

# Implementation and Analysis of Kerberos Authentication on Ubuntu Server Virtual Machines

Η εργασία καλύπτει πρακτικές πτυχές του ελέγχου ταυτότητας Kerberos σε ένα εικονικό περιβάλλον Virtual Box. Οι φοιτητές καλούνται να χρησιμοποιήσουν διακομιστή Ubuntu σε εικονικές μηχανές VirtualBox και να διαμορφώνουν έναν μηχανισμό ελέγχου ταυτότητας για αλληλεπιδράσεις πελάτη-διακομιστή.

## Στόχοι Εργασίας:

- Κατανοήστε τις αρχές και τους μηχανισμούς που διέπουν τον έλεγχο ταυτότητας Kerberos.
- Αναπτύξτε δεξιότητες στη ρύθμιση παραμέτρων και την αντιμετώπιση προβλημάτων Kerberos στον διακομιστή Ubuntu.
- Αναλύστε τις πτυχές ασφαλείας του Kerberos σε ένα δικτυακό περιβάλλον.
- Εφαρμογή ασφαλούς συστήματος ελέγχου ταυτότητας για μια υπηρεσία δικτύου

## Βαθμολογία:

- Practical setup and configuration (40%)
- Presentation of the project and analysis (30%)
- Presentation examination covering theoretical and practical knowledge (30%)

**Καταληκτική ημ/νια υποβολής (μέσω email): 10.09.2024 στις 23.55.**

## Report structure (to deliver):

### Section 1: Introduction to Authentication Systems

- Overview of authentication mechanisms.
- Deep dive into Kerberos: History, principles, and architecture.
- Discussion on the importance of secure authentication.

### Section 2: Setting up the Environment

- Installation of Ubuntu Server on VirtualBox VMs.
- Configuration of network settings to enable proper communication between VMs.
- Introduction to basic command-line operations and system administration in Ubuntu.

### Section 3: Installing and Configuring Kerberos

- Installation of Kerberos packages on Ubuntu.
- Configuration of the Kerberos Key Distribution Center (KDC) and setting up realms.
- Creation of Kerberos principals and managing keytab files.

### Section 4: Client and Server Configuration

- Configuration of a client machine for Kerberos authentication.
- Setting up a secure service on the server that requires Kerberos authentication.
- Detailed explanation of the authentication flow between client and server.

### Section 5: Analysis and Troubleshooting

- Analyzing the security of the Kerberos setup using various tools and logs.
- Troubleshooting common issues in Kerberos implementations.
- Discussion on integrating Kerberos with other services (e.g., SSH, NFS).

### Section 6: Presentation and Group Projects

- Present setups, highlighting the process, challenges, and how they were addressed.

### Section 7: Advanced Topics and Reflection

- Discussion on advanced Kerberos topics such as cross-realm authentication and delegation.
- Reflection on the lessons learned and the applicability of Kerberos in real-world scenarios.
- Examination of Kerberos in the context of modern security challenges and standards.

## **References**

- Official Ubuntu Server documentation: [How to Set Up Basic Workstation Authentication](<https://ubuntu.com/server/docs/how-to-set-up-basic-workstation-authentication>)
- Kerberos: The Definitive Guide by Jason Garman
- Additional reading materials and online resources will be provided throughout the course.