CAE IN CYBERSECURITY COMMUNITY

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PISCES Objectives

- Workforce Development
- Infrastructure Protection
- Support Research

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No-cost security monitoring for the public sector, using data collected to train university students as cyber analysts

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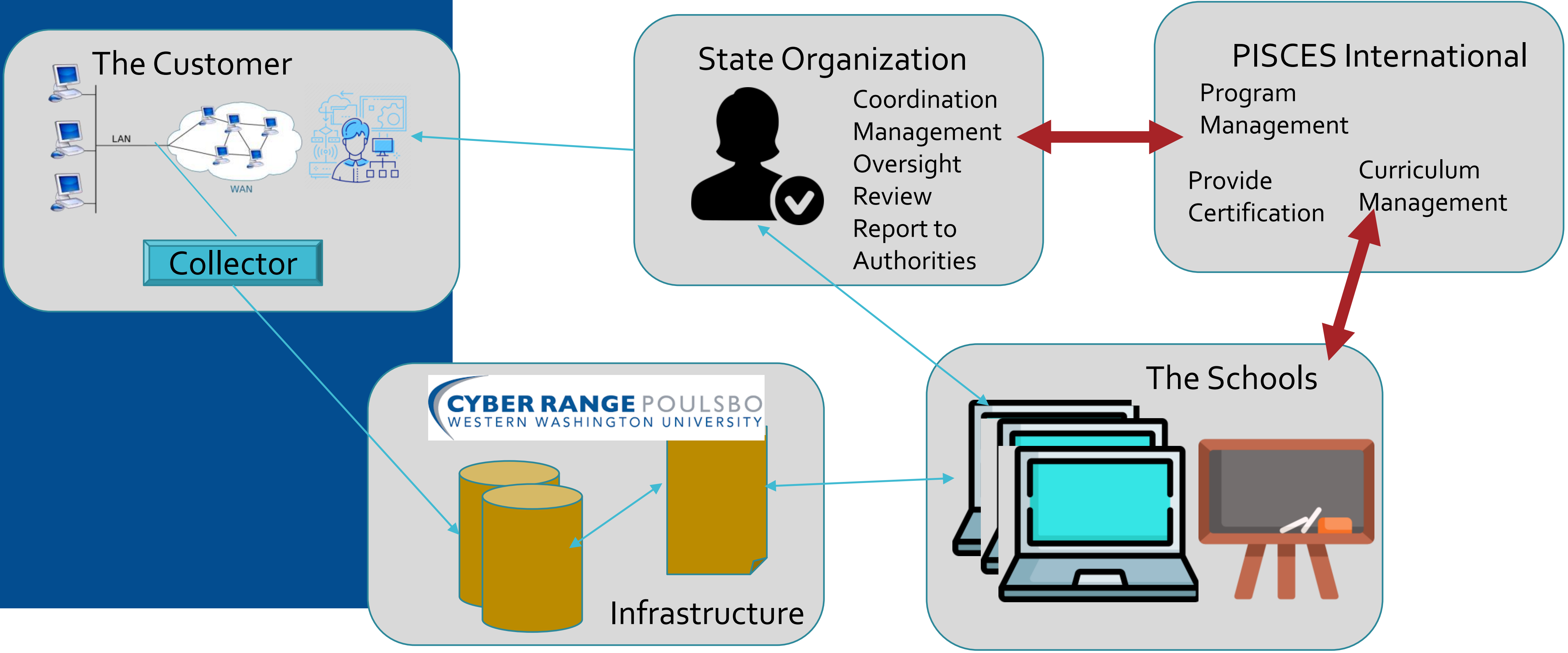

The Customer

Collector

State Organization

Coordination
Management
Oversight
Review
Report to
Authorities

PISCES International

Program
Management

Provide
Certification

Curriculum
Management

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Infrastructure

The Schools

Roles

PISCES International

- Develops and maintains Infrastructure.
- Develops Curriculum
- Train the Trainer
- Sets Guidance and Expectations.
- Manages assessment and certification.
- Works with CISA/PNNL to help with initial funding.

State Responsible Organization

- Recruits and Schedules Schools
- Recruits and manages relationships with local customers.
- Provides customer liaison.
  - Interface to customers
  - Review of Student Tickets
- Develops long-term funding for state.
- Provide periodic reporting
  - Students, etc.
  - Customer Reports

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Schools

- No cost
- Teach students
  - Use curriculum base
- Ensure students sign NDA
- Ensure students cover assigned customers.
- Ensure Students provide reports.

Customers

- No Cost
- Install Collector
- Provide Network Information
- Provide contact Information
- Respond to notifications
- Gives more peace of mind

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Participation

- 2022-23 - 270 Students
- Washington
  - 7 Schools
  - 19 Cities, Counties, etc.
- Colorado
  - 2-3 Schools
  - 6+ Cities, Fire Districts, etc.
- Kentucky
  - 2 Schools
  - 6+ Cities, etc.
- Idaho
  - 2 Counties
- Montana
  - 1 School
  - 4 Customers
- Alabama
  - 1 School

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Successes

- 10/3/2Larval debug attempt detected by USA based IP
- 10/3/22 Possible Mirai botnet activity seen from very high risk foreign address
- 10/4/22 High risk foreign address attempted to scan your network
- 10/4/22 High risk foreign address seen attempting traffic with your critical asset
- 10/4/22 High risk multi-region address attempted traffic to critical asset
- 10/5/22 very high-risk foreign address attempted to http scan critical asset.
- 10/5/22 High risk multi regional address attempted zmap scan on your network. The scanning attempt was successful.
- 10/6/22 high risk foreign address attempting nat stun on assets in your network
- 10/10/22 High risk foreign address attempted to grab .env file

- 2/1/23 Kerberos error flood detected
- 2/1/23 High risk CO-location spambot seen.
- 2/1/23 High risk Russian PHP webshell successful compromise of hvac. Infection beaconing.
- 2/2/23 High risk CO-location spambot seen. 2/3/23 High risk source seen attempting traffic.
- 2/3/23 High risk multi geo domain source seen attempting traffic
- 2/3/23 Network scanning by high-risk source.
- 2/8/23 High risk source communicating with internal host. 2/13/23 High risk source attempting asset compromise
- 2/14/23 Very high-risk spam source and ASN seen 2/23/23 Suspicious phishing email with malware attachment.
- 2/24/23 More spam bots traffic found internal to the community partner 2/27/23 Attempted mirai botnet traffic
- 2/28/23 High risk source unsuccessful in web exploit attempt.

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Curriculum

- General PISCES Curriculum
  - Basics on Kibana Application
  - Introduction to Suricata
  - Networking monitoring
  - Ticket writing
- SOC Curriculum
  - Setting up Kibana
  - Introduction to honeypots
  - Incident response
  - Red/Blue/Purple Team
  - SOC Operations

Workforce Development Goal: Create “experienced” students

- Curriculum designed to teach skills valuable in cybersecurity.
  - Knowing
- Enforcement of “knowledge” through hands on experience.
  - Doing
- Experience with processes, systems, and actual data.
  - Internalizing
- Unstructured problems with no “correct answers”
  - Exploring
- Requirement to work with “tickets”
  - Communicating

The Experience

- 1/3 1/3 1/3
- Challenging to translate previous classes to the real world.
- Satisfying to work with actual data.
- Good contribution for the resume.
- Contributes to success in hunting.

Infrastructure Protection

Goal: No Cost Monitoring

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- Small Entities
  - Small budgets
  - Small staff
  - Limited time, resources, etc.
- Critical Links
  - Use the same state and federal services
  - Provide essential services – Water, power, etc.
- Limited Protection
  - Not 24/7, 365
  - Not experienced staff

Infrastructure Experience

- Initial Implementation is challenging
  - Deciding to start can be hard
    - Uncertainty about data
    - Need to bring many on-board
    - Not sure of the value proposition
  - Not a lot of time or talent
    - Simplified implementation
- Initial Monitoring is exciting
  - Lots of real and potential issues
  - Lots of false positives – getting to know the infrastructure.
  - An opportunity for embarrassment.

- The level of excitement drops over time.
  - Initial issues are resolved
  - Network and firewall configuration is refined
  - Better understanding of the network
- Time for more focused monitoring
  - Threat hunting.
  - Watching the ransomware fail.

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Research Goal: Explore What works

- Usefulness and usability of tools.
- Mapping current attack vectors to PISCES tools
- Real world data set.
- Other areas.

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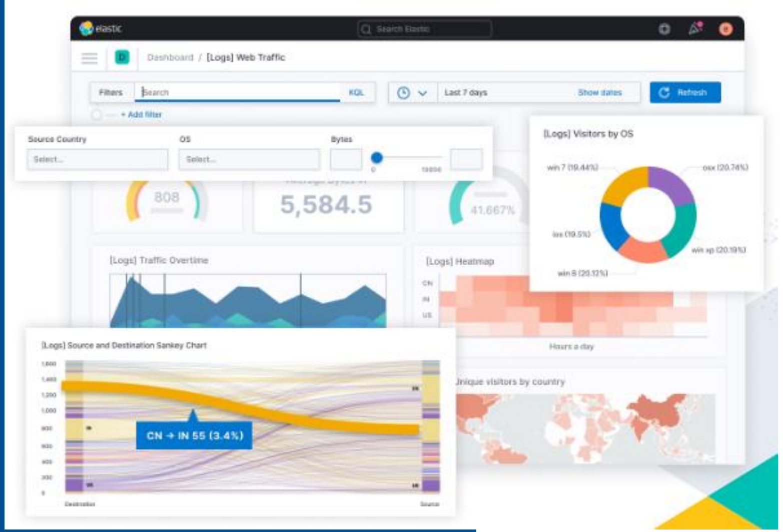
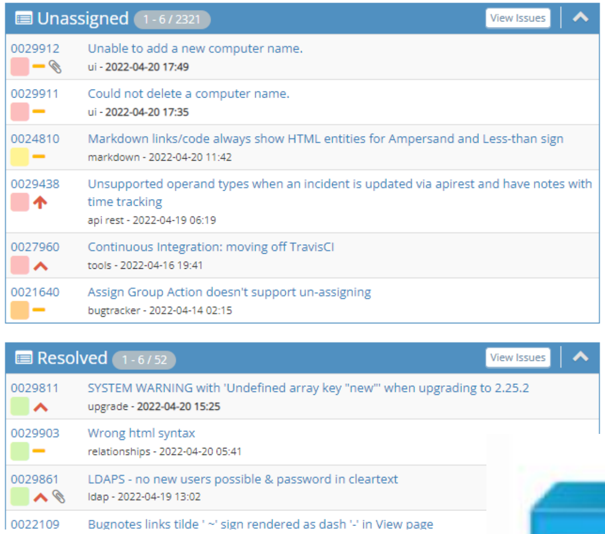
The Tools





Unassigned 1 - 6 / 2321 View Issues

0029912 Unable to add a new computer name.
ui - **2022-04-20 17:49**

0029911 Could not delete a computer name.
ui - **2022-04-20 17:35**

0024810 Markdown links/code always show HTML entities for Ampersand and Less-than sign
markdown - 2022-04-20 11:42

0029438 Unsupported operand types when an incident is updated via apirest and have notes with time tracking
api rest - 2022-04-19 06:19

0027960 Continuous Integration: moving off TravisCI
tools - 2022-04-16 19:41

0021640 Assign Group Action doesn't support un-assigning
bugtracker - 2022-04-14 02:15

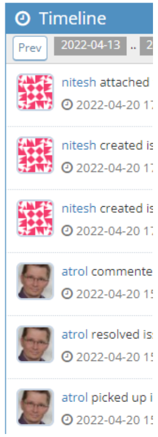
Resolved 1 - 6 / 52 View Issues

0029811 SYSTEM WARNING with 'Undefined array key "new"' when upgrading to 2.25.2
upgrade - **2022-04-20 15:25**

0029903 Wrong html syntax
relationships - 2022-04-20 05:41

0029861 LDAPS - no new users possible & password in cleartext
ldap - 2022-04-19 13:02

0022109 Bugnotes links tilde ' ~' sign rendered as dash '-' in View page



Timeline

Prev 2022-04-13 .. 2

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2022-04-20 1

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2022-04-20 1

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2022-04-20 1

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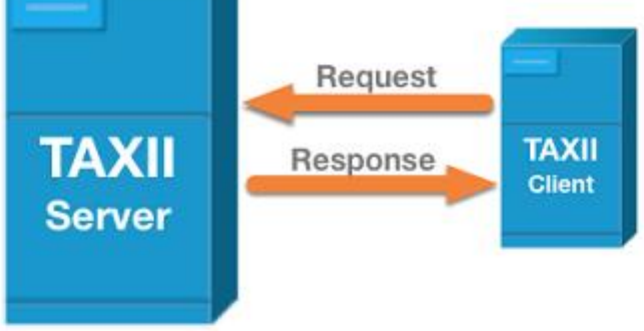

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Questions