

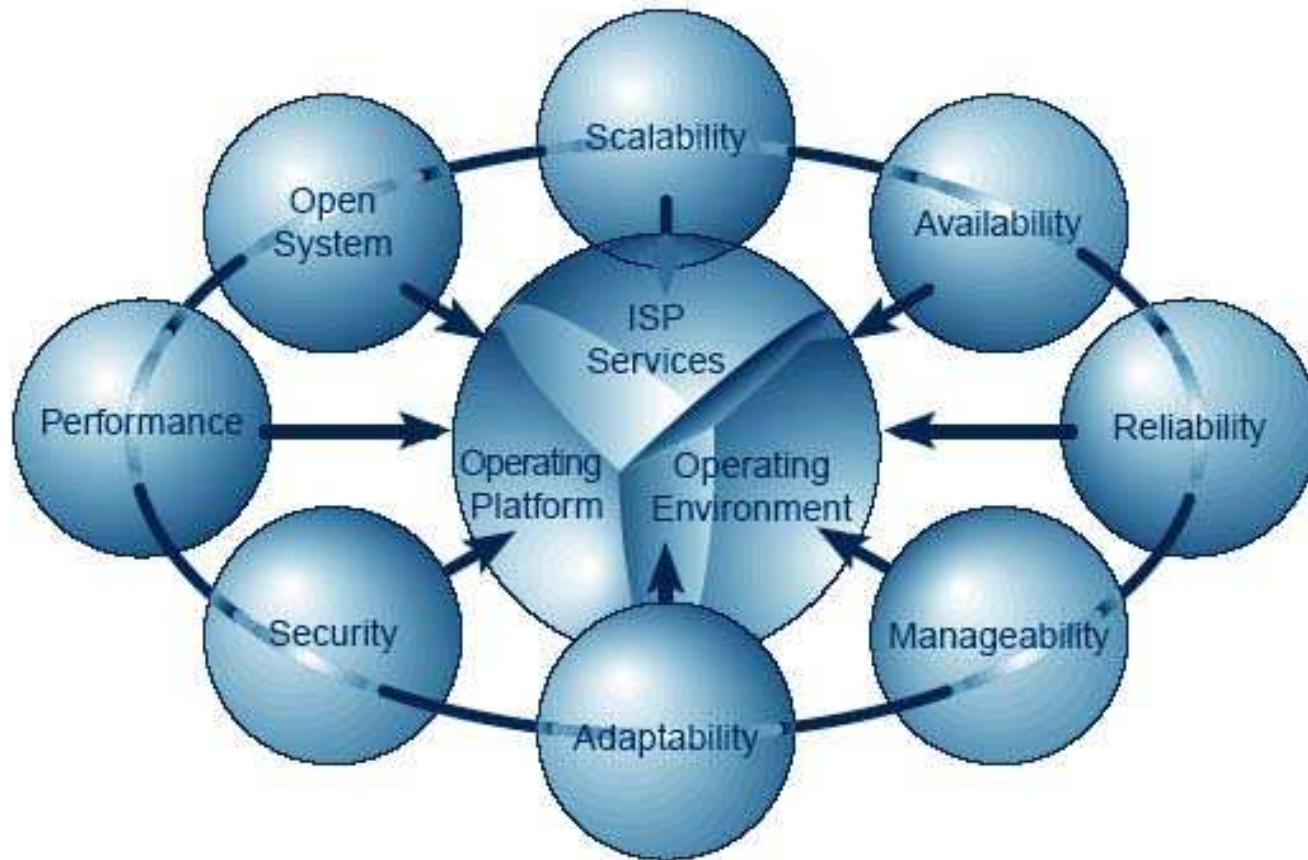
# Balkan Case Challenge 2004

- EUnet Mail Case Study -

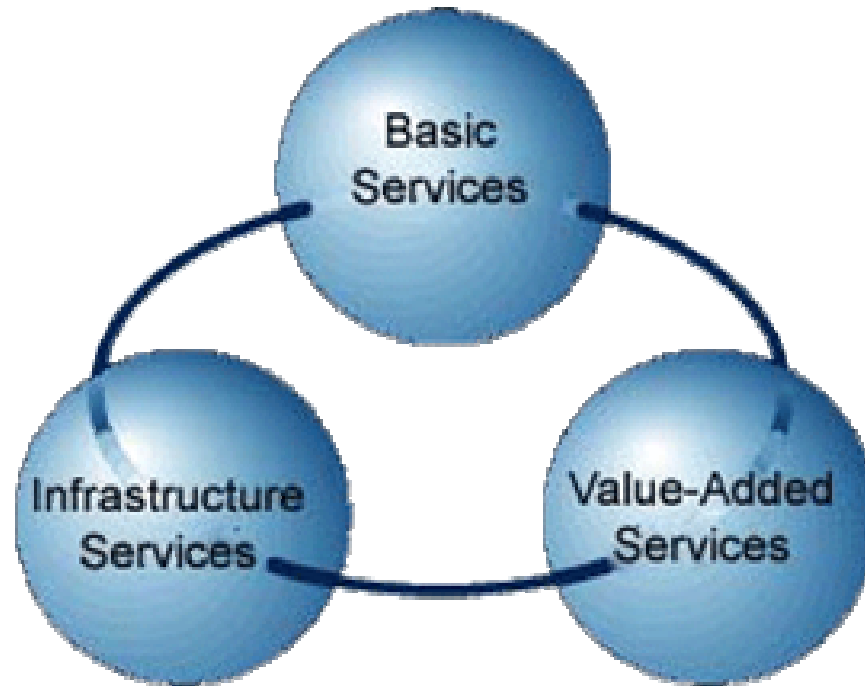
# Agenda

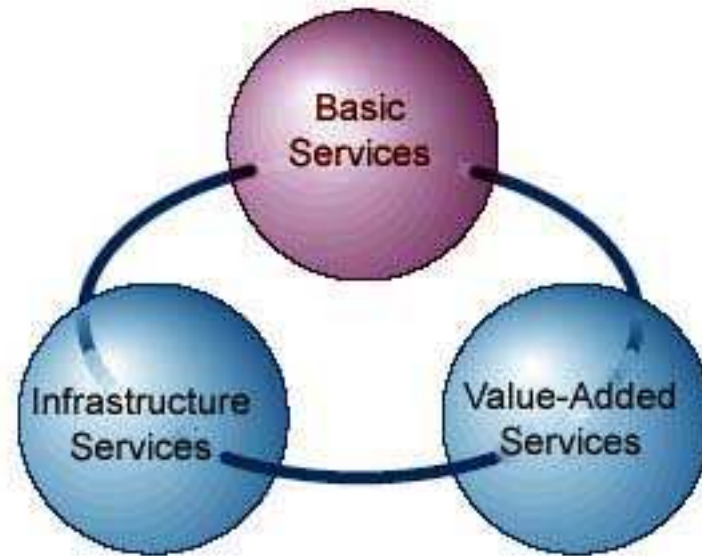
- ISP Architectural model
- Mail Platform
- Cost – Benefit Analysis

# ISP Architectural model



# ISP Services





Basic Services:

**Internet News** Post news on the Internet

**Web Hosting** Host personal web pages

**Email** Send and receive email

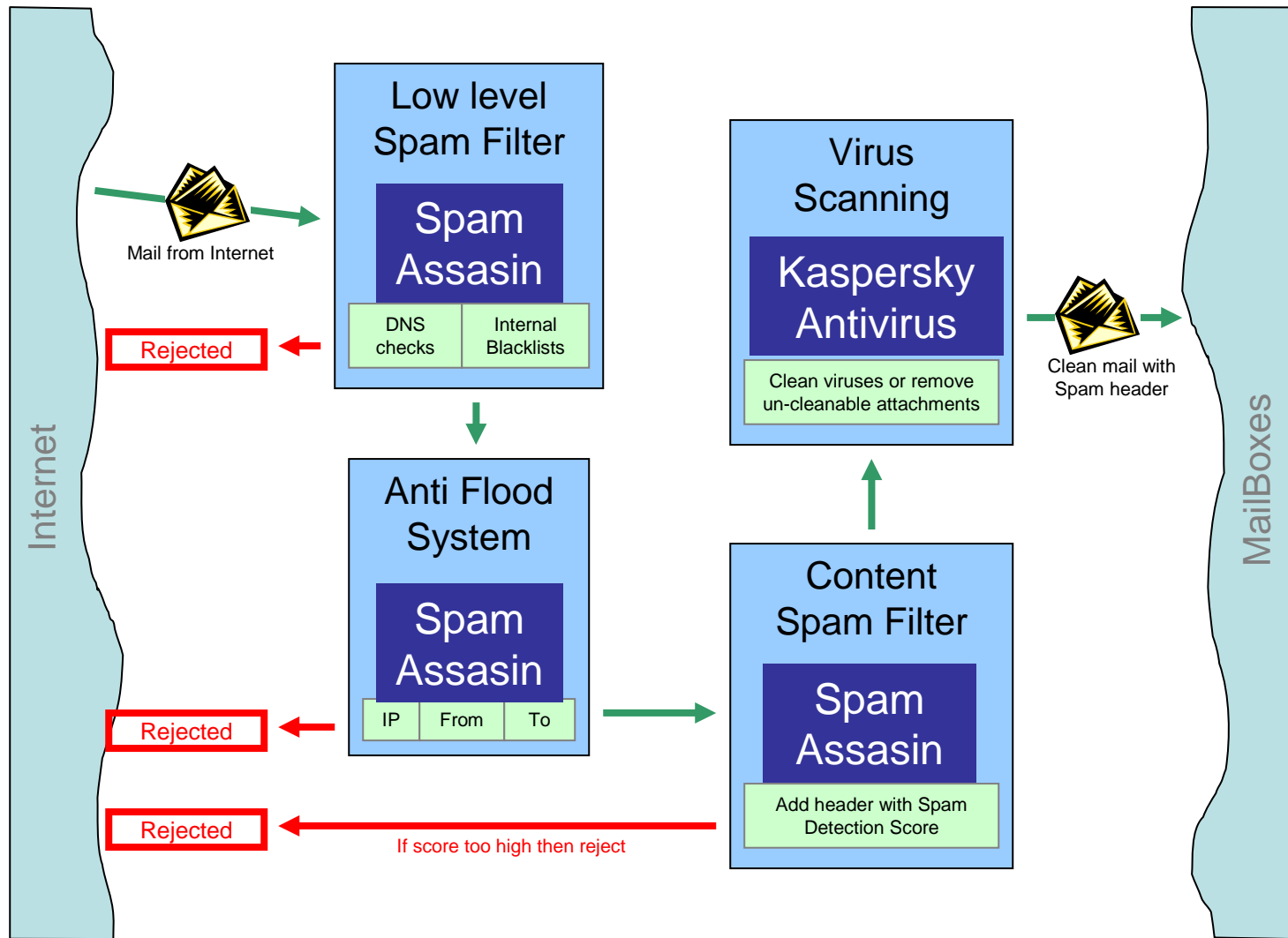
# Mail platform

- SMTP (Simple Mail Transfer Protocol)
- POP3 / IMAP
- Mailboxes

# Mail platform

- **SMTP (Simple Mail Transfer Protocol)**
  - Anti spam
  - Content filters
  - Anti virus
- POP3 / IMAP
- Mailboxes

# SMTP software



# Mail platform

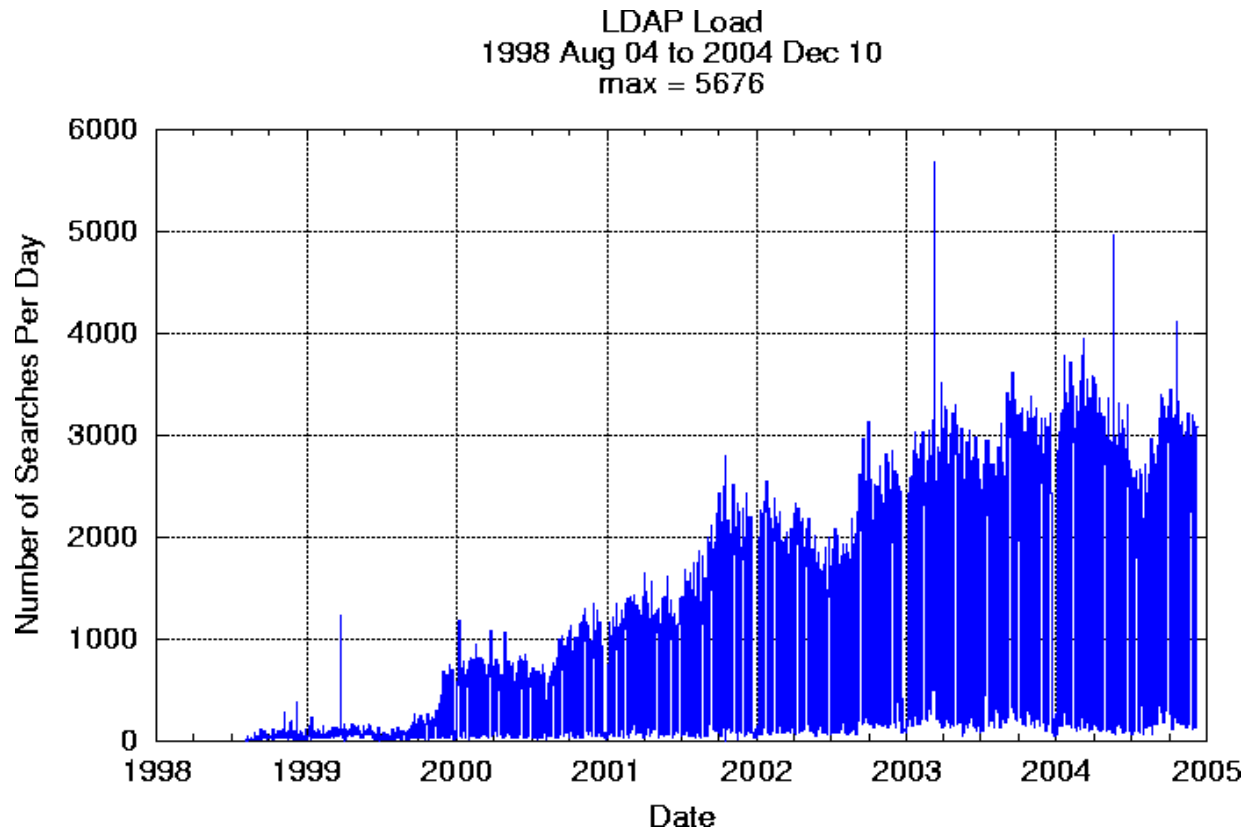
- SMTP
- **POP3 / IMAP**
- Content filters
- Mailboxes

# POP3 and/or IMAP

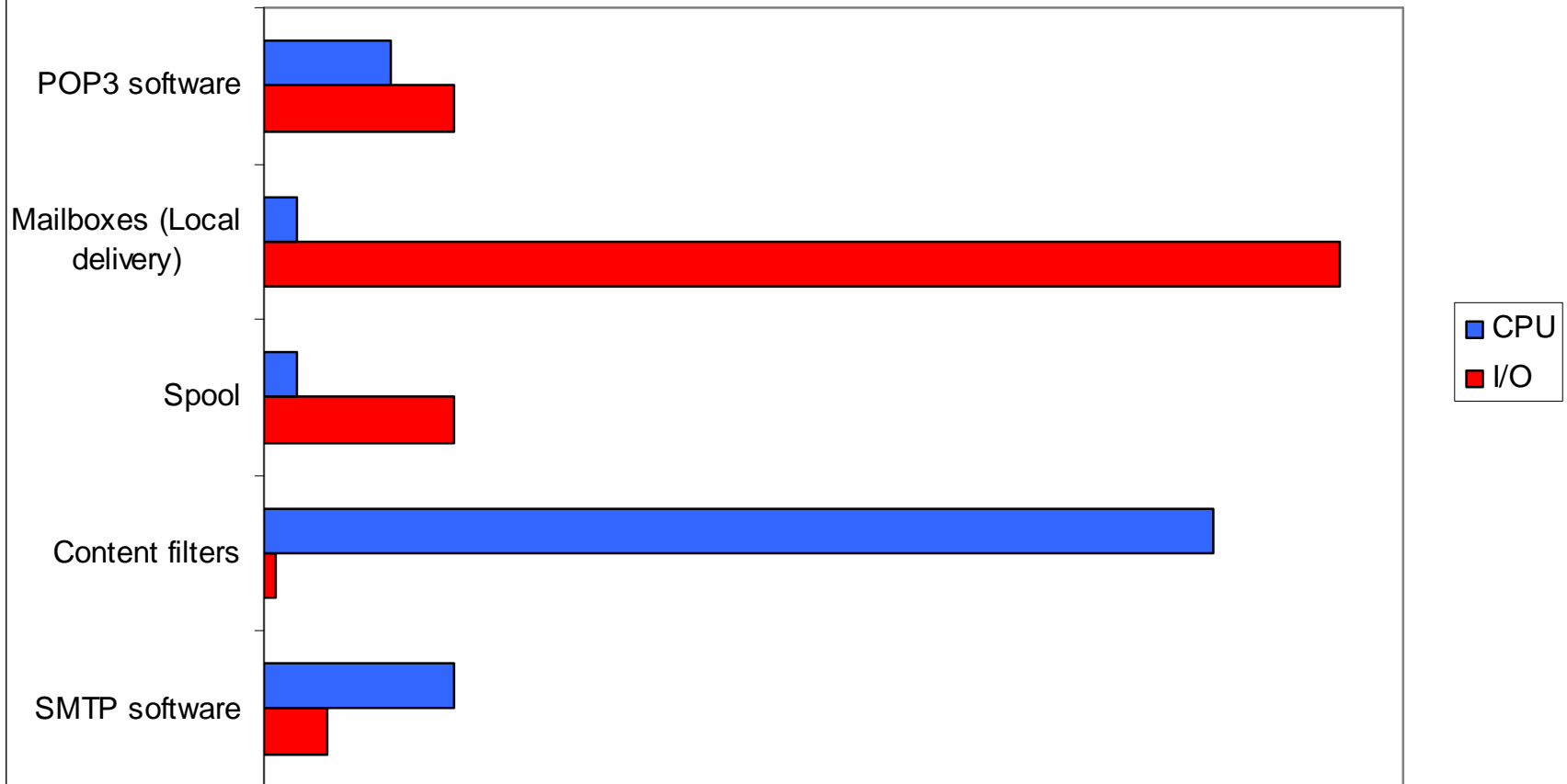
- **POP protocol advantages:**
  - **Simpler protocol; easier to implement.**
  - **More client software currently available.**
- **IMAP protocol advantages:**
  - **Can manipulate persistent message status flags.**
  - **Can access and manage multiple mailboxes.**
  - **Can support concurrent updates and access to shared mailboxes.**
  - **Widely used in Web mail**

# LDAP

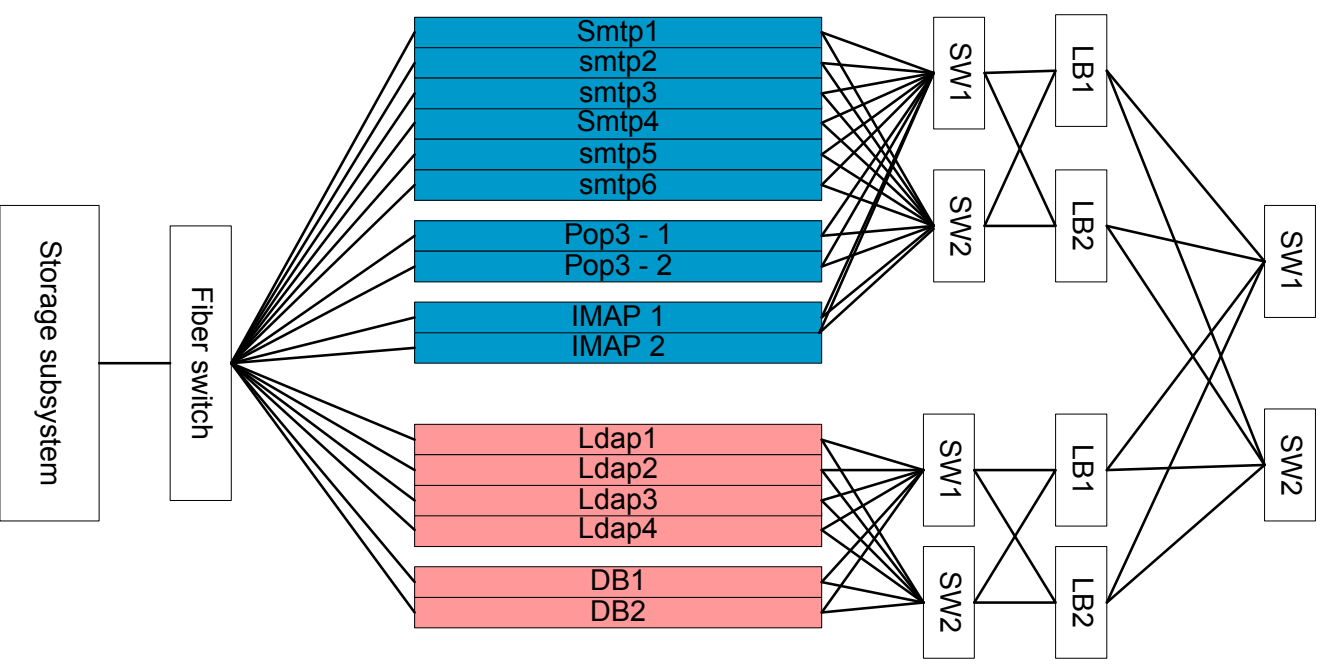
- Lightweight Directory Access Protocol
- Used for authentication and authorization.



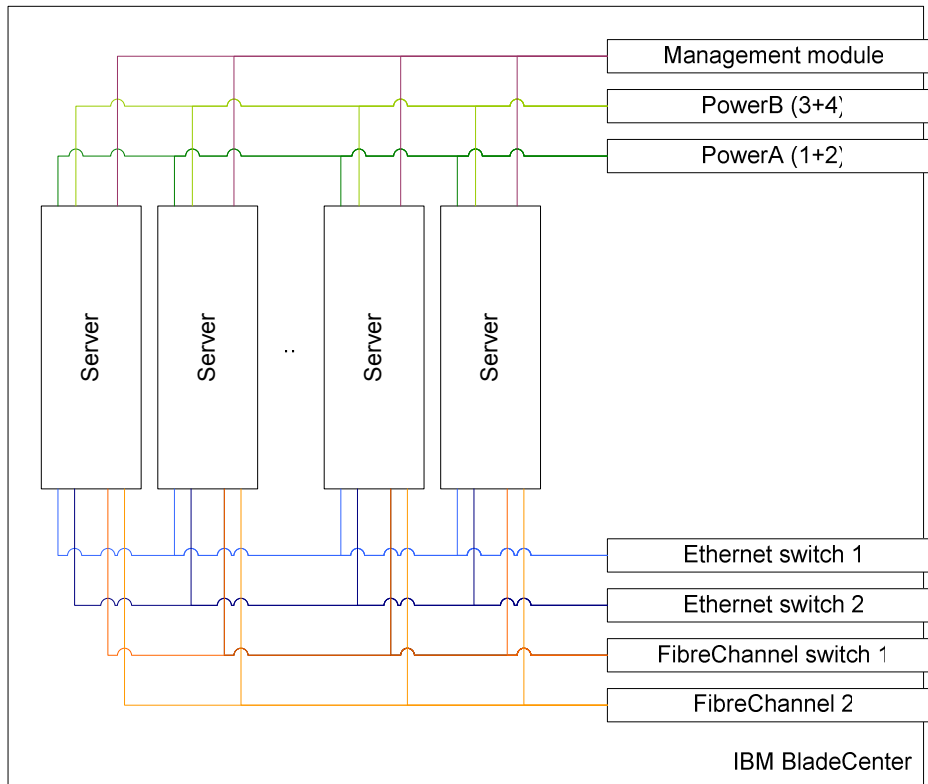
## Relation of resource usage in a mail system



- MAIL cluster
- LDAP cluster



# Hardware – Blade servers



## **IBM Blade Center Chassis**

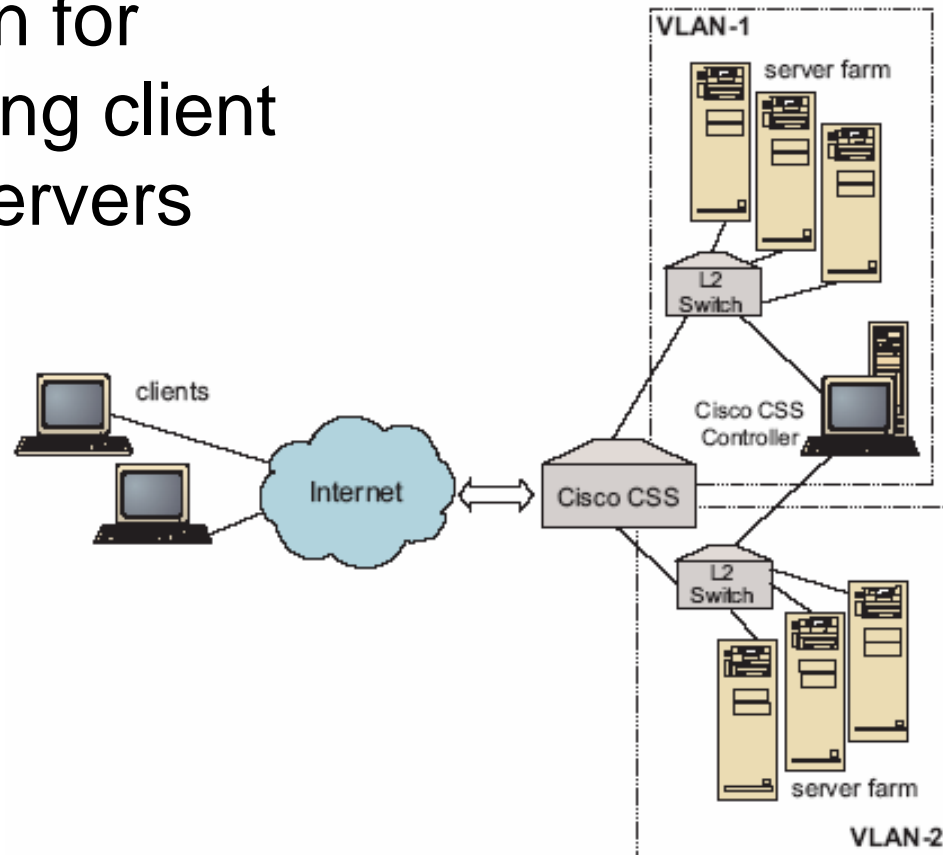
- Shared switches (2xGigabit ethernet, 2xFibreChannel)
- Management module
- 4 Power supplies
- Supports up to 14 servers

• **IBM HS20** Dual Xeon 3060 MHz, 2048 MB (DDR SDRAM), 2xGigabit, 2xFC, 60Gb disk

• **RedHat Linux Enterprise Edition**

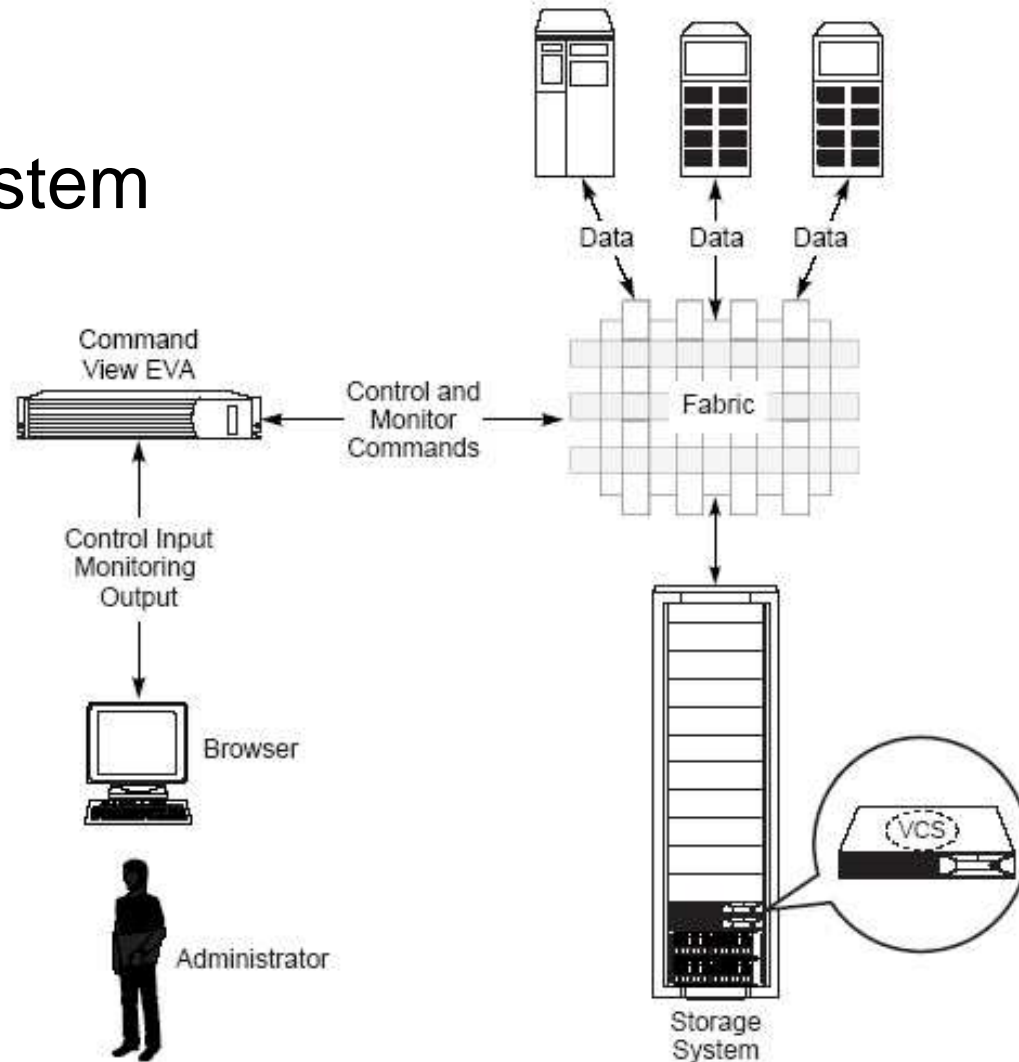
# Load Balancing

- A software solution for distributing incoming client requests across servers



# Storage Subsystem

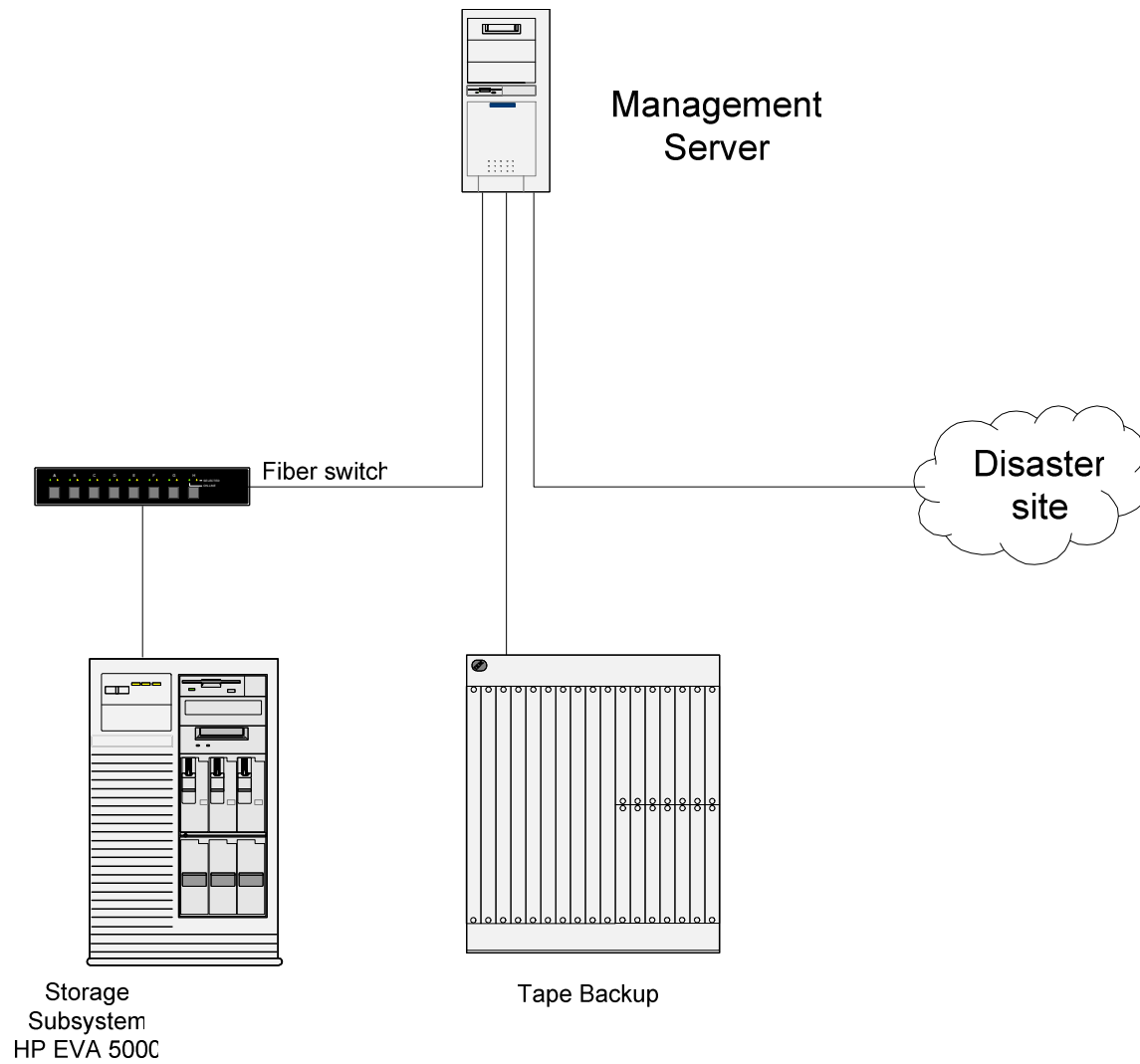
- HP EVA 5000
- Global File System



# Storage Capacity

- HP Enterprise Virtual Array 5000 support up to 35 TB
- Current needs approx. 9TB
- Price per GB approx. \$13.60

# Storage Backup



# Cost – Benefit analysis

<b>Storage</b>	<b>\$120 000</b>
<b>Fiber switch</b>	<b>\$4 800</b>
<b>Blade Centers</b>	<b>\$16 000</b>
<b>Blade Servers</b>	<b>\$56 000</b>
<b>Load balancers</b>	<b>\$2 800</b>
<b>Rad Hat Linux</b>	<b>\$5 000</b>
<b>Kaspersky Anti Virus</b>	<b>\$ 400</b>
	<hr/>
<b>Total</b>	<b>\$ 200 000</b>

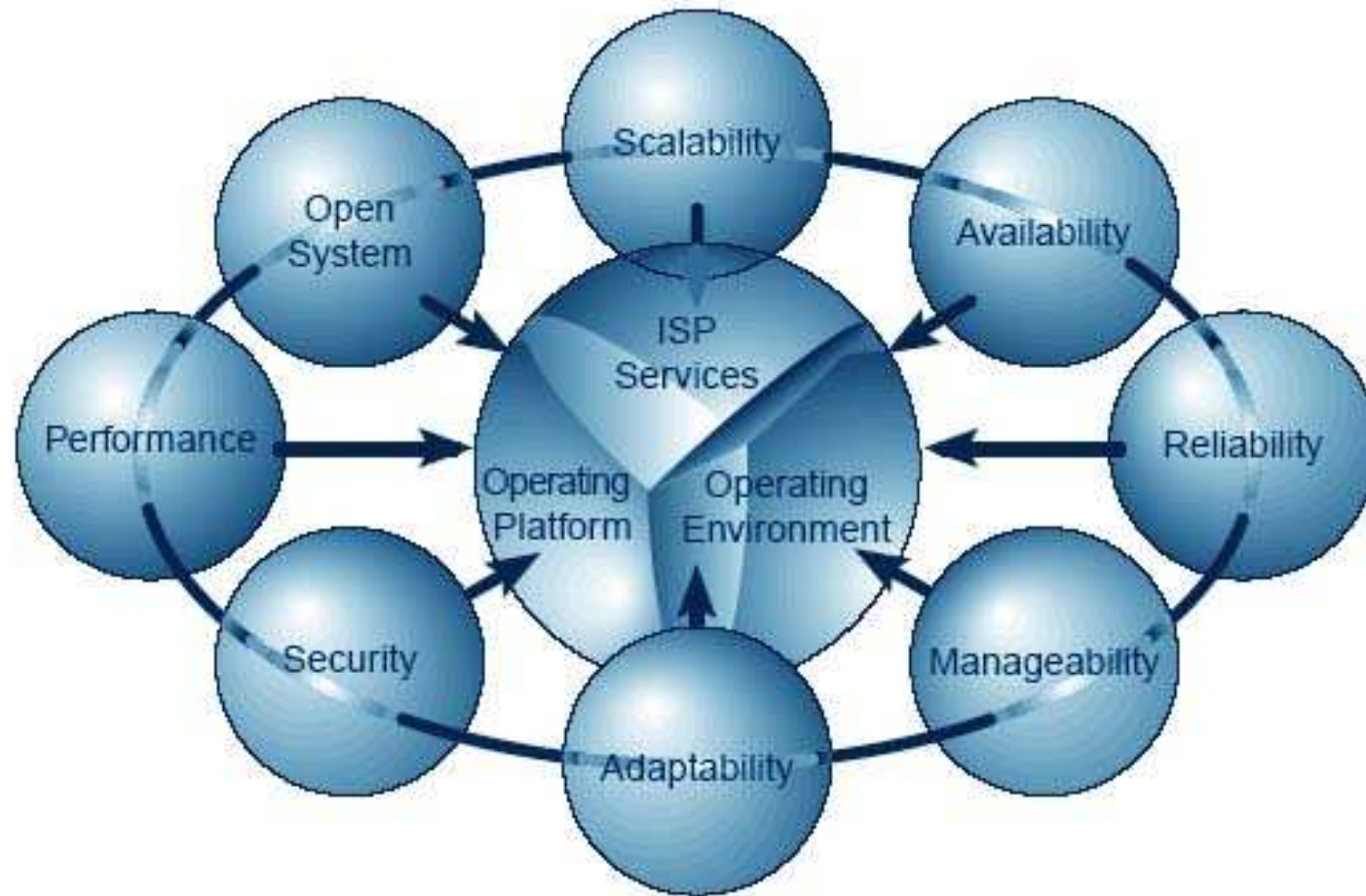
# Cost – Benefit analysis

- What do we get for total cost of approx.

\$ 200.000,00

- Mail system that can serve 1 500 000 emails/day with no additional costs
- Multi platform storage system
- Possibility of storage system extension (up to 35TB)
- Possibility of Blade servers extension with minimal costs
  
- Flexible anti spam filters
- World's leading Anti-virus protection (updated every hour)
- Possibility of developing WAP portal [wap.my.eunet.yu](http://wap.my.eunet.yu)

# Cost – Benefit analysis



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