

# Training:

## Hardening Microsoft Environments

Date of the training: **March 16-17, 2020** in Heidelberg, Germany

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### Overview

Credential theft attacks can be described as a technique in which account logon credentials are captured from a compromised computer, and then used to authenticate to other systems on the network. Attack techniques which fall in the categories of “Credential Theft” or “Credential Reuse” have grown in the last few years into one of the biggest threats to Microsoft Windows environments.

In 2015 and 2016, this development was significantly promoted by a considerable improvement and increasing distribution of hacking and attack tools, such as **mimikatz** and **Windows Credential Editor** and frameworks for attacking Active Directory environments such as **PowerSploit** or **Empire**. This led to theoretical attacks being actually possible in real world scenarios with the application of the aforementioned methods. Once an attacker gains initial foothold on a single system in the environment it takes often less than 48 hours until the entire Active Directory infrastructure is compromised.

### But how can such a threat be handled?

In this intensive two-day seminar, we will present various technical and organizational measures to protect both individual critical Microsoft Windows systems, as well as the entire Active Directory. The goals in mind are to prevent credential theft in the first place, but also to protect against and detect unauthorized use of stolen credentials as early as possible and to provide important hardening guideline information.

## Agenda

### Day 1

- Introduction
- Relevancy and actuality of Credential Theft und Credential Reuse
- Windows Authentication
- Basics of Windows Authentication
- Security Subsystem Architecture in Windows
- Local Security Authority Subsystem Service
- Local authentication
- LM/NTLM network authentication
- Kerberos network authentication
- Credential Theft & Reuse Attacks
- Introduction into mimikatz
- Pass-the-Hash
- Pass-the-Ticket
- Overpass-the-Hash/Pass-the-Key
- Golden & Silver Ticket, Inter-Realm Ticket
- PtT in Ubuntu and Mac OS X
- Practical Exercises for All Mentioned Attack Techniques
- First Overview of Relevant Measures to Reduce Risk
- Reorganization of the Active Directory structure and best practice for administration
- Technical and Credential-Theft-specific measures
- Security monitoring & logging

## Day 2

- Detailed Examination of Relevant Measures to Reduce Risks
- Requirements
- Organizational and design measures (Admin Tiering, ESAE Forest)
- Technical measures
- Secure administration hosts
- Secure configuration of domain controllers and members
- Credential-Theft-specific measures
- Active Directory Monitoring
- Overview of Windows Event Logging
- General monitoring measures
- Centralized logging
- Basics of Advanced Audit Policy
- Specific monitoring measures
- Detection of PtH, PtT and Golden Tickets

## Who should attend this training?

- IT Security Officers
- Windows & Active Directory Administrators
- Project Managers with security focus
- Infrastructure and system architects
- System integrators
- Head of IT & Data Protection Supervisors

## Requirements

- Basic knowledge of Active Directory environments and Windows systems.
- You will need to bring your own Laptop with an up-to-date RDP client, and you will need to be able to establish an RDP connection to the workshop's AD Lab environment in order to perform the workshop's exercises.

## About the Trainers:

**Heinrich Wiederkehr** is a Senior Security Consultant at ERNW GmbH and his focus lies on the assessment and evaluation of security-relevant areas in Windows-based environments, as well as the creation of related concepts and documentation. In addition to his work in audits and pentests of large enterprise networks with emphasis on Active Directory and the Windows operating system, he is also responsible for security trainings and talks. A multitude of projects for customers from different industry branches gives him a solid feeling for practical realities and an eye for essentials.

**Friedwart Kuhn** is a renowned expert for Active Directory security and has performed a huge number of projects both in the concept and design space as well as in the pentesting, auditing and incident analysis field.

## Booking

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<https://troopers.de/tickets/>

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