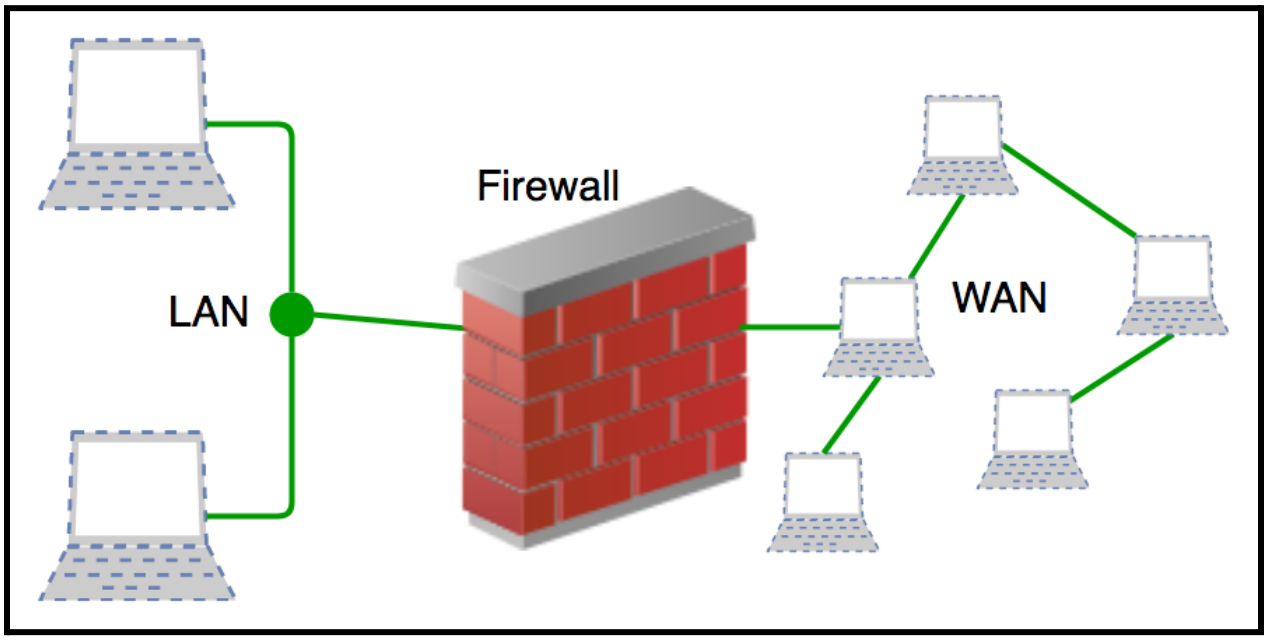
UNIT 4 Electronic Data Interchange

Firewall :

A firewall is a network security device, either hardware or software-based, which monitors all incoming and outgoing traffic and based on a defined set of security rules it accepts, rejects or drops that specific traffic. **Accept :** allow the traffic **Reject :** block the traffic but reply with an “unreachable error” **Drop :** block the traffic with no reply A firewall establishes a barrier between secured internal networks and outside untrusted networks, such as the Internet.



Types of Firewall

Firewalls are generally of two types: *Host-based* and *Network-based*.

1. **Host- based Firewalls :** Host-based firewall is installed on each network node which controls each incoming and outgoing packet. It is a software application or suite of applications, which comes as a part of the operating system. Host-based firewalls are needed because network firewalls cannot provide protection inside a trusted network. Host firewall protects each host from attacks and unauthorized access.
2. **Network-based Firewalls :** Network firewall function on network level. In other words, these firewalls filter all incoming and outgoing traffic across the network. It protects the internal network by filtering the traffic using rules defined on the firewall. A Network firewall might have two or more network interface cards (NICs). A network-based firewall is usually a dedicated system with proprietary software installed.

Advantages of using Firewall

1. **Protection from unauthorized access:** Firewalls can be set up to restrict incoming traffic from particular IP addresses or networks, preventing hackers or other malicious actors from easily accessing a network or system. Protection from unwanted access.
2. **Prevention of malware and other threats:** Malware and other threat prevention: Firewalls can be set up to block traffic linked to known malware or other security concerns, assisting in the defense against these kinds of attacks.
3. **Control of network access:** By limiting access to specific individuals or groups for particular servers or applications, firewalls can be used to restrict access to particular network resources or services.
4. **Monitoring of network activity:** Firewalls can be set up to record and keep track of all network activity. This information is essential for identifying and looking into security problems and other kinds of shady behavior.
5. **Regulation compliance:** Many industries are bound by rules that demand the usage of firewalls or other security measures. Organizations can comply with these rules and prevent any fines or penalties by using a firewall.
6. **Network segmentation:** By using firewalls to split up a bigger network into smaller subnets, the attack surface is reduced and the security level is raised.

Disadvantages of using Firewall

1. **Complexity:** Setting up and keeping up a firewall can be time-consuming and difficult, especially for bigger networks or companies with a wide variety of users and devices.
2. **Limited Visibility:** Firewalls may not be able to identify or stop security risks that operate at other levels, such as the application or endpoint level, because they can only observe and manage traffic at the network level.
3. **False sense of security:** Some businesses may place an excessive amount of reliance on their firewall and disregard other crucial security measures like endpoint security or intrusion detection systems.
4. **Limited adaptability:** Because firewalls are frequently rule-based, they might not be able to respond to fresh security threats.
5. **Performance impact:** Network performance can be significantly impacted by firewalls, particularly if they are set up to analyze or manage a lot of traffic.

6. **Limited scalability:** Because firewalls are only able to secure one network, businesses that have several networks must deploy many firewalls, which can be expensive.
7. **Limited VPN support:** Some firewalls might not allow complex VPN features like split tunneling, which could restrict the experience of a remote worker.
8. **Cost:** Purchasing many devices or add-on features for a firewall system can be expensive, especially for businesses.

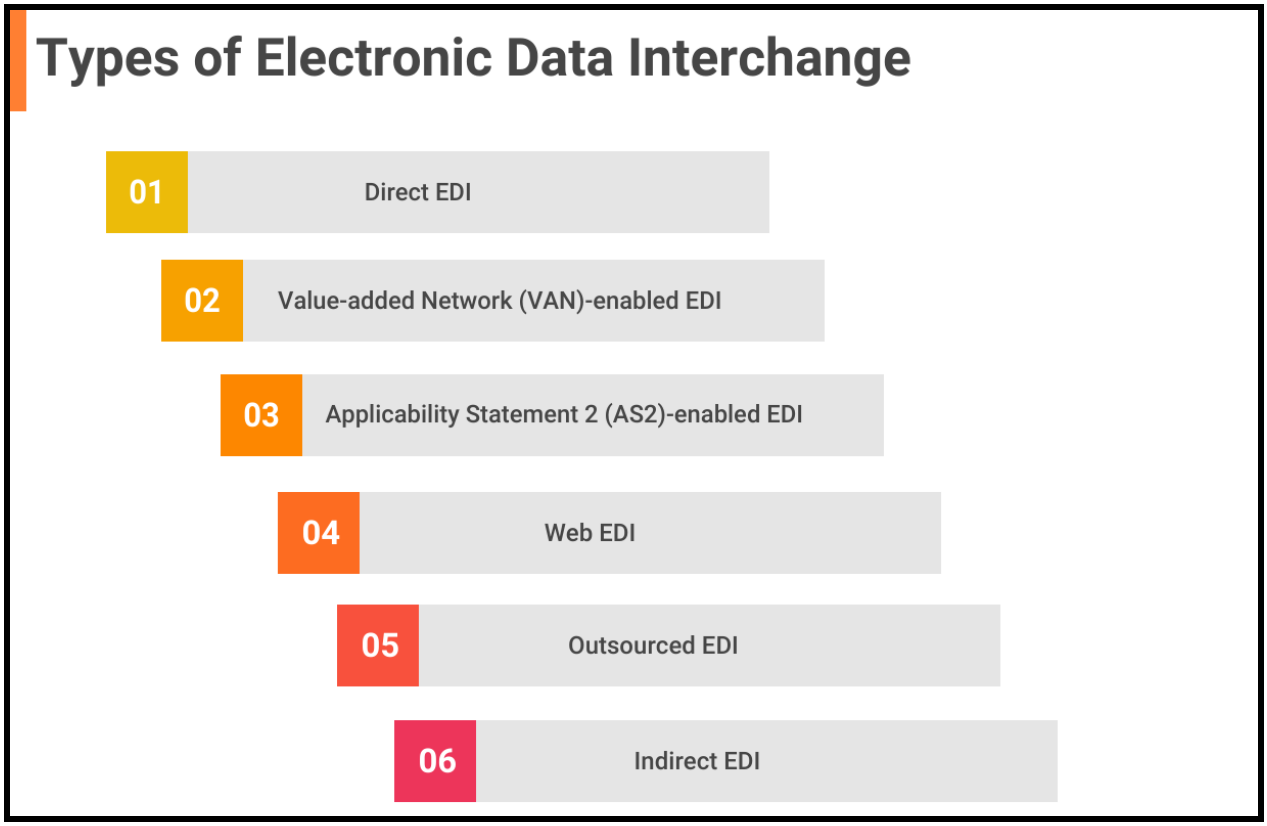
Real-Time Applications of Firewall

1. **Corporate networks:** Many businesses employ firewalls to guard against unwanted access and other security risks on their corporate networks. These firewalls can be set up to only permit authorized users to access particular resources or services and to prevent traffic from particular IP addresses or networks.
2. **Government organizations:** Government organizations frequently employ firewalls to safeguard sensitive data and to adhere to rules like HIPAA or PCI-DSS. They might make use of cutting-edge firewalls like Next-generation firewalls (NGFW), which can detect and stop intrusions as well as manage access to particular data and apps.
3. **Service providers:** Firewalls are used by service providers to safeguard their networks and the data of their clients, including ISPs, cloud service providers, and hosting firms. They might make use of firewalls that accommodate enormous volumes of traffic and support advanced features such as VPN and load balancing.
4. **Small enterprises:** Small firms may use firewalls to separate their internal networks, restrict access to specific resources or applications, and defend their networks from external threats.
5. **Networks at home:** To guard against unwanted access and other security risks, many home users employ firewalls. A firewall that many routers have built in can be set up to block incoming traffic and restrict access to the network.
6. **Industrial Control Systems (ICS):** Firewalls are used to safeguard industrial control systems against illegal access and cyberattacks in many vital infrastructures, including power plants, water treatment facilities, and transportation systems.

Basic concepts of EDI :

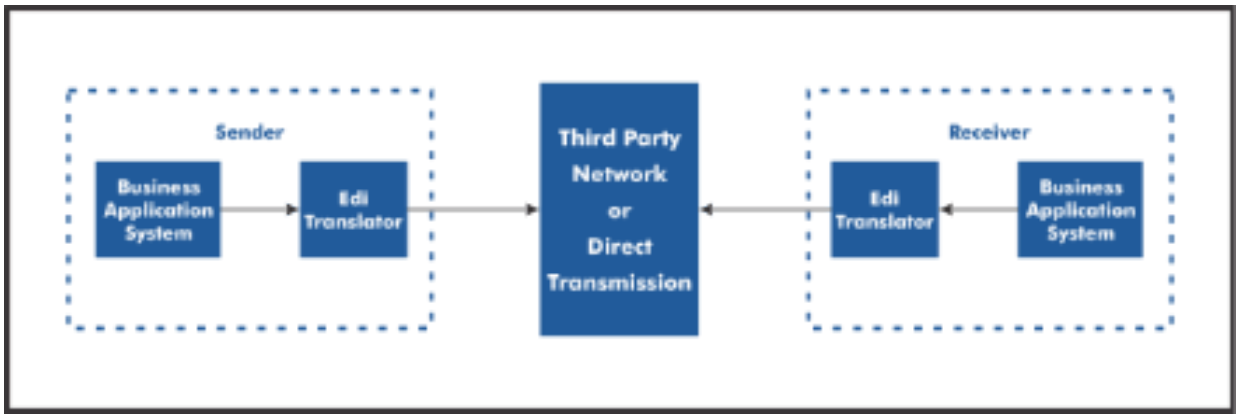
https://www.slideshare.net/gxsinc/introduction-to-edi-basics

Applications of EDI :



EDI Model:

The basic process of EDI-based transactions is the same as their manual. The only difference that EDI makes is that its transactions are done electronically, and data packets are formatted according to the standards of EDI. The following figure describes the basic process of the EDI model:



- In EDI model, firstly the sender must generate the application file using its business application system. This file contains the processed documents. The document sent by the sender has to be translated into an agreed EDI standard format. The process of translating EDI documents into EDI standard format is called mapping.

- The translation software uses this mapping to translate the transaction of EDI so that it can easily understand y the receiving organization.
- The document file is sent electronically either through a value-added network using EDI software, a web-based EDI tool, or outsourcing with an EDI service provider.
- The trading partner receives the file. The receiver translates the file from the EDI standard format to a file usable by their Business Application Software.
- An acknowledgement document is generated to the originating organization.

Advantages of Electronic Data Interchange(EDI)

1. Save Money: Compared to properly implemented EDI software, the investment in paper and paper handling is insanely high. According to RJR Nabisco, completing a paper purchase order costs the company $70, which drops to 93 cents when an EDI buying order is processed.
2. Repetition Comes to an End: If your trading partner wants an exact document copy, they may readily find their mailbox rather than call you. The time saved by not having to replicate precisely and fax or mail copies of business articles is significant.
3. It saves time: EDI is faster than paper processing since data is automatically transferred from one computer to another. With EDI, it is not necessary to re-key information. With no data application, the likelihood of inaccuracy decreases to almost nothing.
4. Enhanced customer service: You can do business more quickly and effectively thanks to the quick transfer of corporate papers and the anticipated drop in inaccuracies. An example of a retailer using a Vendor Stock Replenishment (VSR) program is KMart.With VSR, the KMart storage facility provides supplies while its EDI system accounts for them and invoices the customer automatically. It ensures that the product is routinely on the ledge and can decrease the alignment fulfillment cycle by several weeks.
5. Helps Create a Detailed Customer Base: You can finally expand your consumer base with better client service. Many significant merchants and manufacturers

are providing their supplier's orders to start an EDI program. Therefore, the capability of EDI is an important addition when introducing a specific commodity to offer or a potential supplier to utilize.

6. Boost the efficiency of business cycles: When processing orders, efficiency is key.EDI accelerates business cycles by 61% because it enables process automation that greatly reduces, if not eliminates, the time delays involved with human processing involving entering, filing, and comparing data. Real-time data updates simplify and enhance the effectiveness of inventory management.
7. Enhance business effectiveness: Organizations can gain greater efficiency levels when reducing human error. Employees can spend their emphasis on more significant, value-adding work rather than trivial and monotonous chores. Because of the quicker procurement of products and services, EDI can also help a company manage its relationships with its clients and trading partners.
8. Ecologically friendly and without paper: The switch to electronic transactions from paper-based ones lowers CO2 emissions and encourages corporate social responsibility.
9. Security: By tightly allocating data among a wider variety of connecting protocols and safety, EDI increases security for all transactions, lowering supply chain risks. The frictionless data transfer would benefit your trading partners, and access to technology opens the way for newer business potential.

Even though many firms are benefiting from EDI, others are still cautious about giving it a try due to a few drawbacks.

Disadvantages of Electronic Data Interchange(EDI)

1. The expense of implementation: While EDI offers substantial cost advantages, it can be expensive for small organizations to redesign and build software applications to link EDI with current systems. You must consider these EDI constraints if you intend to utilize the system.
2. Protection of Electronic Systems: EDI also requires significant investments in computer networks and protection mechanisms for maximum security. Any deployed EDI system would need to be secured against cyber threats, including viruses, malware, and hacking.

3. Time spent on preliminary setup: Not only is the installation of an EDI system expensive, but it also takes a long time to set up the necessary components. Therefore, such EDI limits can prevent services from being fast-tracked if urgently needed.
4. Multiple Standards to Uphold: Many companies considering EDI implementation believe the various standards are involved. Due to EDI's constraints, small firms cannot interchange data with larger organizations that employ the most recent version of a document standard. ANSI ASC X12, GS1 EDI, HL7, TRADACOMS, and UN/EDIFACT are well-known metrics examples.
5. An adequate backup system: Due to the dependence of business functionality on EDI installation, frequent maintenance is also required. A reliable data backup solution is needed in case of a system breakdown or for statistical purposes. Implementing these EDI constraints can be expensive.
6. EDI constrains trading partners: Large corporations frequently quit doing business with organizations that don't adhere to EDI standards. Walmart, for instance, only transacts business with companies that use EDI. Due to this, you can only conduct business with a small number of people.

Introduction to electronic payment systems, Payment types: https://www.tutorialspoint.com/e_commerce/e_commerce_payment_systems.htm