

Akelius University

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IT-structure and systems connected to the organization

This report focuses on explaining the structure of the Akelius data communication infrastructure and operations platform. Its purpose is to create a better understanding within the organization of how and why Akelius IT-structure is designed in its current form.

IT-Strategy

An IT strategy describes how information technology is used within the organization to achieve established goals and visions. The strategy normally covers several different areas such as information, quality, infrastructure, and organization.

It is important to have a well-functioning IT infrastructure. In a way, the structures are the "roads" to be used by the systems; the foundation which business is built upon.

Some short extracts from Akelius' IT-strategy:

- To centralize responsibility for IT development and operations
- Strive towards a uniform technical, standardized platform
- Prioritize proven technology and avoid self-developed systems or special adaptations
- IT operations shall follow the global IT development to meet the demands of owners, market and enable new competitive advantages
- Long-term relationships with suppliers of hardware, maintenance, consulting and business-critical systems should be sought
- IT operations shall work towards user-friendly, flexible, powerful systems that rationally, effectively reinforce the company's business.

Data communication infrastructure

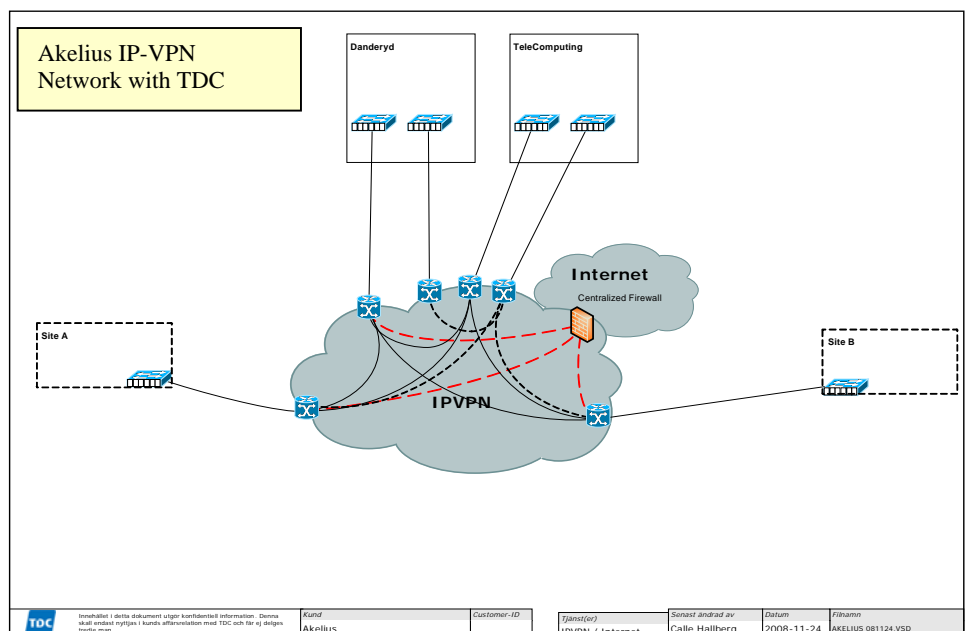
Wide Area Network, WAN, is a computer network that covers a broad area, like for example cross metropolitan, cross regional, or cross national borders. As a contrast, the more commonly known Local Area Network, LAN, is usually limited to an office, building, campus or specific metropolitan area. The largest and most well-known example of a WAN is the Internet.

WANs are used to connect LANs and other types of networks together, so that users and computers in one location can communicate with users and computers in other locations. Most WANs are built for one particular organization and are private.

An often-used technique for creating a cost efficient, private and secure WAN for an organization is called Virtual Private Network. In simple terms, a VPN creates a secure tunnel over Internet between two nodes or more, in such a way that it provides the benefits of a private network, including security, continuous availability, and reliability.

Akelius' WAN is created by an Internet Protocol based VPN. The network topology is fully meshed, i.e. a network where each of the nodes in the network is connected to each of the other nodes in the network with a point-to-point link (see figure 1). This ensures that the data always uses the shortest way to reach its destination.

Figure 1: Akelius IP-VPN Network



Quality of Service (QoS)

Since the Internet was deployed, and up till quite recently, all Internet connections have only been measured based on their bandwidth and whether they were working or not. Due to the rapid development of applications and services such as Internet calls, video conferences, and applications with real time interaction; a demand for measuring other key figures has evolved.

As an example, the following key figures were added to better measure the quality of a connection:

- Maximum allowed dropped packets;
- Maximum allowed delay of packets;
- Maximum allowed variation of packet delay, i.e. jitter.

Internet service providers met this increased demand for high quality connections by creating a new service called Quality of Service. This service, adding to the above mentioned, provides the possibility of prioritizing four different types of data packets, and also guarantees each packet type a percentage of the bandwidth.

For example:

Priority	Packet type	Bandwidth
First priority	Voice packets	X %
Second priority	Video packets	Y %
Third priority	Data packets	Z %
Lowest priority	Other packets	Available bandwidth

Akelius uses the QoS according to the table below.

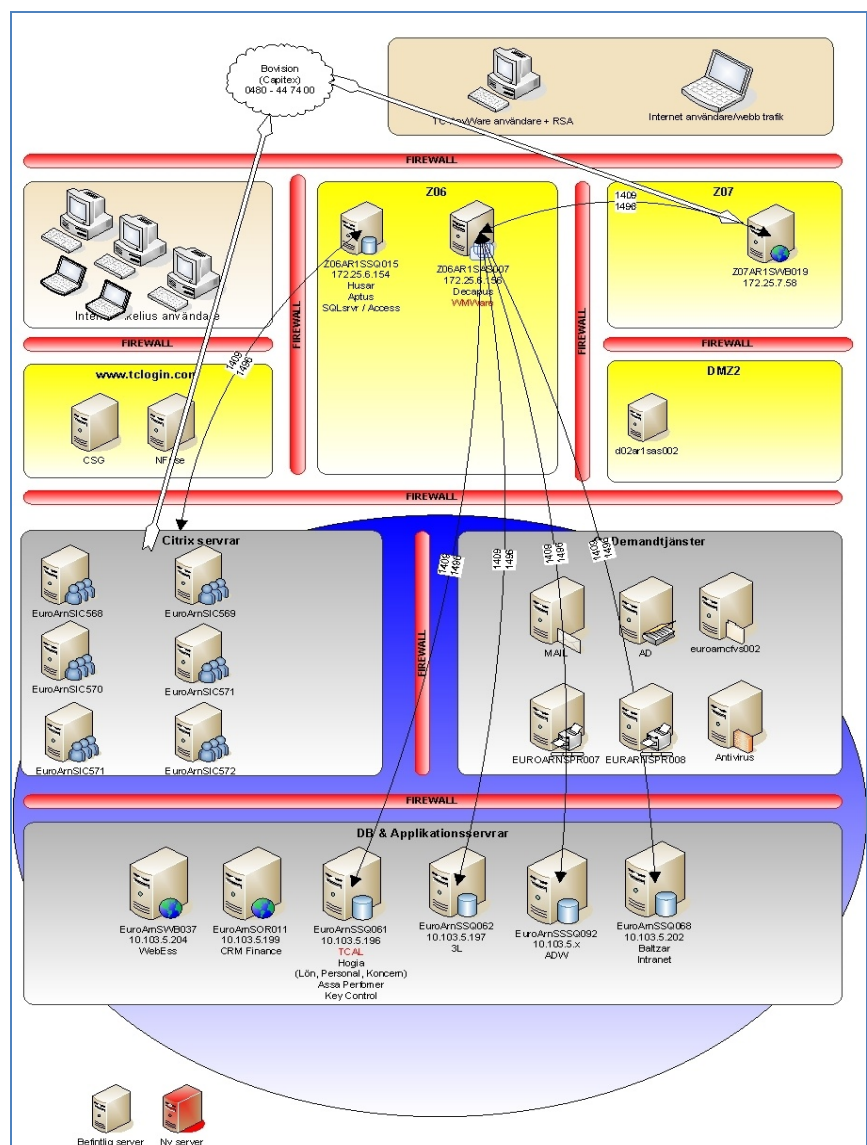
Priority	Packet type	Bandwidth
First priority	Voice packets	25 %
Second priority	Video packets	0 %
Third priority	ICA, Citrix packets	50 %
Lowest priority	Other packets	Available bandwidth

Operations platform

Almost two years ago, Akelius switched to an external IT operations partner. An IT operations partner offers a number of “on demand” services, so called “out of the box” services; from within this customers can choose and create their own operations platform.

Akelius operations partner, TeleComputing, has chosen a Microsoft based platform for their services, following the main trend in the business. Figure 2 shows a sketch of Akelius platform.

Figure 2. Akelius platform.



“On Demand” services used by Akelius

- Citrix – Terminal server service that presents the platform in a desktop window
- Mail – Exchange server for all mail communication
- Active Directory – Server that handles user accounts and user rights
- Storage – Storage Area Network for file storage
- Print – Print servers for all network printers
- Antivirus – Antivirus server for managing of all antivirus clients
- Managed Client – Service for managing and handling of all clients
- Security – Firewalls that divides different security zones from each other internally and also towards Internet
- RSA access – Service for external access to our environment through RSA-token from any computer with Internet access. RSA is an algorithm for public-key cryptography which is widely used in electronic commerce protocols. The letters, RSA, are the initials of the inventors’ surnames.

On top of the chosen platform, each organization adds specific applications and databases to meet the needs of the organization. For most organizations, as well as for Akelius, this consists of:

- A business system, for Akelius 3L
- A finance system, for Akelius CRM
- A data warehouse, for Akelius ADW
- A salary and personnel system, for Akelius Hogia
- Some branch specific systems. Some examples for Akelius are: Husar for maintenance and renting, Ess200 for energy and Key Control for the management of keys.