



# PRESIDENT'S CUP

CYBERSECURITY COMPETITION





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# President's Cup Cybersecurity Competition

Building a Competition Across the Federal Workforce



# What is the President's Cup Cybersecurity Competition?



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- America's Cybersecurity Workforce E.O. 13870 mandates DHS to hold the competition annually.
- The goal of the competition is to identify and reward the top cybersecurity talent in the federal workforce.
- Any federal executive department or agency employee can participate, including uniformed service members.
- Participants can compete as an Individual, on a Team of up to five members, or both.

## 2021 Winners

Individual  
Track A  
USMC

Individual  
Track B  
USAF

Team  
780th  
Military  
Intelligence  
Brigade



# President's Cup Format



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- The competition has three rounds – two Qualifying Rounds and Finals.
- Qualifying Rounds
  - Must succeed in first qualifying round to participate in second round
    - Teams – best team from each Department, plus top 20% based on score
    - Individuals – Top 100
- Final Round
  - Top 5 Teams and Top 10 Individuals in Tracks A/B
  - Day 2 of Teams Finals Livestreamed via YouTube



# Considerations for President's Cup Platform



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- **Accessible anywhere from a standard web browser**
  - Minimum Hardware/Software requirements for end users
- **Scalable to support potentially thousands of concurrent participants across the federal .gov/.mil**
- **Open-Source Resources**
  - TopoMojo - <https://github.com/cmu-sei/TopoMojo>
  - Gameboard - <https://github.com/cmu-sei/Gameboard>
  - Identity - <https://github.com/cmu-sei/Identity>



# President's Cup Challenge Development



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- Each challenge is tied to a NICE Work Role
- Built within TopoMojo
  - Multiple variants of each challenge created and deployed at random
  - “Infinity challenges” – variants within challenge randomized by TopoMojo
- Quality Assurance for each challenge
  - Playtesting conducted by National Labs with support of DOE
- Session timer
  - Influences challenge development and competitor strategy

## Where's the site?

There was an update to a mission critical website, but we don't know where the new site is. Can you help?

### NICE Work Roles:

Exploitation Analyst

### NICE Tasks:

- T0266 - Perform analysis for target infrastructure exploitation activities.



# President's Cup 2019 Wrap-Up

- Two Tracks – Teams and Individuals
- Two Qualifying Rounds per Track
  - “Game-show” style
  - Held remotely over 10 days with 8-hour time limit
- Final round consisted of 3D immersive “Escape Room”

Teams Round 1 Gameboard

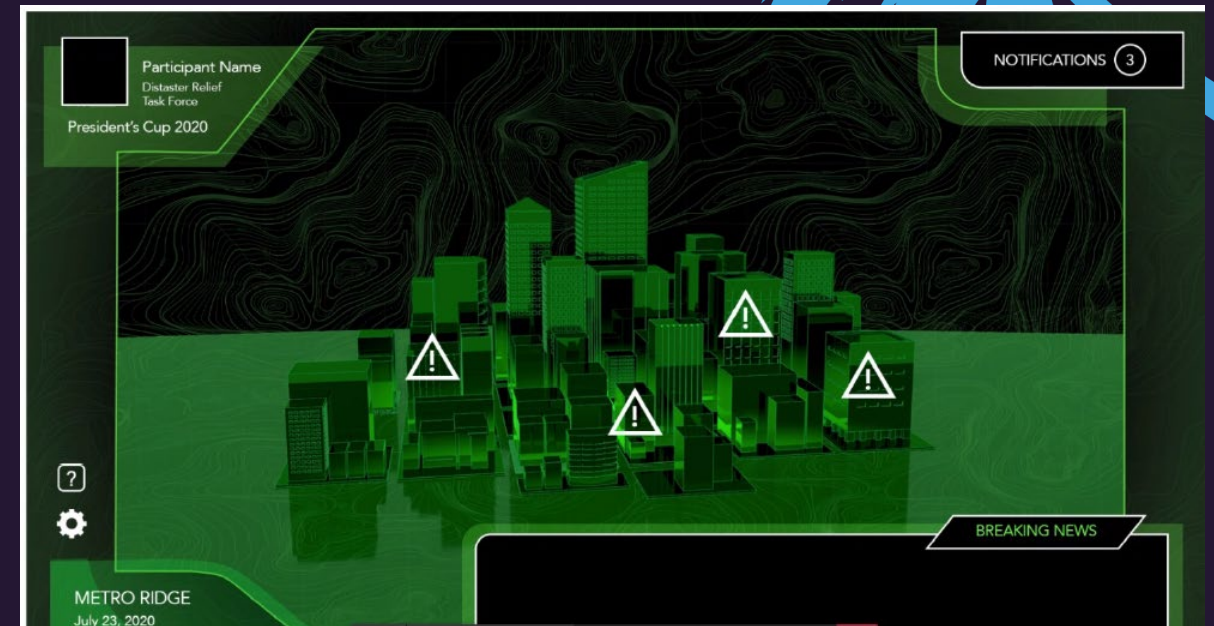
| ANALYZE AND INVESTIGATE | COLLECT AND OPERATE | OPERATE AND MAINTAIN | PROTECT AND DEFEND | SECURELY PROVISION |
|-------------------------|---------------------|----------------------|--------------------|--------------------|
| 250                     | 250                 | 250                  | 250                | 250                |
| 500                     | 500                 | 500                  | 500                | 500                |
| 1000                    | 1000                | 1000                 | 1000               | 1000               |



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# President's Cup 2020 Wrap-Up

- Multi-part challenges with partial credit
- Individual Tracks
  - Track A – Incident Response, Forensics
  - Track B – Vulnerability Analysis, Exploitation Analysis
- Remote Finals
  - Cloud hosted “Save the World” Game



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# President's Cup 2021 Wrap-Up

- Continue using NICE work roles for Teams and Individuals Tracks
- Updated Gameboard
- Remote Finals
  - Save the planet narrative



# Gameboard Updates in 2021

- Consolidated Gameboards into a single application
- Integrated challenge metadata
- Migrated email functionality away from Gameboard
  - PII protections



Home Getting Started Profile Admin Logout

## President's Cup Cybersecurity Competition

Live!

OPEN PRACTICE

ROUND 1 INDIVIDUAL TRACK A

ROUND 1 INDIVIDUAL TRACK B

Upcoming Games

Completed Games

ROUND 1 TEAM

# Outlook for President's Cup



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- Expand use of President's Cup challenges
  - Hold additional internal competitions for federal workforce.
  - Make existing challenges available to provide training opportunities through simulated real-world environments.
- Releasing source code of challenges to public after each competition.
- Foundry Appliance – Announced at 2021 Blackhat



PCCC Practice Area

Practice demo challenges and content from past President's Cup competitions

2021 Practice  
*Gameboard*

Challenge Archive  
*Gameboard*

Open Source Challenges  
*GitHub*

Walkthrough Videos  
*YouTube*



# Foundry Appliance

- Pre-configured VM that packages President's Cup applications
- Single-host Kubernetes cluster to replicate production deployment
- Uses VMware ESXi to serve virtual challenge environments
- <https://github.com/cmu-sei/foundry-appliance>



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Carnegie Mellon University  
Software Engineering Institute

## Foundry Appliance v0.4.0

Welcome to the Foundry Appliance. This virtual machine hosts workforce development apps from the [Software Engineering Institute at Carnegie Mellon University](#).

### Getting Started

The appliance advertises the *foundry.local* domain via mDNS. All apps are served as directories under this domain.

To get started using the virtual appliance:

1. Download [root-ca.crt](#) and trust it in your keychain/certificate store. This removes browser certificate warnings.
2. Navigate to any of the apps in the following two sections.
3. Unless otherwise noted, the default credentials are:  
`user: administrator@foundry.local`  
`pass: foundry`  
`code: 123456`

### Foundry Apps

The following Foundry applications are loaded on this appliance:



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