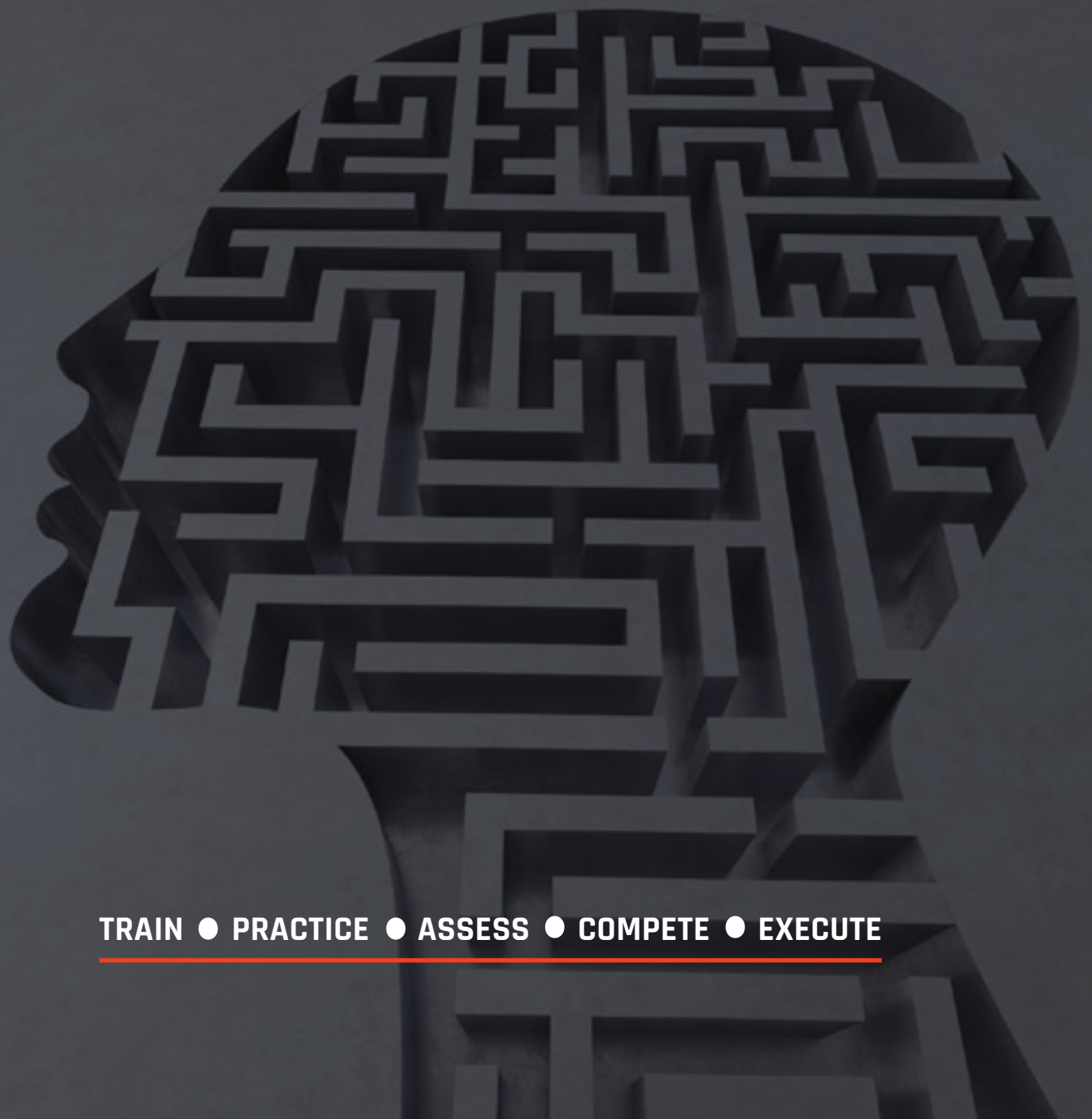


**BUILDING CYBERSECURITY
SKILLS MASTERY VIA THE
INDUSTRY'S MOST ADVANCED**

**CYBER RANGE
PLATFORM-AS-A-SERVICE**



TRAIN ● PRACTICE ● ASSESS ● COMPETE ● EXECUTE



BRUCE LEE



**“I FEAR NOT THE MAN
WHO HAS PRACTICED
TEN THOUSAND KICKS
ONCE, BUT I FEAR
THE MAN WHO HAS
PRACTICED ONE KICK
10,000 TIMES.”**



TABLE OF CONTENTS

INTRODUCTION	5
WHAT IS A CYBER RANGE?	6
FLAWS IN EXISTING CYBER RANGES	7
WHY DON'T ENTERPRISES TRAIN?	8
HOW CYBER TEAMS SHOULD BE SCORED	10
WHAT IS AN IDEAL CYBER RANGE?	14
INTRODUCING CYBERQ	16
INDIVIDUAL AND TEAM-BASED TRAINING MODULES	20
HOW CYBERQ CAN HELP ENTERPRISES	23
BENEFITS OF CYBERQ RANGE PLATFORM-AS-A-SERVICE FOR ENTERPRISES	24
NETWORK ARCHITECTURE	26
OVER 200+ CUTTING-EDGE EXPERIENCES	28
CONTACT US	29



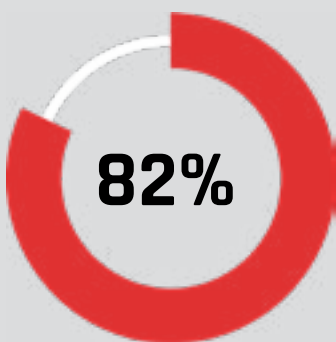
INTRODUCTION

We have all heard the cybersecurity stats — cybercrime is on the rise, attacks are getting more sophisticated, the cost of the average breach continues to climb, and projections for the future seem to show an ever-escalating set of challenges the cybersecurity professional will face.

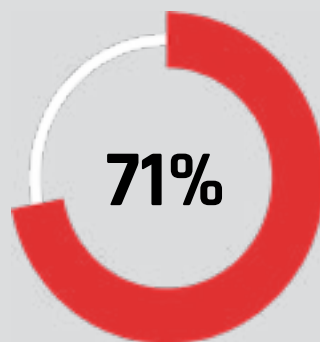
A recent report by CSIS states that no less than 82% of employers reported a shortage of cybersecurity skills in their workforce. What makes this worse is that 71 % of them believe that this talent gap causes direct and measurable damage to their organizations.

Are current education programmes enough to prepare students to gain expected mastery in enterprise-level cybersecurity skills? Or are they severely lacking in essential real-world practice?

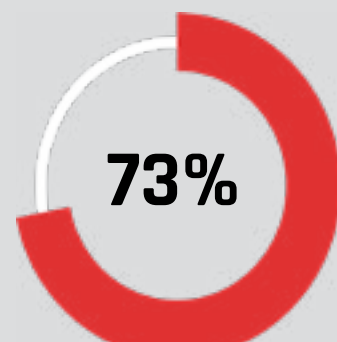
IN 2019-20 ALONE, AROUND **73% OF ORGANIZATIONS HAVE NOT TRAINED THEIR CYBERSECURITY TEAMS.**



SHORTAGE OF TALENT



**MEASURABLE DAMAGE
TO ORGANIZATION**



NO TRAINING AT ALL

source : <https://bit.ly/3pfr2mC> | <https://bit.ly/3aTJNHg>



Cyber

R A N G E

WHAT IS A

CYBER RANGE?

Cyber ranges provide a controlled environment for professionals to learn, practice, compete, and assess skill levels against realistic target networks and infrastructure while deploying real attacks, training participants in the real countermeasures required to prevent or respond to those attacks. A cyber range is a place to practice new skills, hone existing ones, and succeed or fail without consequence, which is integral to the development of essential cybersecurity skills and tactics that will be used on the job.

Through cutting-edge technologies, organizations can rapidly create, replicate, and tear down single targets or complex networks of targets in a matter of minutes to provide real, hands-on experiences for learning, practice, competition, and assessment, in both individual and team settings.

Cyber professionals, either individually or on a team, are able to gain deeper and faster skill development through a system of continuous and immersive learning experiences. Cyber ranges are frequently used for competitions and cyber drills to ensure preparedness of a team, in hiring and recruiting, and for the purpose of skill gap assessment.

FLAWS IN EXISTING CYBER RANGES

Recent advances in technology have left many cyber range providers with flawed systems.

Technology has advanced but many “highly vested” providers of cyber range technology are reluctant or simply unable to adapt. Ranges that are outdated tend to have the following flaws:



COMPLEX AND TIME-CONSUMING TO IMPLEMENT.

EXPENSIVE TO ACQUIRE AND MAINTAIN.



REQUIRE SIGNIFICANT INFRASTRUCTURE INVESTMENT.

NEITHER SCALABLE NOR CUSTOMIZABLE TO DOMAIN-SPECIFIC NEEDS.



LACK EMPHASIS ON CONTINUOUS LEARNING.



INSUFFICIENT ANALYTICS AND INACCURATE REPORTING.

RIGID LEARNING PATHS.



TIME CONSUMING AND/OR COMPLEX TO OPERATE.

SIMPLY PROVIDE POINTS AS A MEASUREMENT OF ACHIEVEMENT.



REQUIRES HIGHLY TRAINED, SPECIALIZED PERSONNEL.

UNABLE OR EXPENSIVE TO CREATE CUSTOM CONTENT.





WHY DON'T ENTERPRISES TRAIN?

Enterprises do not train their teams for a fairly simple reason – the cybersecurity professional of today is overworked!

Some are simply too busy to invest their time repeatedly and often cannot take a week off from work to attend training programs. Another key reason is obviously **cost constraints** – organizations can't always afford to continuously train their cybersecurity workforce. Many cyber professionals believe they would learn these skills by themselves, on the job, and therefore don't realize, or possibly value, the need for professional development.

At certain unfortunate times, **cyber professionals are not receiving sound guidance** to take the right steps towards upskilling themselves.

The fact is that there is a clear imbalance in the spread of cybersecurity challenges versus how organizations are building capability to fight them. They simply do not match!





One model that seems to work is the model employed by military forces across the world.

While the finer nuances may differ, most military bodies first recruit their troops as entry-level soldiers. For example, Infantry training starts with an individual with little to no skill. Through training and assessment, a green civilian becomes ready to join a combat infantry unit. Should this individual wish to join the elite corps of Special Forces, they must undergo a series of grueling physical and mental fitness challenges. Even if selected, they must continue to train and hone their individual skills before joining an Elite combat unit. And still the training and practice does not stop there. As a team member, they must train to perform at their best as a member of a team, working to achieve a common goal. This is what CyberQ was designed to emulate

HOW CYBER TEAMS SHOULD BE SCORED

Scoring in sports is completely arbitrary and bears no relationship to the difficulty level of the task, especially when compared across sports. Why is a Rugby Try worth 5 points, a U.S. football touchdown worth 6, or a basketball basket worth 2 (but also sometimes 3 or 1), while tennis scoring is completely different. The points system in sports is completely arbitrary and is either bounded by time or when a certain goal is

Find your favorite sports website and you will see that points are on a single page, but then take a look at all the metrics that are maintained — that data pool is a rich source in figuring out who the best players and teams really are. Let's look at the NYC Marathon and the Everest Marathon, for example. They are both 26.2 mile races. However, one is at sea level, the other starts at 17,900 feet and ends at 11,286 feet. While they are both “marathons,” they are NOT the same race. This same problem plagues

obtained such as in pool, golf, volleyball, etc. **Points tell one story — who won and who lost.** Points are a meaningful metric in determining how someone wins or loses.

cybersecurity labs and ranges. **The existing marketplace is flooded with solutions that focus on arbitrary points, difficulty ratings, and timing.** This lack of meaningful metrics, scoring, and difficulty ratings in the marketplace prevents you from knowing if you or your team is adequately prepared. Winning the NYC marathon does not mean you are ready to tackle Everest.

CYBER BATTLE



« **CYBERSECURITY
IS A SKILL.
IT'S NOT A BINARY
PASS/FAIL.**



The CyberQ Platform is a system of systems, designed to take care of the most complex tasks of creating a target environment, assigning measurable flags, and collecting meaningful analytics as you interact with the system to help you ascertain your true capabilities, areas for improvement, and your raw talent.

From complex network creation, complete

Are you able to break in undetected? How much network traffic did you generate compared to others? Did you trip the IDS systems? Were you able to keep critical services alive during an attack? Were you able to recover the systems from an attack and how fast? What are the areas that need work and what skills still need to be developed?

cloud orchestration, full packet capture, IDS, monitoring, and critical service checks, along with an intelligent flag system, CyberQ collects the key analytics on your capabilities at every level of engagement. Each time you interact with the CyberQ platform, it logs your activity, measuring through our benchmarking algorithms how you measure up to those who came before you.



WHAT IS AN IDEAL CYBER RANGE?

CYBERQ LEVERAGES TECHNOLOGY AND SOLVES THESE CHALLENGES...

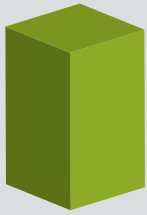
SUPPORTS CYBER PROFESSIONALS' LEARNING JOURNEY

Learn, Practice, and Assess cyber skills as an individual and then in a team environment repetitively to gain collective team skills and achieve mission-ready status.

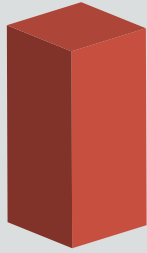
Provides a comprehensive portfolio of pre-built exercises across all levels and domain requirements.



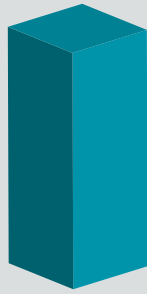
IMPROVES ENTERPRISE-LEVEL CYBERSECURITY OPERATIONS



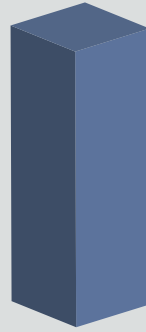
Help an organization to build a team of diversified cyber skills from SOC Analyst to CISO



Quickly plug existing training gaps across all levels.



Creates peer benchmarked persistent skills profiles



Uplifts cybersecurity process and compliance.



Customizable to replicate domain-specific network topology

CLOUD BASED & AFFORDABLE

- Provide 24/7 web access anytime, anywhere.
- Don't burn a hole in your pocket with setup or fixed costs.
- Able to connect with the firm's existing cyber network.
- Quick onboarding.
- Available with pay-as-you-use pricing models.

ADVERSARY AUTOMATION CAPABILITIES

Ability to test you own cyber defence capabilities against attack vectors and traffic generated through in-built capabilities.

INTRODUCING CYBERQ

EC-Council's CyberQ provides a fully automated Cyber Range platform-as-a-service training solution which delivers the industry's most capable cybersecurity skill development, practice, competitions, and assessment solutions to build cutting-edge cybersecurity skills and, as a cyber team, gain collective laser-sharp effectiveness.



BUILD SKILL THROUGH REPETITION.

200+ PRE-BUILT CYBER EXPERIENCES

Hacking Web Applications, IoT Hacking, Vulnerability Analysis, and more. Develop deep expertise on each cybersecurity skill with wide-ranging practice exercises to practice each skill several times till expertise.

DEVELOP YOUR LEARNING PATH

Develop your continuous learning path based on actual skill-mapping with requirements. Cybersecurity skill mapped to

Course -> Module -> Task Mapping

Category -> Specialization Area -> Work Role

Prominent cybersecurity courses and certifications

Benchmarked against peers and industry standard CVSS ratings

REAL-WORLD NETWORKS TOPOLOGIES

Practice on templated network topologies replicating domain-specific configurations for most complex cyber network domains, such as:



ON-DEMAND

- 24/7 web-access, anytime, anywhere.
- Military-grade infrastructure.

BUILD YOUR OWN WITH YOUR OWN STUDIO LICENSE

- HIGHLY SCALABLE AND CUSTOMIZABLE TO BUILD YOUR CONTENT.
- DRAG AND DROP CUSTOM EXPERIENCE DESIGNER.
- COUPLE OF CLICKS TO REPLICATE DOMAIN-SPECIFIC NETWORK TOPOLOGY.
- CONNECTS YOUR ENTERPRISE HARDWARE AND SOFTWARE THROUGH API FOR TRULY IMMERSIVE APPLICATION.
- SAVE YOUR TEMPLATE PERSISTENTLY.

EDUCATION PROVIDER CUSTOMIZATION

- UPLOAD YOUR OWN CONTENT.
- COURSE CONTENT MAPPING TO SPECIFIC CYBER TASKS.
- CUSTOMIZED EVALUATION/SCORING.

BENCHMARKED BIG DATA ANALYTICS PLATFORM

- FULL PACKET CAPTURE
- IDS MONITORING
- IPS MONITORING
- CRITICAL SERVICES CHECKS
- INTELLIGENT FLAG SYSTEM
- BIG DATA ANALYTICS CAPABILITY
- DEEP ANALYTICS FOR INDIVIDUALS
- DEEP ANALYTICS FOR TEAMS
- DEEP ANALYTICS FOR ORGANIZATIONS
- CREATE YOUR OWN REPORTS VIA APIS

EFFICIENCY METRICS

- Real-world cyber skill assessment

Reports by:

NICE/NIST Work Role

Task Mastery

Network Impact

Flags

- Show what skills you have mastered, not how many points you have

CUTTING-EDGE CAPABILITYESS

BEST PRACTICES Cyber Kill Chain, MITRE Framework	ADVANCED TECHNIQUES Initial assess, defence evasion, privilege escalation, and more...
WEB APPLICATION SECURITY OWASP mapping	DIGITAL FORENSICS AND INVESTIGATIONS Hack and Detect
MAPPED TO INDUSTRY STANDARD FRAMEWORKS: NICE/NIST, CSWF, CYBOK, CVSS	



BE MISSION-READY.

INDIVIDUAL AND TEAM-BASED TRAINING MODULES

CyberQ was designed as the most flexible, agile cyber range on the market. Individual and Team Exercise formats support cyber skill practice, development, and assessment in a revolutionary format.

SINGLE PLAYER EXERCISES

CyberQ is the first of its kind to provide always available, single experience challenges available 24x7 through an easy-to-use interface. No need to set up complex cloud environments, build your own test ranges, or set up local virtualization and download risky targets from the internet. CyberQ contains an ever-growing list of experiences that includes predesigned targets with challenge flags, file-based targets, and experiences to support cyber skill development in a fully curated environment. **Gain instant access to vulnerable machines and**

networks, fully licensed Operating Systems, Linux, Windows, IoT devices, OT Networks, SCADA systems, and much more to practice, hone, and assess cyber skill levels in a professionally designed and curated platform. Gain critical insights about your own skills and areas for improvement with advanced analytics, including comprehensive mapping to courses and job role frameworks.

CAPTURE-THE-FLAG EXERCISES: RED-ONLY, PURPLE

Whether you are on a team looking to hone your skills, in a cyber club, or participating in a cyber drill, CTFs provide time-based challenges that put you and your team's skills to the test. **CyberQ's revolutionary templating and automation system make creating CTFs, running them, and analyzing them fast, simple, and automated.** From exercise coordination, team rosters, cloud orchestration including resource scheduling, spin up, and tear down, CyberQ takes the heavy lifting out of coordinating exercises and lets you focus on what matters most — skill development and assessment.



RED VS. BLUE, FORCE-ON-FORCE COMPETITIONS

Ready to really put your team's skills to the test? CyberQ supports complete force-on-force competitions. We have mastered the art of Cyber Range competition hosting with a revolutionary approach to automated Cyber Competition Provisioning. Supporting a core Red Team and an isolated, but replicated, Blue Environment, each Defender team is assigned a live network of systems to defend. Support from just one to hundreds of defending teams, launching red cell attacks or automated attacks, and testing your Cyber Defense team capabilities. **CyberQ supports role-based assignments with Red and Blue flags/objectives to facilitate skills measurement that is meaningful and actionable.** CyberQ collects advanced metrics through customizable service checks, full packet capture, flag grading, and more...

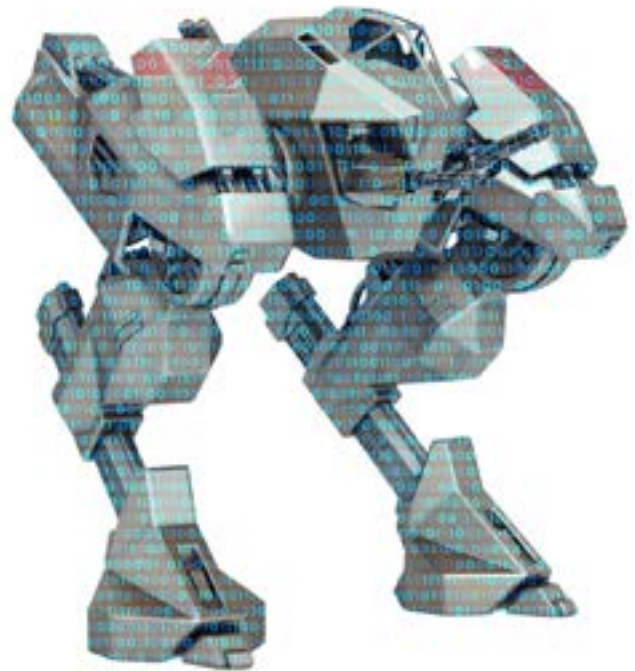




TRAIN AS YOU FIGHT, FIGHT AS YOU TRAIN.

ADVERSARY AUTOMATION CAPABILITIES

The best way to prepare for an attack is to go up against one. CyberQ supports live attack techniques, both manual and automated, based on the exercise types. Load TTPs and deploy attacks from APTs and some of the most notorious hacker groups in the world in a controlled environment. Be it ransomware, viruses, remote access trojans, or malware designed to encrypt and steal data, CyberQ puts you in the driver's seat of some of the cyber world's most dangerous attacks. **Learn how to detect, investigate, respond, and prevent what some of the most well-funded notorious hacking organizations are using against their victims.**





TRAIN WITHOUT CONSEQUENCE.

HOW CYBERQ CAN HELP ENTERPRISES

CyberQ is an essential tool for enterprises to build a system of continuous and immersive cyber learning and plug existing operations gaps. Empower your staff with a robust, fully autonomous skills platform. Your employees can run through single target challenges, full premium certification experiences, participate in cyber competitions, capture the flag exercises, Red vs. Blue events, and Cyber Drills hosted by your own SMEs.

With a Studio account, you can even replicate your own infrastructure, bring your own servers and your own network topology, and ensure the environment you practice and train on is a replica of your actual production environment.

Deploy real machines with real live vulnerabilities and test break/fix, patching, systems defense, system attacks, penetration testing, etc. All in a controlled environment without the consequences.

UPLIFT YOUR CYBERSECURITY OPERATIONS LIKE NEVER BEFORE

People

- Hire the best talent.
- Develop mission-ready cybersecurity teams.
- Run challenging cyber competitions.
- Benchmarked performance metrics.

Process

- Run real-life cyber experiences.
- Practice on the most advanced comprehensive library of pre-built exercises.
- Replicate your infrastructure or connect via APIs.

Technology

- Evaluate vendors.
- Train employees in vendor technology.



BENEFITS OF CYBERQ RANGE PLATFORM-AS-A-SERVICE FOR ENTERPRISES

Build the best skilled Cyber team:

CyberQ's comprehensive library of practice experiences helps develop cutting-edge cybersecurity skills at an individual and enterprise team level. **Skills are developed and perfected through repetition and evaluation.**

With an in-built big data analytics platform, we collect a host of metrics. This data in aggregate provides the employer with enough metrics and analytics that tie to industry frameworks, courses, job role frameworks, and their identified knowledge, skills, and abilities to make informed decisions about their current Cyber Team profile, the capability of a potential candidate, or where to invest training dollars for teams or individuals.



Gain confidence with well-qualified, trained individuals to run the cyber element of your organization.

ATTAIN UNIT COHESION.

CREATE DOMAIN-SPECIFIC NETWORK TOPOLOGY:

Providing full customization capabilities, you can replicate your own network topology in a few clicks and connect your live network's hardware and software with the CyberQ Range through APIs, thereby giving a **real immersive production environment for your cyber team, but without the consequences of on-the-job failures.**

For e.g., transport systems, industrial control systems, etc.

With Custom Content creation, you can create your own targets, CTFs, and even full force-on-force competitions to assess skills, with deep reporting on multiple dimensions for comprehensive review.

UPSKILL QUICKLY WITH AFFORDABLE TRAINING INVESTMENTS:

With 200+ (and growing) prebuilt templated exercises available 24/7 anywhere, anytime on cloud infrastructure, enterprises can quickly choose a suitable collection of cyber exercises to practice based on multiple ways of skills mapping, for e.g., Cyber Task Mastery, NICE/NIST, Difficulty Ratings, Cyber Domains, etc.

We also provide full functionality to design

your customized cyber training curriculum backed by CyberQ's performance-based learning engine.

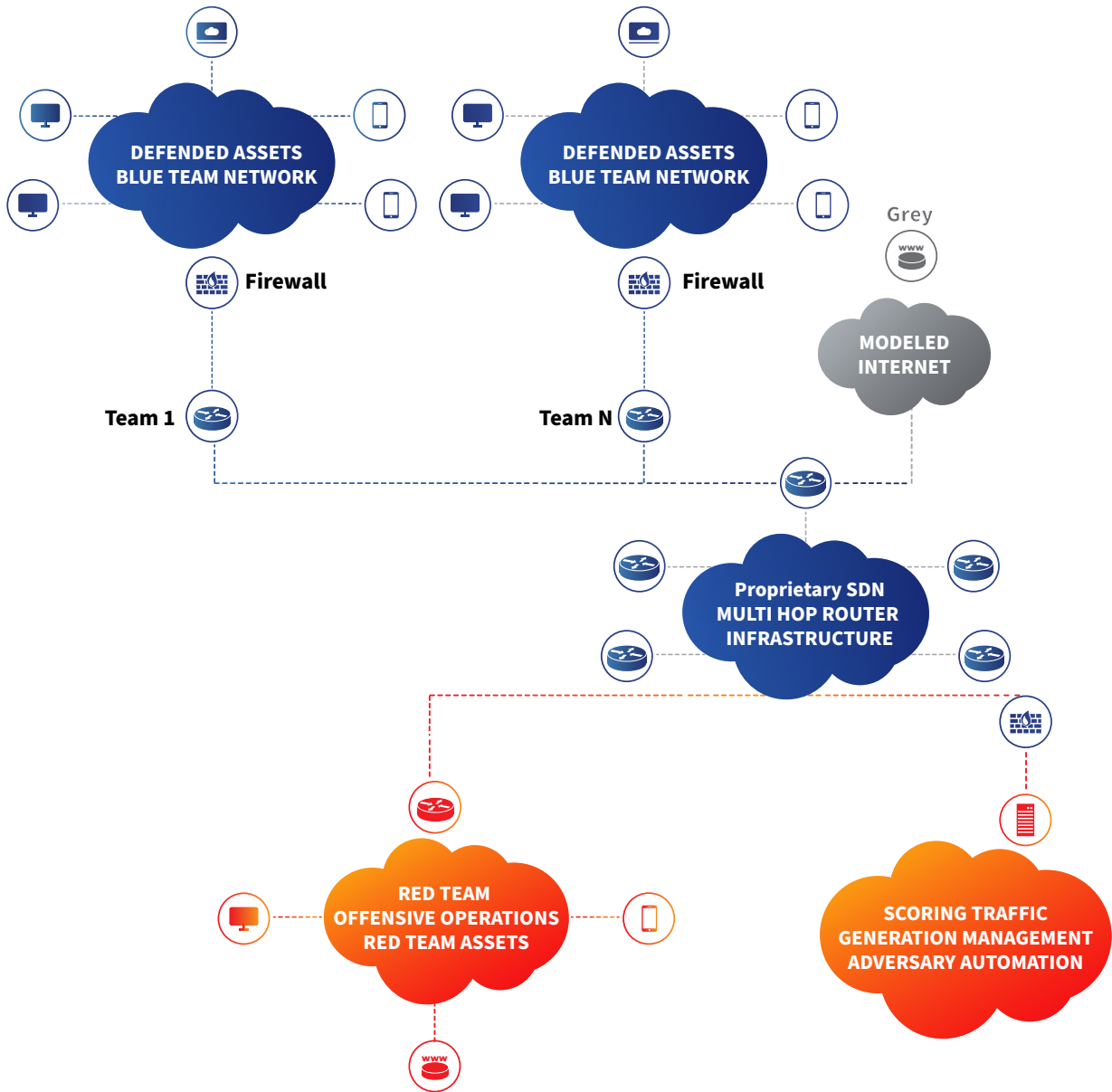
CyberQ guides enterprises to assessing, developing, and investing in their IT and cybersecurity staff. With easy, affordable, pay-as-you-use pricing models for individuals and enterprises, start leveling up your cyber skills from Day 1

NETWORK ARCHITECTURE

Every enterprise's cyber network face cyberattacks of varying intent and complexity. To develop competent capabilities through practice on CyberQ, an attack experience can be developed as a Cyber Competition between Red and Blue teams, wherein the Blue Team acts a network defender and faces the Red Team, who launch the cyberattack. The Red Team can be CyberQ's Adversary Automation Capability or a team of humans with competent cyber skills.

The network infra is provided through **cloud orchestration on our military-grade data centres** armed with the industry's leading security tools and network infrastructure components from all the vendors for network build-up. **Through Software Defined Networking, any domain network architecture can be built or torn down in a couple of minutes. Persistent templates can be saved to quickly spin up the experience again.** Our big data engine captures every byte of data and performs analytics to provide deep efficiency metrics and reports.

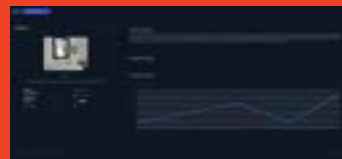
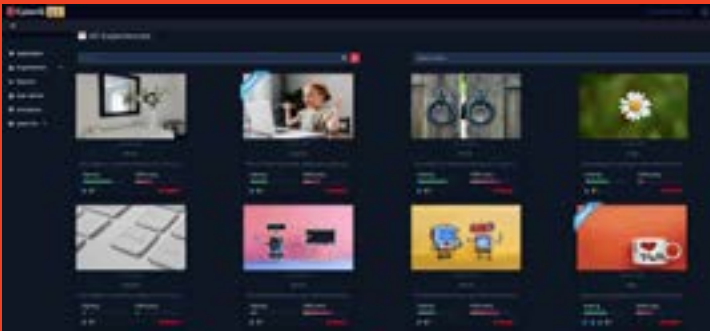




- EVENT MANAGEMENT
(INVITATION, RSVP, TEAM ROSTER, SCHEDULING)
- EVENT DOCUMENTATION (ROE)
- EVENT WIDE TEAM CHAT
- EVENT COORDINATOR SCREEN and CHAT
- PUBLIC/PRIVATE LEADERBOARDS
- EXTERNAL METRICS (xAPI)
- INJECTS
- RED FLAGS
- BLUE FLAGS
- FLAG CHAINS
- IDS
- FPC
- EXERCISE CONTROL (WHITE CELL)
- RANGE MANAGEMENT (GREEN CELL)
- RAPID (EASY) EVENT REPEATABILITY
- CROSS EVENT REPORTING
- MULTI EVENT REPORTING
- INDIVIDUAL and TEAM BASED REPORTS



OVER 200+ CUTTING-EDGE EXPERIENCES READILY AVAILABLE (AND GROWING....)



Access to Cyber Challenges, Competitions, and Experiences on Fully Cloud Orchestrated Military-Grade Cyber Range Environments, Comes with Easy, Affordable, Pay-As-You-Use Pricing Models



**Prepare yourself and your team to win the global cyber battle
in less time, and at a lower cost than the alternatives!**



Visit us: <https://cybergq.eccouncil.org/>



Contact us: CyberQ@eccouncil.org



Get a Custom Demo : <https://cybergq.eccouncil.org/cybergq-contact.html>

PRACTICE DEEP - STAY SHARPENED - PROTECT WITH MASTERY