

<b>HTL Leoben</b>	<b>HTL Leoben</b> Higher Federal Technical College of Industrial Engineering – Information technology and smart production	<b>Diploma Exam</b>
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## DIPLOMA THESIS Documentation

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Form, academic year	5BHWIN, 2025/26
Topic	Virtual cybersecurity test environment with IDS
Co-operation partners	HTL Leoben

Assignment of tasks	<p>Eichelberger: The Blue Team is responsible for developing a secure virtual network environment on an HTL server. This environment should be designed to be monitored by an Intrusion Detection System (IDS) to detect attacks and suspicious activity in time and ensure network security.</p> <p>Macuha: The Red Team conducts network scans and attack simulations to test the Blue Team's defense mechanisms. Tools such as Nmap, Mimikatz, and Metasploit are used to simulate targeted attacks and generate events in the IDS that can then be analyzed.</p>
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Realisation	As part of this diploma thesis, it will be evaluated whether this setup of a virtual network environment can be used in school lessons and practically applied in laboratory classes.
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Results	<p>Eichelberger: Creates a functional network environment with an integrated IDS that can be used in class. The goal is to provide a secure infrastructure and demonstrate that such a setup can be practically implemented in a school context.</p> <p>Macuha: Conducts simulated attacks on the network environment to test the effectiveness of the defense measures and the IDS. This enables hands-on learning and highlights the relevance of the attack scenarios for the classroom environment.</p>
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Illustrative graph, photo (incl. explanation)	No illustrative graph or photo
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Participation in competitions Awards	No participation in competitions
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Accessibility of the Diploma Thesis	The diploma thesis will be archived in the HTL Leoben library and can be accessed there by anyone.
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Approval (Date / Signature)	Examiner	Head of College
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