HOW TO ORGANIZE A CTF

STEPHAN AND STEAN

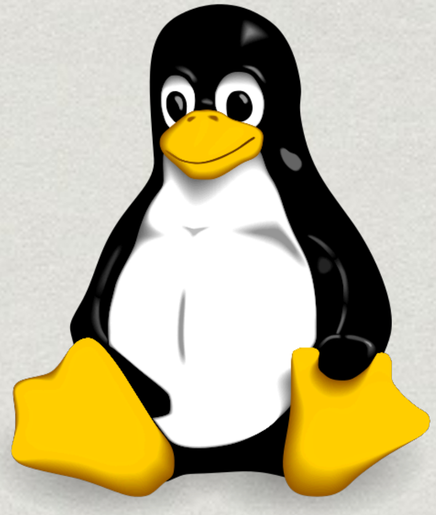
Agenda

- What is a CTF?
- Why should you organize one?
- What kinds of CTFs exist?
- Ingredients
- Challenge-Design
- DOs and DON'Ts
- Q&A

Who are we?

Squares

+



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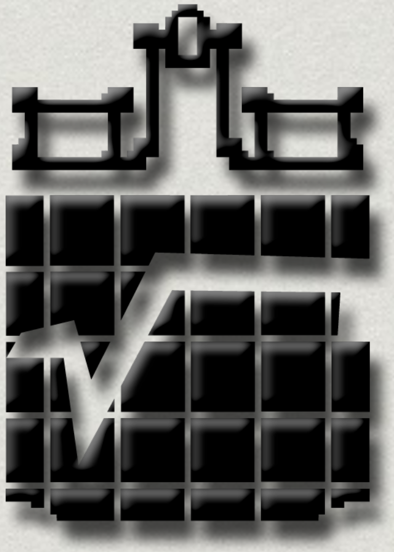


Squareroots

- CTF Team - University of Mannheim
- Playing CTFs since 2006
- Organized 2 public and 2 newbie CTFs per year

What is a CTF?

- CTF = Capture the Flag
- information security competition
- Goal: Get as many flags as possible
- example for flags:
  e303640fbc9aa49a840b6ea77fdb1086
  ctf{this_is_an_example_for_a_flag}

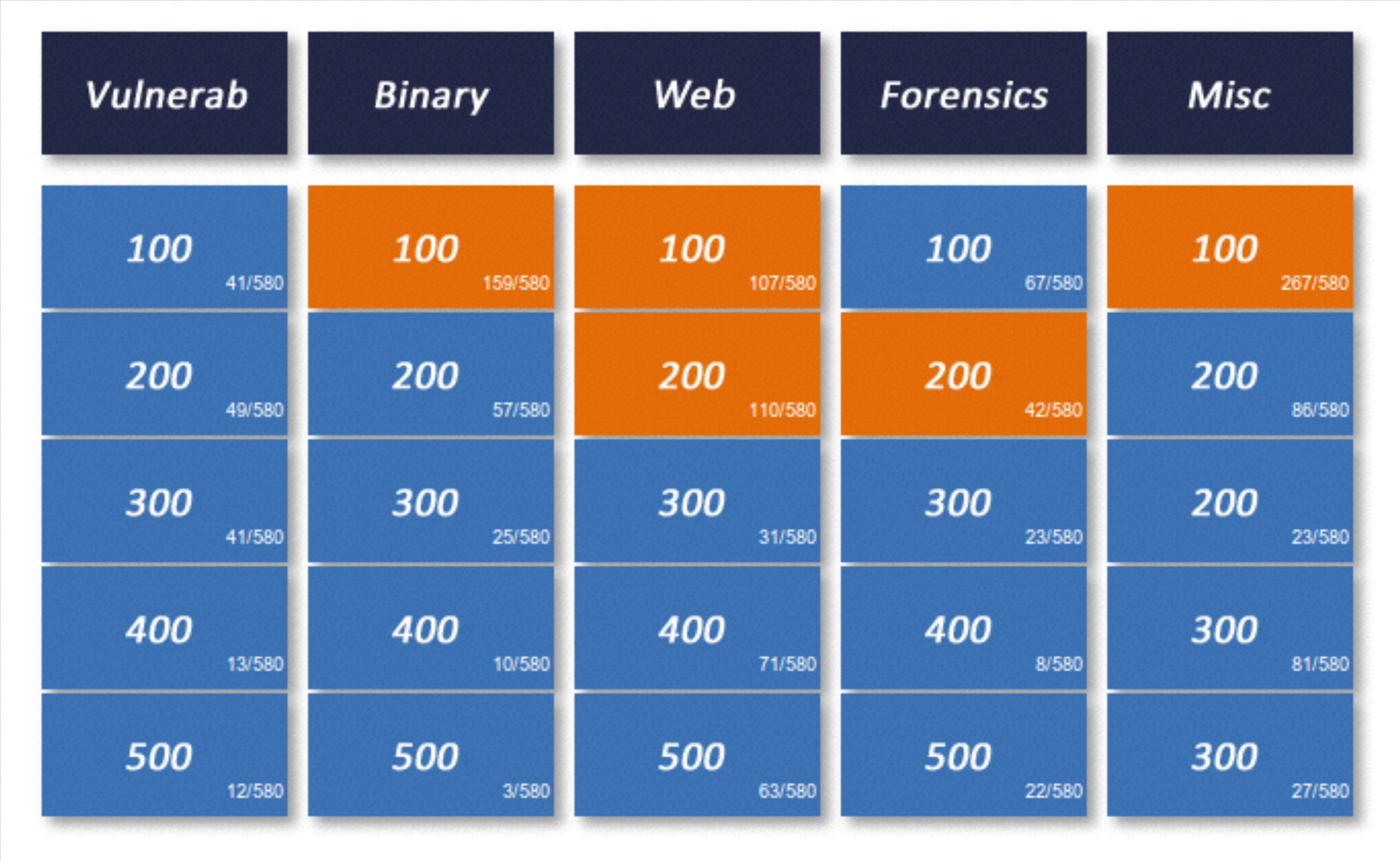
Classic kinds of CTFs

- Challenge-based
- Server-based
- mixed

Challenge-based/ Jeopardy-style

- Challenges from all over infosec:
  - Reversing
  - Trivia
  - Crypto
  - Programming
  - …
- Each solved Challenge yields a flag
- Challenges are usually arranged as Jeopardy-Overview
- Time frame: days
- Example: DEF CON CTF Qualifier, PlaidCTF

Challenge-based/ Jeopardy-style



Vulnerab	Binary	Web	Forensics	Misc
100 41/580	100 159/580	100 107/580	100 67/580	100 267/580
200 49/580	200 57/580	200 110/580	200 42/580	200 86/580
300 41/580	300 25/580	300 31/580	300 23/580	200 23/580
400 13/580	400 10/580	400 71/580	400 8/580	300 81/580
500 12/580	500 3/580	500 63/580	500 22/580	300 27/580

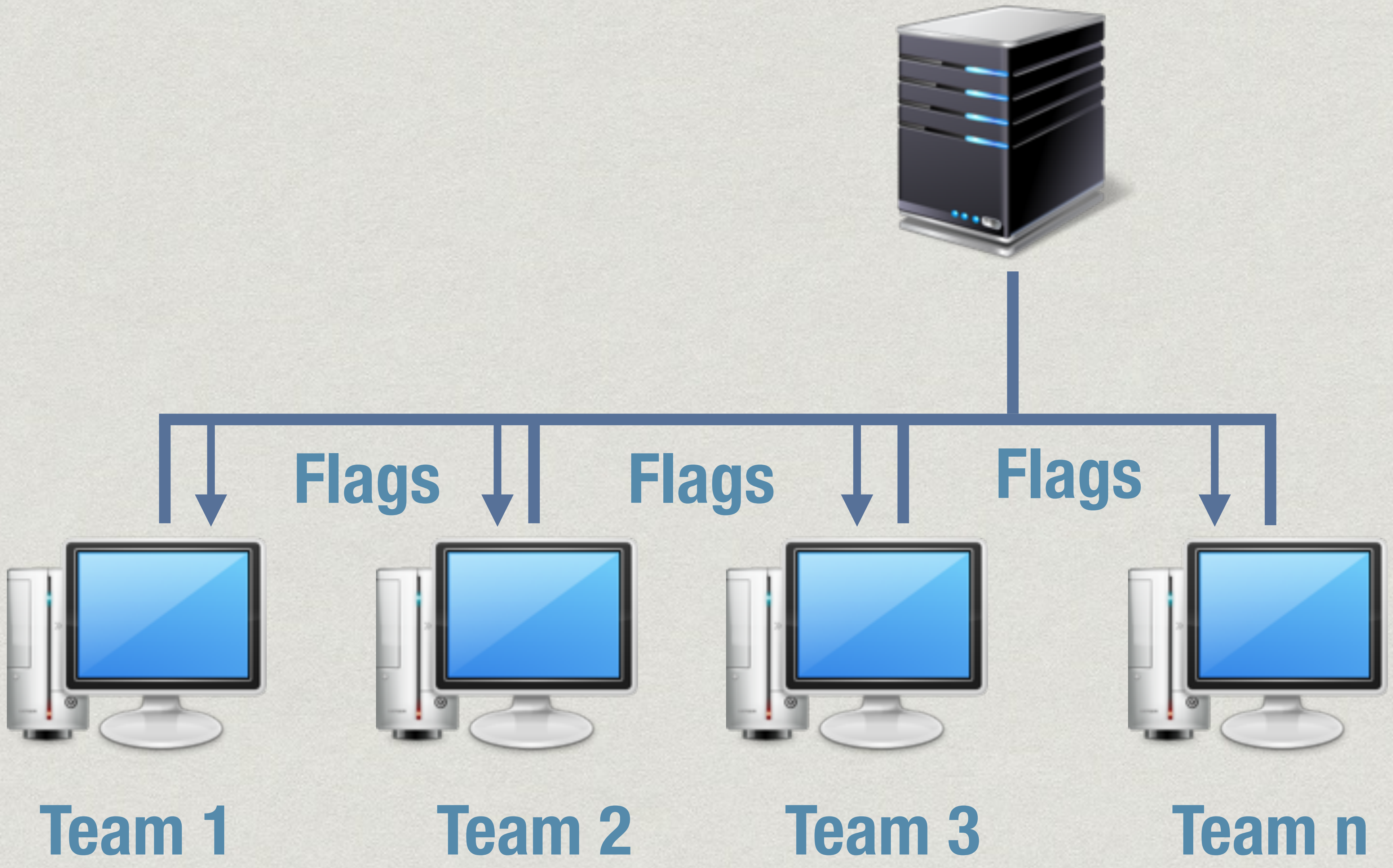
Source: Codegate CTF 2013

Server-based/Attack-Defense

- *fight other teams and protect yourself*
- One network, one VM image, several vulnerabilities
- Time frame: hours
- Example: ruCTF, iCTF

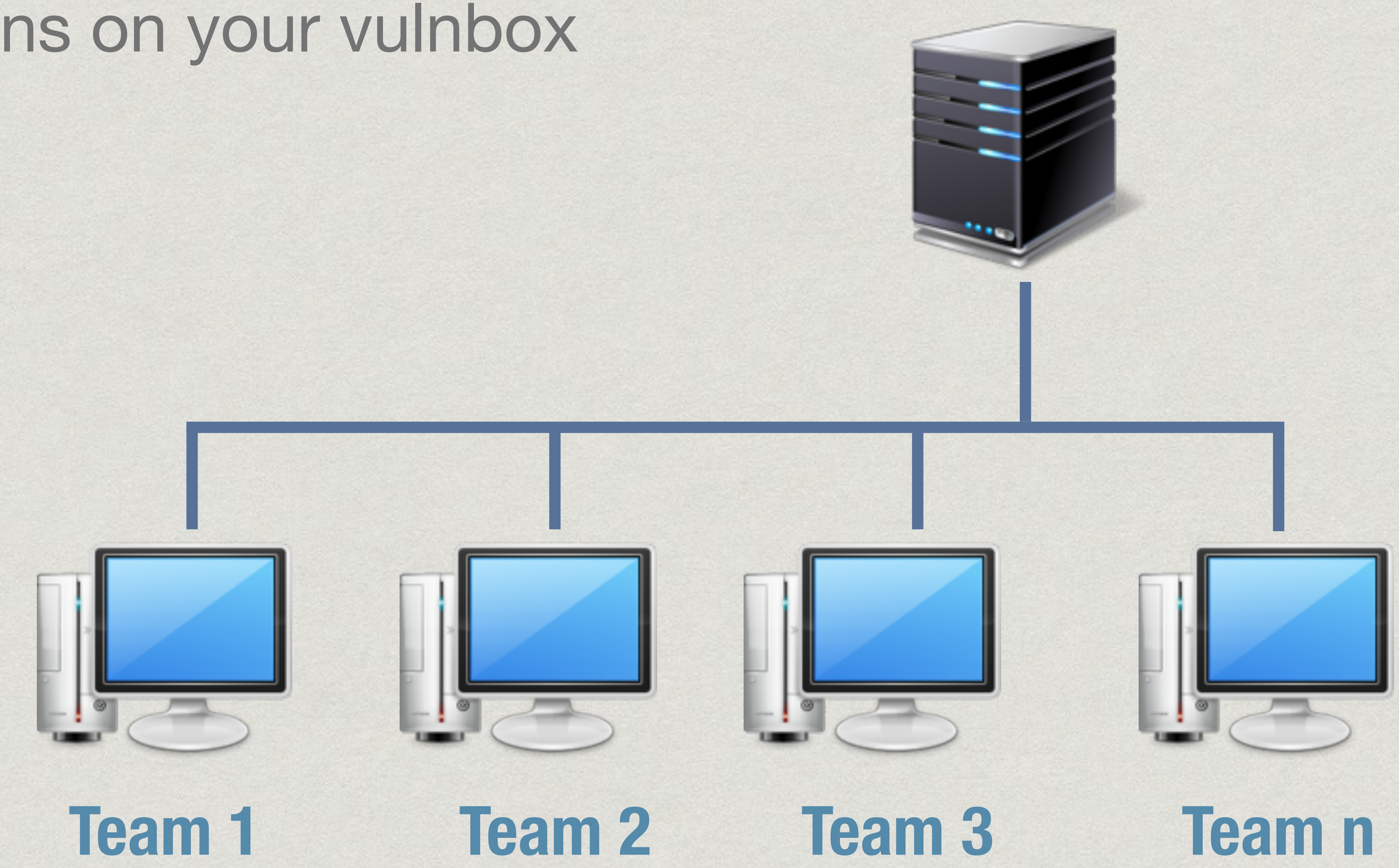
Server-based/Attack-Defense

1. Keep your services up for the game server



Server-based/Attack-Defense

1. Keep your services up for the game server
2. Find vulns on your vulnbox



Server-based/Attack-Defense

1. Keep your services up for the game server
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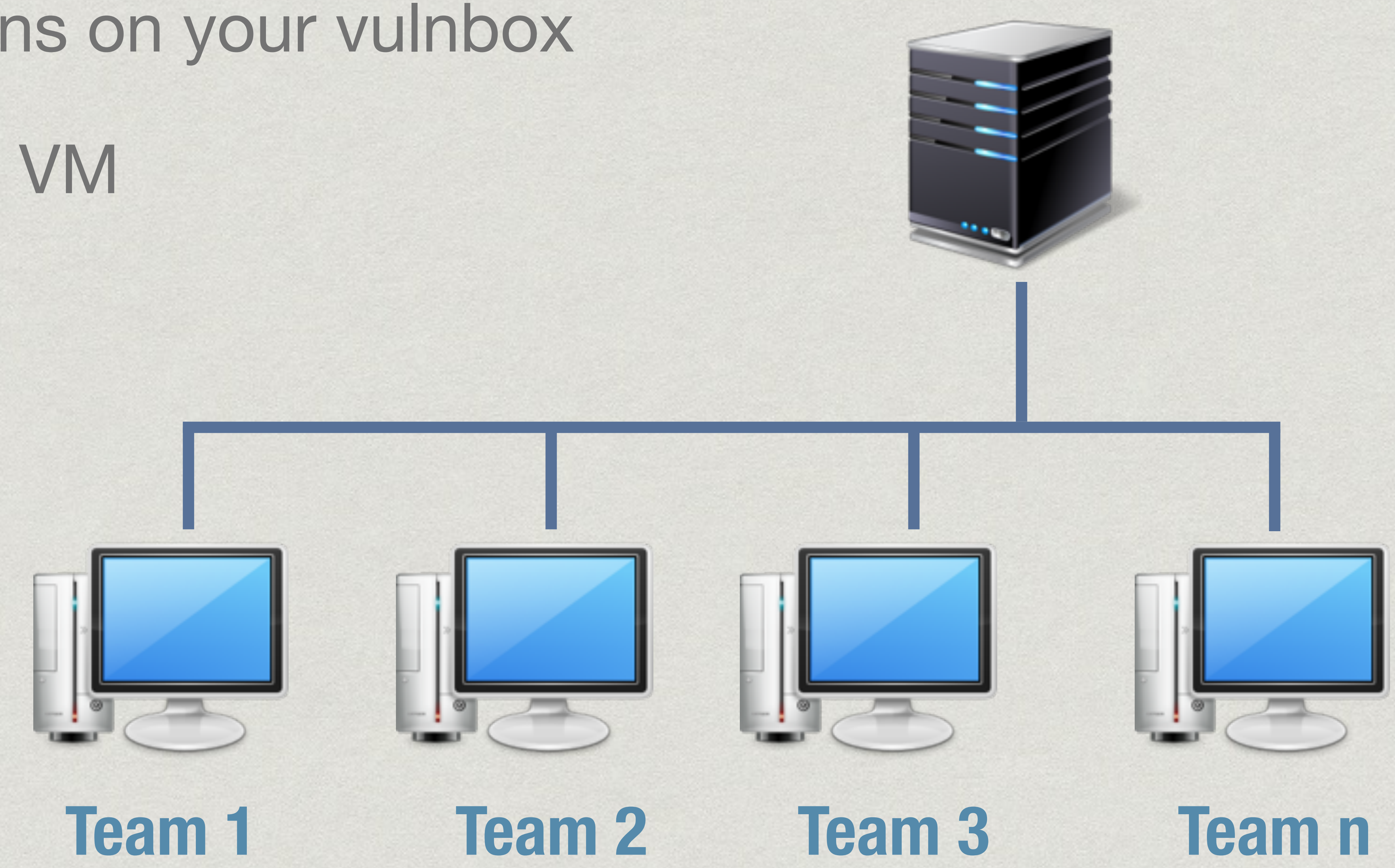
3. Fix your VM



Server-based/Attack-Defense

1. Keep your services up for the game server
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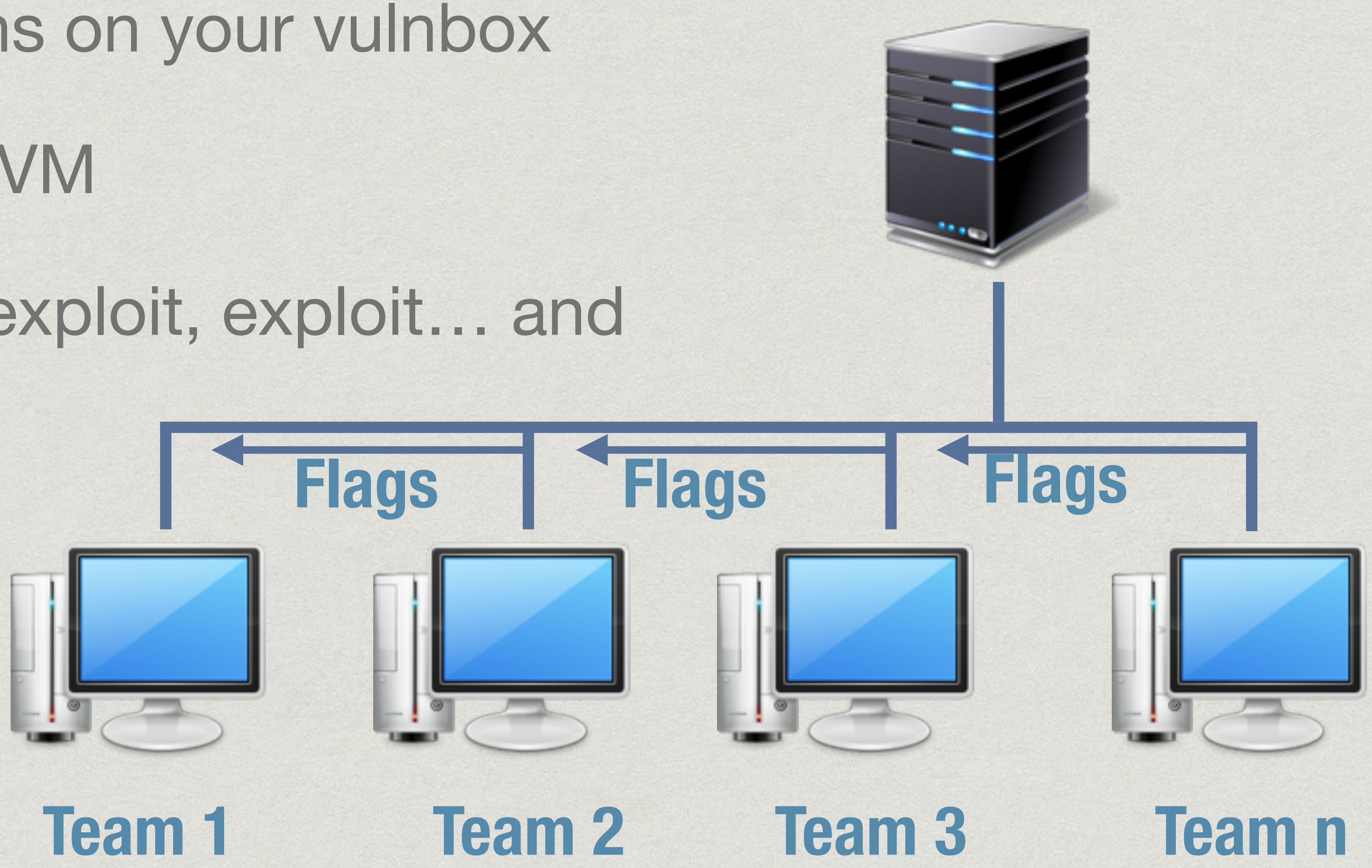
4. Exploit, exploit, exploit… and get flags



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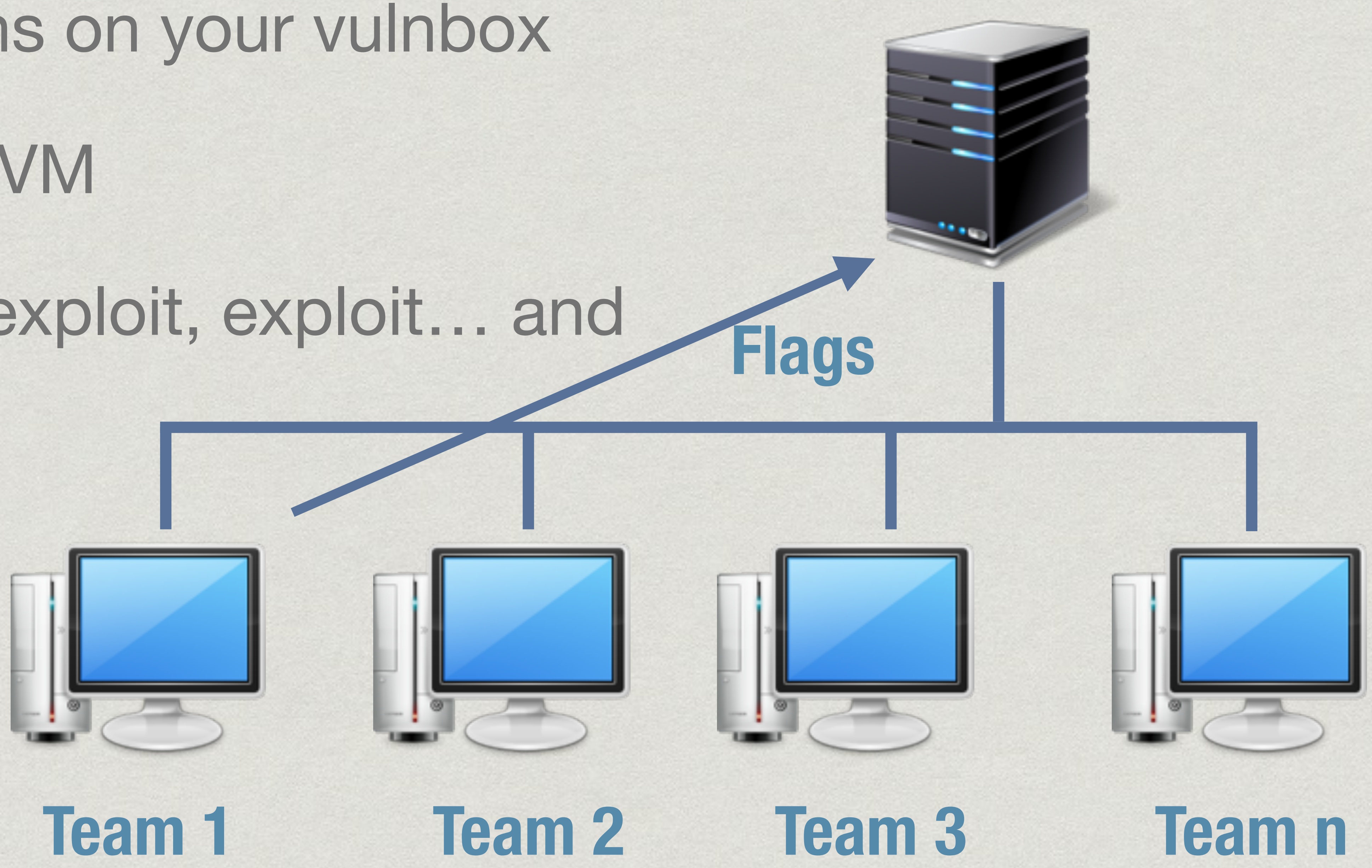
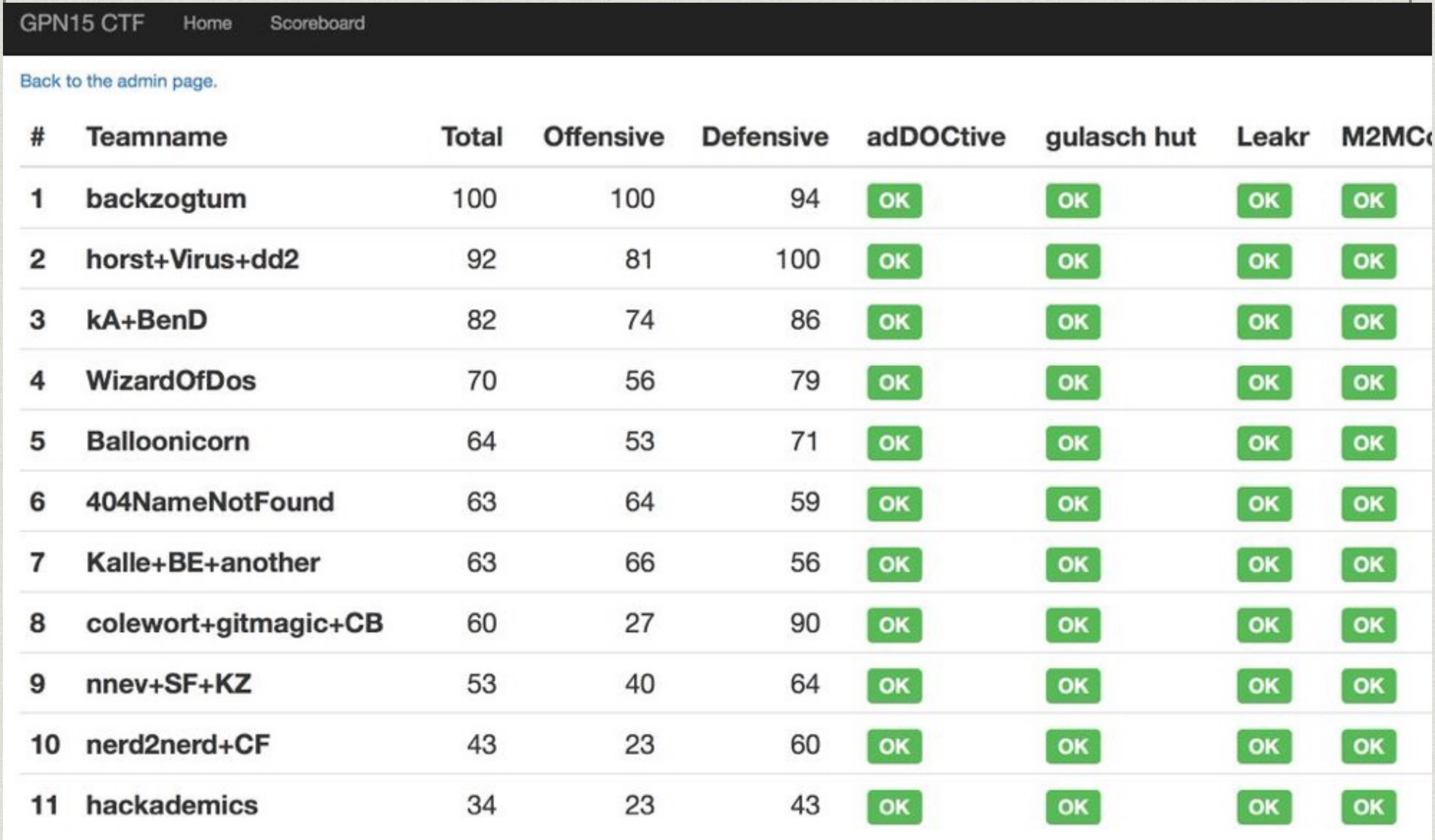




GPN15 CTF Home Scoreboard

Back to the admin page.

#	Teamname	Total	Offensive	Defensive	adDOCtive	gulasch hut	Leakr	M2MC
1	backzogtum	100	100	94	OK	OK	OK	OK
2	horst+Virus+dd2	92	81	100	OK	OK	OK	OK
3	kA+BenD	82	74	86	OK	OK	OK	OK
4	WizardOfDos	70	56	79	OK	OK	OK	OK
5	Balloonicorn	64	53	71	OK	OK	OK	OK
6	404NameNotFound	63	64	59	OK	OK	OK	OK
7	Kalle+BE+another	63	66	56	OK	OK	OK	OK
8	colewort+gitmagic+CB	60	27	90	OK	OK	OK	OK
9	nnev+SF+KZ	53	40	64	OK	OK	OK	OK
10	nerd2nerd+CF	43	23	60	OK	OK	OK	OK
11	hackademics	34	23	43	OK	OK	OK	OK

Mixed

- *Attack central infrastructure*
- Teams meet usually physically in one location
- The unknown network contains some services, which need to be found and owned
- Different Rounds with different goals
- Example: PacketWars

Why organize a CTF?

- Implement your ideas
- Gain knowledge
- Challenge yourself
- Improving communication and collaboration with other teams
- Contribute back to the community
- It’s fun :-)

Ingredients

- **Commitment and Time!**
- Challenges!
- Workforce
- Infrastructure: Scoreboard, Servers, Network, …

Challenge-Design

- be versatile
- be unpredictable
- be precise
- have different difficulty levels
- have rules & enforce them

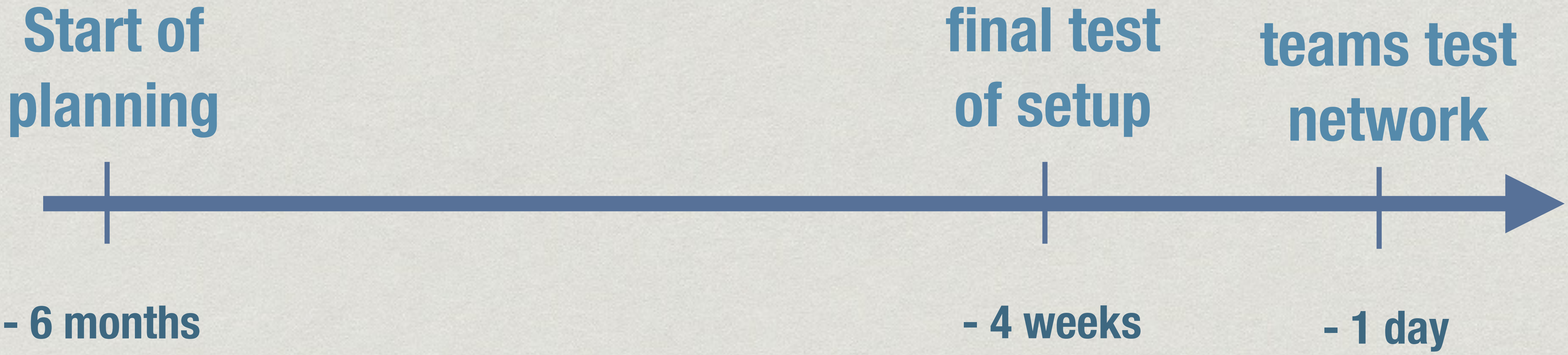
Infrastructure

- No infrastructure = No CTF
- **Always keep in mind:** Your network is attacked or attacking
  - Expect the unexpected
  - Contain attacks
- Scoreboard: No competition without comparison
  - CTFd for jeopardy CTFs
- Servers: Adjust to the load, have backup systems ready

DOs and DON’Ts

- **Start early**
  - there is much to get done
  - planing and preparation is key
  - speak with your local on-site orga

Schedule



Start of planning

- 6 months

final test of setup

- 4 weeks

teams test network

- 1 day

DOs and DON’Ts

- **Keep it simple**
  - debugging is much easier
  - less pre-CTF work
  - new or complex tech might crack down on you
  - also: multi-stage challenges can be frustrating

DOs and DON’Ts

- **Organize your team**
  - CTFs are a team effort
  - distribute responsibilities

DOs and DON’Ts

- **Test, test, test…**
    - Check your challenges for other vulnerabilities
    - Let somebody else run through your challenges
    - Also test your setup
    - Think like an attacker

DOs and DON'Ts

- **Refrain from last second changes**
  - probably not tested
  - your team does not know about changes
  - = stuff breaks

Getting publicity

- Spread the word among other teams
- CTFtime.org (http://ctftime.org/)
- On site: use talks to get attention

REMINDER:
CAMP CTF JUST STARTED

HTTPS://CAMPCTF.CCC.AC/