

Internet and Intranet

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Chapter 6: Internet and Intranet Systems Development

Topics :

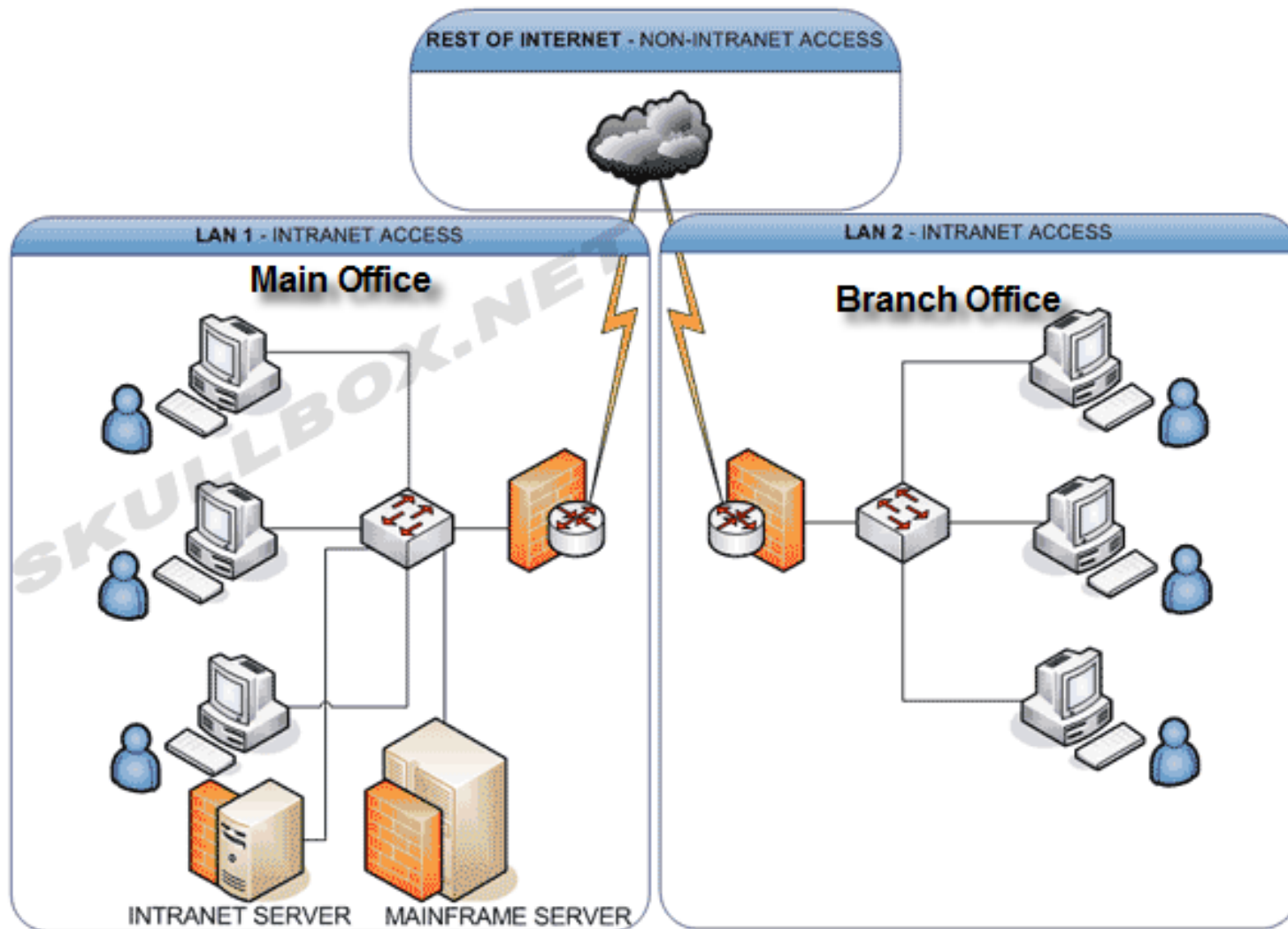
- Introductions
- Benefits and Drawbacks of Intranet
- Protocols, Structure and Scope of Networks
- Intranet Resource Assessments: Network Infrastructure, Clients and Server Resources
- Intranet Implementation Guidelines
- Content Design, Development, Publishing and Management
- Intranet Design With Open Source Tools: DRUPAL, JOOMLA
- Tunneling Protocols: VPN

Intranet Introduction

- An intranet is a private network that is contained within an enterprise.
- It may consist of many interlinked local area networks and also use leased lines in the wide area network.
- Typically, an intranet includes connections through one or more gateway computers to the outside Internet.
- The main purpose of an intranet is to share company information and computing resources among employees.
- An intranet can also be used to facilitate working in groups and for teleconferences.

- An intranet uses TCP/IP, HTTP, and other Internet protocols and in general looks like a private version of the Internet.
- With tunneling, companies can send private messages through the public network, using the public network with special encryption/decryption and other security safeguards to connect one part of their intranet to another.

Intranet



Advantages of Intranet

- Intranets offering workforce productivity
 - find and observe information very fast
 - use applications according to their roles and tasks
 - through web browser a user can get access to entire contents of intranet website from anywhere or any time
 - also increase the ability of employee's by performing their job confidently very fast, and accurately
- Time
 - allow organizations to distribute information to employees on an as-needed basis; Employees may link to relevant information at their convenience, rather than being distracted indiscriminately by email.

- Business operations and management
 - Intranets are also being used as a platform for developing and deploying applications to support business operations and decisions across the internetworked enterprise
- Cost-effective
 - Users can view information and data via web-browser rather than maintaining physical documents such as procedure manuals, internal phone list and requisition forms
- Enhance collaboration
 - Information is easily accessible by all authorized users, which enables teamwork.

- Cross-platform capability
 - Standards-compliant web browsers are available for Windows, Mac, and UNIX
- Immediate updates
- Supports a distributed computing architecture:
 - The intranet can also be linked to a company's management information system, for example a time keeping system.
- Multiple Branches which are geographically located can be connected

Disadvantages of Intranet

- Intranet has great features for interconnected manners but has some disadvantages too
- Management does need to stop control of specific information, this problem can be minimized but with appropriate prudence.
- The other disadvantage of Intranet is security issue
- Intranet gathered everything in one location which is really good but if it is not prearranged then you will spoil everything.
- The cost of intranet is very high but has lots of advantages after implementation.

Extranet

- Extranet is an Intranet for outside authorized users using same internet technology.
- Inter-organizational information system.
- enable outsiders to work together with company's employees.
- open to selected suppliers, customers & other business partners
- Examples
 - Dealers/distributors have access to product files such as :-
 - product specification, pictures, images, etc.
 - to answer the queries of the customer.

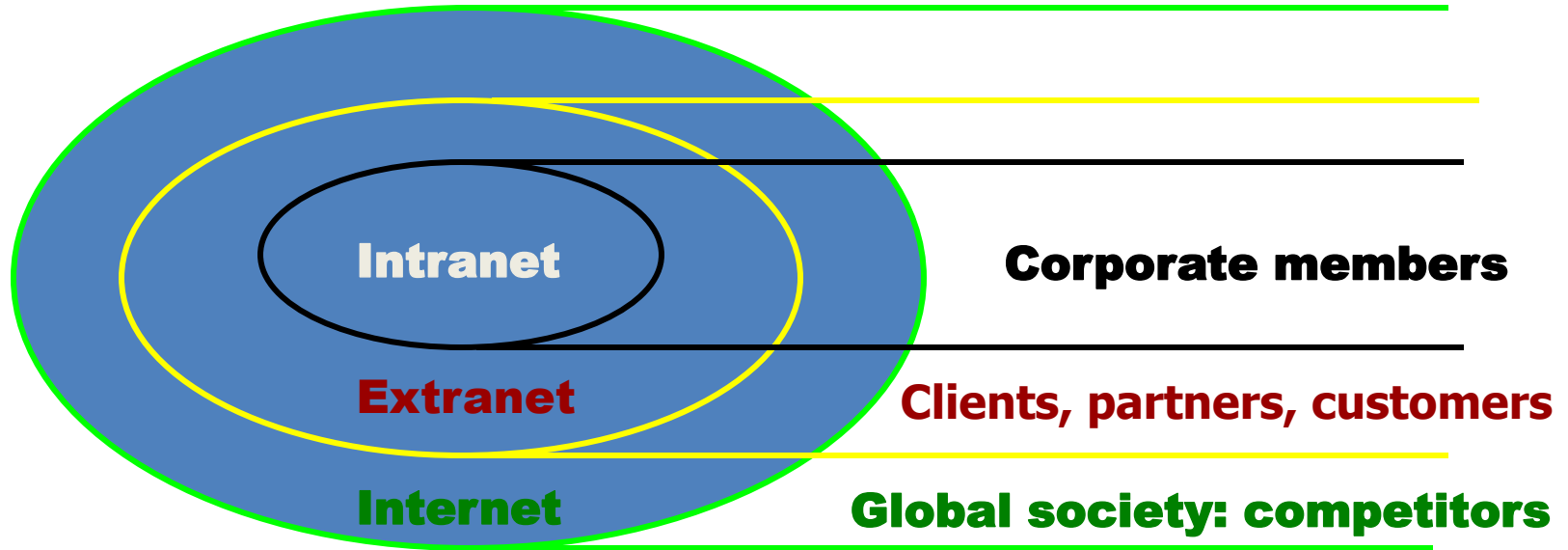
Benefits of Extranet

- Improved quality.
- lower travel costs.
- lower administrative & other overhead costs.
- reduction in paperwork.
- delivery of accurate information on time.
- improved customer service.
- better communication.
- overall improvement in business effectiveness.

Disadvantages

- The suppliers & customer who don't have technical knowledge feel problem.
- Faceless contact.
- Information can be misused by other competitors.
- Fraud may be possible.
- Technical Employees are required.

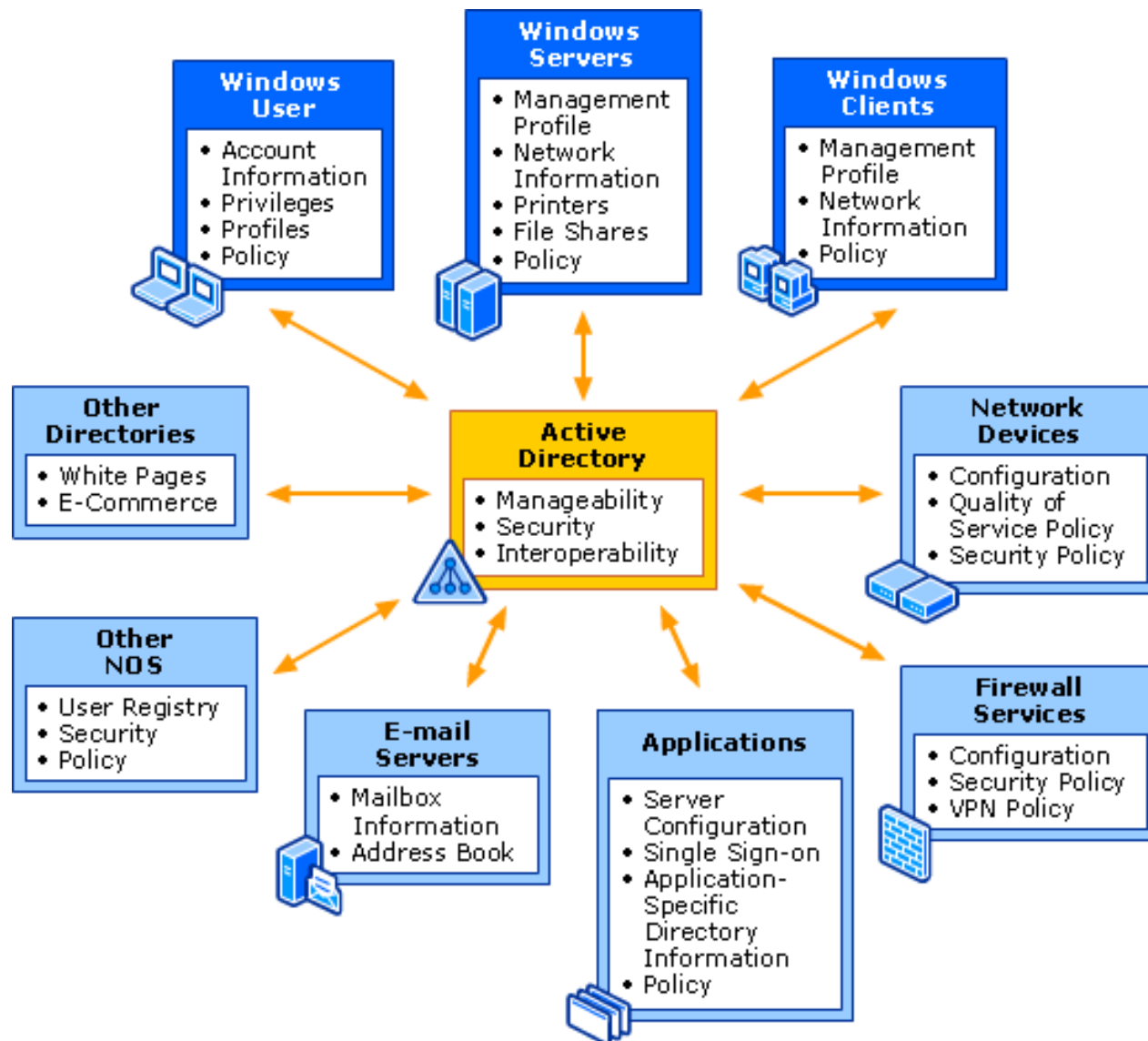
Layered System View



Protocols Used in Intranet

- HTTP(s)
- SMTP(s)
- IMAP(s)
- POP3(s)
- DHCP
- DNS
- FTP
- SSH
- VOIP
- Active Directories or LDAP
- VPN
- Some kind of indexing and searching service

Active Directory Services



Intranet Implementation Guidelines

- In order to develop a well structured and organized intranet that would fulfill all requirements, one would have to follow the right intranet development guidelines.
- Before starting developing intranet, one need to do extensive research and an in-depth needs analysis to find out what exactly your requirements are and what you want to achieve.
- The intranet development guidelines will help and guide during the different stages of the development process.

- The purpose and goals of the intranet
- Persons or departments responsible for implementation and management
- Functional plans, information architecture, page layouts, design
- Implementation schedules and phase-out of existing systems
- Defining and implementing security of the intranet
- How to ensure it is within legal boundaries and other constraints
- Level of interactivity (e.g. wikis, on-line forms) desired.
- Is the input of new data and updating of existing data to be centrally controlled or devolved

Actual Intranet Implementation Includes

- Securing senior management support and funding.
- Business requirements analysis.
- Identify users' information needs.
- Installation of web server and user access network.
- Installing required user applications on computers.
- Creation of document framework for the content to be hosted.
- User involvement in testing and promoting use of intranet.
- Ongoing measurement and evaluation, including through benchmarking against other intranets

Content Design, Development, Publishing and Management

- Consider the potential of the intranet to enhance the operation of the organization
- Consider the specific needs of the Organization
- Seek out the experiences of other agencies

POLICIES AND PROCESSES

- Identify staff and business needs
- Determine intranet goals
- Establish a cross-functional team
- Seek an intranet sponsor
- Consider appropriate governance models
- Determine an appropriate authoring model

DESIGN AND CONTENT

- Apply user-centred design techniques
- Schedule regular evaluation of the intranet
- Incorporate 'killer applications' and make the intranet a place for 'doing things'
- Ensure high-quality content
- Consider the most appropriate structure for the intranet
- Establish content review processes
- Ensure that the intranet meets accessibility standards
- Consider recordkeeping issues
- Consider implementing a content management system

Designing Intranet

- Firewall
- Router
- Switches
- Server

Intranet Sites Development

- An Intranet is a private network that uses common web technology for use within an enterprise or organization.
- Access to the network is restricted.
- Intranets may serve anything from small workgroups sharing the same office space to entire corporation with locations around globe.
- Intranet applications are typically used in “Business to Employee” (B2E) context, which means they are used to communicate with employees and share information within the organization

- A content management system is software that keeps track of every piece of content on Web site, much like local public library keeps track of books and stores them.
- Content can be simple text, photos, music, video, documents, or just about anything you can think of.
- A major advantage of using a CMS is that it requires almost no technical skill or knowledge to manage. Since the CMS manages all content, one don't have to.

Intranet Development with Open Source Tools: Drupal, Joomla

Drupal

- Drupal is open source software maintained and developed by a community of 1,000,000+ users and developers.
- It's distributed under the terms of the GNU General Public License (or "GPL"), which means anyone is free to download it and share it with others.

- This open development model means that people are constantly working to make sure Drupal is a cutting-edge platform that supports the latest technologies that the Web has to offer.
- The Drupal project's principles encourage modularity, standards, collaboration, ease-of-use, and more.

Who's Using Drupal

- From local businesses to global corporations, diverse organizations use Drupal.
- News Publishing
 - NowPublic, Popular Science, Economist

- Intranet/Corporate Websites
 - AOL Corporate, Dahon Bicycles
- Education
 - San Jose State University, Harvard, MIT, Council on Writing Program Administrators
- Art, Music, Multimedia
 - MTV UK, Sony Music, Warner Brothers Records
- Community Portal Sites
 - Fast Company, Team Sugar, Ubuntu Brainstorm
- Social Networking Sites
 - DrupalSN

Joomla

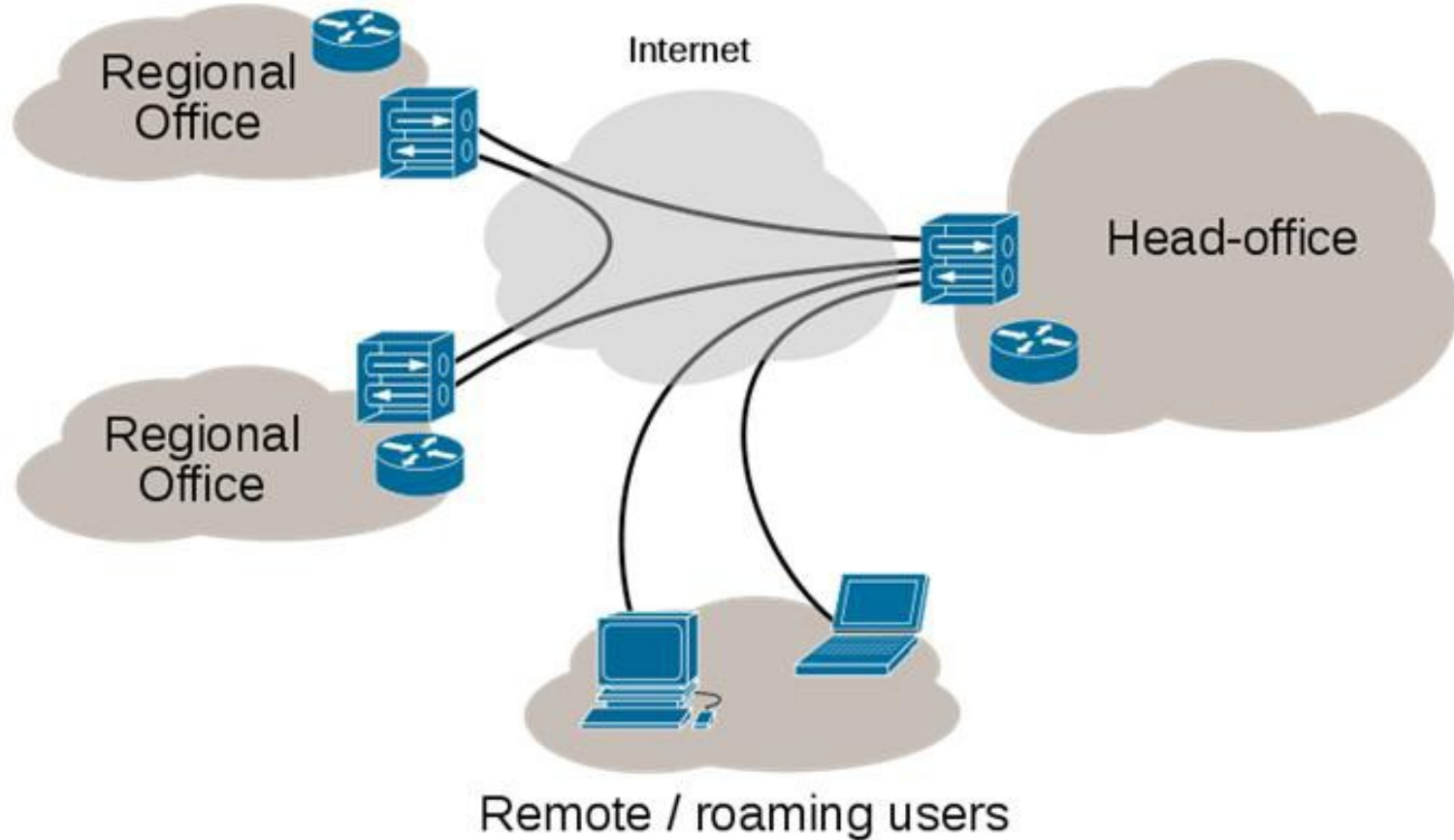
- Joomla is content management system (CMS), which enables to build Web sites and powerful online applications.
- Many aspects, including its ease-of-use and extensibility, have made Joomla the most popular Web site software available.
- Best of all, Joomla is an open source solution that is freely available to everyone.

- Joomla is used all over the world to power Web sites of all shapes and sizes. For example:
 - Corporate Web sites or portals
 - Corporate intranets and extranets
 - Online magazines, newspapers, and publications
 - E-commerce and online reservations
 - Government applications
 - Small business Web sites
 - Non-profit and organizational Web sites
 - Community-based portals
 - School and church Web sites
 - Personal or family homepages

- Here are just a few examples of Web sites that use Joomla:
 - MTV Networks Quizilla (Social networking)
 - <http://www.quizilla.com>
 - IHOP (Restaurant chain)
 - <http://www.ihop.com>
 - Harvard University (Educational)
 - <http://gsas.harvard.edu>
 - Outdoor Photographer (Magazine)
 - <http://www.outdoorphotographer.com>
 - PlayShakespeare.com (Cultural)
 - <http://www.playshakespeare.com>

VPN (Virtual Private Network)

- A VPN is a virtual network
 - Built on top of existing physical networks
 - Provide a secure communications mechanism for data and IP information transmitted between networks.
- VPN can be used over existing networks, such as the Internet
 - Thus can facilitate the secure transfer of sensitive data across public networks.
- This is often less expensive than alternatives
 - such as dedicated private telecommunications lines between organizations or branch offices.
- Firewalls, VPNs, and IPsec with ESP in tunnel mode are a natural combination and widely used in practice
- VPNs can use both symmetric and asymmetric forms of cryptography.



For example, a VPN could be used to securely connect the branch offices of an organization to a head office network through the public Internet.

- Three primary models for VPN architectures :
- Gateway-to-gateway (site to site):
 - Protects communications between two specific networks
 - Eg., an organization's main office network and a branch office network, or two business partners networks.

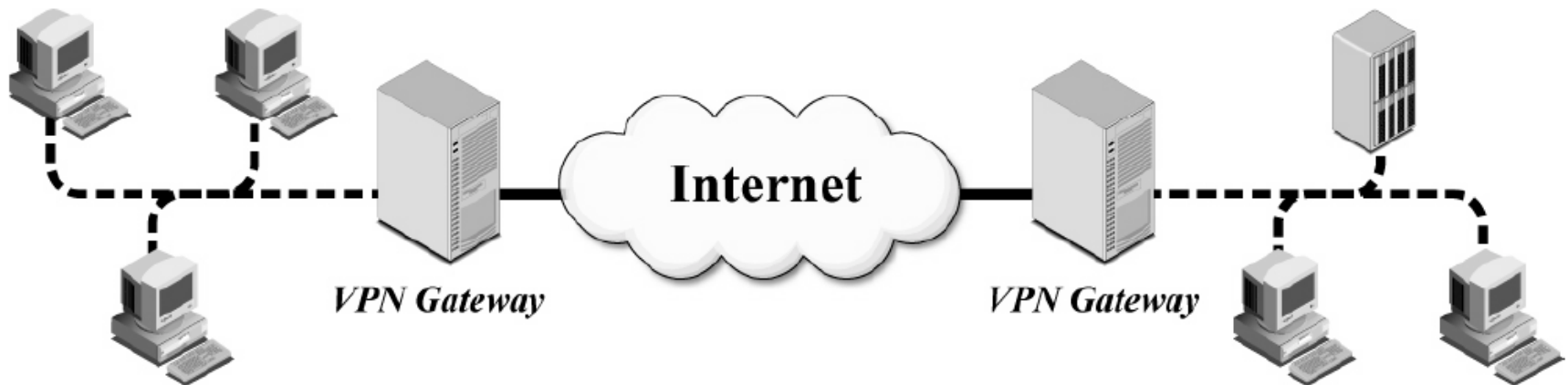


Figure : Gateway-to-Gateway Architecture Example

- Host-to-gateway:
 - Protects communications between one or more individual hosts and a specific network belonging to an organization.
 - Eg., traveling employees to gain access to internal organizational services, such as the organization's e-mail and Web servers.

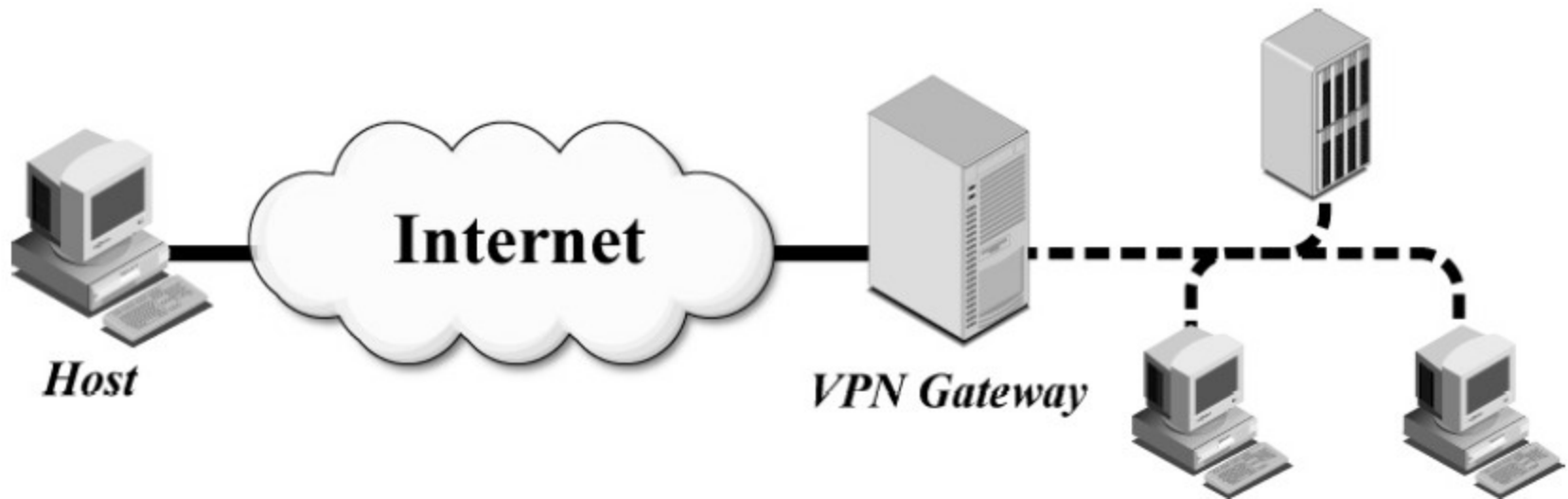


Figure: Host-to-Gateway Architecture Example

- Host-to-host :
 - Protects communication between two specific computers.
 - Eg., small number of users need to use or administer a remote system

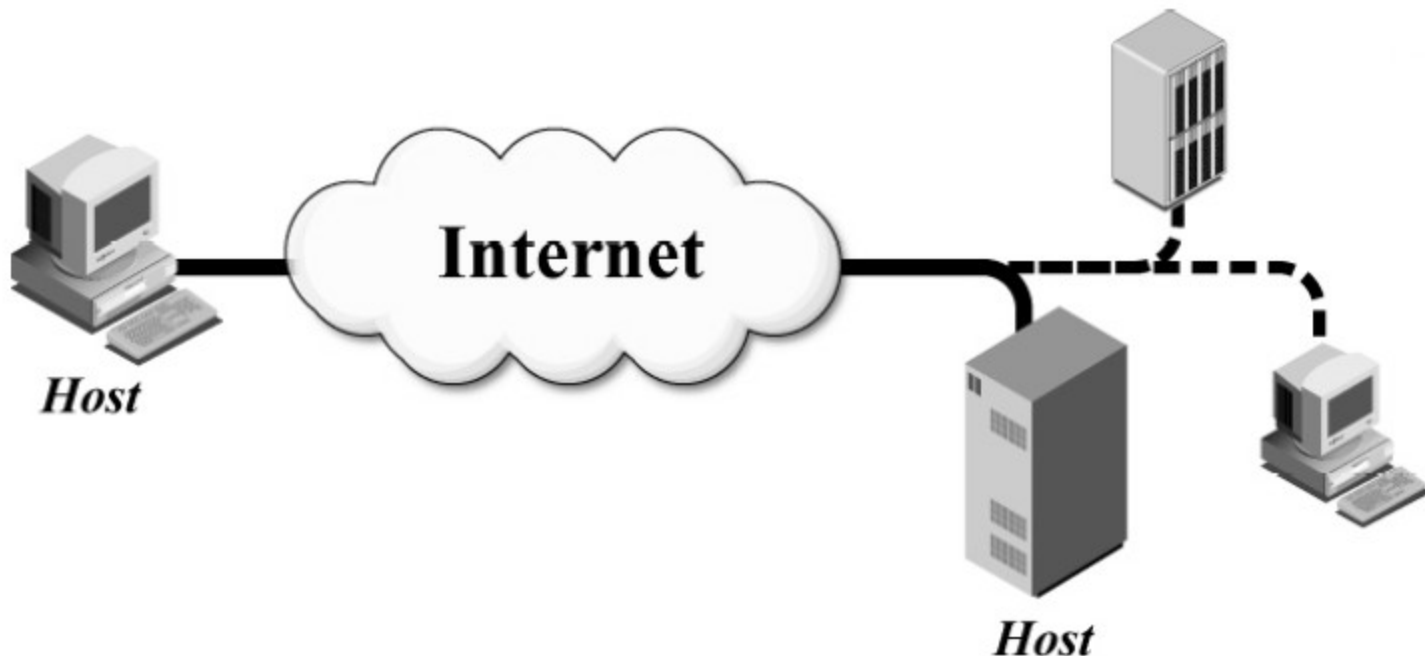


Figure :Host-to-Host Architecture Example

IPSec

- IPSec is a framework of open standard for ensuring private communication over public network
- It has become the most common network layer security control, typically used to create a VPN
- Two security protocols:
 - Authentication Header (AH) and
 - Encapsulating Security Payload (ESP)
- AH can provide integrity protection for packet headers and data, but it cannot encrypt them.
- ESP can provide encryption and integrity protection for packets, but it cannot protect the outermost IP header, as AH can.

IPSec Components

- Encapsulating Security Payload (ESP): Provides confidentiality, authentication, and integrity.
- Authentication Header (AH): Provides authentication and integrity.
- Internet Key Exchange (IKE) protocol:
 - negotiate secret keys and
 - manage, update, and delete IPsec-protected communication channels.
- IP Payload Compression Protocol (IPComp):
 - Optionally, IPsec can use IPComp to compress packet payloads before encrypting them.

IPSec Security Features

- IPSec is the most secure method commercially available for connecting network sites.
- IPSec was designed to provide the following security features when transferring packets across networks:
 - Authentication: Verifies that the packet received is actually from the claimed sender.
 - Integrity: Ensures that the contents of the packet did not change in transit.
 - Confidentiality: Conceals the message content through encryption.

Benefits of IPSec

- It provides strong security
- IPSec in a firewall is resistant to bypass if all traffic from outside see IP
- IPSec is below transport layer and is transparent to applications
- IPSec can be transparent to end users

Applications of IPSec

- Secure branch office connectivity over the internet
- Secure remote access over the internet
- Establishing extranet and intranet connectivity with partners

Thank You

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