

Session – 1

Session Name: Network Security Attacks

Author Name: A.Umamageswari

Department: Computer Science and Engineering

**Subject/Course: Cryptography and Network
Security**

Cell Number: 7299988294



Session Objectives

At the end of this session, the learner will be able to:

- ✚ Define Network Security
- ✚ List various types of attack
- ✚ Differentiate between active and passive attack
- ✚ Compare and analyze the different types of attacks

Teaching Learning Material

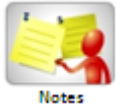
- ✚ White Board and Markers
- ✚ Presentation slides
- ✚ LCD Projectors

Session Plan

Time (in min)	Content	Learning Aid and Methodology	Faculty Approach	Typical Student Activity	Learning Outcomes (Blooms + Gardeners)
5	Introduction to Network Security	See and Tell	Explains	Discusses Understands	Understanding Interpersonal Intrapersonal Linguistic
5	List Various Attacks	Demonstration Visual Aids	Facilitates Instructs Explains	Listens Observes Comprehends	Understanding Intrapersonal Linguistic Visual
10	Difference between Active and passive attack	Chalk and Talk	Explains	Listens	Analyzing Intrapersonal Visual Logical Linguistic
15	Compare and Analyze different types of attacks	Group Discussion Presentation	Organizes Monitors Guides Consolidates	Participates Discusses Recalls Listens	Understanding Analyzing Intrapersonal Interpersonal Linguistic Logical Spatial
10	Conclusion and Summary	Crossword Puzzle	Facilitates Instructs Monitors	Listens Participates Discusses Identifies Discusses Recalls	Remembering Interpersonal Verbal Intrapersonal

Session Inputs

Introduction to Network Security



Network security being a well-known term, the faculty can begin the session by conducting a See and Tell activity so as to know what is the basic understanding of learners about the term Network security.

Suggested Activity: See and Tell

The Facilitator can use some pictures to explain what is attack



Source: www.cs.cmu.edu/~srini/15-441/S05/lectures/26-security2.ppt



Source: <http://www.google.co.in/search?hl=en&q=images security attacks>



Source: <http://www.google.co.in/search?hl=en&q=images security attacks>

After explaining three photographs the learners can be given some time to respond. They can be asked to share whatever they know about the security. The responses from the learners can be listed on the board by the facilitator.

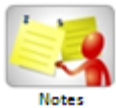
At the end of the stipulated time, the learners can be asked to stop. The learner can then remove the irrelevant answers after providing correct explanation.



Network Security: Network security affects many organizations, whether they are large, small, or government organizations. If network security is breached an intruder can do all sorts of harm. That is why people need to be aware of and to be educated about network security and how to secure their computer and network.

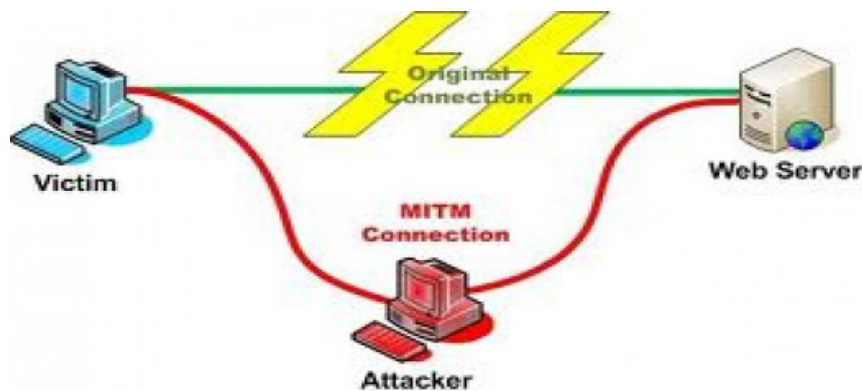
Systems are required to be updated regularly as new security flaws are discovered. Without being up to date, it makes it easy for a hacker to gain unauthorized access to the system

List various attacks

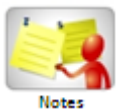


Having discussed the fundamentals of network security, faculty can now explain what the various types of attacks are.

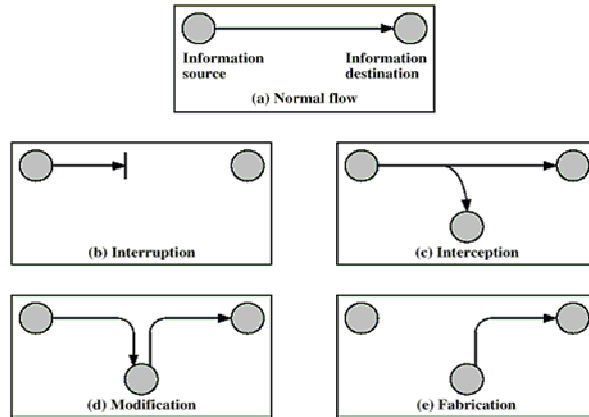
The terms related to the types of network security attacks can be explained to the learners by showing the following images using a PPT.



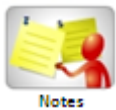
Source: <http://www.google.co.in/search?q=images+on+security+attacks>
Attack-Active attack and passive Attack



The facilitator would use this sketch to explain different types of security attacks

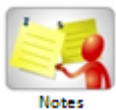


Source: www.dcs.warwick.ac.uk/~doron/security.ppt



Thereafter, the facilitator can explain the concept of Interruption, Interception, Modification and Fabrication.

Difference between Active and passive attack



Now we can discuss the difference between active attack and passive attack. The facilitator can list the differences between two and explain the same by using suitable examples.

Active attack	Passive attack
Attacker captures the message from the media and sent the message as such to the receiver.	Attacker captures the message and do some modification then send the data to the receiver
No modification in message	Message will be modified

Compare and Analyze different types of attacks



Having discussed the different types of network security attack, we can now compare each of these so as to bring out the differences. A group discussion can be organized for this purpose.

Suggested Activity: Group Discussion

This group discussion can be carried out by identifying 6 students. 3 students-very talkative and another 3 who do not talk at all!

The facilitator will group 3 students who are talkative as Group-A

The other three into Group-B

Group A will discuss on Active Attacks

Group B will discuss on Passive attacks

The learners are asked to bring out the different points related to each type of attack. The facilitator can support the discussion by providing guidance whenever necessary.

The learners should analyze which type of attack causes more damages to the original information and how to avoid such attacks.

Each group can present the summary of their discussion. Following this, the facilitator can consolidate the key points.

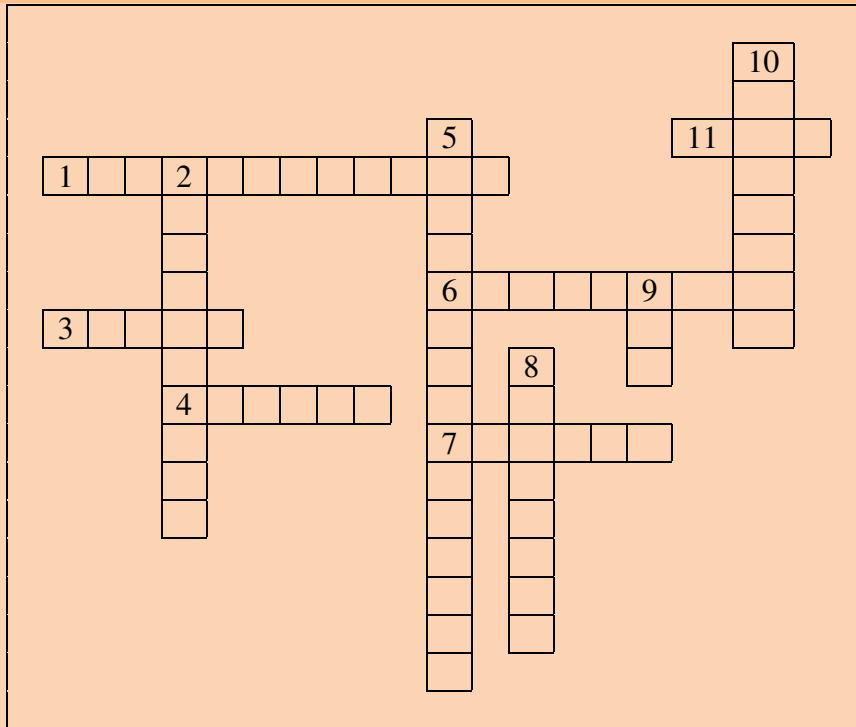
Conclusion

Information and network security is an important and critical issue that all computer systems need to have implemented some sort of security control. Without having security, sensitive information can be easily gained, so it is important that we deter, prevent, detect, and correct security issues

Suggested Activity: Crossword Puzzle

We can give the following crossword puzzle to the learners to help them review or revise the concepts and terms that were discussed during this session.

We can form the learners into four groups (A, B, C, D) of four each. Hard copies of the following grid can be circulated among all the four groups. The clues can also be provided to each group. Group A can ask group C to tell the answer for any clue if they don't answer the question will be passed to B or C. After 10 minutes the facilitator can get the answer for all the clues. The solution can be discussed and the fully solved puzzle can be displayed.



Clues:

Across

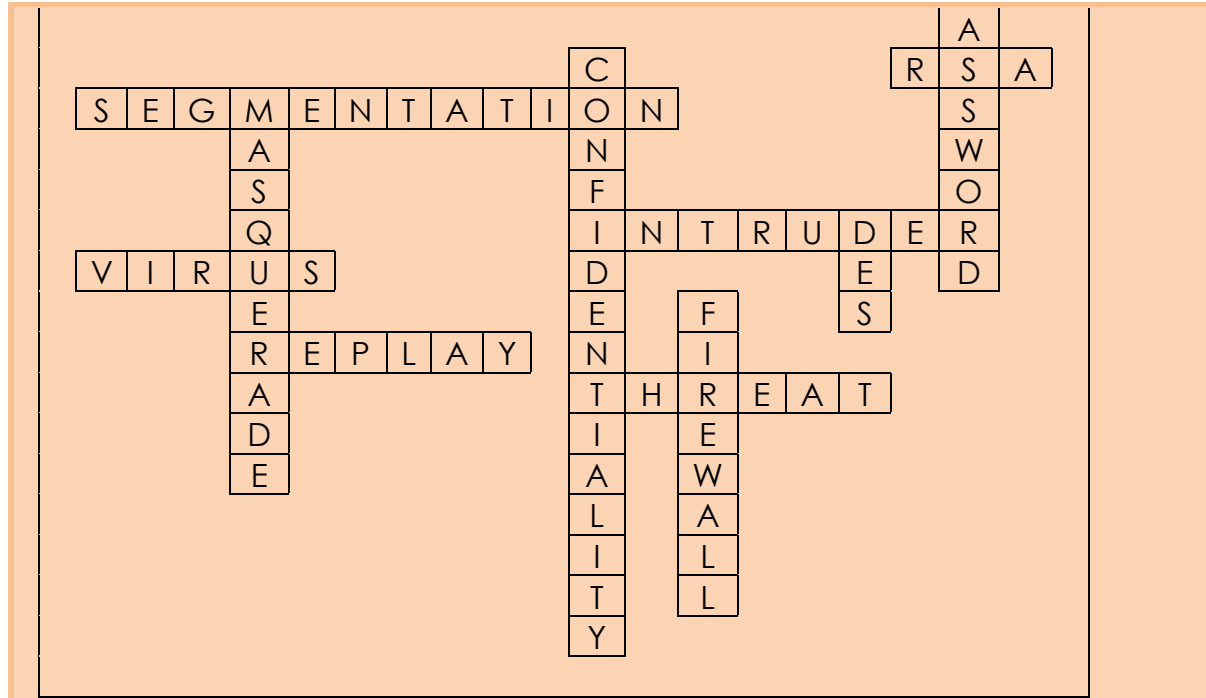
- 1. Larger messages are broken up into smaller segments
- 3. Piece of programs infects other programs in system
- 4. Transmission of same data again and again
- 6. Unauthorized Person
- 7. Violation of Security
- 11. Famous asymmetric key cryptographic algorithm

Down

- 2. One person pretends to be an another person
- 5. Concealment of information
- 8. Security mechanism which examines all incoming packet from the internet
- 9. Famous symmetric key cryptographic algorithm
- 10. We can use this for authentication

Solution:

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Summary

In this session, we learnt to:

- ✚ Define security attack
Conceals the message from the media
- ✚ List out the various types of attacks
Active attack
Passive attack
- ✚ Difference between active and passive attack
Active attack will modify the secret information
In passive attack the attacker sees the secret information
- ✚ Compare and analyze the different types of attack

Assignment

1. Give real time examples for various types of attacks that you can observe from the nature.
2. Explain the Cyber Crime.

References

- ✚ Cryptography and Network Security by William Stallings
- ✚ Data Communication and Networking by Berouz.A.Ferouzan