CICI: Regional: Substrate for Cybersecurity Education; a Platform for Training, Research and Experimentation (SCEPTRE)

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Product: CRACR (CAPITAL REGION ADVANCED CYBER RANGE)

- **Substrate:** OpenStack/ceph distributed platform on top of 100G DWDM network – CAAREN (NSF Award 1246386)
- **Framework:** orchestrated, Dynamic Topology Engine with Cyber Range semantics: security protocols, targets, hits, misses, scoring, events (NSF Award 1642118)
- **Payload:** per-student, arbitrary, dynamic scenarios and topologies for Cybersecurity education, fully integrated with GW Cyber Academy labs and students’ devices
CRACR Payload Example

Class: PSCS 4202
Transition to Practice (Education)

- in full production use at GW
- three courses have been taught on the platform so far:
  - Cyber Attack Tools & Technique (PSCS 4202)
  - Securing Operating Systems (PSCS 4103)
  - IT Security Defense Countermeasures (PSCS 3113)

in pilot mode at NOVA/NVCC

PSCS 4103 Final Exam
Transition to Practice (Workforce Development, Training and Collaboration)

- Michigan Cyber Range (MCR)/Merit
- Smarter DC, Resilient DC & Smart City Works
  - CRACR ➔ Cybersecurity Education Platform
    - Customizable Learning Management System
    - Provides Access to Physical IoT and SCADA systems
    - Real-World Sandbox using 2D representations
    - Future is AI and 3D Gamification
- DOL/GSA
  - evaluation and testing of newly proposed environments