Introduction

This guide has been developed to help teams participating in CyberCenturion X understand what is involved in the competition and what support is available for teams and Team Leaders. We will also cover the hardware and software requirements of the competition.

What is CyberCenturion X?

CyberCenturion tasks teams with working on a range of computer systems, including both Windows and Linux based systems, to fix cyber security issues. Supported by a range of resources and the internet, teams will have to complete numerous tasks including:

- Identifying and removing malicious software
- Enforcing secure password policies
- Carrying out system security audits
- Ensuring a system is properly up-to-date
- Enabling and enforcing firewall rules

Preliminary rounds and supporting resources will provide a more thorough understanding of the types of activities involved in the competition.

How can I register?

A link to the registration form will be posted on the dedicated CyberCenturion webpage: **www.stem.org.uk/cyber-centurion**

During registration you will be asked for the details of your team members (four young people plus one reserve) and the Team Leader (responsible adult), as well as information on the organisation you are part of (school, cadets, code club etc.). Following this, you will be kept up to date with key competition phases via email.

Competition Structure & Timeline

The CyberCenturion competition takes place over several rounds:

Training and Practice Round	8th September - 15th October 2023
Competition Round 1	19th - 23rd October 2023
Competition Round 2	7th - 11th December 2023
National Final	Spring 2024

There is no obligation to take part in all rounds. Selection to the national final is based on cumulative score across Competition Rounds 1 & 2.

There are two age divisions to the competition:

- Junior Division
- Senior Division

Junior teams must be entirely comprised of competitors within the following year groups:

England & Wales: Y7 – Y9

Scotland: S1 – S3

Northern Ireland: Y8 – Y10

Senior teams must be entirely comprised of competitors within the following year groups:

England & Wales: Y10 – Y13

Scotland: S4 – S6

Northern Ireland: Y11 – Y14

Both divisions also include the following streams to encourage diversity and inclusion:

- All boys team
- All girls team
- Mixed gender team
- Cadets team

Junior and senior teams compete separately to one another and 15 teams, including winners from each division and stream will be invited to the final.

Competition Rounds and the National Final will each have several competition images (virtual systems) to investigate and secure. Teams can work on the images on a competition day of their choosing. Scores are automatically uploaded to the scoring server and tracked by the CyberCenturion team. Technical issues & queries during the live round will be handled by a live support team.
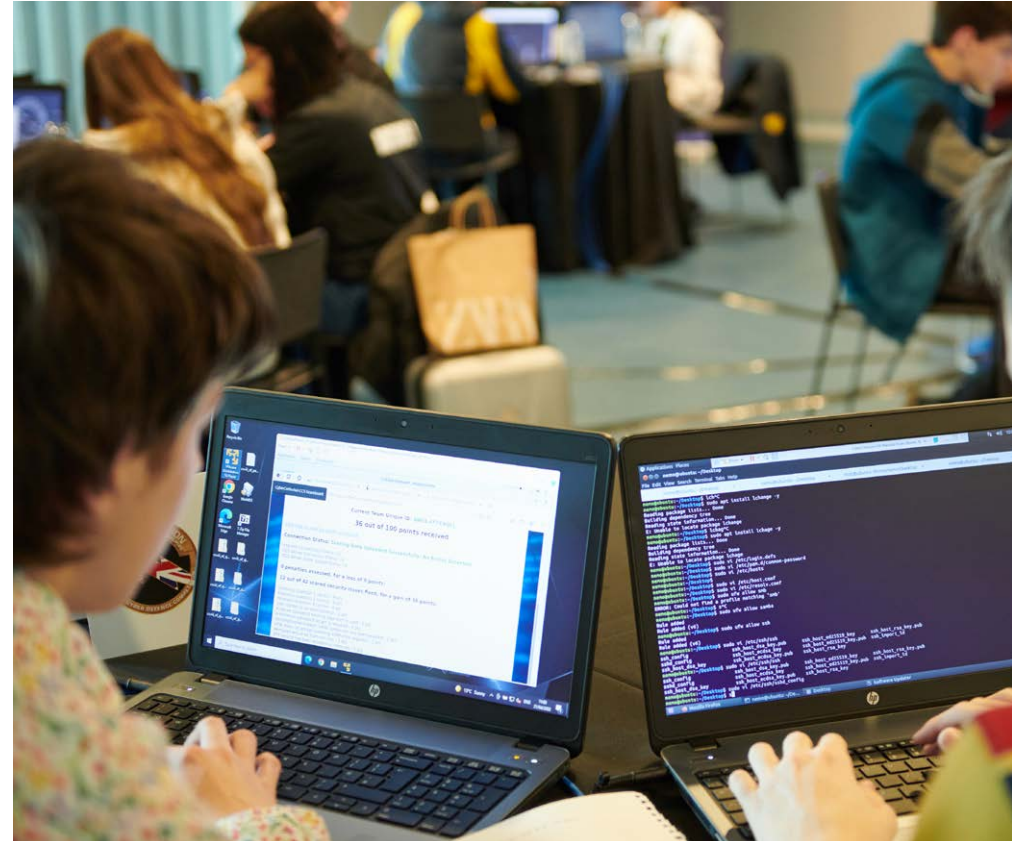
Support

There are three strands of support available to teams taking part in CyberCenturion:

1. Team Leader training

A virtual training session will be held by the CyberCenturion team for all registered Team Leaders. This training will guide Team Leaders through using the competition environment and the basic principles of CyberCenturion.

2. STEM Ambassador support

Each team will be able to request the support of a trained CyberCenturion STEM Ambassador. The STEM Ambassador will be on hand to team mentoring and signpost to suitable resources.

3. STEM Community

The CyberCenturion STEM Community (**https://community.stem.org.uk/home**) group will be open to all registered Team Leaders and is a place where teams can share resources and ask questions. The community will be supported by the CyberCenturion technical support team.

Technical Requirements

Context

The competition makes use of a range of pre-prepared images (virtual operating system environments) that participating teams work through, solving a range of challenges and securing the virtual system. These images are provided by the American Air Force Association (AFA).

The images are executed by a piece of software called **VMware workstation player**. Whilst running, the images require access to the internet, to connect to the scoring system operated by the AFA and to complete system updates. The AFA run CyberPatriot, the US version of the competition. CyberCenturion uses the same scoring system and infrastructure to support the competition.

Within the image/virtual operating system, teams will have access to administrator privileges to allow them to establish the security of the system. This privilege does not extend to the host computer.


Hardware requirements

The hardware requirements to run the virtualisation software, as recommended by the AFA are as follows:

- **Processors:** (2011 or later): Intel: 64-bit i3 processor, generation "Sandy Bridge" or better OR AMD: 64-bit processor, generation "Bulldozer" or better

- **Virtual Extensions:** Virtualization technology/extensions (e.g., VT-x, Vx) must be ENABLED in BIOS

- **RAM:** 8 GB of RAM. 4 GB may cause performance issues. Performance issues stemming from this will not receive special consideration

- **Disk Space:** 40 GB of free disk space

- **Display:** XGA (1024x768) or higher display

- **Internet Access**

Note: It is recommended that 4 such machines are available for each team to use during competition rounds. This allows one image per machine and a machine used to simultaneously research technical queries.

Software requirements

- **VMware Workstation Player 16.2.4** installed and executable on the user account of the participant.

- **WinMD5** installed and executable on the user account of the participant.

- **7-zip** installed and executable from the user account of the participant.

- **OUTBOUND** access to **HTTP** on **Port 80** and **HTTPS** on **Port 443**.

- Permission to run the CyberPatriot Competition System (CCS) Connection Test executable from the user account of the participant. This is used to test connection to the CyberPatriot scoring server without the need to run an image. A link to the most recent version of the CCS will be provided by the CyberCenturion Programme Office.

- Whitelisting of a range of websites that teams may wish to use to diagnose queries and technical questions throughout the course of the competition. A minimum list is **here**. Providing it is not against the rules of the competition, IT Administrators may find it useful to work with teams on a case-by-case basis to establish further whitelisting of websites to support their research throughout the competition.
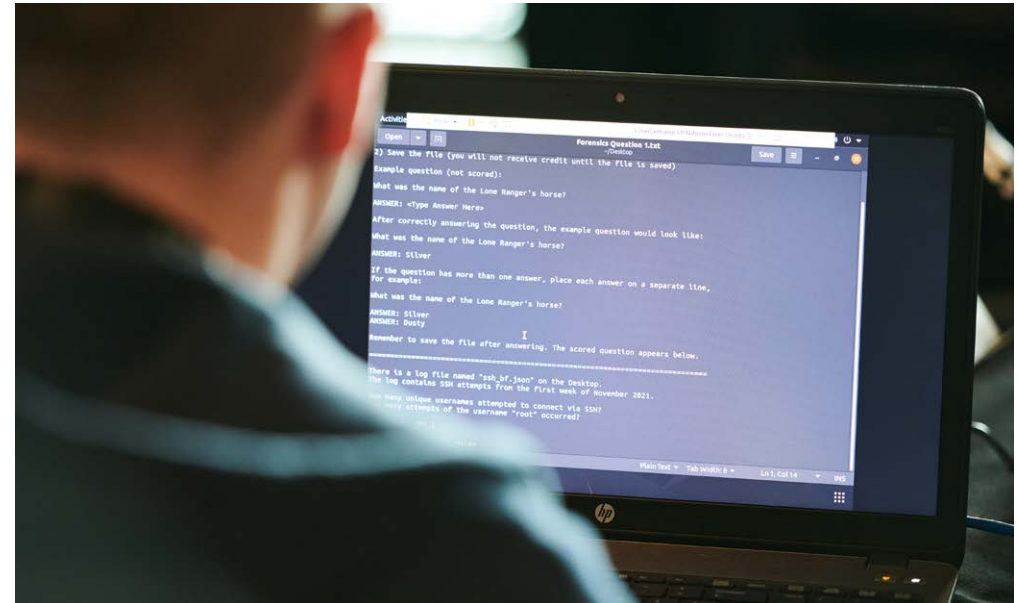
Further guidance on whitelisting can be provided by the CyberCenturion Programme Office, please contact them if you experience connection issues.

These technical requirements form only part of the mandatory rules of the competition, and **both should be consulted** by participating teams.

Note: Be aware that the links to download the required software may be subject to change over time.

Enabling Virtualisation

By default, virtualisation will likely be disabled on your device. This must be enabled by accessing the **BIOS** (Basic Input Output System) of the computer. The BIOS allows basics services to run that are necessary for an operating system to boot, as well as the ability to interface with hardware peripherals.

1. The BIOS can be accessed when first booting up the computer. How do to so varies from computer to computer, usually this is by pressing one of the following keys (prior to the OS booting): **Delete**, **Esc**, **F1**, **F2**, **F3**. If you miss the prompt, simply reboot, and try again. If none of these keys work, consult the manufacturer's guide for your computer.

2. Navigate to the CPU settings, usually using the keyboard's arrow keys and the enter key. The CPU settings may be labelled: **Processor or Chipset**.

3. Enable virtualisation. This setting may be called **VT-x**, **AMD-V**, **SVM**, **Intel VT-d**. Simply toggle this setting to 'enabled' or check the box.

4. Save changes and reboot.

Competition Images

All rounds prior to the national final are held remotely. The images used in these rounds will be made available to download and prepare **prior to the competition period**. The images will be password protected. The password will be released the **morning of the first day** of the competition round. Internet access is required throughout these competition rounds.

You should therefore:

- Ensure you allow emails from '**cybercenturion@email.stem.org.uk**' and '**cybercenturion@stem.org.uk**'.

- Ensure you allow plenty of time to download and check the integrity (using WinMD5) of the images prior to the competition round starting. Some of these files are large and may take a while to download depending on your internet connection.

- Ensure teams will have access to the necessary hardware throughout the competition round.

It is also advised to have a plan in place should you have internet connectivity problems during the competition. This could for example be a **cellular dongle and data plan**.

Note: Following each round the **competition images must be removed** from each device.