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CTF Contests: Hands-On Experience of the IT Security Culture – UE 06: Attack / Defense

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TJCTF Debriefing

Attack / Defense

Recap: Attack / Defense Mode

- Each team is given the same set of intentionally vulnerable services
- Goals:
  - Exploit vulnerabilities to steal flags from other teams
  - Fix vulnerabilities to avoid other teams stealing flags from you
  - Keep the service functional
- Teams permanently interact with each other
- By definition services need to be network-based
- Example services:
  - Web blog with open registration and comment functionality
  - Command Line Interface (CLI) file storage backed by custom compression

Scoring

- Updated every round ("tick")
- Commonly used scoring criteria:
  - Attack: Flags stolen from other teams by you
  - Defense: Flags stolen by other teams from you
  - Service Level Agreement (SLA): Service availability / functionality
- Details vary between events

Game Components

- "vulnbox"
  - Virtual Machine (VM) containing the vulnerable services
  - One instance per participating team
- Game bot / check system
  - Event organizers connect to the services each tick
  - Legitimate functionality is triggered and checked for correctness
  - Flags are injected into the service
- Flag submission system
  - Submit flags of other teams to earn points

Service Analysis

- Download the vulnbox image to your local machine
- Extract information from the (online) vulnbox
- Investigate network traffic (e.g., with Wireshark)
- Game bot interaction might provide crucial insights
- Keep the management sheet up to date!

Found a Vulnerability?

- Exploit it manually and submit a flag to verify correctness (and possibly claim first blood)
- Automate the exploitation and flag submission
- Fix the vulnerability in our own service

Upcoming Event: saarCTF

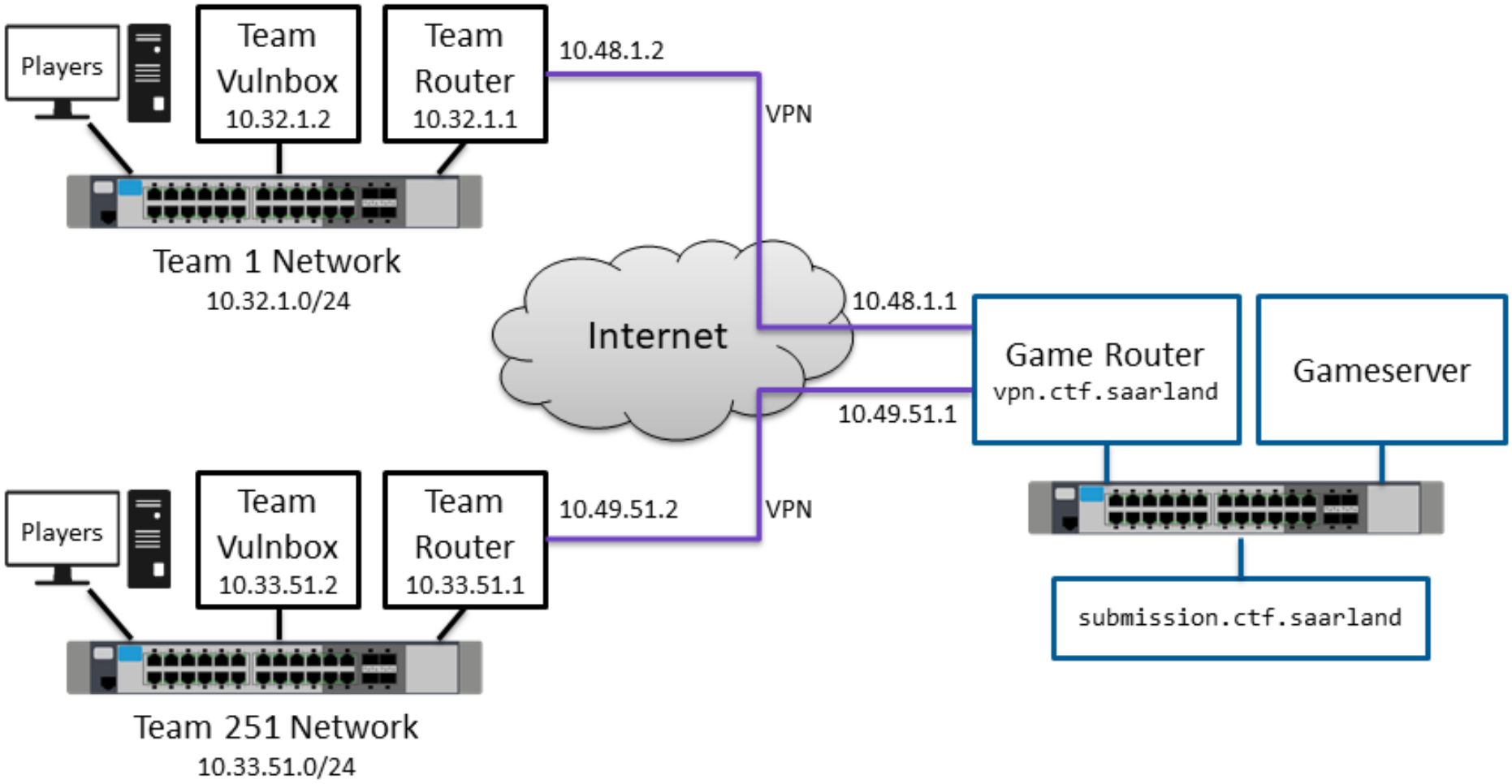
saarCTF 2022

- https://ctf.saarland/
- 20 May 2022, 16:00 - Sat, 21 May 2022, 01:00
- Submit your writeup in TUWEL until 10 June 2022, 23:55
- Organizers will use Internet Relay Chat (IRC) for communication
- We will meet 20 May at 15:30 in the INSO library
  - Wiedner Hauptstraße 76, staircase 2, 2nd floor
  - Located inside the “Galerie Wieden”
  - https://www.inso.tuwien.ac.at/index.html#office

Infrastructure Setup

- We will use the cloud-hosted setup of saarCTF
- Participants connect to the game network via Virtual Private Network (VPN)
  - We will provide the team-specific OpenVPN configuration as soon as it is available
  - Reserve some setup time!

Network Structure (self-hosted)



(See `https://ctf.saarland/setup`)

Network Ranges

- Team ID: 66
- Game network: `10.32.0.0 - 10.33.255.255`
- Team network: `10.32.66.0`
- Router address: `10.32.66.1`
- Vulnbox address: `10.32.66.2`
- Network testbox address: `10.32.66.3`

(See `https://ctf.saarland/setup`)

Ticks, Flags & Scoring

- Network will be closed during the first hour of the competition (preparation time)
- A tick takes 2-3 minutes
- Flags are valid for 10 ticks
- Flag format: `SAAR\{[A-Za-z0-9-_]{32}\}`
- Scoring:
  - Attack
  - Defense
  - SLA

(See `https://ctf.saarland/rules`)

Flag Submission

- `submission.ctf.saarland` on port 31337 over Transmission Control Protocol (TCP)
- One flag per line
- Responses:
  - `[OK]`: Flag accepted
  - `[ERR]`: Flag permanently invalid
  - `[OFFLINE]`: Submission currently disabled (preparation time)

(See `https://ctf.saarland/setup`)

Thank you!

https://security.inso.tuwien.ac.at/ctf-2022s/