

Lesson 10 – VPN, DMZ, Firewalls



Improving midterm grade (optional activity)

- Oral test (15 to 20min interview)
 - Questions will be similar to the midterm questions
 - Questions on slides 3 and 4 of this slide deck
 - Will ask only the same terms used in the midterm
 - Terms in slide 6 of this slide deck
 - Be prepare to explain the terms, give examples, compare with other terms (in the same list), and defend your answers
 - Strict grading
- Your midterm grade cannot go down
 - It can stay the same or go up
- Week 12
 - Saturday afternoon (starting after class)
 - Schedule in advance

Assignment 9

- Install GPG (two options)

- www.gnupg.org
- www.gpg4win.org
 - Use Kleopatra

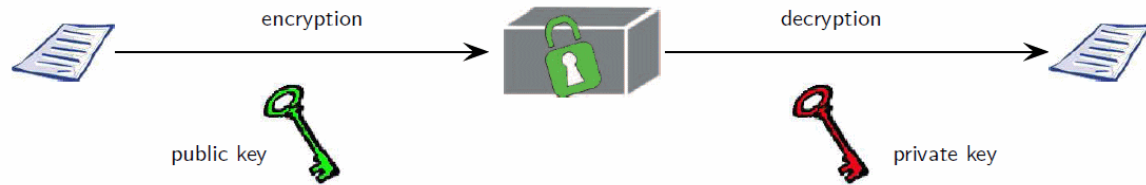
- Note that keys are called certificates

- Generate your pair of keys (private and public)

- Email the instructor your public key

- The instructor will email your current grades and midterm encrypted with your public key

- You should be able to decrypt with your private key

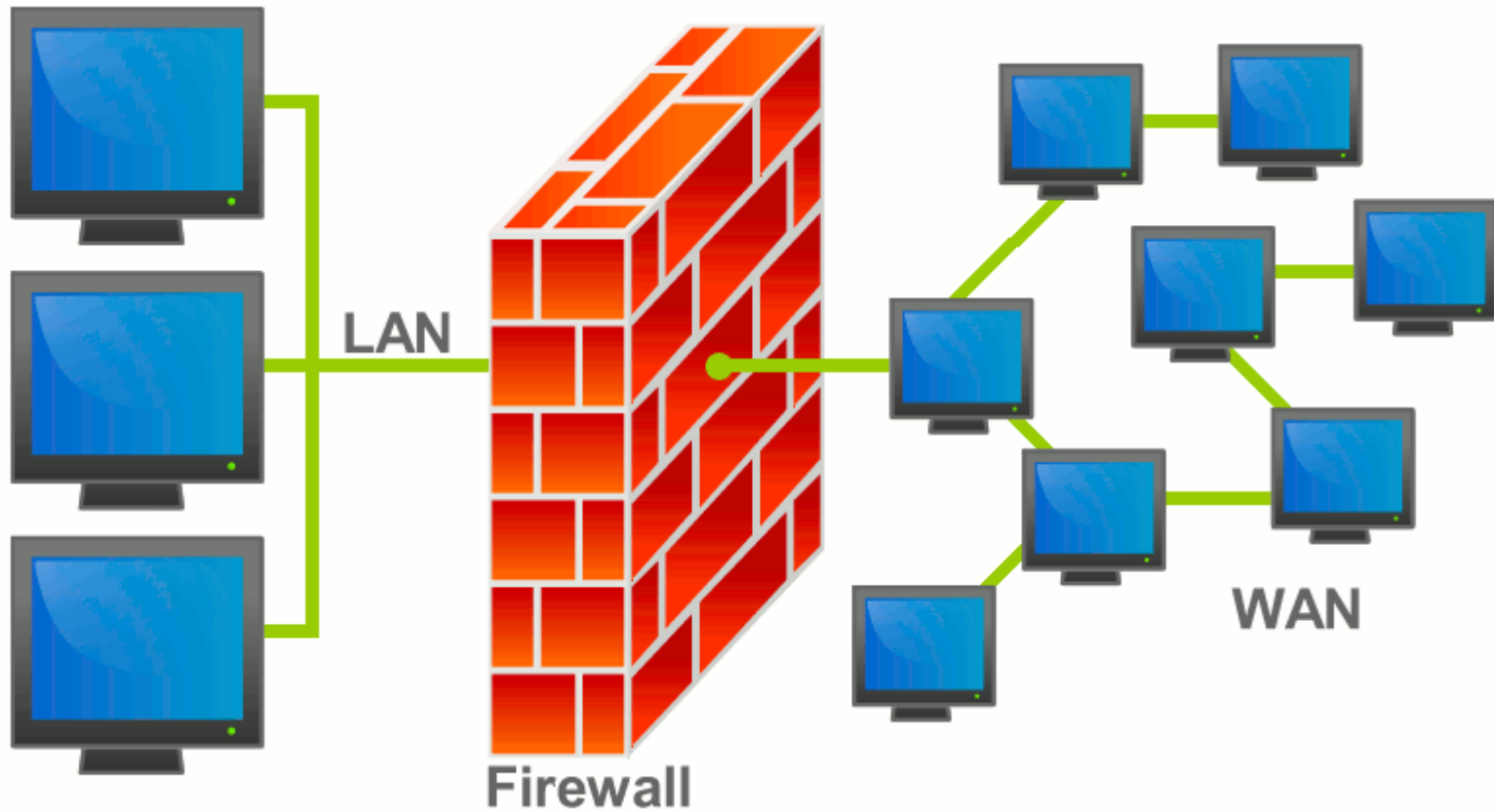


Firewall

Firewall

- Control access to a computer or network based on rules
 - Simple rules include
 - blocking unsafe ports
 - Filtering packets
 - More complex rules include monitoring port traffic
- Prevent unauthorized traffic to get into the protected network or computer

Firewall example



Source: <http://en.wikipedia.org/wiki/File:Firewall.png>

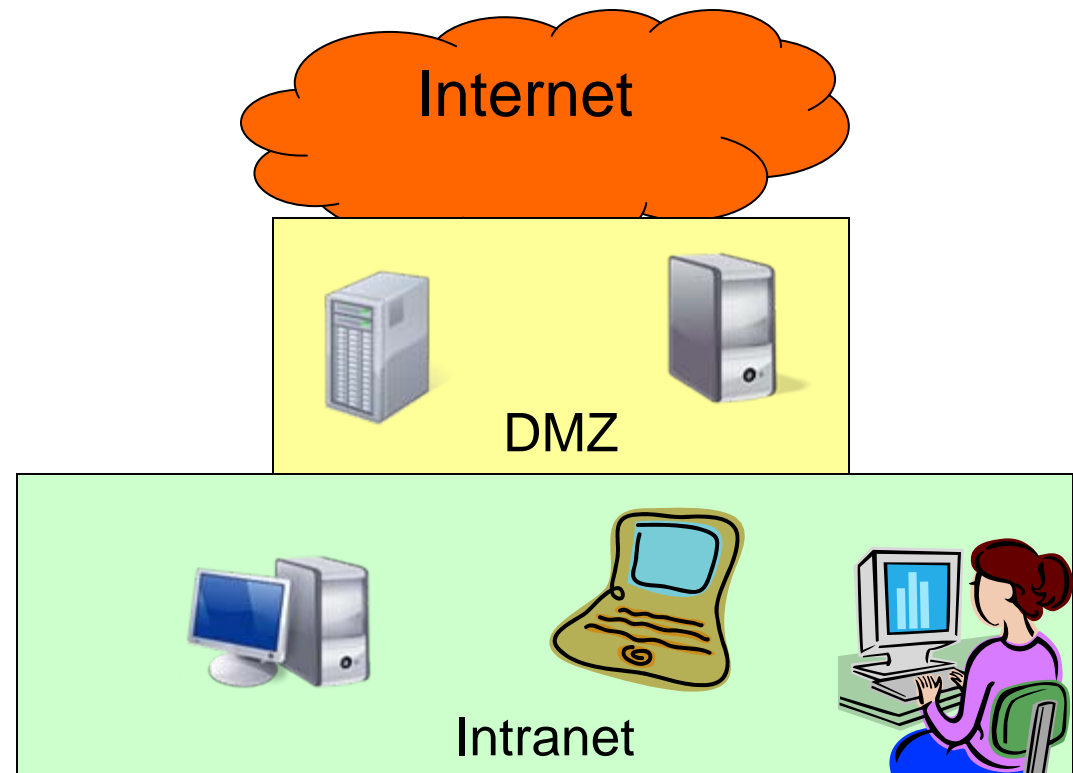
Firewall maintains CIA

- Confidentiality by
 - Limits external users or systems to access the internal network or computer
- Integrity by
 - Prevent external users or systems to penetrate the network or computer and modify data
- Availability by
 - Control available resources (ports and applications) to both internal and external users

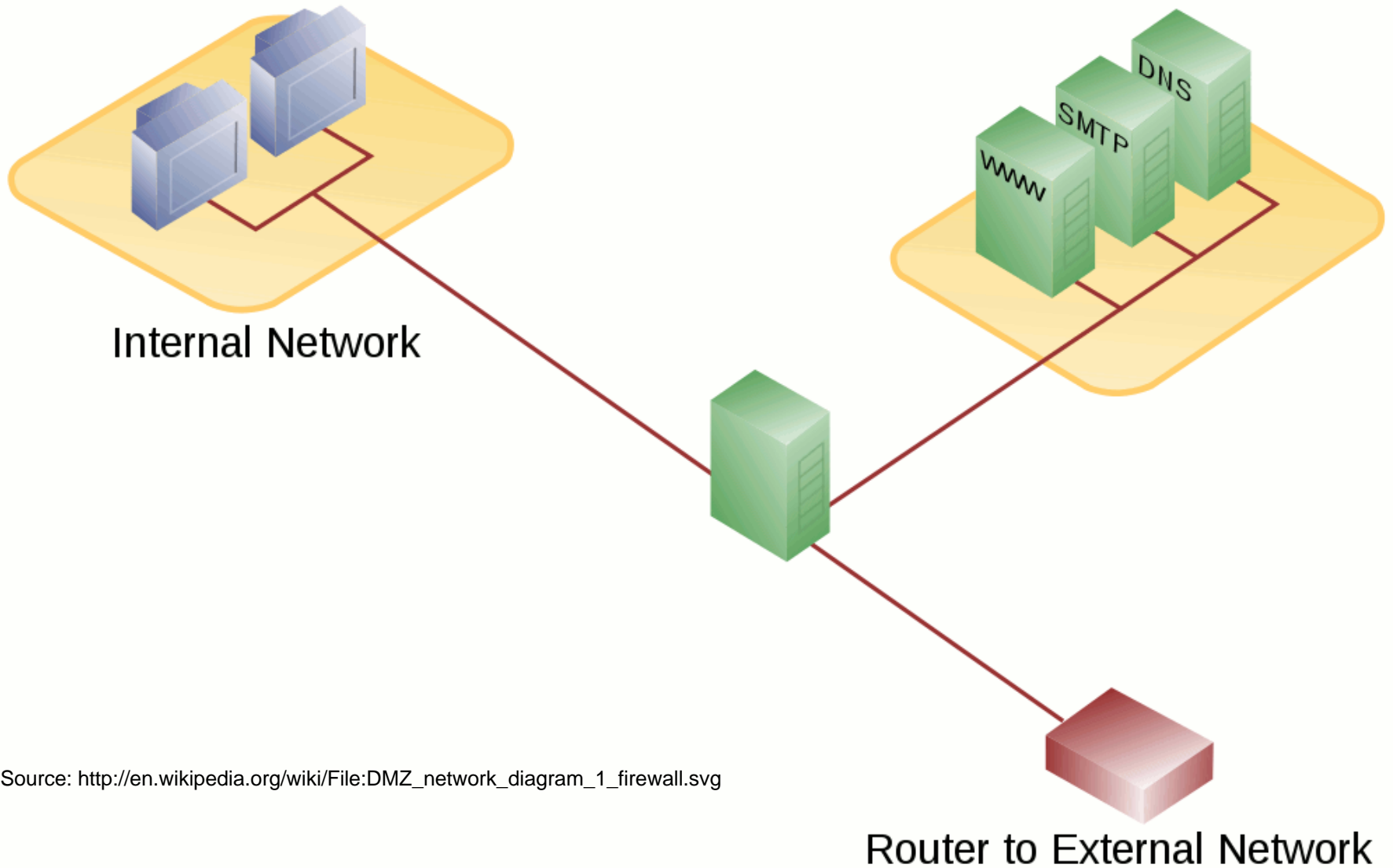
Demilitarized Zone (DMZ)

Demilitarized Zone (DMZ)

- Subnet that isolates external traffic from the internal network
- Network services are hosted in the DMZ, including
 - Email (SMTP)
 - Web Server
 - FTP
 - Etc.



One Firewall DMZ example

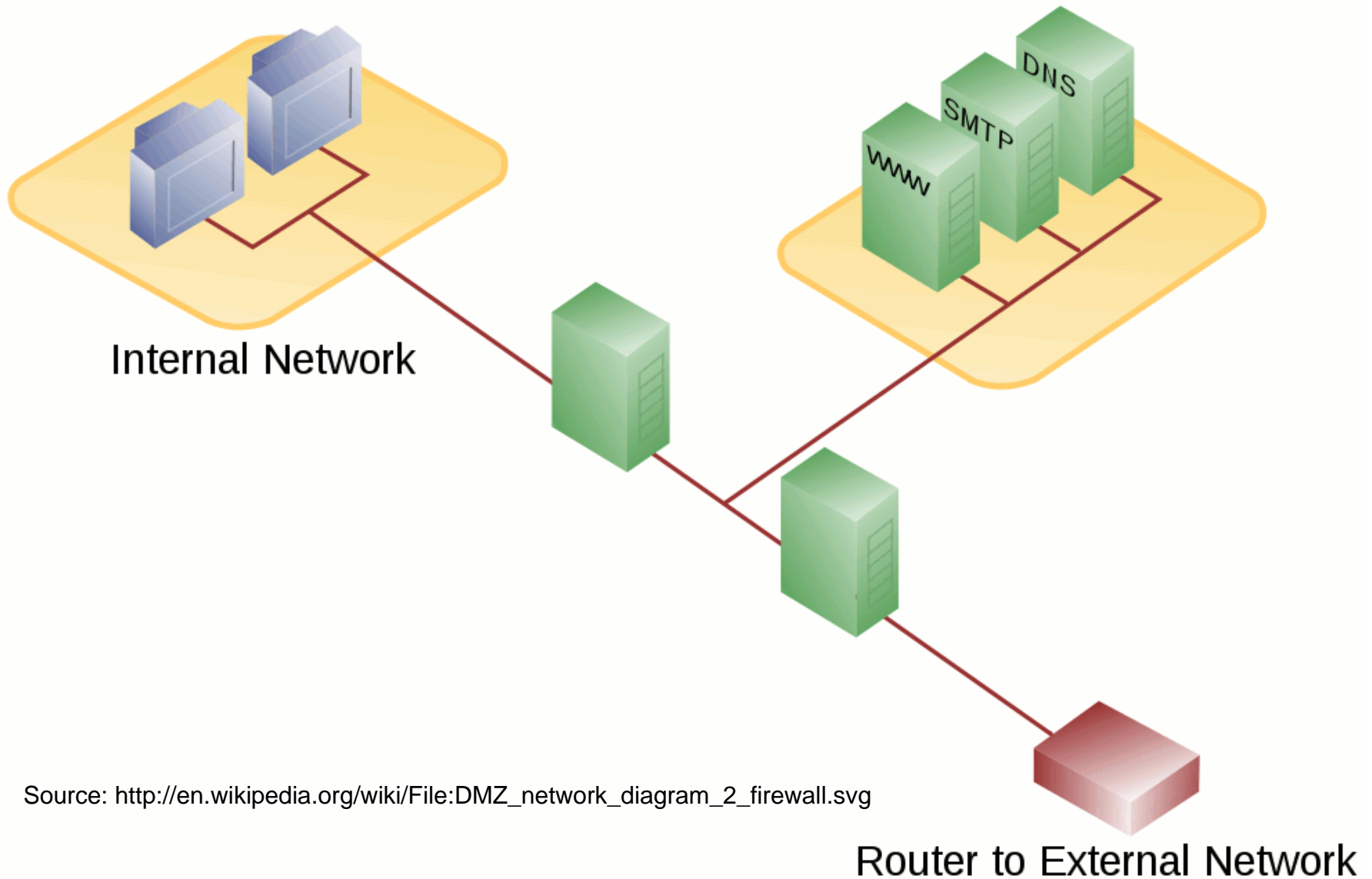


Source: http://en.wikipedia.org/wiki/File:DMZ_network_diagram_1_firewall.svg

DMZ maintains CIA

- Confidentiality by
 - Preventing external traffic to gain access to the internal network
- Integrity by
 - Prevent external traffic to penetrate the internal network and modify data
- Availability by
 - Allows internal users to access the internal network

Two firewalls DMZ example

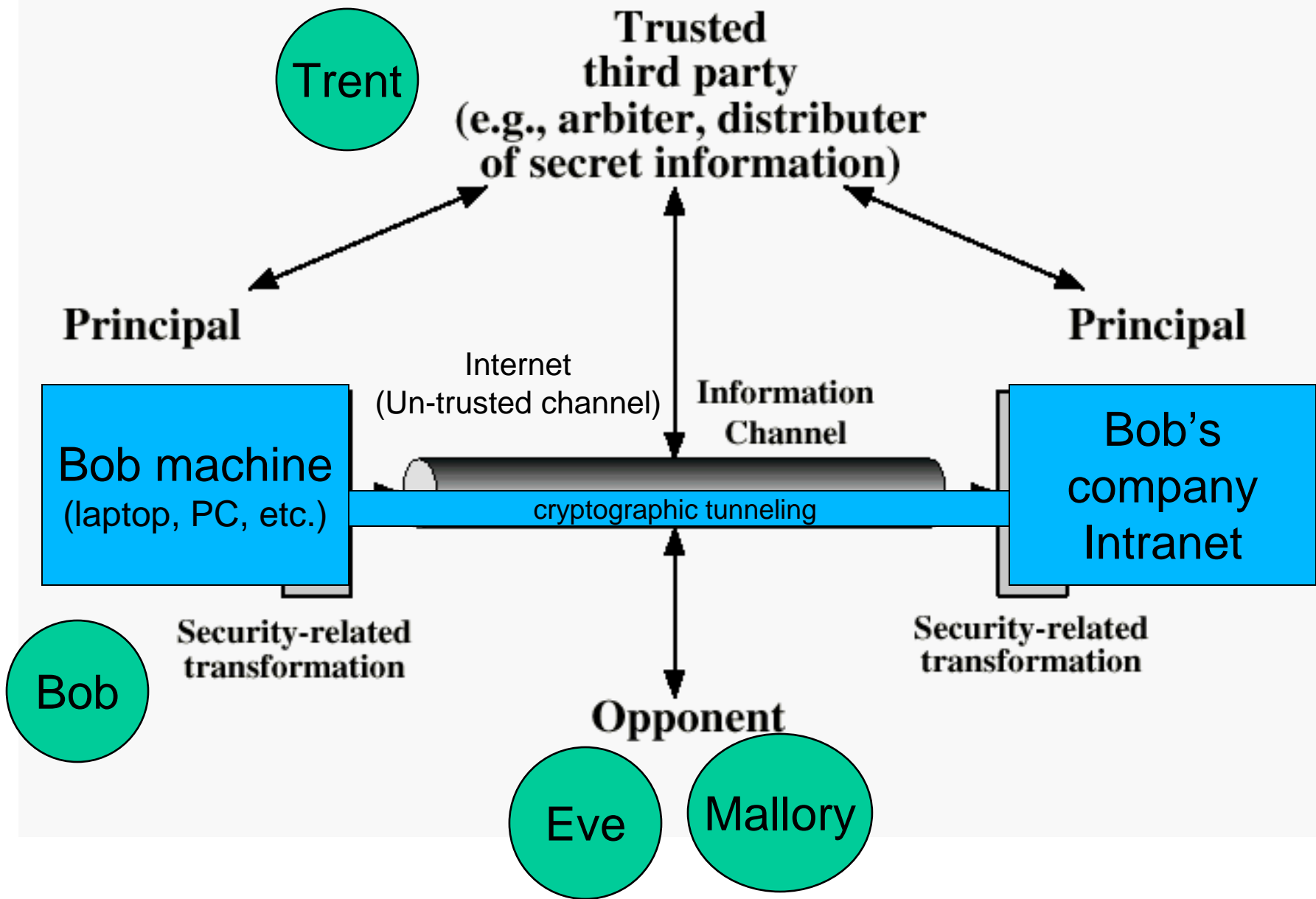


Source: http://en.wikipedia.org/wiki/File:DMZ_network_diagram_2_firewall.svg

Virtual Private Network (VPN)

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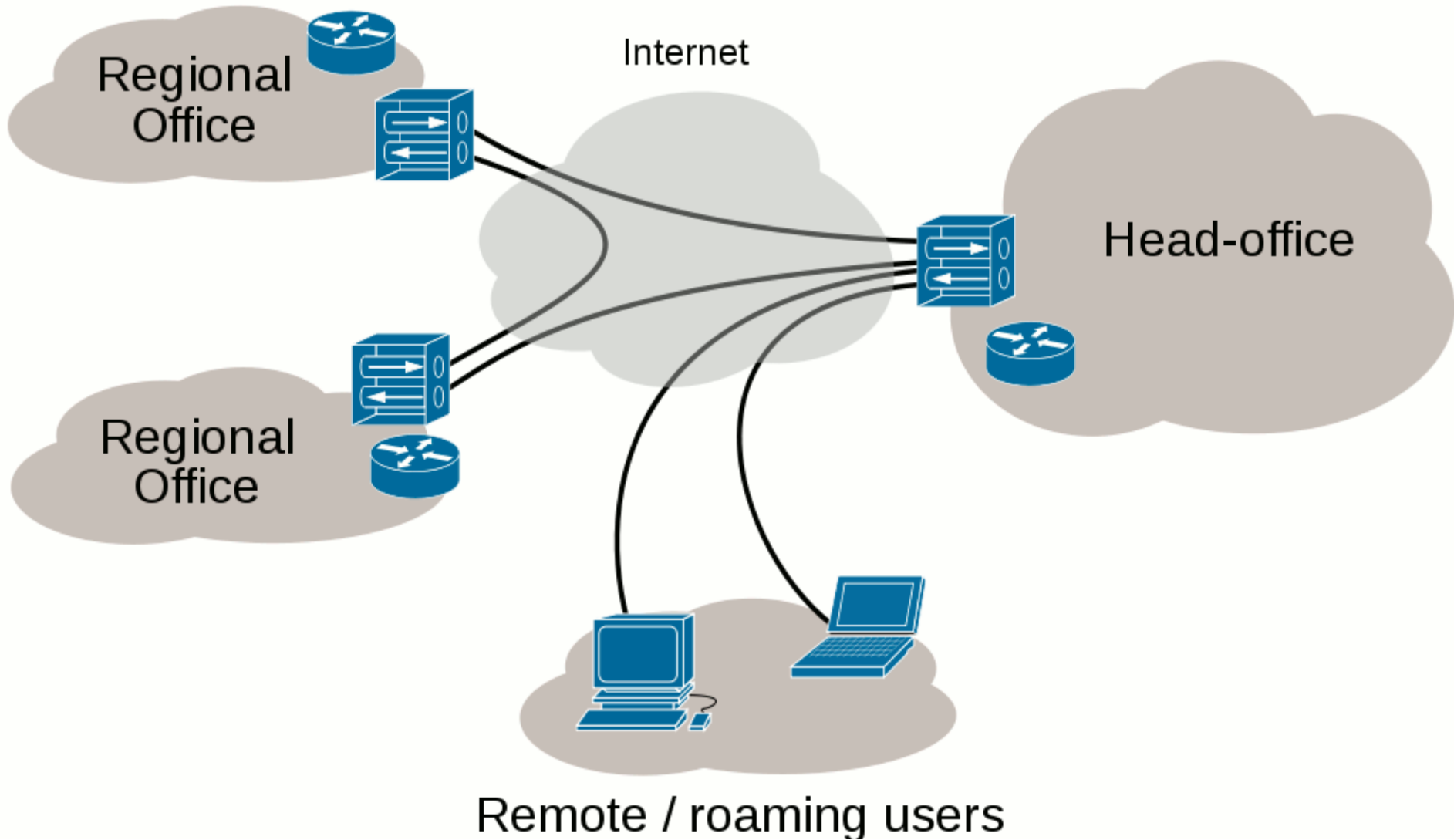
- Establish a secure communication channel over an insecure channel by establishing a cryptographic tunnel
 - Examples
 - Bob can access his company network via the internet
- Used by companies to provide secure remote access
- Personal VPN is very useful to avoid sniffing in public networks



VPN maintains CIA

- Confidentiality by
 - Preventing sniffing
- Integrity by
 - Prevent message modifications
- Availability by
 - Allowing users to remotely access their secure company network

VPN Example



The End