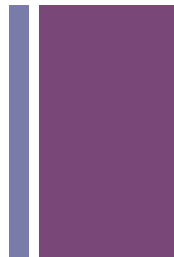# PROVIDING SERVICES

Ravindra Dangalla

Department of Computing and Information Systems

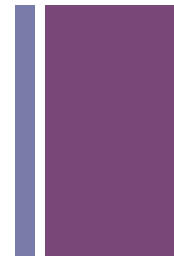Sabaragamuwa University of Sri Lanka

+ Contents

- Service Monitoring

- Email Service

- Print Service

- Data Storage

- Backup and Restore

- Remote Access Service

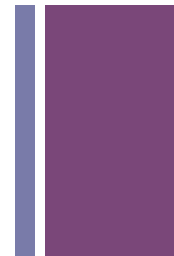- Software Depot Service

- Web Services

SERVICE MONITORING

- Warning
  - Monitoring uses - Network bandwidth
  - Monitoring uses - CPU & memory resources
  - Security issues

- Historical monitoring

- Real-time monitoring
  - Simple Network Monitoring Protocol (SNMP)
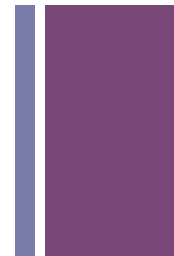 - Altering Processes

- Access

EMAIL SERVICE

- Privacy policy
- Namespaces
- Reliability
- Simplicity
- Spam & virus blocking

- Generality
- Automation
- Basic monitoring
- Redundancy

EMAIL SERVICE Continue…

- Security issues

- Communication problems

- Additional
  - Encryption
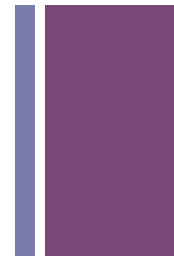 - Email retention policy
  - High level monitoring

+ PRINTING SERVICE

- Level of centrality
  - Cost vs. Convenience

- Print architecture policy
  - General Print Architecture Policy
  - Printer spooling
  - Maintenance
  - Accounting policy
  - Printer equipment standards
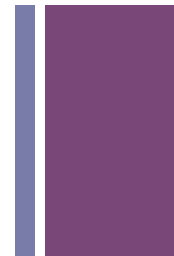 - Access policy
  - Naming policy

PRINTING SERVICE Continue…

- System design
    - Peer-to-peer
    - Central funnel

- Documentation
    - How to print
    - List of printers
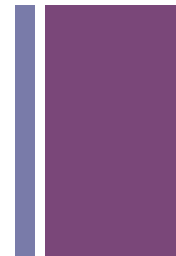   - Printer labels

- Monitoring

- Environmental issues

+ DATA STORAGE

- Cost of storage

- Terminology
  - Key individual disk components
    - Spindle, Platters, Heads
    - Drive controller
    - Host bus adapter
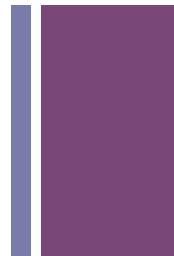
+ DATA STORAGE Continue…

- RAID: Redundant Array of Independent Disks

RAID 0	Stripes	Fast reads/writes ; Poor reliability
RAID 1	Mirrors	Faster reads; Good reliability; very expensive
RAID 5	Distributed parity	Faster reads; Slow writes; very economical
RAID 10	Mirrored stripes	Faster reads; Best reliability; most expensive

- Volumes & File systems
- DAS: Directly Attached Storage
- NAS: Network Attached Storage
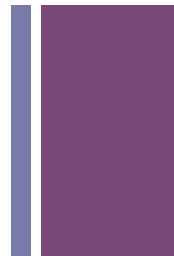- SANs: Storage Area Networks

+ DATA STORAGE Continue…

- Managing storage
  - Reframe storage as community resource
  - Conduct storage-needs assessments
  - Map groups into storage infrastructure
  - Develop an Inventory & Spares policy
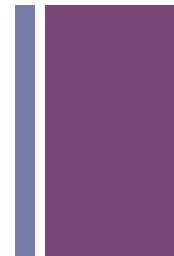 - Plan for future storage
  - Storage standards

DATA STORAGE Continue…

- Storage as a service
  - A Storage SLA
  - Reliability
    - RAID & reliability
    - NAS & reliability
    - Choose how much reliability to afford
  - Backups
    - RAID is not a backup strategy
    - RAID mirrors as backups
    - RAID mirrors to speed backups
    - NAS and backup
    - SANs and backup
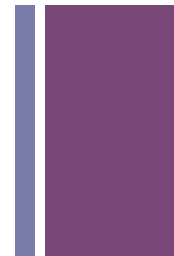 - Monitoring

+ BACKUP & RESTORE

- Reasons for restore
  - Accidental file deletion
  - Disk failures
  - Archival

- Types of restores
  - Individual file restore
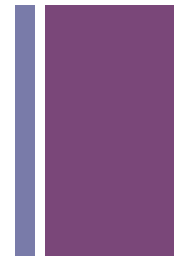 - Archival backups
  - Complete restore

BACKUP & RESTORE Continue…

- Data recovery SLA and policy

- Backup schedule

- Time and capacity planning

- Consumable plans

- Restore process issues

- Backup automation
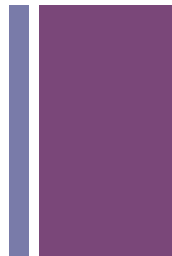
- Centralization

- Tape inventory

REMOTE ACCESSIBILITY SERVICE

- Requirements for remote access
  - Availability of the service
  - Global technology
  - High bandwidth

- Policy for remote access

- Definition of service level

- Centralization

- Outsourcing

+ SOFTWARE DEPOTS

- Understand the justification

- Understand the technical expectation

- Set the policy
  - Who may build & install the packages
  - When maintainer leaves
  - Which OSs are Supported
  - Using wrappers
  - Upgrading
  - Handling bugs
  - Deleting packages from the depot
  - Scope
  - Customer requests

+ SOFTWARE DEPOTS Continue…

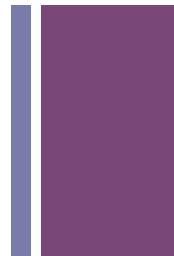- Select depot software

- Create the process manual

WEB SERVICES

- Web service building blocks

- The webmaster role

- Service level agreements

- Web server architecture
  - Static web servers
  - CGI servers
  - Database driven web sites
  - Multimedia servers

+ WEB SERVICES Continue…

- Monitoring

- Scaling for web services
  - Horizontal scaling
  - Vertical scaling

- Securing the service
  - Secure connections & certificates
  - Protecting content
    - Directory traversal
    - Form field corruption
    - SQL injections