

**Demystifying networking**  
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**Lecture - 74**  
**Introduction to Security and CIA**

So, now we had discussed about encryption and the realm of security in computer networks. Now, it is time let us look at certain topics in computer networks which relate to security. So, it is not just security in networks; it is layered approach like security can be at the level of information because information is something that is important and with the network's strive to communicate among each other and so, how do we go ahead and ensure security? So, to dive deep into security the things we will be looking at our the CIA triad.

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The slide features a blue header with the word "Security" in white. To the right of the header is a network diagram and the IIT Bombay logo. Below the header is a bulleted list of topics. In the bottom right corner, there is a small video inset showing Prof. Sridhar Iyer speaking. At the bottom of the slide, the text "Demystifying Networking | CS75" is displayed.

- The CIA triad
- Network Security
- Information / Data Security
- Cyber / Internet security
- Computer / Mobile / IoT Security

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The then we will talk about what network security is, then information on data security then cyber and internet security and then certain securities that relate to the computer the mobile or IoT security which is more about what are the kinds of things you can do for securing your mobiles, your computers or the new generation IoT internet of thing devices. So let us start with the what we call the CIA triad.

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**Security**

**CIA triad**

- Confidentiality
- Integrity
- Availability

**Non-repudiation**

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The CIA triad is C for confidentiality, I for integrity and A for availability. So, what is confidentiality? Confidentiality is that a certain piece of information is to be available only to the people who are ought to know about it; that means, that the information is confidential. Integrity is that the information that is being conveyed is the correct information or it was or in other terms it has not been tampered with.

Availability means the information is available to all the relevant people. Now why this is a triad is because when you try to achieve either one of them very extremely you might have to lose on the other two.

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The slide features a blue header with the word "Security" in white. To the right of the header is a network diagram and a logo. Below the header, the text "CIA triad" is displayed. A large, light-brown triangle is centered on the slide, with its vertices labeled "Confidentiality" (top), "Integrity" (bottom-left), and "Availability" (bottom-right). An orange circle is positioned on the edge connecting Confidentiality and Integrity. In the bottom right corner of the slide, a man with glasses and a dark shirt is shown from the chest up, appearing to be presenting. At the very bottom of the slide, the text "Demystifying Networking | CS75" is visible.

For example, now, if you want to achieve confidentiality and integrity. So, you will put more and more measures to secure the information; that means, maybe more number of authentications, you will use heavy encryption and all of those. So, this will hamper availability.

And, now if you want the information to be more available to the users, then you will not be able to put on these measures of security. Hence, you will lose on say confidentiality and integrity though the information will be available. So, the key idea is that we have to decide which information lies on which part of the triangle. Now, there is something apart from these three which is called non-reputation, non-reputation means that if a person is stating something say he is providing some information he will not be able to refute this claim later that it was not stated by him or her.

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Cherdantseva Y. and Hilton J. "Information Security and Information Assurance. The Discussion about the Meaning, Scope and Goals of Information System Administrator. Almeida F., Portela, I. (eds.) IGI Global Publishing. (2013)

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So, now when we look at the CIA triad it is a layered approach. Now, as we seen the diagram, so, we have certain procedures which are at the organization level. Now, these procedures ensure that the people who are in the organization comply to all the security. So, we have a layered approach towards security here.

Now, as we have seen the diagram the procedures here ensure that the people who are in the organization are performing all the tasks in compliance with security procedures. And, these people then ensure the security of the physical products. So, like this way what we see here is, there is a layered approach towards it and what are the things that need to be secure, they are the hardware the software and the communication.