



Network Security Technology Projects



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Project Goals



- Understand the principle of typical security technologies and their applications
- Train the ability of implementation, test and analysis
- Educate the ability of writing technical report
- Improve the level of oral presentation
- Obtain the ability of referring to publications

Project 1: Attack and Detection



- Study the architecture of two tools: intrusion detection Snort and most used penetration testing framework Metasploit.
- Design a scenario, such as buffer overflow, SQL injection, abnormal packet, and so on.
- Add at least three detection rules into Snort, including SQL injection, LARGE ICMP PACKET with $\text{size} \geq 800$ bytes, illegal telnet service access, and so on.
- Launch several typical attacks with Metasploit towards a specific target.
- Test the validity of added rules, i.e. test alert function of Snort.

Project 2: One Time Password (OTP)



- Study two kinds of OTP methods
 - TOTP, Time-Based One-Time Password Algorithm
 - HOTP, Hash-Based One-Time Password Algorithm
- Implement OTP system based on TOTP or HOTP on one developing platform
- Develop the UI for setting the parameters of OTP
- Test the validity and further analyze its security

Project presentation



- Make presentation in the classroom
- Duration
 - 10 minutes per project
 - 5 minutes for Q&A
- Grade
 - 10 points, the quality of technical report
 - 5 points, presentation
 - 5 points, Q&A

Report Structure



- Introduction: background, objective
- Analyzing principles of two specified tools
- Analyzing related work
- Presenting implementation procedure and test results
- Conclusion: results and understanding about network security
- References: at least 6
- Pages: 5-10

Related information about project



- One group with 2 students
- Group leader who is responsible for oral presentation
- Better to do live demonstration and explore new functions
- Upload formal reports to CANVAS
- Need hard copies of project reports to be sent teacher's office
- Presentation Date: 2026.01.06
- Submission Deadline: 2026.01.10

谢谢！

