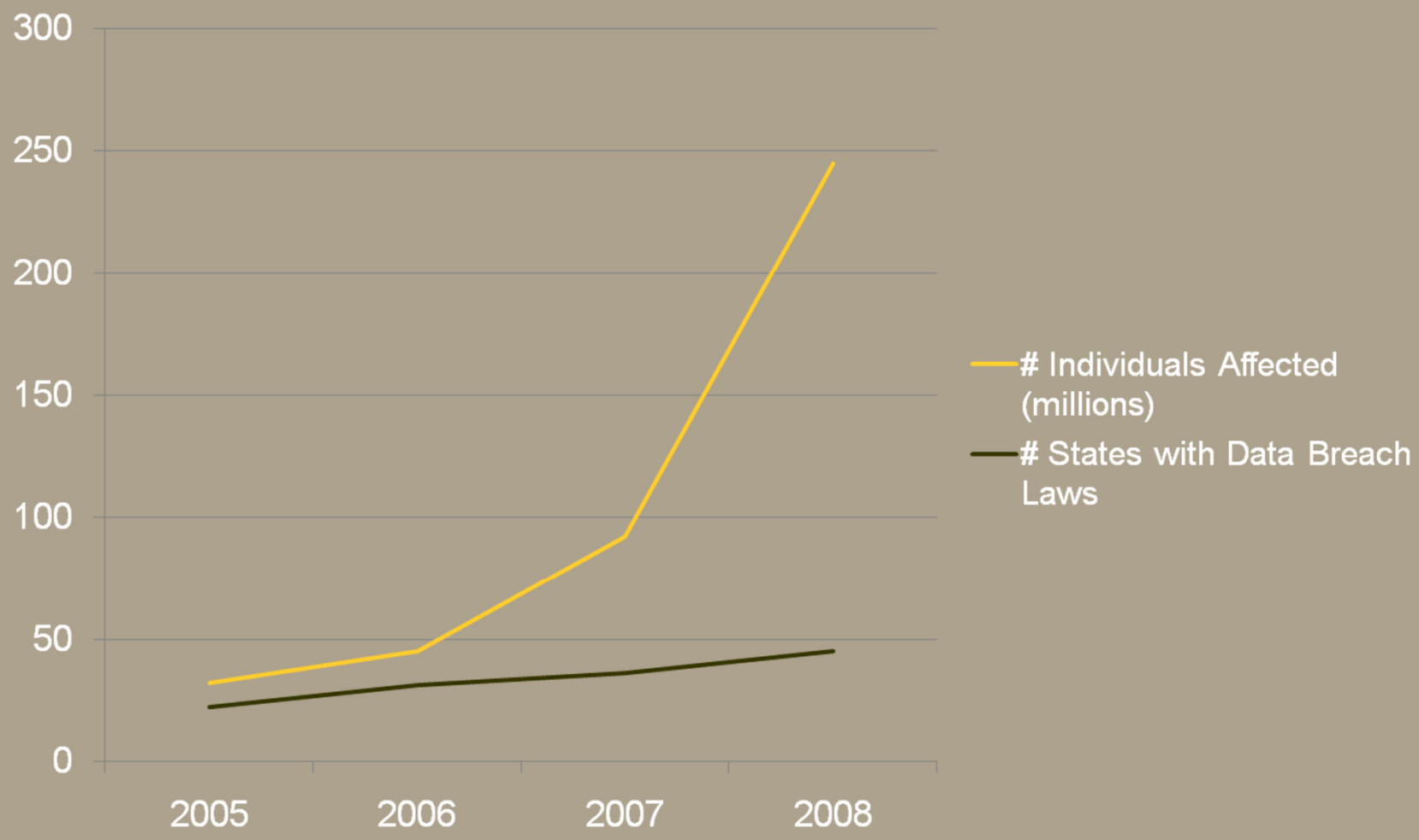
Growth in number of individuals affected by data breaches

Source: Privacy Rights Clearinghouse 2008



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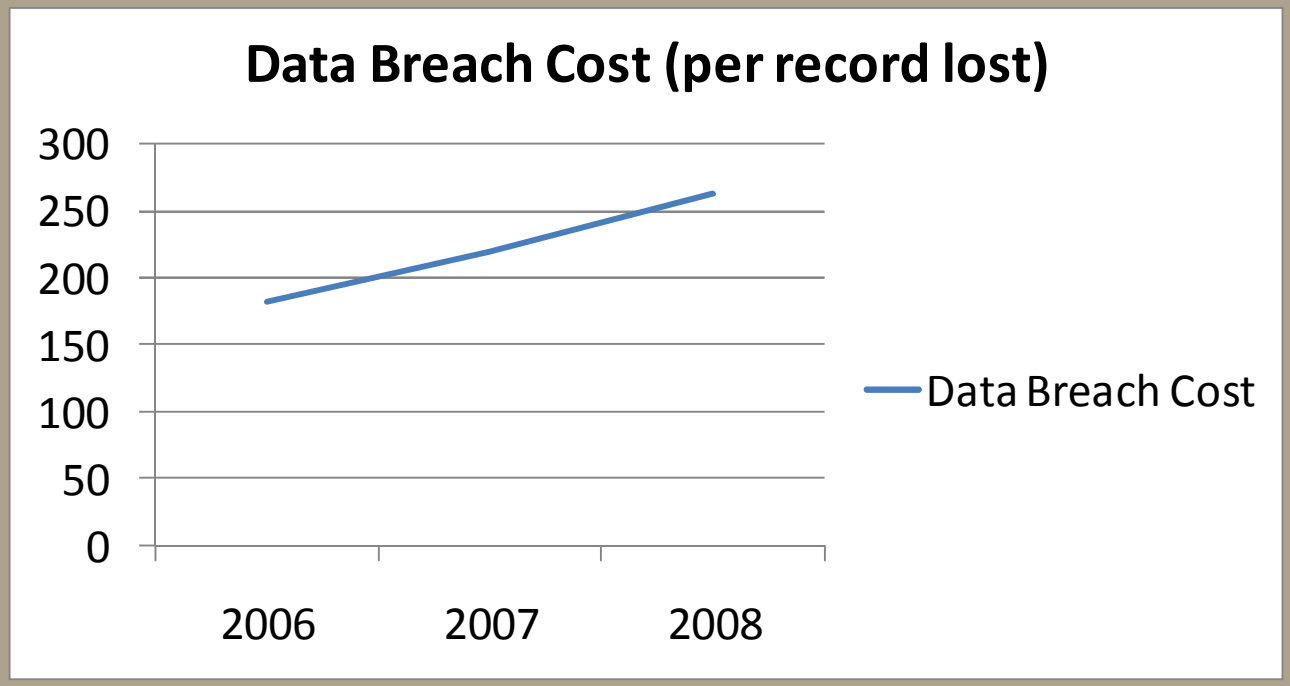
Cost of Data Breaches

Source: Ponemon Institute, LLC



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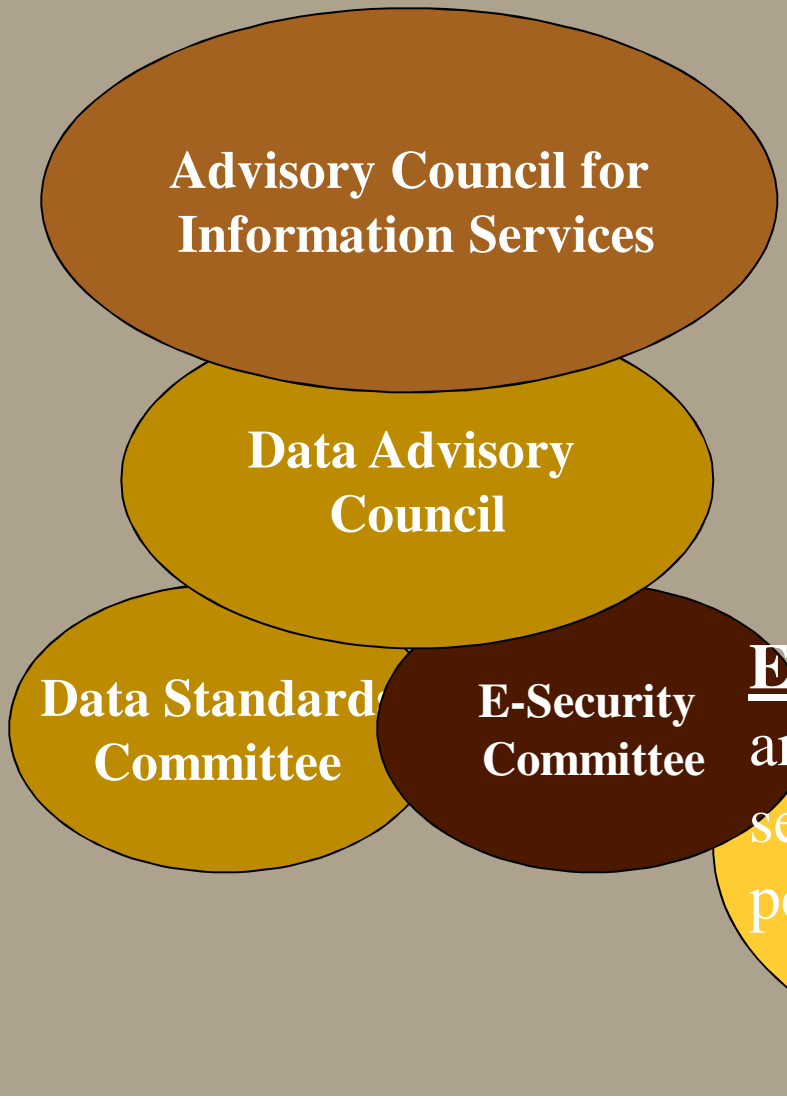
Lehigh's Procedure in Case of a Data Breach

- Security Officer works with technical & legal staff to determine the extent of the problem and if it requires a legal response
- Lehigh technical staff determines the extent of the problem & works to minimize damages – some action taken immediately
- University Communications develops a communications plan – reviewed by risk management and legal counsel – prepare for media inquiries
- Credit monitoring services offered to affected individuals for at least 12 months – cost start around $15 per month
- PA breach law states – name combined with SSN, DLN, or credit card information constitutes a notifiable breach

Committee Structure



Advisory Council for Information Services – sets university wide information services policies

Data Advisory Council – ensures data standards are maintained and enforced

Data Standards Committee – Addresses the best way to encrypt Personal Data and other Sensitive Information on systems, portable devices, and backups

E-Security Committee – Addresses Lehigh's standards for shared data elements in Banner and recommends implementation of security related practices and policies

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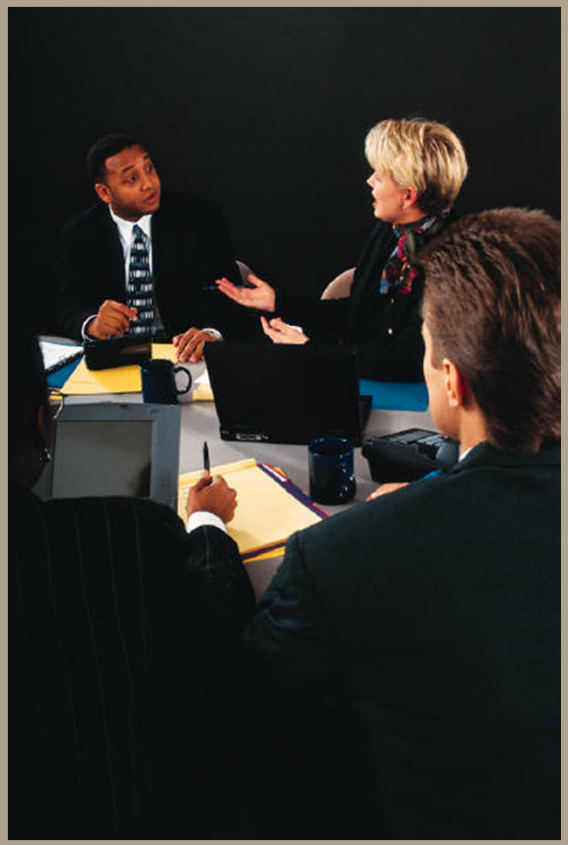
Data Encryption Committee



- Looked at various methods of encryption
  - File/folder encryption
  - Container encryption
  - Whole disk encryption
- Determined that whole disk encryption (WDE) was necessary
- Selected products to be tested
- Developed criteria for testing
  - Platform compatibility
  - Performance
  - Ease of Use and Administration
  - Cost

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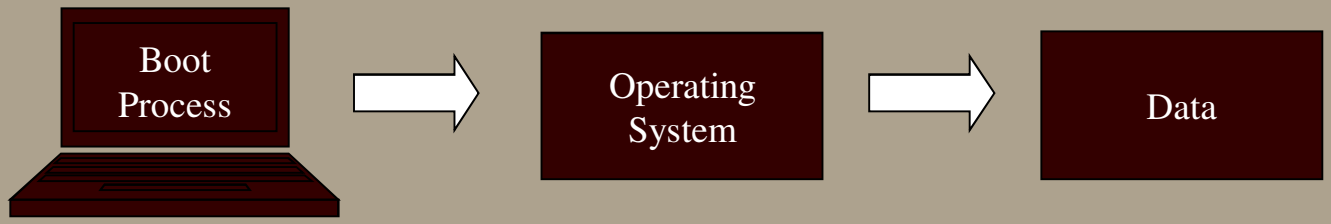
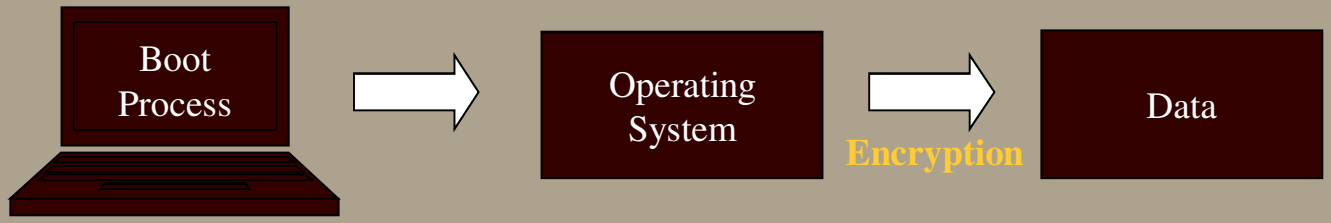
How Whole Disk Encryption Works

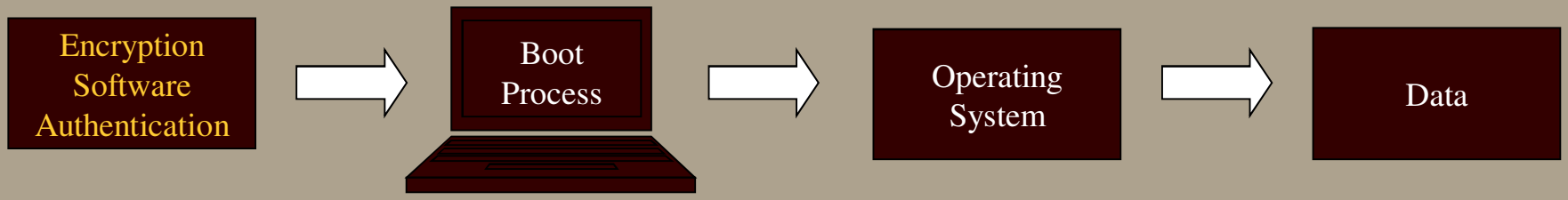
No Encryption



File Encryption



Whole Disk Encryption



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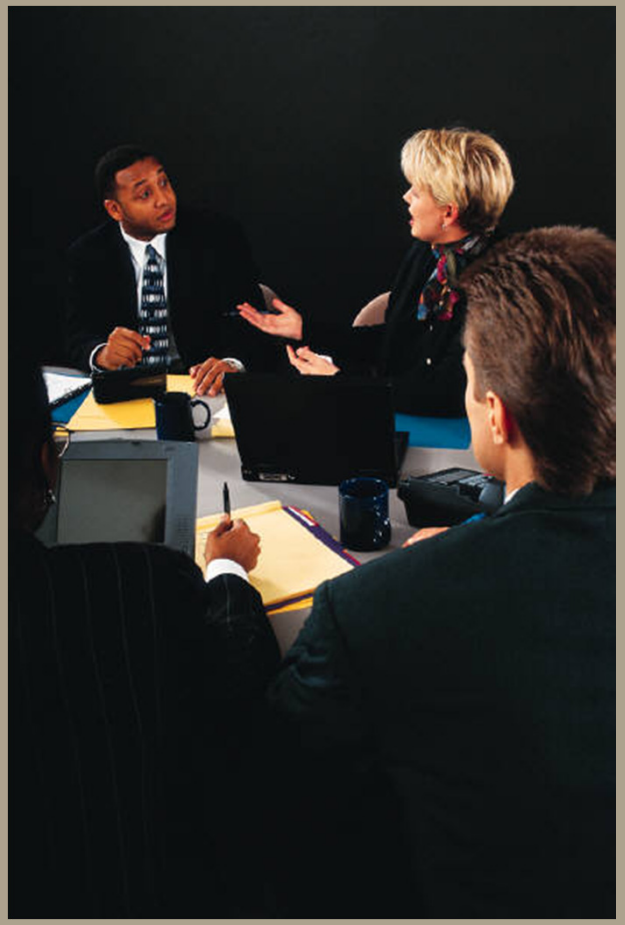
Data Encryption Committee
(Continued)



- Evaluated Products
  - WinMagic (Securedoc 4.2)
  - PGP Desktop Pro 9.0
  - Pointsec 6.0
  - Securstar (DriveCrypt 3.5)
  - Ultimaco (Safeguard 4.2)
- Performed Benchmarks (Performancetest 6.0)
  - CPU
  - Memory
  - Disk Read/Write
- Selected PGP as the product of choice
  - Recommended to encrypt all Faculty/Staff PCs on Campus

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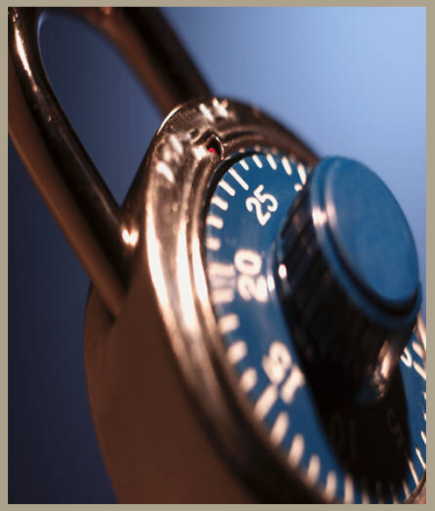
Why PGP Desktop and Universal Server?



- Desktop Platform Compatibility
  - Macintosh and Windows compatibility (95% of users)
- Limited Hardware Requirements for Server
  - Universal Server installed in a virtual environment
- Limited Server Administration
- Server Policies and Customized Installers
- Integration with Microsoft's Active Directory
- Easy recovery of encryption keys
- Price
  - Educational pricing is 50% off list (PGP Limited)

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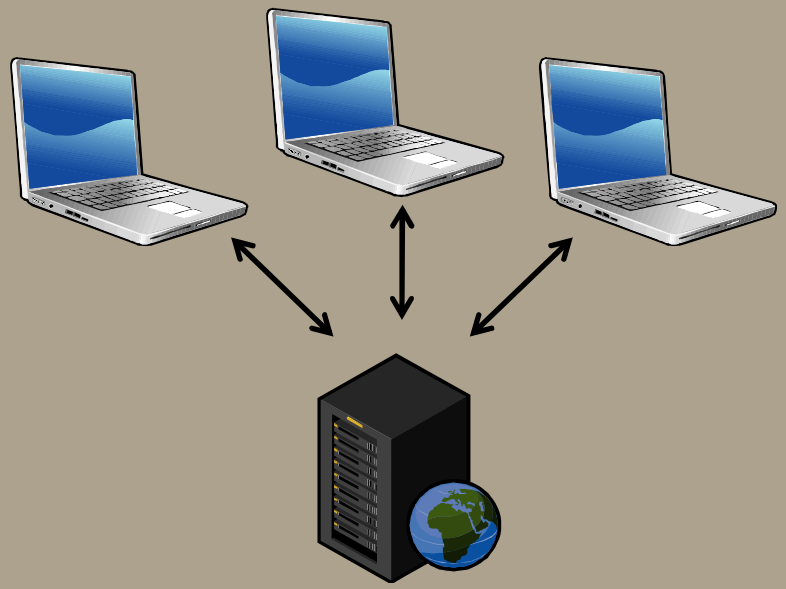
PGP WDE – A closer look

- PGP Desktop



- PGP Universal Server

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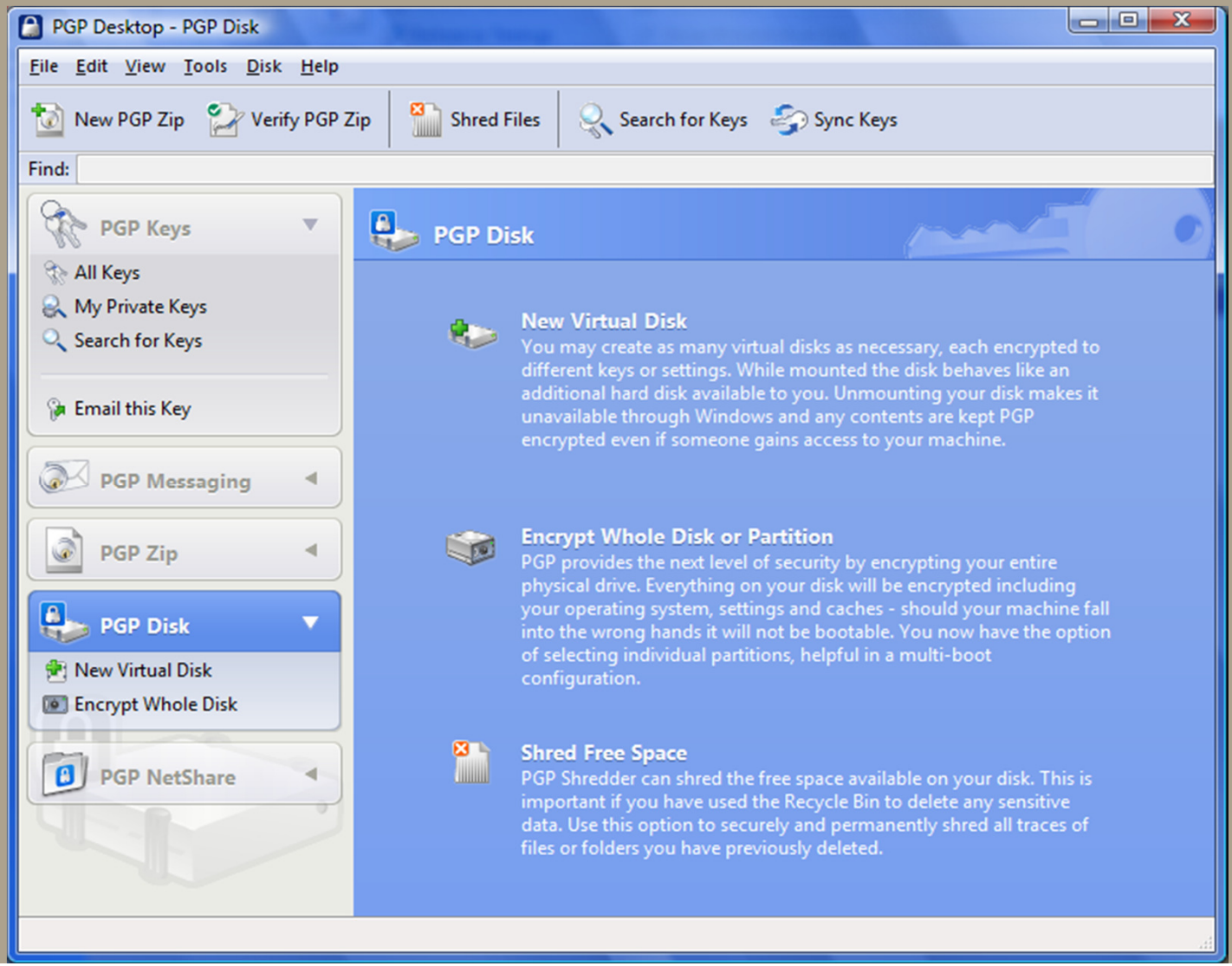
PGP Desktop



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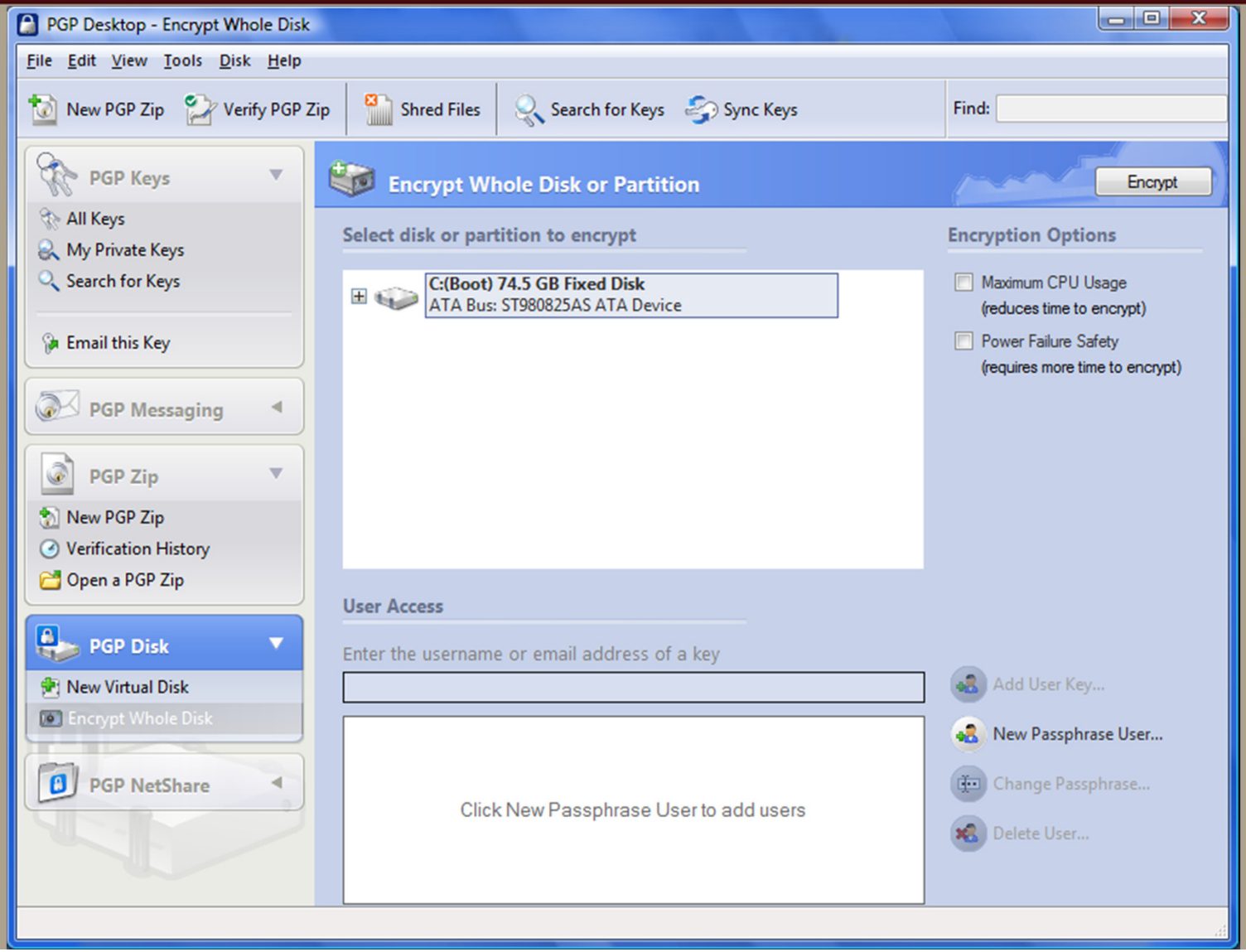
PGP Desktop



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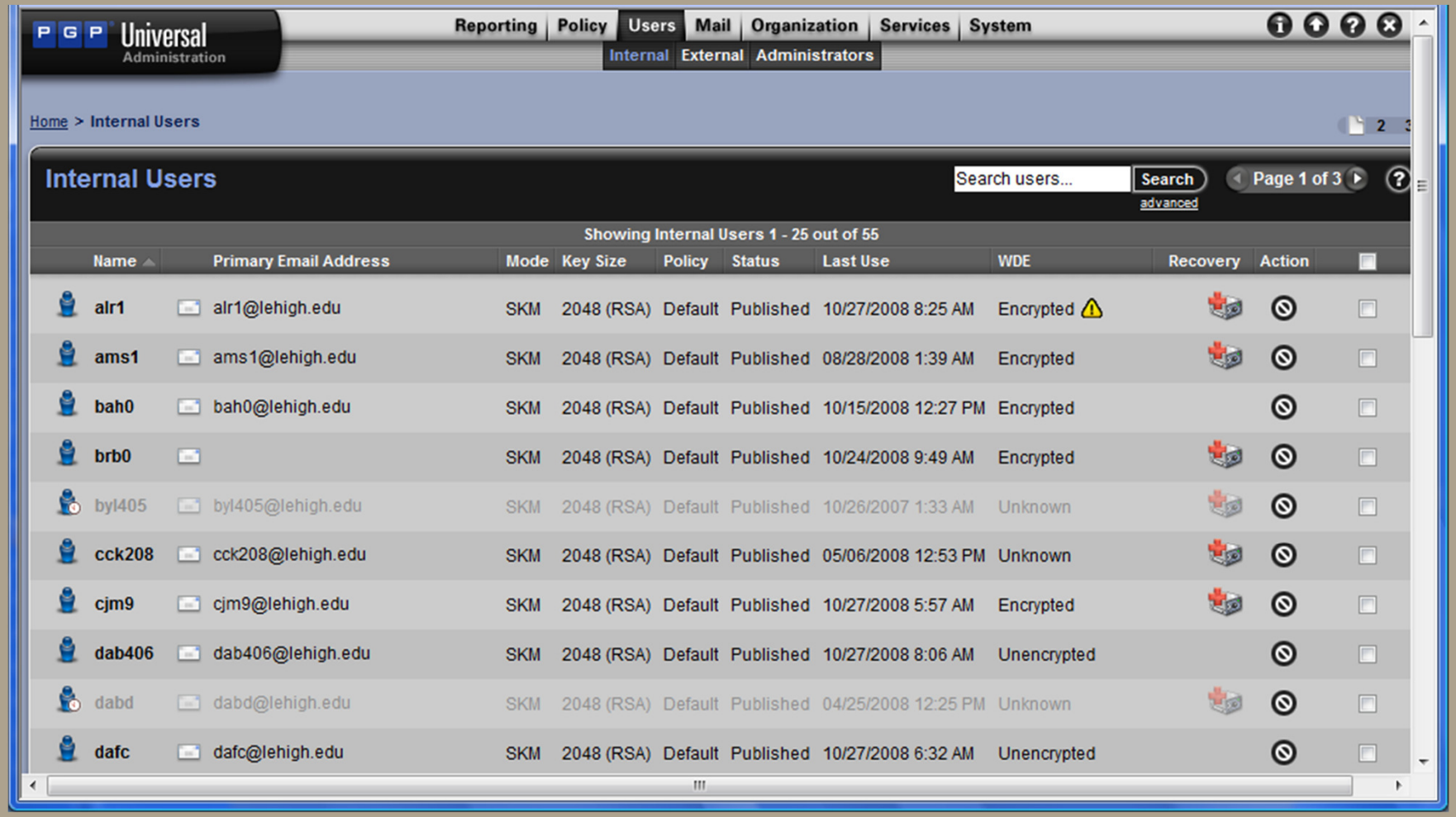
PGP Universal Server



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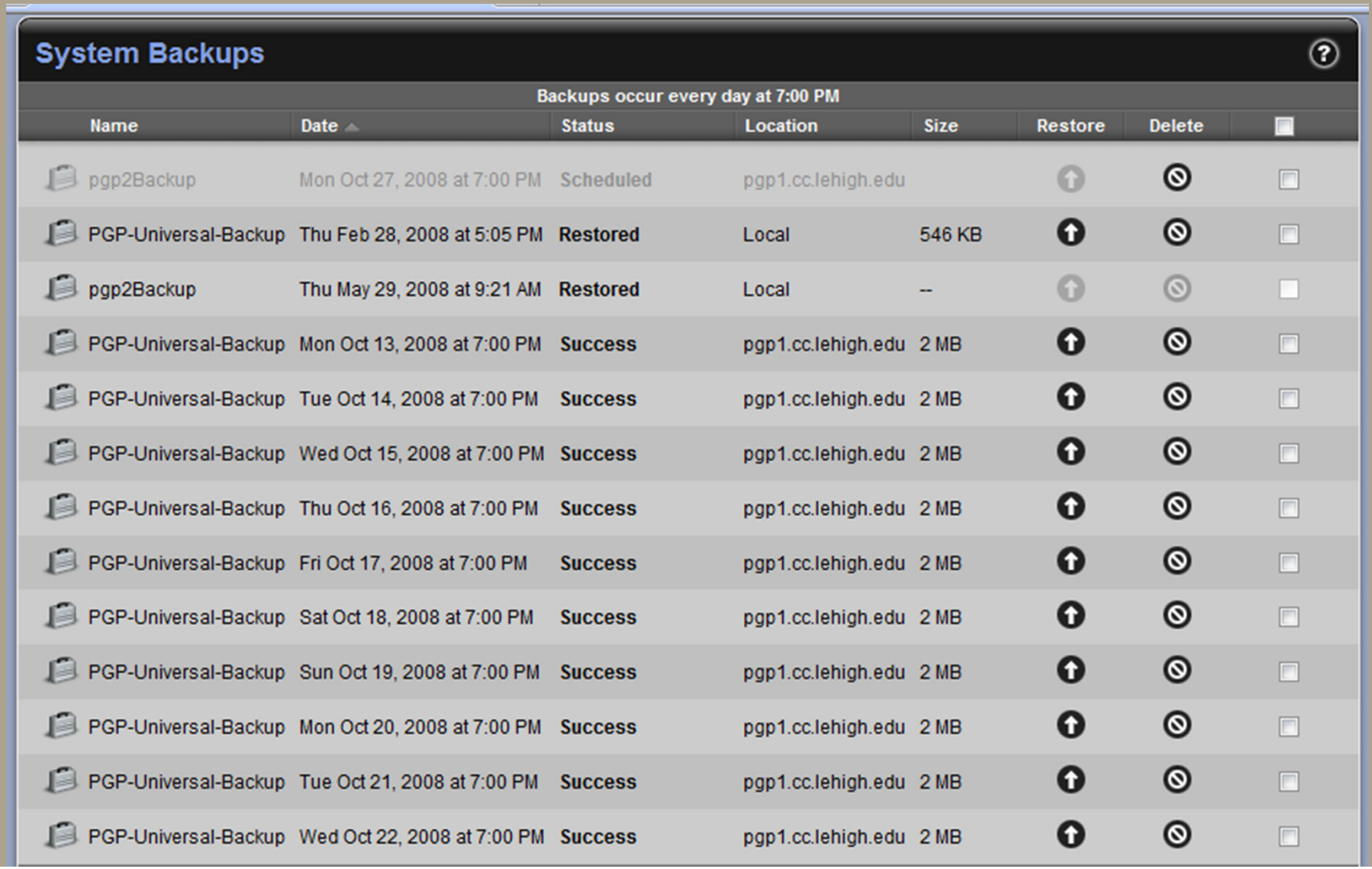
PGP Universal Server



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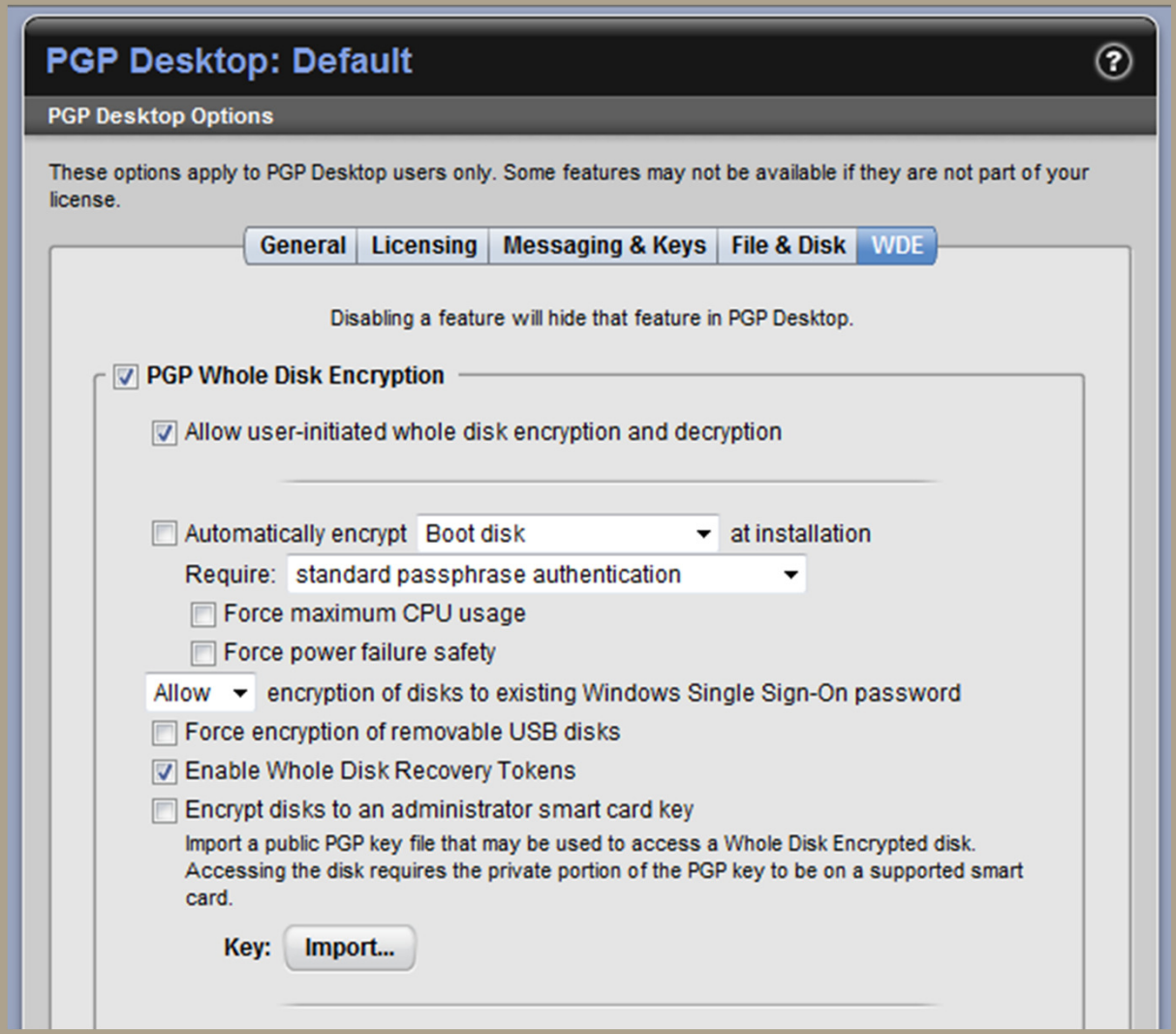
PGP Universal Server



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PGP Pilot Program

(October 2007 – May 2008)

- 100 Copies of PGP Desktop and Universal Server
  - Funded by Library and Technology Services
- 3 Groups of individuals were identified as testers
  - Technical Users (first installation)
  - Administrative Users (second installation)
  - Academic Users (third installation)
- Training was scheduled for each test group
- Policies were set and a customized installer created
- Hard drives were purchased to backup user data
- Web-based Feedback form created using Cold Fusion

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Pilot Program Results

- PGP was installed on 69 computers (54 users)
- 36 users provided feed back
  - 51% reported no problems
  - 15% reported encryption process took too long
  - 12% reported slowness opening applications
  - 10% reported slowness opening drives
  - 10% reported slowness on boot
  - 2% reported errors while encrypting drive

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PGP Pilot Survey

Response Rate: 40%

Questions	Responses		
What type of computer do you have?	Laptop: 36%	Desktop: 64%	
How long have you been a PGP Whole Disk Encryption user?	Less than 3 months: 23%	3 to 6 months: 46%	More than 6 months: 31%
Why did you decide to use the software?	Concern for my use of sensitive data: 46%	My boss told me I had to: 27%	Other: 32%
Who installed your software?	LTS: 64%	Myself: 34%	Other: 0%
Do you perform regular data backups?	Yes: 27%	No: 68%	I Don't know: 5%
If Yes, are your backups encrypted?	Yes: 25%	No: 50%	I Don't Know: 25%
How much of a concern is "Confidence of Recovery of Encrypted Data" if you forget a password or something happens to your computer	A small concern that can be easily managed: 36%	A significant concern that can be managed : 22%	A huge concern that will be difficult to manage: 22%

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Proposed Implementation Plan

Encrypt all staff computers on campus

- Install PGP on all mobile users first (~ 400 laptops)
  - Finish installing remaining 31 licenses on university laptops (key areas)
  - Purchase licenses to cover remaining laptops and encrypt as soon as possible
- Bundle the price of a PGP license with the new purchase of each PC
- PGP training for staff
- Timeframe
  - October-December 2008 (remaining licenses)
  - January 2009 – December 2009 mobile users
  - incorporate license with new PC purchase (3 year lifecycle)

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Issues and Roadblocks

- User's Time to Encrypt
  - Encryption takes 1-3 hours
- Computing consultant reluctance to install the software
- Computing Consultant time to perform installations
- Client reluctance to install software
- Concern over recovery of data if file corruption occurs
- Development of a reliable client backup solution

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Questions we asked ourselves

- What happens if a user forgets his/her password?
- What happens if a user changes his/her password on and off campus?
- How do we handle the installation for campus users?
- How do we handle encrypting external USB devices?
- What happens if a user encrypts a USB device and uses a computer that doesn't have PGP?
- Should we require user files be backed up? If so, how?

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