



Cyber attack readiness report 2023

Lessons from testing 982 corporate teams and 5,117 security professionals with enterprise-grade security challenges.



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SUMMARY

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Hack The Box (HTB) enables security leaders to sharpen skills, build specialized teams, and boost employee engagement with a suite of cyber workforce upskilling solutions.

This report shares team performance data from the 2023 edition of HTB's global capture the flag (CTF) competition for corporate security teams—also known as HTB Business CTF: The Great Escape.

Business CTF is a free annual event hosted by HTB that offers cutting-edge content on emerging technologies and vulnerabilities.



This year, **982** security teams and **5,117** professionals worldwide rigorously tested their technical and collaborative skills for a \$50,000 prize pool.

In addition to performance data from the CTF event, this report combines insights from a

982

SECURITY TEAMS

93

COUNTRIES

5,117

PROFESSIONALS

5,502

FLAGS SUBMITTED

separate user survey of 803 active cybersecurity professionals in the HTB user base.

Note: This year's Business CTF event featured new Blockchain and SCADA challenges. Two new industry categories were also included in the final analysis that weren't in the previous year's report—telecommunications and media.



KEY FINDINGS

KEY FINDINGS



30% Lower solve rate for blockchain & cloud

A significant number of security teams are still “catching up” to blockchain and cloud-related tech. Solve rates for these challenges are almost 30% lower than the average.



70% Use CTFs to boost employee engagement

More than 70% of managers view team events like CTFs as a viable way to raise employee engagement and measure skills.



62% Rate learning as a way to prevent burnout

62% of managers rated “opportunities to learn new skills” as the best way to prevent burnout among security staff.



75% Prioritise learning new skills over earning higher salaries

Employees prioritize progressing their skills over pay. Less than one in four members of a security team rated an increase in pay as the best way to engage them at work.



Challenge categories explained

Business CTF features jeopardy-style hacking challenges based on the live threat landscape. These challenges help measure an organization's attack readiness by testing a team's ability to detect, respond, and manage real-world attacks.



Forensics

Investigate digital forensics artifacts seen in common cybersecurity attacks and identify who is responsible.



Web

Find and exploit code flaws, misconfigurations, and insecure software in web-based applications or environments.



SCADA

Find and secure against vulnerabilities, weaknesses, or flaws that can compromise industrial devices and processes.



Pwn

Develop and manage exploits or attacks based on binary files that interact with computer memory and processors.



Crypto

Protect sensitive information from unauthorized access by identifying encryption flaws. For example, banking applications and financial transactions.



Blockchain

Identify and exploit bugs and misconfigurations to compromise the security of smart contracts.



FullPwn

Develop and conduct a comprehensive attack strategy to gain access to a host and subsequently elevate privileges to the highest level.



Reversing

Discover hidden or undocumented features in systems that make software or hardware vulnerable to an attack.



Cloud

Identify and address common cloud security flaws.

Wrangling with Web 3.0:

Skill gaps surface in blockchain & cloud tech

Nearly all teams are adept at dealing with forensics, SCADA, reversing, and web challenges. In contrast, global performance across all industries trends downwards for skills related to topical technologies in infosec.

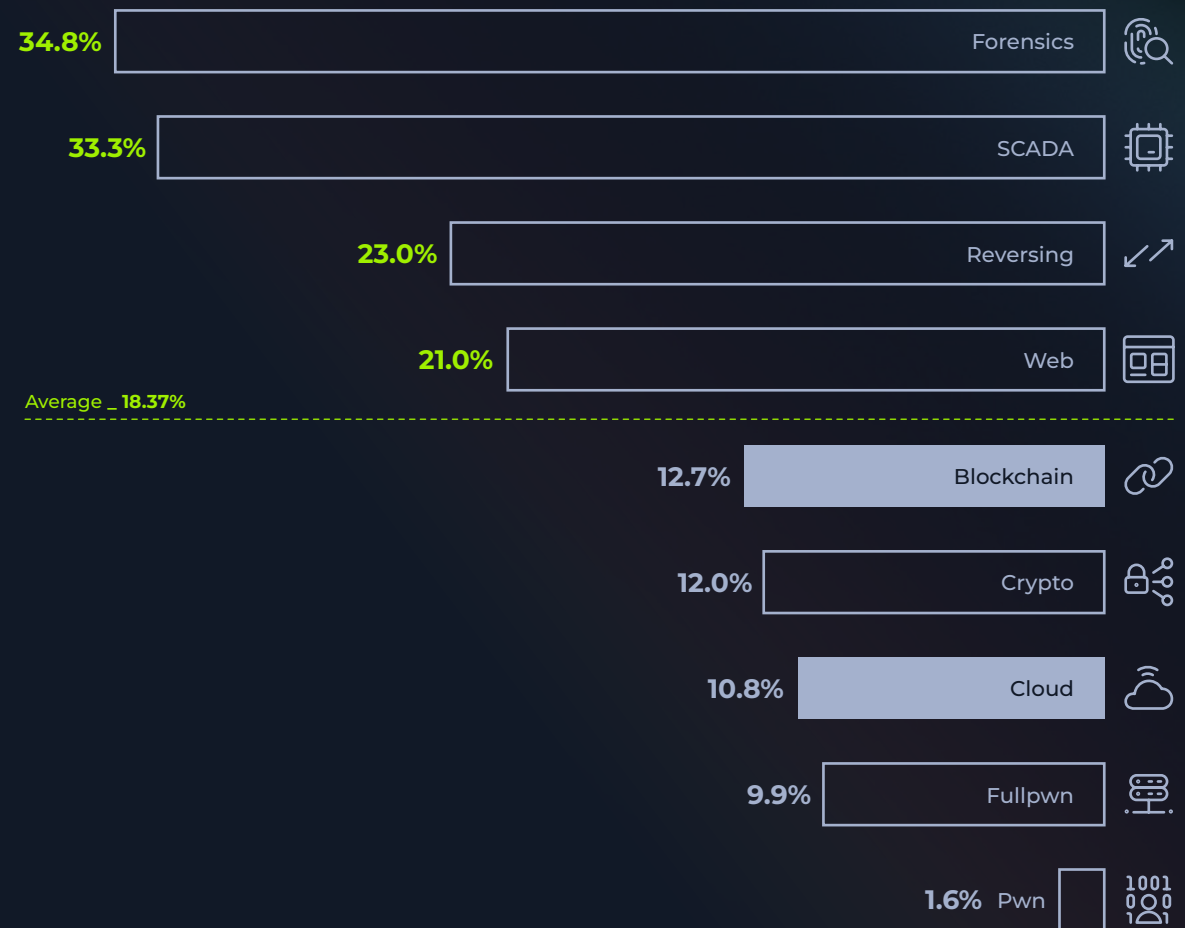
Blockchain and cloud-related solve rates are almost 30% lower than the average solve rate for all challenges (18.37%).

The data draws attention to today's technical skill gaps as teams "catch up" to Web 3.0 technology, protocols, and vulnerabilities. For industries such as finance, healthcare, and government, it's a call to double down on upskilling to protect decentralized applications and blockchain-based services.

Forensics _ **34.8%**
 SCADA _ **33.3%**
 Reversing _ **23.0%**
 Web _ **21.0%**

Blockchain _ **12.7%**
 Crypto _ **12.0%**
 Cloud _ **10.8%**
 Fullpwn _ **9.9%**
 Pwn _ **1.6%**

Average solve rate vs. challenge



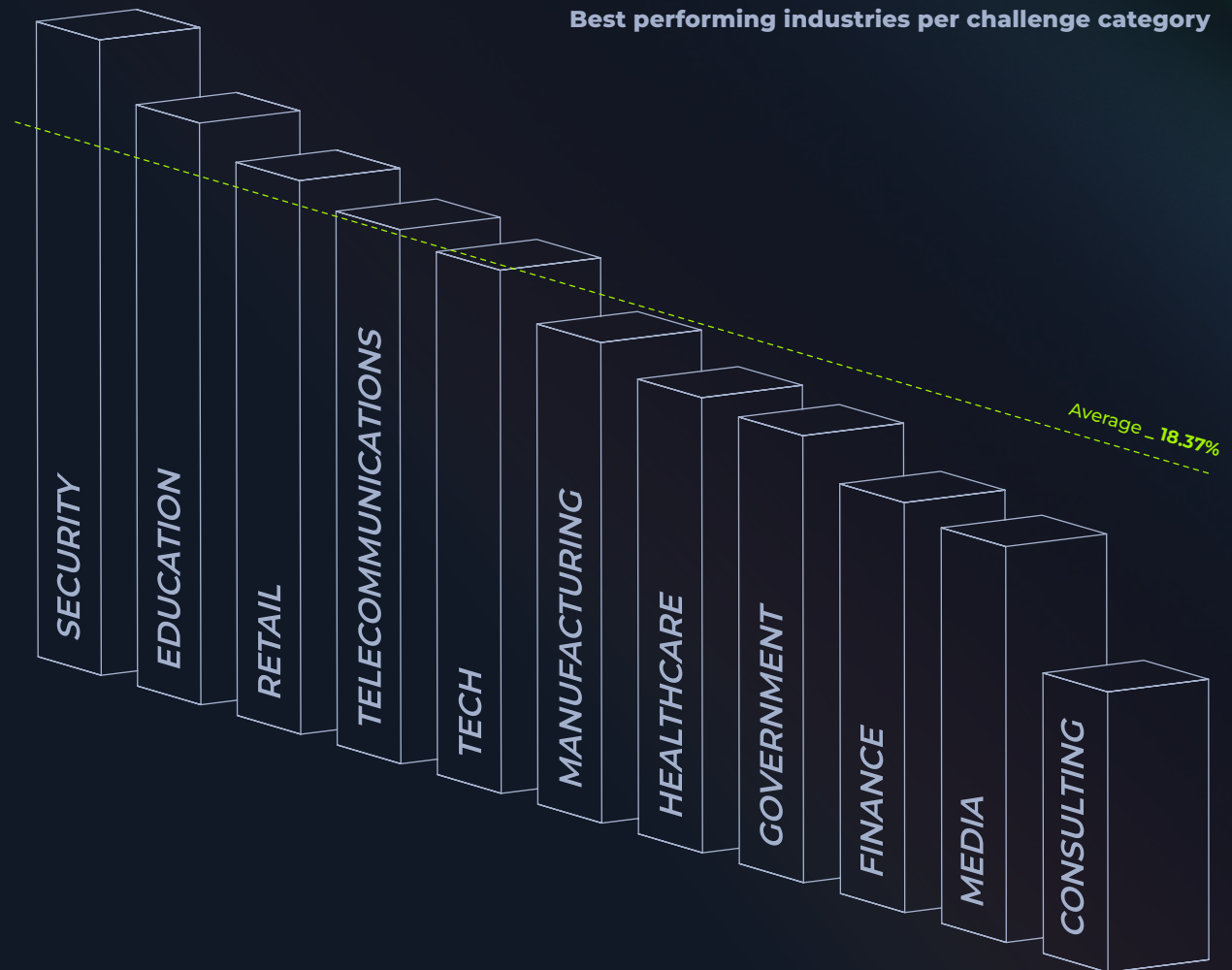
Best performing industries across all challenges

This year, teams in industries such as security, education, retail, and telecommunications performed above average (18.37% challenge solve rate) demonstrating a high level of attack readiness.

Meanwhile, finance, media, and consulting teams placed last with below-average solve rates. Consulting teams in particular scored 60% lower than average. This comes as a stark contrast to last year's report and competition, in which finance and consulting teams were above-average performers.

Security _ **22.2%**
 Education _ **20.3%**
 Retail _ **19.3%**
 Telecommunications _ **18.6%**
 Tech _ **18.2%**
 Manufacturing _ **16.7%**
 Healthcare _ **15.8%**
 Government _ **15.5%**
 Finance _ **14.2%**
 Media _ **13.7%**
 Consulting _ **9.7%**

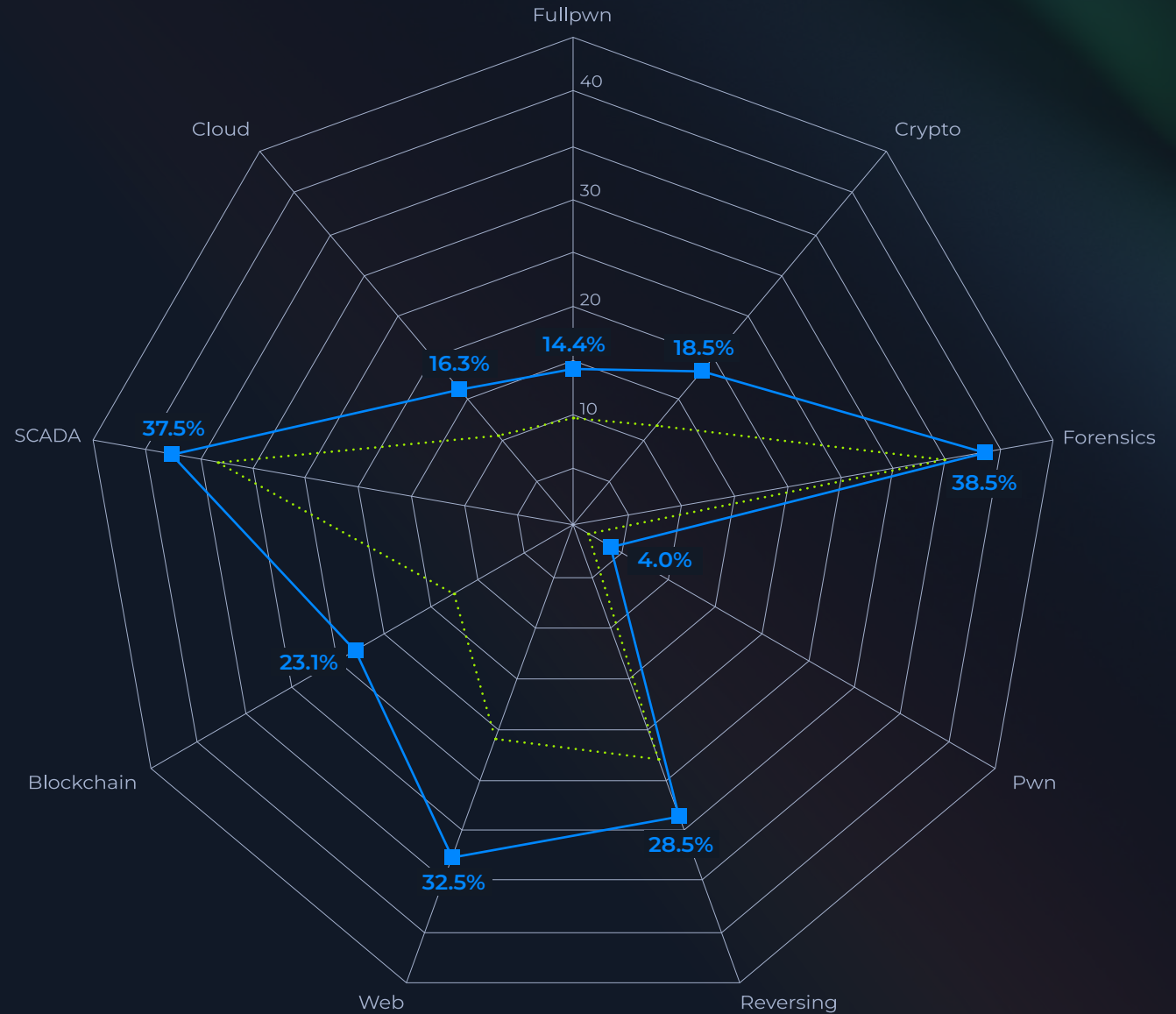
Best performing industries per challenge category



Top five industry breakdown: Security

Security teams hold the strongest level of average attack readiness across most cybersecurity challenges and technologies. They exceeded the average solve rates for blockchain, web, crypto, and cloud challenges.

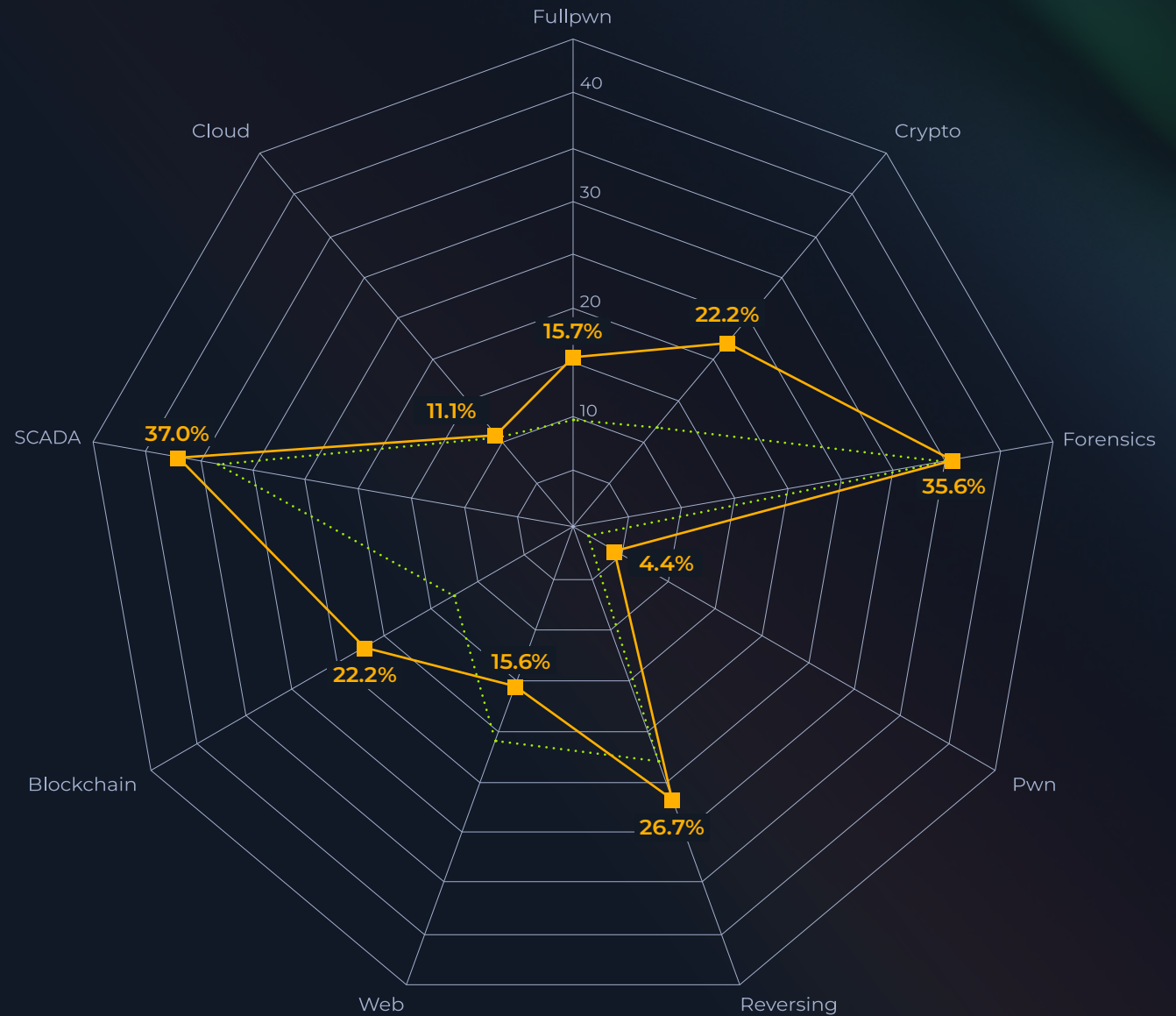
Fullpwn	14.4%	9.9%
Crypto	18.5%	12.0%
Forensics	38.5%	34.8%
Pwn	4.0%	1.6%
Reversing	28.5%	23.0%
Web	32.5%	21.0%
Blockchain	23.1%	12.7%
SCADA	37.5%	33.3%
Cloud	16.3%	10.8%



Top five industry breakdown: Education

Teams in the education sector are high performers in challenges that involve reversing, SCADA, and blockchain, but struggle with web challenges, scoring 25% lower than average.

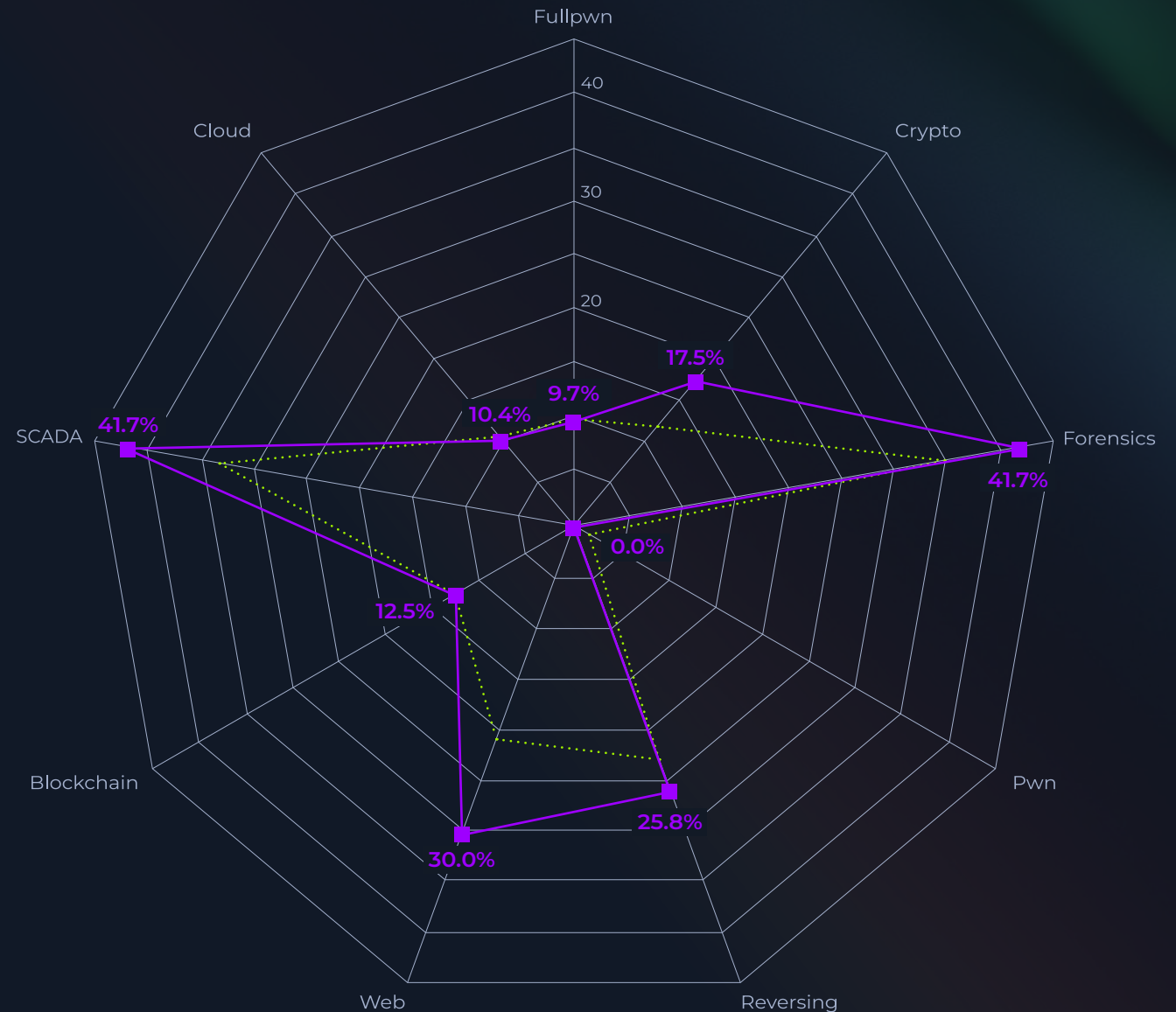
Fullpwn	15.7%	9.9%
Crypto	22.2%	12.0%
Forensics	35.6%	34.8%
Pwn	4.4%	1.6%
Reversing	26.7%	23.0%
Web	15.6%	21.0%
Blockchain	22.2%	12.7%
SCADA	37.0%	33.3%
Cloud	11.1%	10.8%



Top five industry breakdown: Retail

Teams in the retail sector took the lead on forensics and SCADA challenges, scoring the highest out of all industries for the respective challenge categories. They show a competitive level of skill with cloud, crypto, and blockchain challenges, with fullpwn and pwn challenges being the biggest areas of improvement.

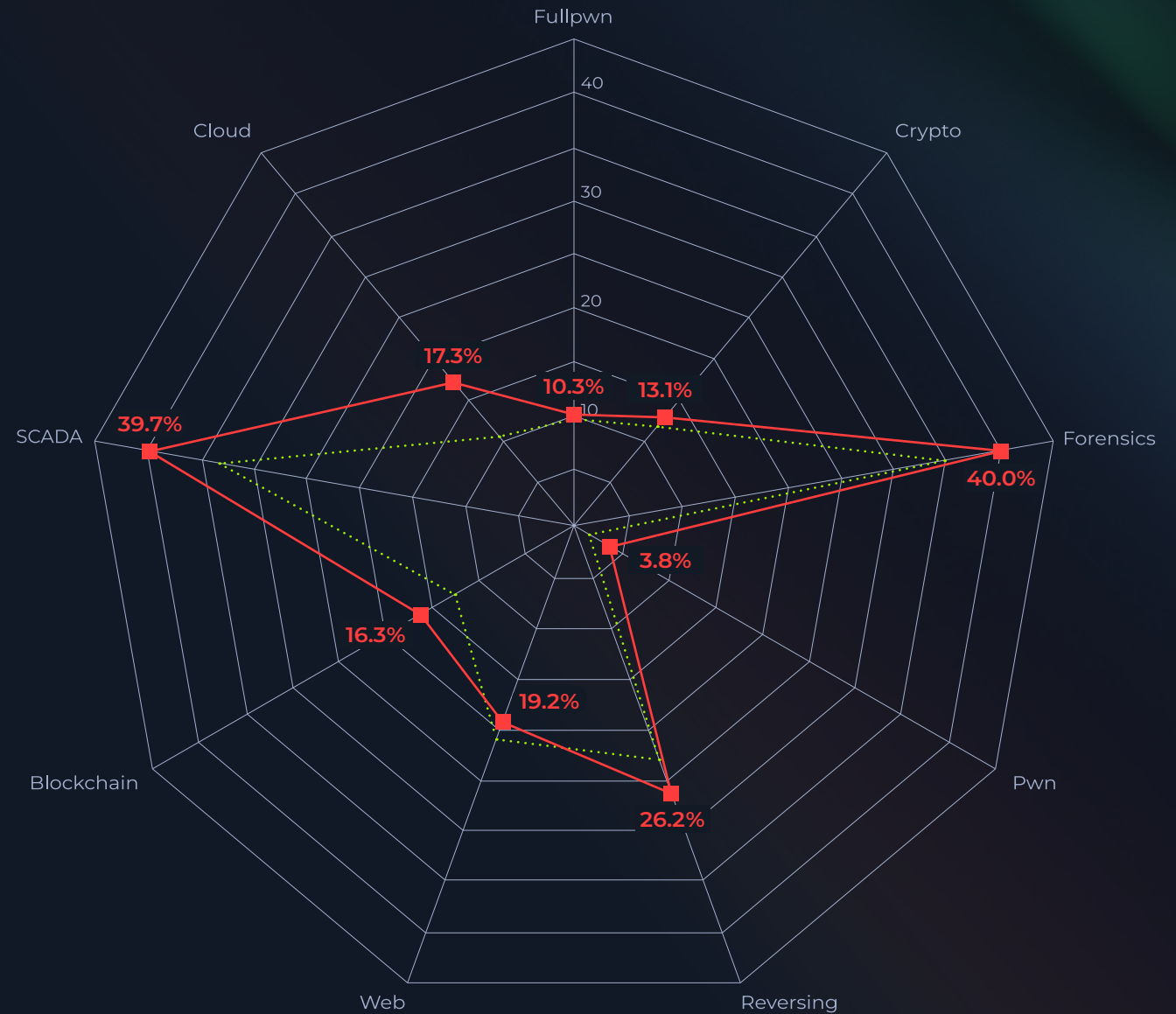
Fullpwn	9.7%	9.9%
Crypto	17.5%	12.0%
Forensics	41.7%	34.8%
Pwn	0.0%	1.6%
Reversing	25.8%	23.0%
Web	30.0%	21.0%
Blockchain	12.5%	12.7%
SCADA	41.7%	33.3%
Cloud	10.4%	10.8%



Top five industry breakdown: Telecommunications

Teams in the telecoms industry are competitive in forensics, SCADA, and reversing challenges. They also perform above average in categories that teams from other industries struggled in, such as blockchain, cloud, and crypto.

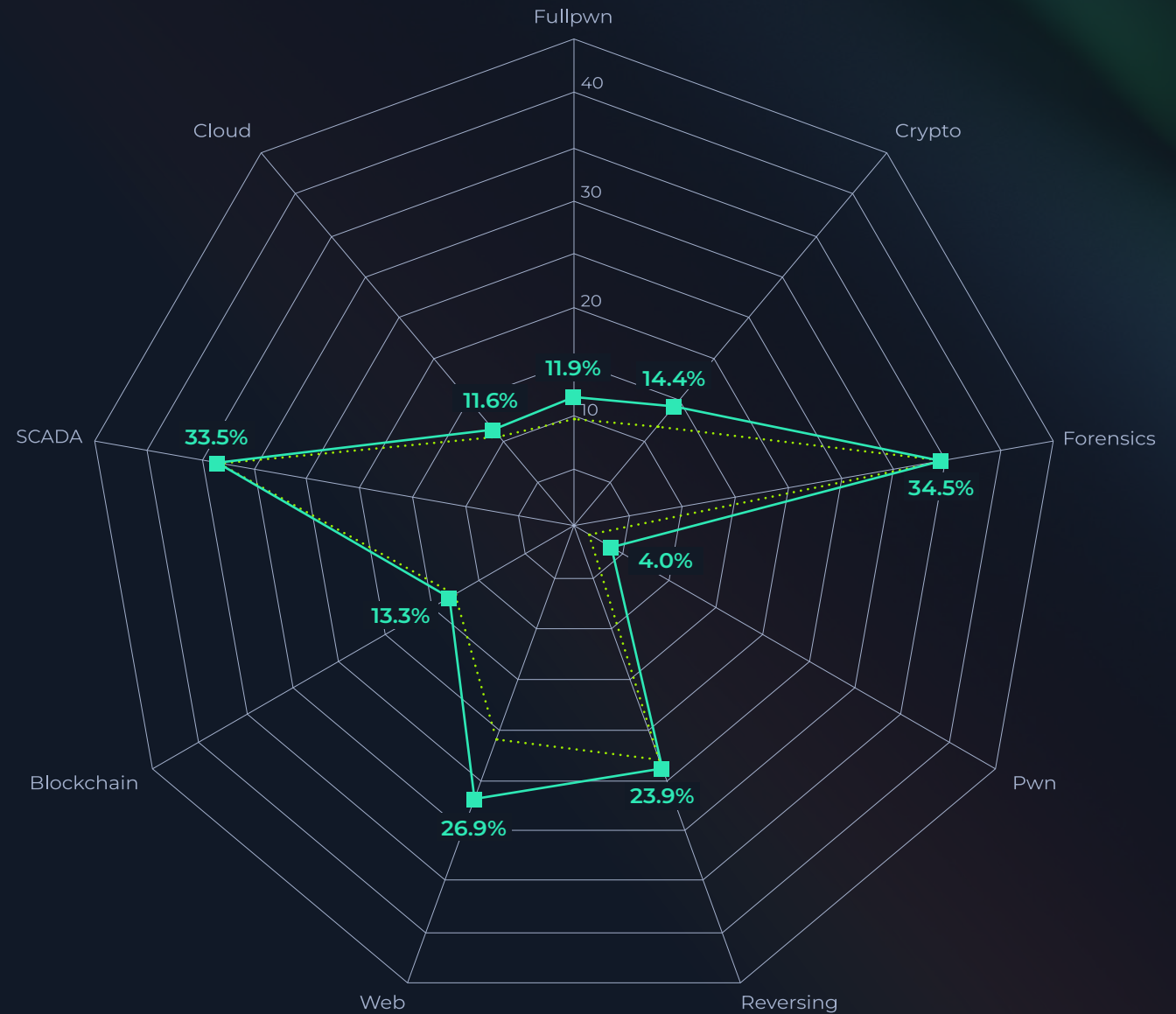
Fullpwn	10.3%	9.9%
Crypto	13.1%	12.0%
Forensics	40.0%	34.8%
Pwn	3.8%	1.6%
Reversing	26.2%	23.0%
Web	19.2%	21.0%
Blockchain	16.3%	12.7%
SCADA	39.7%	33.3%
Cloud	17.3%	10.8%



Top five industry breakdown: Tech

Compared to their third-place position in 2022's Cyber Attack Readiness report, tech teams ranked in fifth place for overall attack readiness, with competitive solve rates across all challenge categories.

Fullpwn	11.9%	9.9%
Crypto	14.4%	12.0%
Forensics	34.5%	34.8%
Pwn	4.0%	1.6%
Reversing	23.9%	23.0%
Web	26.9%	21.0%
Blockchain	13.3%	12.7%
SCADA	33.5%	33.3%
Cloud	11.6%	10.8%



— Tech

..... Average per challenge category

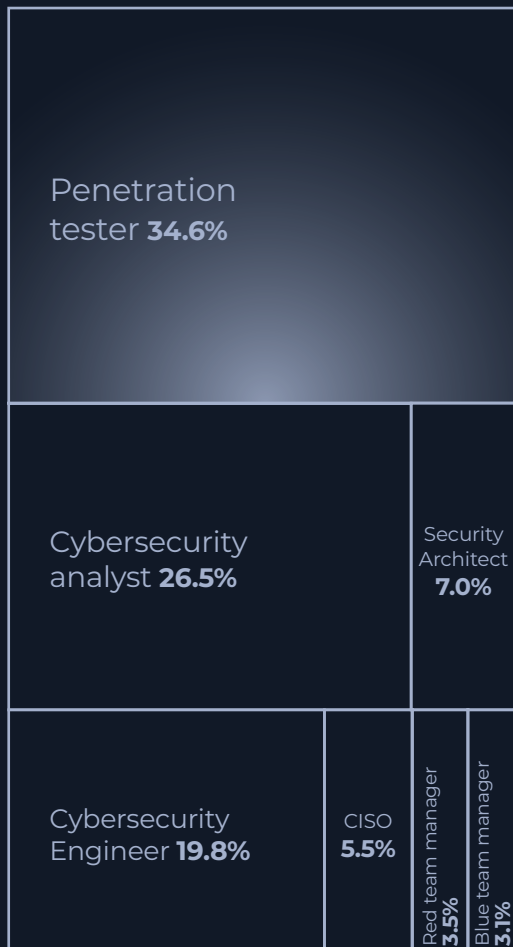


SURVEY INSIGHTS

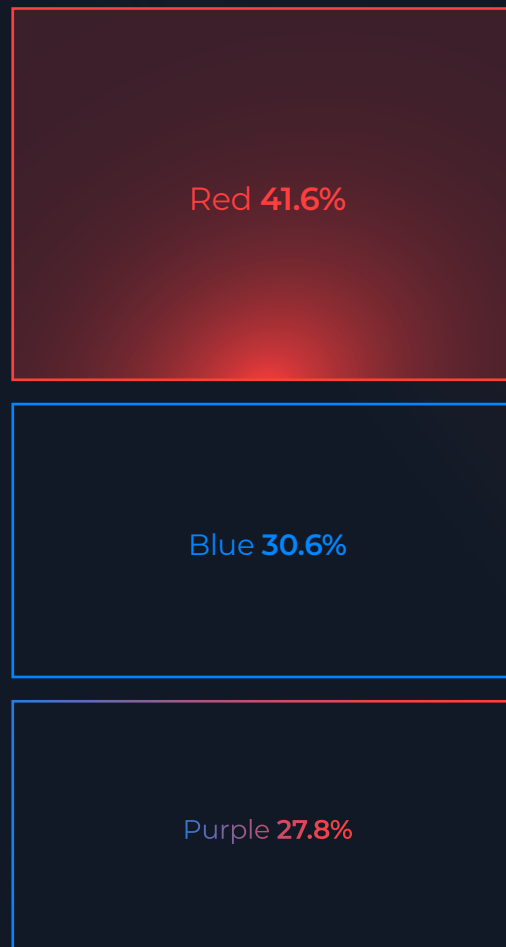
The upcoming section of the report combines insights from a separate user survey of 803 active cybersecurity professionals in the HTB user base.

Survey demographics

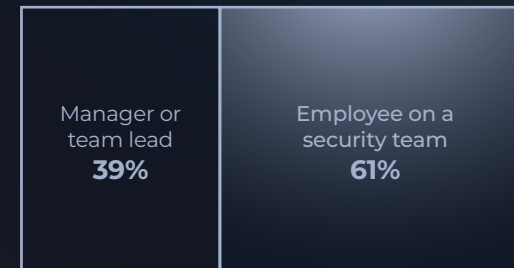
Job title



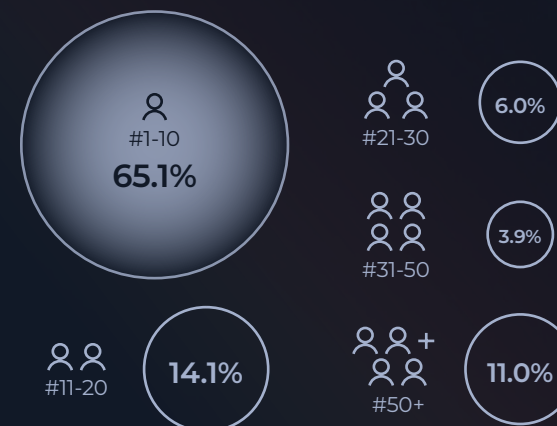
Type of team



Position on team



Security team size (by # of employees)

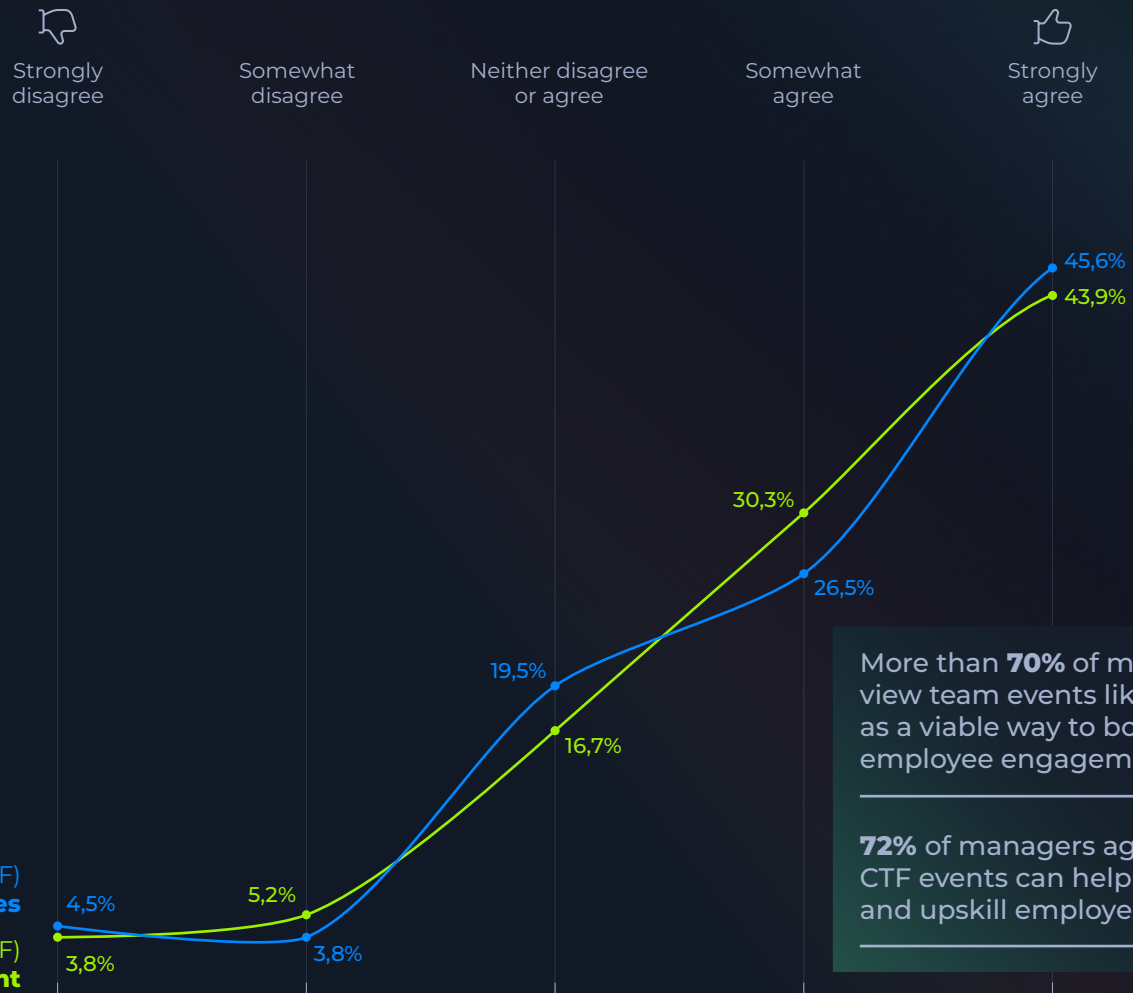


Leaders use CTFs to measure skills & motivate security teams

Our survey of 803 cybersecurity professionals shows that both security leaders and security staff consider CTFs as an opportunity to measure skills and improve employee engagement.

More than 70% of managers view team events like CTFs as a viable way to raise employee engagement.

Given current economic uncertainty, dwindling security budgets, and rampant burnout, team events can maximize ROI on limited training budgets and boost motivation to upskill.



Team events like Capture The Flag (CTF) **help measure and upskill employees**

Team events like Capture The Flag (CTF) **improve employee engagement**

More than **70%** of managers view team events like CTFs as a viable way to boost employee engagement

72% of managers agree that CTF events can help measure and upskill employees

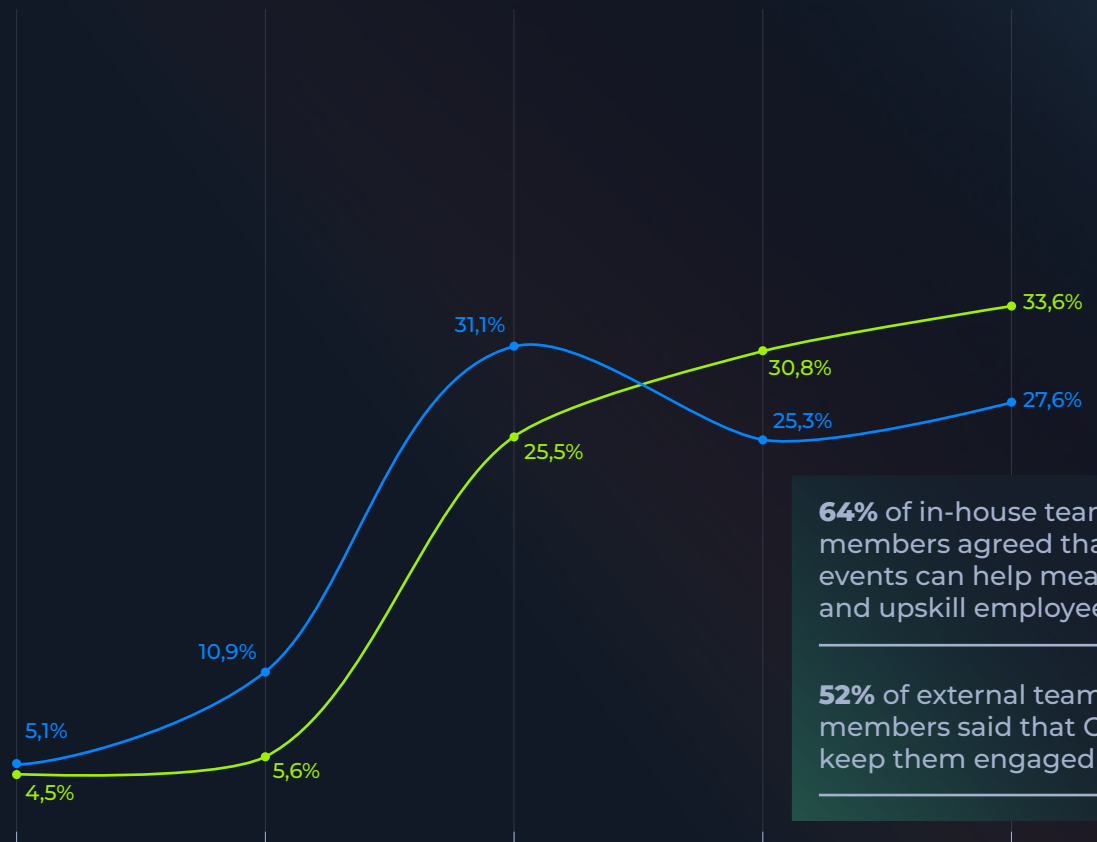
In-house security staff report higher engagement from team events

While teams report that CTFs keep them engaged, in-house staff seem more likely to experience higher levels of engagement from CTF events than external teams.

64% of in-house teams agreed that CTFs keep them engaged at work. Meanwhile, staff who weren't part of an in-house team and identified as External Service Providers (ESPs) were less likely to experience the same engagement from team events like CTFs.

Strongly disagree Somewhat disagree Neither disagree or agree Somewhat agree Strongly agree

Team events like Capture The Flag (CTF) keep me engaged at work - **external service provider**
 Team events like Capture The Flag (CTF) keep me engaged at work - **internal IT team**



64% of in-house team members agreed that CTF events can help measure and upskill employees

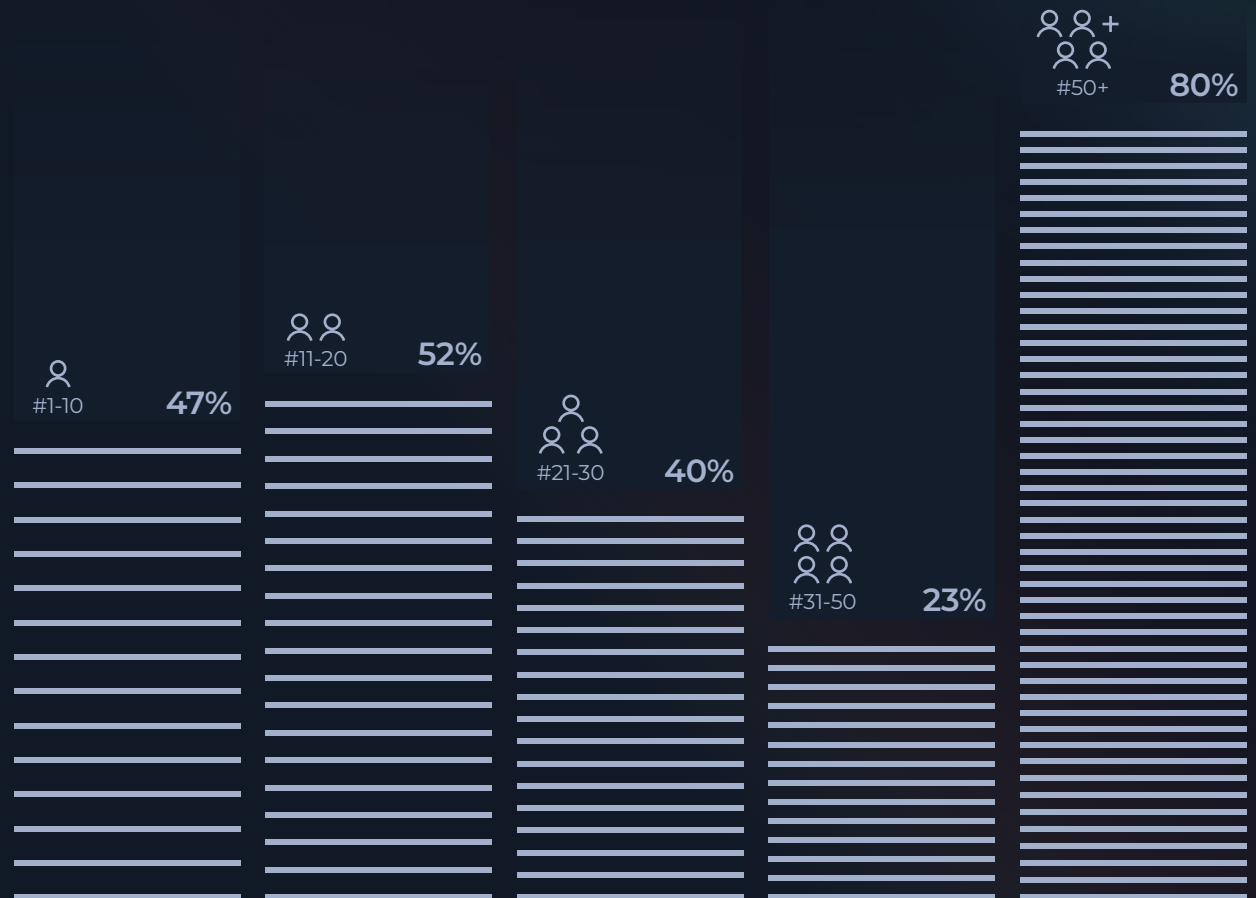
52% of external team members said that CTFs keep them engaged at work

Smaller security teams are less confident at benchmarking skills

In regards to measuring skills development, survey data shows 80% of leaders with teams of more than 50 security personnel rated benchmarking and reporting their team's skills as "easy."

In comparison, cybersecurity teams below the 50-employee threshold don't share the same confidence as their larger counterparts.

Ease of benchmarking security skills



80% of teams with more than 50 security personnel find it easy to benchmark and report their team's skills

Only **47%** of teams with 1-10 security employees said that benchmarking and reporting their teams' skills development is easy



Security leaders see upskilling as a solution to burnout

Encouraging security teams to constantly develop new skills is a top priority for leaders.

It ensures teams have the capability to deal with an evolving threat landscape, and as shown in our research, is rated by cybersecurity professionals as one of the most effective ways to keep them engaged at work.

When asked about the best way to prevent burnout amongst security staff, more than 60% of managers voted “providing learning opportunities” as more effective than “increasing pay” or “vacation time.”

- What keeps **cybersecurity team members** engaged at work
- What do **managers** consider the best way to avoid burnout amongst cybersecurity staff



68% of security team members rated “opportunities to learn skills” as the most successful way of staying engaged at work

62% of managers rated “opportunities to learn new skills” as the best way to prevent burnout amongst security staff

ABOUT HTB

ABOUT HACK THE BOX

Loved by a global cybersecurity community of more than two million members, HTB is helping security leaders across the world equip their teams with the skills and expertise needed to proactively secure and protect their organizations.

HTB specializes in defensive and offensive cybersecurity upskilling programs featuring content that's guided, practical, and aligned with the NIST NICE and MITRE ATT&CK frameworks, as well as unrivaled hands-on labs designed to help organizations close skills gaps, hire top talent, and protect infrastructure.

Measure, assess, and proactively close your organization's cybersecurity skill gaps with a single platform focused on developing your cyber workforce.



1.5k+

Businesses upskill
with HTB



900+

Universities
enrolled



788+

CTFs, meetups & trainings
organized globally



2M+

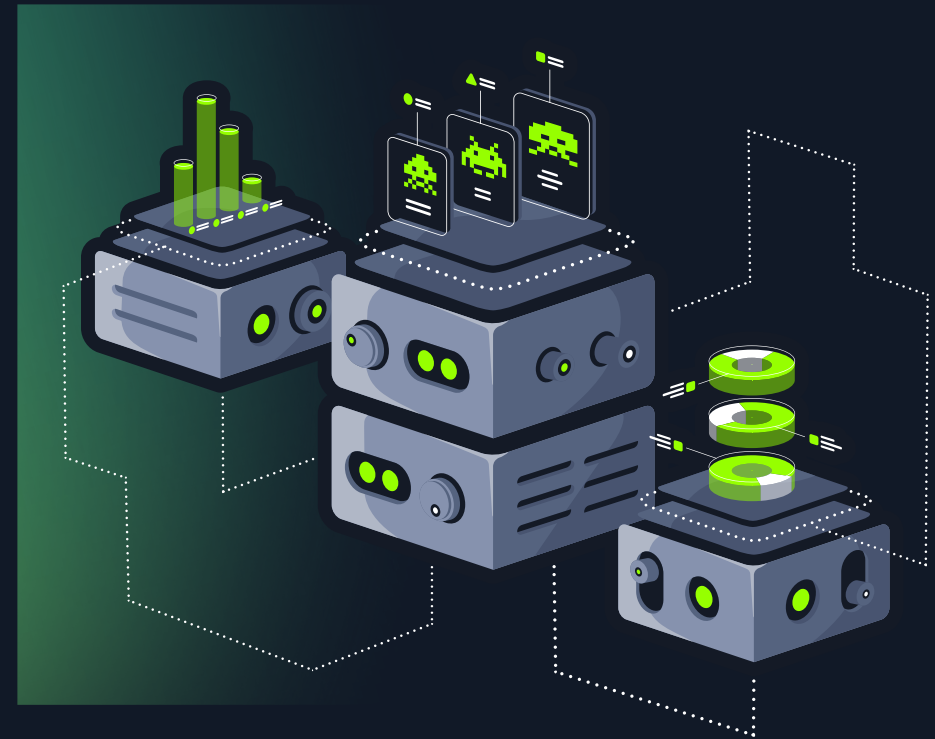
Community members
worldwide

Upskill, engage, and unite your security team with HTB



CTF Marketplace

The CTF Marketplace allows security and wider IT teams to deploy CTF events with only a few clicks. Teams can easily configure multiple private and public CTF events and manage them within their CTF subscription.



HTB Dedicated Labs

HTB Dedicated Labs feature realistic corporate environments that help your team develop hands-on expertise. Test security processes, improve incident response, or quickly address vulnerabilities.

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2023