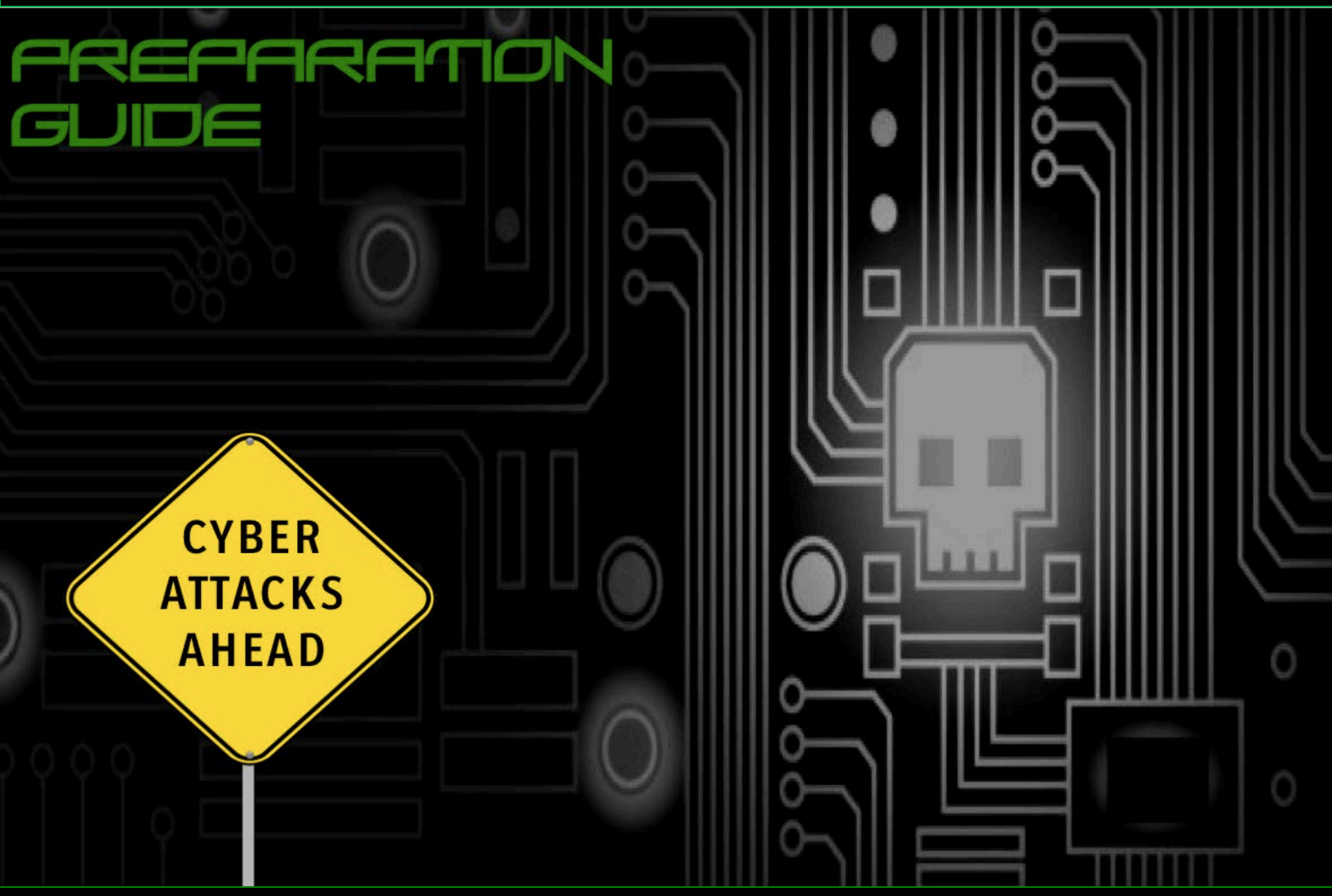
PCDC 2017

PREPARATION GUIDE



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WELCOME

It is my pleasure to congratulate you as you have accepted the challenge to prepare for the fourth annual Palmetto Cyber Defense Competition (PCDC) hosted by the Space and Naval Warfare (SPAWAR) Systems Center Atlantic (SSC-Atlantic) in collaboration with the Lowcountry Chapter of the Armed Forces Communications and Electronics Association (AFCEA), to be held on April 8-10, 2017. This year we are expanding our separate but collocated Palmetto Digital Forensics Competition with separate high school and collegiate/pro divisions on 8 April. We are also continuing the Professional day that we added on in 2015 and are again allowing students to complete along-side trained cybersecurity professionals. Finally, to get you started we have developed a preparation guide to prepare you for the excitement that is PCDC.

As you are well aware, there is an ever-expanding proliferation in the use of information technology. Technology is everywhere; it's in our pockets, living rooms, offices, refrigerators, microwaves, workplaces, doctor's offices, and grocery stores. With this huge prolific growth in the use of connected technology, criminals are continually finding ways to exploit and exfiltrate personal, business and government information. Recent attacks such as those at Home Depot, Wendy's, Yahoo, and Dyn have highlighted the importance of ensuring information technology is secured. According to a study by a firm that studies jobs trends, cybersecurity jobs are growing at a rate of 12 times the overall job market. The field is calling for a new breed of cyber security experts to defend and information systems as well as to research and engineer new cyber technologies that offer new and exciting capabilities in a secure manner.

Every year this competition grows and evolves. We hope that the continuation of professional day, will do even more to prepare students, as some will be given the opportunity to work along-side trained cybersecurity professionals. The continued growth of this event is the direct result of providing unique and valuable training to students in South Carolina. This could not be done without all of the sponsors and the cyber security professionals who have dedicated numerous hours of volunteer time. They have all done a wonderful job each year putting this together. But the ultimate reason we are successful is because the students competing work very hard to prepare for this competition and then take the next step towards becoming a cybersecurity professional.

Lastly I want to wish you good luck as this competition is very challenging, but I think you will find that the experience is greatly rewarding as well.

Best Wishes,

Jeff Sweeney
PCDC Director

PCDC 2017

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About the Competition

The Palmetto Cyber Defense Competition is a three-day Cyber Defense Competition that is put on by the Space and Naval Warfare (SPAWAR) Systems Center Atlantic in collaboration with the South Carolina Lowcountry Chapter of the Armed Forces Communications and Electronics Association (AFCEA), to be held on April 8-10, 2017. The PCDC is an event for the promotion of Cyber Security education and awareness. This competition is intended to energize local high schools & colleges to invigorate focused curriculum development for the type of technical skills that are needed in today's fast paced & challenging cyber environment. This will include Cyber Security/IA technical skills that are often taught only at the postgraduate, college level but need to be introduced at a much earlier age.

Event Objectives

- Provide an educational venue for cyber defense
- Foster teamwork
- Create awareness of the cyber security careers
- Create awareness and understanding of real world cyber security scenarios
- Create interest in cyber security.
- Promote cyber security education programs
- Provide student access to potential employers in fields related to cyber security.

Competition Overview

The competition is a 3-day event with high school teams competing on the first day, college teams competing on the second day, and professional teams competing on the third day. Each day there will be 8 teams of 6 members each competing with additional members on Pro Day. The teams will assume the role of Blue Teams and will be responsible for operating a small network while protecting the network infrastructure from "Red Team" attacks. Throughout the competition Blue Teams will be scored for accomplishing tasks while maintaining network/service availability as well as their ability to detect and respond to threats. Students must be able to securely configure and protect their network. During the competition, teams will be expected to operate the business in addition to performing IT functions. This includes responding to e-mails from customers, fulfilling customer orders received via e-mail, website, and other messaging services. These tasks will be trivial, however are crucial to competing in this competition. Business success is dependent on IT service availability. Teams must also be able to respond to requests (injects) such as the addition or removal of services while balancing security needs against business needs, or other tasks that cyber security professionals are expected to complete. Representatives of local technology companies, seeking new talent, will be present to observe the technical skills being exercised in this competition.

College Competition

The Collegiate Competition will take place on Sunday 9 April. Eight colleges and universities in the state of South Carolina will be participating. The collegiate teams will prepare independently; however, several Q&A sessions will be held prior to the competition. The Red Team will utilize more sophisticated attacks during the College Day and will commence after 30 minutes. These conditions will allow the college participants to put their education to use with hands-on practice while also providing the opportunity to meet business leaders in the IA profession. During the college competition, systems may be pre-infected and teams will need to perform the role of incident response to eradicate any present threats while maintaining services.

High School Competition

The High School Competition will take place on Saturday 8 April. Eight South Carolina high schools will be participating in this event. The level of cyber defense knowledge that the students currently possess will vary depending on the programs and classes offered at the participating high schools. Therefore, SSC Atlantic provides a primary Blue Team Mentor to each school, in addition to other mentors to work several hours each week to prepare the students for the competition. SSC Atlantic POC will also be assigned to each Blue Team to provide hands-off guidance during the competition. During the competition, only the SSC Atlantic mentor or designated SMEs are allowed to provide the team guidance. Each high school will have one hour and thirty minutes to secure their network before the Red Teams can attack. It is imperative that students

comprising the Blue Teams make a commitment to spending time on their own to prepare for this competition through participation in school cyber clubs, reviewing Cyber Patriot Curriculum (on the Cyber Patriot web site) and/or working with their designated Blue Team mentors after school. This event will offer high school students the opportunity to gain hands-on real world experience in the IA field and to collaborate with current IA college students, professors, and professionals. Three of the high schools competing are qualified based on their winning scores from last year. The other five high schools competing were qualified by the Cyber Patriot National High School Cyber Defense Competition.

Awards

Each school team that wins first place will get to keep the Challenge Cup trophy until next year's competition, at which time it will be returned to be awarded to the next winning team. The top three teams will each receive a trophy as well, that is theirs to keep, and each team member will receive a medal for their participation.

Internship and Job Opportunities

Students are encouraged to submit their resume to the AFCEA POC, Greg Blackburn at PCDC@afceacharleston.org prior to the March 31st deadline. Resumes will be made available to corporate sponsors and technical companies providing the students with potential career opportunities and internships.

For SPAWAR Atlantic jobs, students are encouraged to submit their resumes and transcripts to SPAWAR Atlantic's website at http://jobs.spawar.navy.mil/resume_other.aspx, or they can also submit resumes to http://spawar.usajobs.gov. High school students looking to intern at SPAWAR Atlantic during the summer of 2018, must submit their application in the fall of 2017.

Questions

The links below provide useful information to assist you in preparing for this event. For the latest information on the event, including Frequently Asked Questions, please visit the PCDC webpage as well as its social media pages on Twitter and Facebook. For additional information of the event, including hotel information, please visit the PCDC site. If you have additional questions please post to the Facebook page. Also, make sure to tell your friends and family to follow Facebook and Twitter during the competition to follow who is in the lead, what red team attacks are taking place, etc.

PCDC: *http://www.pcdc-sc.com*
SPAWAR: *http://spawar.navy.mil*
AFCEA: *http://charleston.afceachapter.org/*
Facebook: *https://www.facebook.com/PalmettoCyberDefenseCompetition*
Twitter: *https://twitter.com/PalmettoCyber*
Cyber Patriot*: http://www.uscyberpatriot.org*

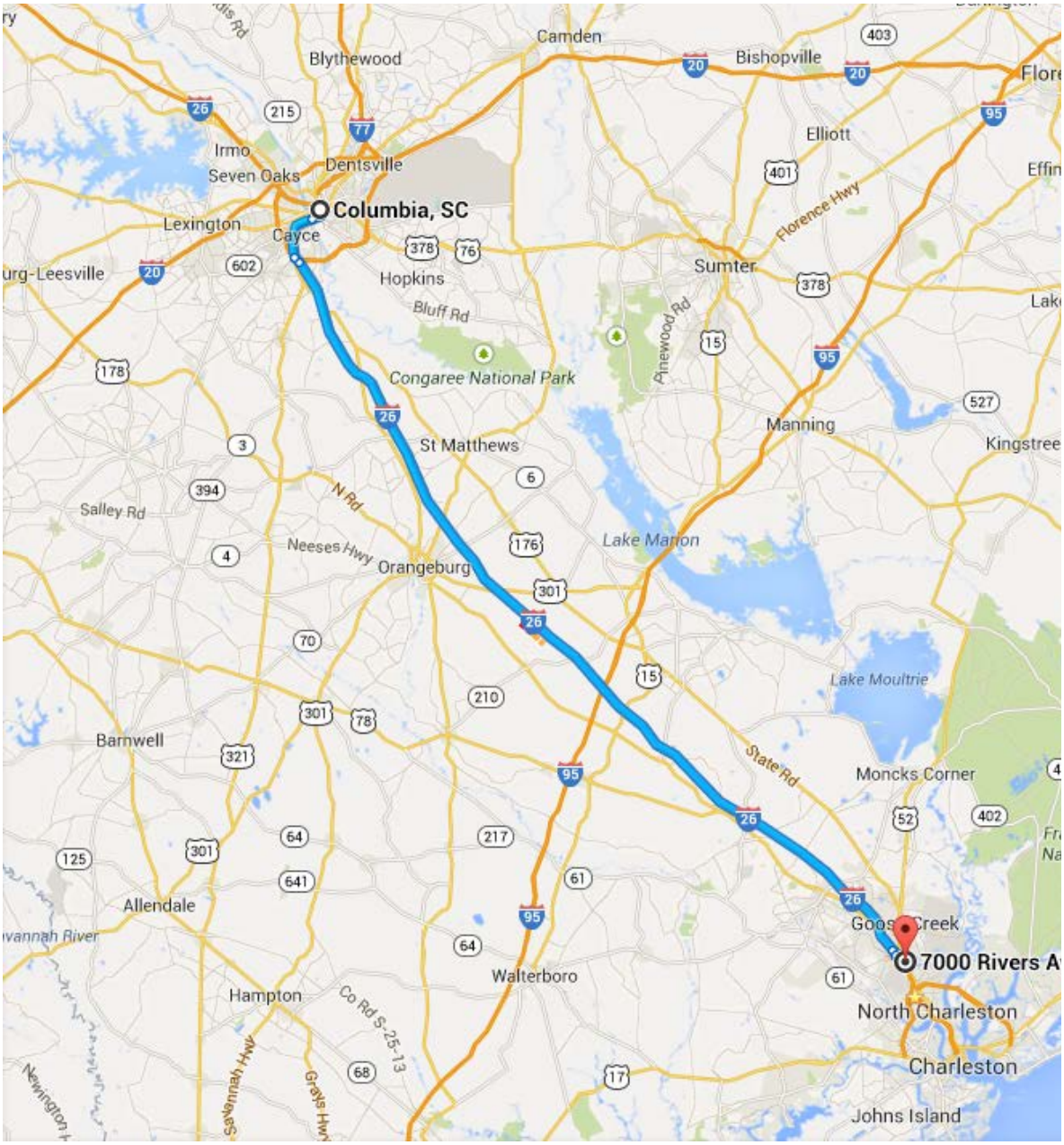
PROFESSIONALISM

The PCDC event is to be treated as a business environment. All participants are expected to behave professionally at all times during the PCDC event. Corporate sponsors will be observing the competition, many of whom are actively recruiting for employment. Competitors are advised to dress appropriately and use professional language. Inappropriate behavior and speech will not be tolerated and will result in an individual or team removal from the event and premises.

The venue for the competition is Trident Technical College in North Charleston. PCDC events will be held in College Center (Building 920). Free parking is available and will be marked accordingly.

Helpful area maps can be found at: https://www.tridenttech.edu/campusesandsites_14855.htmhttp://www.citadel.edu/root/publicsafety-maps.

Trident Technical College - Main Campus
7000 Rivers Avenue, Building 920
North Charleston, SC 29406



Directions from **Columbia, South Carolina**:

1. Head **east** on the **I-26** toward **Charleston**
2. Take exit **209A** for **Ashley Phosphate Rd**
3. Turn **left** onto **Ashley Phosphate Rd**
4. Turn **right** onto **Rivers Ave**
5. Destination will be on the **left**

COMPETITION SCHEDULE

Food and drinks will not be allowed in the designated Blue Team competition areas, but a break area will be nearby. Refreshments and snacks will be provided throughout the day. Outside food is not permitted in Conference Center.

Saturday 8 April	High School Competition
7:00 A.M. – 7:30 A.M.	Registration / Visit Sponsor Booths
7:15 A.M. – 7:20 A.M.	Drawing for Team Positions (Team Captains)
7:20 A.M. – 7:30 A.M.	Pre-Brief of Competition Teams
7:30 A.M. – 7:45 A.M.	Opening Ceremony
7:45 A.M. – 9:15 A.M.	Conduct initial injects / Secure the Network
9:15 A.M. – 3:30 P.M.	Operate Network Under Red Team Attacks
3:30 P.M. – 4:00 P.M.	Blue Teams visited by Red Team Members
4:00 P.M. – 4:30 P.M.	Break/View Sponsor Booths
4:30 P.M. – 5:00 P.M.	Blue Team Presentations
5:00 P.M. – 5:15 P.M.	Red/Gold Team Debrief: Top 5 Most Common Mistakes
5:15 P.M. – 5:20 P.M.	SPAWARSYSCEN Atlantic ED and/or CO Speaks
5:20 P.M. – 6:00 P.M.	Awards/Closing Ceremony

Sunday 9 April	College Competition
7:00 A.M. – 7:30 A.M.	Registration / Visit Sponsor Booths
7:15 A.M. – 7:20 A.M.	Drawing for Team Locations (Team Captains)
7:20 A.M. – 7:30 A.M.	Pre-Brief of Competition Teams
7:30 A.M. – 7:45 A.M.	Opening Ceremony
7:45 A.M. – 8:15 A.M.	Conduct initial injects / Secure the Network
8:15 A.M. – 4:15 P.M.	Operate Network Under Red Team Attacks
4:15 P.M. – 4:30 P.M.	Blue Teams visited by Red Team Members
4:30 P.M. – 5:00 P.M.	Break / View Sponsor Booths
5:00 P.M. – 5:30 P.M.	Blue Team Presentations
5:30 P.M. – 5:45 P.M.	Red/Gold Team Debrief: Top 5 Most Common Mistakes
5:45 P.M. – 6:10 P.M.	Keynote Speaker
6:10 P.M. – 6:35 P.M.	Awards / Closing Ceremony

COMPETITION SCHEDULE

Monday 10 April	Pro Competition
7:00 A.M. – 7:30 A.M.	Registration / Visit Sponsor Booths
7:15 A.M. – 7:20 A.M.	Drawing for Team Locations (Team Captains)
7:20 A.M. – 7:30 A.M.	Pre-Brief of Competition Teams
7:30 A.M. – 7:50 A.M.	Opening Ceremony
7:50 A.M. – 4:30 P.M.	Operate Network Under Red Team Attacks
4:30 P.M. – 4:45 P.M.	Blue Teams visited by Red Team Members
4:45 P.M. – 5:00 P.M.	Break / View Sponsor Booths
5:00 P.M. – 5:40 P.M.	Blue Team Briefs
5:40 P.M. – 5:55 P.M.	Red/Gold Team Debrief: Top 5 Most Common Mistakes
5:55 P.M. – 6:15 P.M.	Keynote Speaker
6:15 P.M. – 6:30 P.M.	Awards / Closing Ceremony

*Lunch will be provided approximately 12:00 P.M. – 1:00 P.M. in a designated area. *(Note: It is recommended students take their lunch in groups of 2-3 at a time to ensure system continuity)*
These Schedules may change up to the event and will be updated in the Event Guide provided at the Event and on the PCDC website.

EVENT CONCEPTS

The PCDC 2016 event consists of several networking and security concepts. Below are some of the critical concepts that you and your team should familiarize yourself with while preparing to compete in the PCDC event. For each of these critical concepts, you should be familiar with how the concept applies to securing a network, reacting to incidents, and so on.

NOTE: This is not a comprehensive list and concepts on this list may not appear or be emphasized during this PCDC event.

1. **Perimeter Security**
    a. Network and Host based firewalls, how they work and how to configure them, as well as Intrusion Detection Systems, Virtual Private Networks, and DMZs. How to use firewall products including deployment, configuration, using them to control traffic flow, analyzing log data from them, maintenance, etc.
2. **Patching**
    a. Software Patching
3. **Networking**
    a. Traffic flow, switching, and routing.
    b. Drafting and/or reading a network diagram
4. **UNIX**
    a. Flavors of UNIX/Linux, BSD, CentOS, Ubuntu
5. **Windows** – 2000, XP, 2003 (both R1 & R2), Vista, 7, 8, 8.1, 2008 (both R1 & R2), 2012 (both R1 & R2)
6. **User/Account Management**
    a. Adding and deleting users on multiple Operating Systems and managing those user accounts.
7. **Services and Applications**
    a. Email, DNS, Active Directory, FTP, HTTP, HTTPS, SSH, SCP, SMB, databases, web applications
8. **Tools**
    a. Port Scanners, Vulnerability Scanners, and Software based firewalls and IDSs.
9. **Authentication**
    a. Beyond just knowing how to change passwords in multiple environments, also understanding other forms of authentication.
10. **General**
    a. Performing admin duties such as installing, securing, updating, troubleshooting, and maintaining the functionality of computer systems on a network.
    b. Setting up a printer.
    c. Social Engineering

RESOURCES

Below is a list of web sites that contain information about concepts and tools that may be useful to competing teams during preparation for the PCDC event. The Cyber Patriot website offers several training modules at http://www.uscyberpatriot.org/competition/training-materials/training-modules.

NOTE: These pages are not being operated, managed, or maintained by PCDC affiliates.

WARNING: Some of these sites are run by the hacker community and should be visited at your own risk.

Administration

- http://www.technicalinfo.net
- http://tldp.org/
- http://onlamp.com/
- http://technet.microsoft.com
- http://www.rootsecure.net/
- http://www.osboxes.org/

Assessment

- http://osvdb.org/
- http://packetstormsecurity.org/
- http://www.securityfocus.com/
- http://sectools.org
- http://www.insecure.org

Incident Response and Forensics

- http://www.cert.org
- http://www.first.org
- http://www.computerforensicsworld.com
- http://www.forensicfocus.com/
- http://www.e-evidence.info/

Malware

- http://www.malwarehelp.org

Perimeter

- http://www.networkworld.com/topics/security.html
- http://www.owasp.org

General

- http://www.scmagazineus.com
- http://www.sans.org/security-resources.php
- http://searchsecurity.techtarget.com/
- http://csrc.nist.gov/
- http://www.us-cert.gov/
- http://www.itsecurity.com/
- http://www.securitynewsportal.com/
- http://blog.securitymonks.com/

PCDC COMPETITION ROLES

Gold Team: The competition officials that organize, score, run, and manage the competition.

White Team Judges and Runners: The competition officials that evaluate team performance and enforce rule compliance. They also pick-up, deliver communications, and provide overall administrative support to the competition. White team judges will rotate every two hours.

Red Team: The penetration testing professionals simulating external hackers attempting to gain unauthorized access to competition teams' systems.

Blue Team Preparation Mentor: The competition support members that provide technical and administrative support prior to the competition. This is only available to the high school teams.

Blue Team SSC Atlantic Competition Mentor: The Blue Team's assigned SSC Atlantic Mentor for the day of the completion who will provide off-hands technical guidance. Often this is the same POC that assisted with the preparation mentoring. Note: Only the SSC Atlantic mentor is permitted to provide the student's technical guidance. The school professors/mentors may make suggestions to the SSC Atlantic mentor but not to the students directly.

Blue Team Technical SMEs: In addition to the Blue Team SSC Atlantic Competition Mentors, there will be designated Blue Team Technical SME's that will be walking around during the competition to provide additional expertise as requested by the SSC Atlantic Mentor (for example, if a team Mentor needs additional Linux help they can request assistance from the SME)

Blue Team / Competition Team: The college and high school competitive teams consisting of six students competing in the PCDC event.

Team Captain: A student member of the Blue Team identified as the primary liaison between the Blue Team and the White Team. Will usually provide the 5 minute Blue Team de-brief (lessons learned, what you liked/disliked, etc) at end of competition.

Team Co-Captain: A student member of the Blue Team identified as the backup liaison between the Blue Team and the White Team, should the Team Captain be unavailable (i.e. not in the competition area).

Team Representative: A faculty or staff representative of the Blue Team's host institution responsible for serving as a liaison between competition officials and the Blue Team's institution.

Trust: Blue Team members can trust competition staff with official Blue, Gold or White Team badges as well as AFCEA or SPAWAR directors.

These competition rules are taken from the approved rules of the National Collegiate Cyber Defense Competition (CCDC) and are modified for this competition.

1. COMPETITION CONDUCT

1.1 Throughout the competition, trusted officials will occasionally need access to a team's system(s) for scoring, troubleshooting, etc. Teams must immediately allow them access when requested.

1.2 Teams must not connect any devices or peripherals to the competition network unless specifically authorized to do so by Black or White Team members.

1.3 Teams may not modify the hardware configurations of competition systems.

1.4 Teams must not open the case of any server, printer, PC, monitor, router, switch, firewall, or any other piece of equipment used during the competition.

1.5 All hardware related questions and issues should be referred to the White Team.

1.6 Team members are forbidden from entering or attempting to enter another team's competition workspace or room during the PCDC event.

1.7 All private communications (calls, emails, chat, texting, forum posting, conversations, requests for assistance, etc.) with non-team members including team representatives, that would help the team gain an unfair advantage, are not allowed and are grounds for disqualification and/or a penalty assigned to the appropriate team. This includes conversations on cell phones or otherwise outside of the team's competition area during breaks.

1.8 School representatives, sponsors, and observers are not competitors and are prohibited from directly assisting any competitor through direct advice, "suggestions", or hands-on assistance. "Spying" on other teams is also prohibited.

1.8.1 Any team sponsor or observers found assisting a team will be asked to leave the competition area for the duration of the competition and/or a penalty will be assigned to the appropriate team.

1.9 Team members will not initiate **any** contact with members of the Red Team during the hours of live competition.

1.10 Team members are free to talk to Red Team members during official competition events such as breakfast, dinner, mixers, and receptions that occur outside of live competition hours.

1.11 Teams are free to examine their own systems but **no** offensive activity against other Blue Teams, the Gold Team, the White Team, the Red Team, or any global asset will be tolerated.

1.11.1 This includes port scans, unauthorized connection attempts, vulnerability scans, etc.

1.11.2 Any team performing such activity will be immediately **disqualified** from the competition.

1.12 If there are any questions or concerns during the competition about whether or not specific actions can be considered offensive in nature, contact the Black Team before performing those actions.

1.13 Teams are allowed to respond to suspicious / malicious activity including using active response mechanisms such as TCP resets.

1.13.1 Any active mechanisms that interfere with the functionality of the scoring engine or scoring checks are exclusively the responsibility of the teams.

1.13.2 Any firewall rule, IDS, IPS, or defensive action that interferes with the functionality of the scoring engine or scoring checks are exclusively the responsibility of the teams.

1.13.3 Individuals wearing Blue, Black, Gold, White, or Media team badges are allowed in the Blue team areas. In addition the PCDC Director's may also be allowed in the Blue team areas as well as anyone he is escorting.

1.14 Red Team members may offer deals. Teams may accept the deals, or not.

1.15 The company Chief Information Officer (CIO) may come by and make requests that should be honored.

1.16 Blue Teams may make reasonable requests of the White or Gold Teams. The request may or may not be granted.

1.17 Competing High School Blue Team members are not eligible to compete in the Palmetto Digital Forensics Competition.

1.18 Blue Teams may ask unauthorized personnel to leave their competition area and White team judges will ensure that the request is obeyed.

2. PERMITTED MATERIALS

2.1 No memory sticks, flash drives, removable drives, CDROMs, electronic media, or other similar electronic devices are allowed in the room during the competition unless specifically provided by the Black or White Team in advance.

2.1.1 Any violations of these rules will result in disqualification of the team member and/or a penalty assigned to the appropriate team.

2.2 Teams may not bring any type of computer, laptop, tablet, PDA, cell phone, smart phone, or wireless device into the competition area unless specifically authorized by the Black or White Team in advance. If you cannot leave your cell phone outside the building, you will need to provide to your assigned school POC for it to be kept outside of the competition area.

2.2.1 Any violations of these rules will result in disqualification of the team member and/or a penalty assigned to the respective team.

2.3 Printed reference materials (books, magazines, checklists) are permitted in competition areas and teams may bring printed reference materials to the competition.

2.4 All competition materials must remain in the competition area, including injects, scoring sheets, and team-generated reports and documents.

2.5 Only materials brought into the competition area by the student teams may be removed after the competition concludes.

2.6 All materials provided to the teams must not be removed from the competition area unless authorized by the Gold Team or White Teams.

3. Professional Conduct

3.1 In addition to published PCDC rules, Host Site policies and rules apply throughout the competition and must be respected by all PCDC participants.

3.1.1 Trident Technical College General Rules and Regulations can be found at http://www.tridenttech.edu/about/policies/12_safety/index.htm

3.1.2 The use of tobacco is **prohibited** by students, staff, faculty, or visitors except in designated smoking areas. For the purpose of this procedure, tobacco is defined as any type of tobacco product including, but not limited to: cigarettes, cigars, cigarillos, pipes, hookahs, smokeless or spit tobacco or snuff. This procedure also includes electronic-cigarettes of any type and any device that emits smoke or vapors or results in second hand smoke or vapors.

3.2 Outside food is not permitted in Conference Center.

3.3 No eating or drinking near equipment. Lunch and snacks will be provided, but cannot be consumed near the equipment. Breaks may be taken as needed but the competition will be continuous throughout the day. It is recommended that only a few team members at a time take breaks.

3.4 Activities such as swearing, consumption of alcohol or illegal drugs, disrespectful or unruly behavior, sexual harassment, improper physical contact, becoming argumentative, willful violence, or willful physical damage have no place at the competition and will not be tolerated.

3.5 Violations of the rules can be deemed unprofessional conduct if determined to be intentional or malicious by competition officials.

3.6 Competitors behaving in an unprofessional manner may receive a warning from the White Team, Gold Team, or Black Team for their first offense. For egregious actions or for subsequent violations following a warning, competitors may have a penalty assessed against their team, be disqualified, and/or expelled from the competition site.

3.7 Individual(s), other than competitors, behaving in an unprofessional manner may be warned against such behavior by the White Team or asked to leave the competition entirely by the Black or Gold Team.

3.8 All team members will wear their competition badge identifying team affiliation at all times during competition hours.

3.9 Only Gold, Black, and White Team members will be allowed in the competition areas outside of competition hours.

4. Internet Usage

4.1 All Internet access will be based on a whitelist. Each competing schools should compile a list of website domains that they would like access to during the

4.2 competition and submit them to their school's PCDC POC. Subject to approval, these domains will be added to the whitelist on competition day.

4.3 Internet resources such as FAQs, how-to's, existing forums and responses, and company websites, are completely valid for competition use provided there is no fee required to access those resources and access to those resources has not been granted based on a previous membership, purchase, or fee.

4.4 Only resources that could reasonably be available to all teams are permitted.

4.4.1 For example, accessing Cisco resources through a CCO account would not be permitted but searching a public Cisco support forum would be permitted.

4.4.2 Public sites, such as Security Focus, are acceptable.

4.4.3 Teams may not use any external, private electronic staging area or FTP site for patches, software, etc. during the competition. Violation of this rule is grounds for disqualification.

4.4.4 Teams are not allowed to access private Internet-accessible libraries, FTP sites, web sites, network storage, or shared drives during the competition.

4.4.5 All Internet resources used during the competition must be freely available to all other teams.

4.5 No peer-to-peer (P2P) or distributed file sharing clients or servers are permitted on competition networks unless specifically authorized by the competition officials.

4.6 Internet activity, where allowed, will be monitored and any team member caught viewing inappropriate or unauthorized content will be subject to disqualification and/or a penalty assigned to the appropriate team.

4.7 This includes direct contact with outside sources through AIM/chat/email or any other public or non-public services including sites such as Facebook.

4.8 For the purposes of this competition, inappropriate content includes pornography or explicit materials, pirated media files, sites containing key generators and pirated software, etc.

4.9 If there are any questions or concerns during the competition about whether or not specific materials are unauthorized, contact the White Team immediately.

4.10 All network activity that takes place on the competition network may be logged and subject to release.

4.11 Competition officials are not responsible for the security of any information, including login credentials, which competitors place on the competition network.

5. School Competitor Eligibility

5.1 Competitors may only be a member of one team per PCDC event.

5.2 Only invited academic institutions in the state of South Carolina are eligible.

5.3 Competitors in the Collegiate PCDC event must be full-time students of the college or university that they are representing.

5.3.1 Team members must qualify as full-time students as defined by the college or university they are attending.

5.3.2 A competitor in their final semester prior to graduation is exempt from the full-time student requirement and may compete in the PCDC event as a part-time student provided the competitor has a demonstrated record of full-time attendance for the previous semester or quarter.

6. TEAM COMPOSITION

6.1 Each school competition team may consist of between three (3) and six (6) eligible students.

6.2 Each collegiate competition team may have no more than one (1) graduate student as a team member.

6.3 If a member of a competition team is unable to attend the competition, that team may substitute another eligible student in their place prior to the start of that competition, or Compete without that member as long as the team consists of a minimum of three (3) members.

6.4 Once a PCDC event has begun, substitutions or additions of team members are prohibited. A team must complete the competition with the team that started the competition.

6.5 Each team will designate a Team Captain for the duration of the competition to act as the team liaison between the competition staff and the teams before and during the competition.

6.6 Each team will identify a Team Co-Captain for the duration of the competition to act as the team liaison in the absence of the Team Captain.

6.7 A Team Captain or Team Co-Captain must be in the competition space at all times during competition hours.

6.8 Each academic institution participating is only allowed to compete one team in the PCDC event.

6.9 Pro Teams will have up to six (6) team members, one captain (1) and up to two (2) college students assigned.

7. TEAM REPRESENTATIVES

7.1 Each school team must have at least one representative present during the PCDC event.

7.2 The representative must be a faculty or staff member of the school the team is representing.

7.3 Once the PCDC event has started, representatives may not coach, assist, or advise their team until the completion of the event, unless authorized on a case-by-case basis by the assigned SPAWAR Blue Team Mentor or White Team Judge only on the high school competition day. If the assistance is authorized, the assistance must be hands-off.

7.4 Representatives must not interfere with any other competing team.

7.5 Each Collegiate Team Representative (faculty advisor) must avoid contact with their team during the PCDC competition hours and must not attempt to influence their team's performance in any way, except in the case of an emergency.

7.6 High School team representatives may be with their team during the PCDC competition hours but must NOT attempt to influence their team's performance in any way unless authorized as stated in 7.3

8. Questions, Disputes, and Disclosures

8.1 Team captains are encouraged to work with the Competition Point of Contact (POC) assigned to their school, as well as their school's staff to resolve any questions that arise prior to the competition regarding the rules of the competition or scoring methods.

8.2 Protests by any team during the competition must be presented in writing by the Team Captain or Co-Captain to the White Team as soon as possible.

8.3 The competition officials will be the final arbitrators for any protests or questions arising before, during, or after the competition. Rulings by the competition officials are final.

8.4 All competition results are official and final as of the Closing Ceremony of each day.

8.5 In the event of an individual disqualification, that team member must leave the competition area immediately upon notification of disqualification and must not re-enter the competition area at any time.

8.5.1 Disqualified individuals are also ineligible for individual or team awards.

8.5.2 In the event of a team disqualification, the entire team must leave the competition area immediately upon being notified of disqualification and is ineligible for any individual or team award.

9. Scoring

9.1 The up and down of services for all teams will be visible to everyone throughout the competition day.

9.2 Scores will be maintained by the Gold Team and will not be announced, even at the end of the competition.

9.3 Only the top three rankings will be provided. Teams accumulate points by successfully completing injects, maintaining services, delivering products & detecting/responding to Red Team attacks.

9.4 Teams lose points by violating Service Level Agreements (SLAs), usage of recovery services, and successful penetrations by the Red Team.

9.5 Teams are scored on four main areas: Availability, Injects, Attacks, and Business Operations.

9.6 Availability is the act of maintaining functionality of required services throughout the competition. During the PCDC event, a set of critical services will be identified for teams to manage and maintain at all times. Those services are checked for functionality and availability throughout the competition – you gain points each time one of your services is "up" and functioning properly when it is checked. If one or more of your services are down for an extended period of time, your team will be assessed with an SLA violation and you will lose points.

9.7 Injects are tasks assigned by the Gold Team. Blue Teams must address or respond to these injects during the competition. Injects range from the very simple, such as resetting a user's password, to the complex, such as migrating web servers from IIS to Apache with zero down time. Many injects have a written portion, such as a report detailing actions taken by your team or the creation of a new business policy.

9.8 Injects are weighted – more complex and lengthy injects are worth more points than simple injects. Injects should be completed in the time allotted; late injects will not be scored.

9.9 All Inject responses must be typed and submitted using the in competition injects system. Instructions on completing injects will be provided during the competition.

9.10 All Injects will be delivered via an injects system such as website, Email, VOIP, and/or voice to the teams.

9.11 Blue Teams may request that systems be reverted to their original configuration before the competition began; however there will be a maximum of two (2) reverts per machine and revert action will cost the team 500 points.

9.12 Attacks consist of Red Team activity such as gaining unauthorized access to a Blue Team's system. The Blue Team is responsible for controlling or preventing unauthorized access by the Red Team. Teams lose points to successful Red Team activity based on the nature of the activity and the level of access obtained.

9.13 Attack points may be regained if the team provides incident reports for each Red Team incident they detect. Incident reports can be completed as needed throughout the competition and sent to the Gold Team. Incident reports document a successful Red Team attack with a description of what occurred, a discussion of what was affected, and a remediation plan. A thorough incident report that correctly identifies a successful attack can reduce the penalty for that attack by up to 50%. A thorough report shall contain at a minimum the source IP address, the compromised system's IP address, the time that the attack occurred, and details of how the attack was identified.

9.14 Business operations will require each team to perform trivial tasks that will be dependent on their services. These operations will require their services to not only be up, but they will need to be functional as well.

9.15 Any team action that interrupts the scoring system is exclusively the responsibility of that team and may result in a lower score. Should any question

9.16 arise about scoring, the scoring engine, or how they function, the Team Captain should contact the white team judge for their team to address this issue.

9.17 There will be no running totals provided during the competition.

9.18 At no time will questions about the status of the team's services or the team's current score be answered. Teams are expected to monitor their own performance throughout the competition.

9.19 Teams may request that systems be re-verted to their initial load only twice.

Rule Violations: Any violation of competition rules and conduct can result in negative points toward the violating team's score.

Q: What are Injects?
A: They are usually requests from company management requesting things from your team. They could be as simple as “Provide me a list of users who have access to the database system” or as involved as “Migrate the current mail server from Postfix to Exchange.” These are just examples as the actual injects will be provided the day of the competition at set times.

On the College and Pro days these tasks will differ and be more complex exercises related to cyber security.

Q: What is the most important aspect going into the competition?
A: Your team dynamics and the roles you assign each member are very important. Remember this is not a hacking competition: it’s a business competition. Don't put your most skilled technical person as the leader of the team. He/She will be busy handling business tasks. You want someone on your team that has good communication skills as your leader. You also want a strong team that works well together. Your team will be under stress during the event, teamwork helps to manage and control the situation.

Q: Do teams ever self-destruct, fall apart or quit the competition?
A: Yes, this happens at most Cyber Defense Competitions. It's due to various reasons. Mostly, the teams do not function as a single unit. Teamwork and persistence is crucial to successfully completing the competition.

Q: What do we do if we feel overwhelmed during the preparation and don't know what to do?
A: High School teams may consult with your SSC Atlantic mentor and if he/she needs additional help they can request assistance from a Blue Team Technical SME. Collegiate teams are expected to be able to prepare on their own using resources at their school, however questions can always be sent via the Social Media sites.

Q: How will we be scored?
Scoring is based upon services, injects, and business operations.

Q: What is the single most important aspect of the competition?
A: This is a learning event. We are here to learn and have some fun at the same time. During a recent security talk regarding how to host a Capture the Flag (CtF), it was asked “How do you know what to do when you compete?”
The reply was “Sit down, stare at the screen. Bang your head against the wall. You'll learn something.”

Q: Is the PCDC an Attack and Defend competition?
A: No, No, No. Absolutely not. If you come into the competition with that attitude, you will do poorly. This is an IT Business competition. Your team will be the IT staff of a business. Your job will be to ensure business functionality and the security of the business's IT assets. The Red Team will simulate real world activity that could harm your IT assets and bring down your business.

Q: What information will I be given about my team's systems?
A: Teams will be given a Blue Team Packet on the morning of the competition. The packet will name the operating systems, root credentials to each system, a list of usernames and passwords, and the services that system was to provide (for example SSH, WWW, etc).

Q: What will the blue team operating systems consist of?

A: An approximate equal mix of Windows and Unix/Linux operating systems. Windows systems for example may be a range from Windows 98 to Windows Server 2012. Unix/Linux systems for example may include several different distros of Linux, Solaris, and BSD.

Q: What will our blue team network consist of?

A: The blue team network will consist of virtual machines hosting an array of operating systems, applications, and services installed hosted on a virtualized infrastructure operated by the Gold Team. The virtualization systems themselves are out of the scope of the competition for attacks as well as the laptops which will be used to access the virtualization systems.

Q: What will I need to manage as far as the virtualized servers?

A: You will need to know how to open VMware ESXi from a VMware vSphere client. The hypervisor itself is out of scope for attack.

Q: Will the competition involve social engineering?

A: Yes, the competition will involve social engineering; however, Blue teams can trust anyone wearing a Gold, White, Blue or Media badges and these personnel are allowed in the Blue team areas. In addition, the PCDC Directors will be allowed in the Blue team areas as well as anyone he designates or is escorting. There may also be groups of middle school students observing the competition this year.

Q: Will we have Internet access during the competition?

A: Yes, you will have access to the Internet during the competition. However, you will only be able to go to sites that have been approved on the white list. If you have sites

you would like to request to be placed on the whitelist prior to the competition please notify your assigned SPAWAR POC. The tools and sites must be accessible and available for free to the general public. No special sites that require credentials or fees will be allowed. Note: It is not guaranteed that these sites will be approved and placed on the white list. Sites hosted by any schools or individuals in the competition are also not allowed.

Q: What kind of tools will I have access to?

A: You will be able to use the Internet to access sites that have been placed on the whitelist to download tools. If you have specific tools you would like to request in advance please let your SPAWAR school POC know so we can include them for you. Also, see Security Onion below.

Q: What is the competition scenario?

A: This year's competition will be based upon a shipping line company, Palmetto Shipping Corporation (PSC). PSC ships products (cars) from our east coast to ports across the Atlantic. Points may be collected for delivering the product to the correct port. Each Blue Team PSC network provides a variety of services. The majority of the services are common among most businesses. Examples of typical services include but are not limited to:

Web server services

Database server services

Email services

Account management

Q: Are the systems going to be working when we get access to them?

A: Yes, all the systems will be running and "functional" meaning they will be working and will be responding to the scoring checks – this is an operational network. That does not mean they will all be perfectly configured, or even intelligently configured.

Q: Will we know when our services are considered to be down?

A: The gold/white team will provide a simple display during the competition that shows the status of each of your core services (during the last status routine check).

Q: Can we bring our own system or networking device?

A: No. Teams may not bring any computer, laptop, external drive, networking device, tablet, PDA, cell phone, etc. into the competition area. You may, however, bring text books and hard copies of guides and manuals.

Q: How will the business injects work?

A: Each team will get instructions from the "CEO/CIO" throughout the competition, in the form of an inject, to complete within the specified amount of time. Completion of each inject within the time specified earns you points. Partial credit may be given for injects turned in that are slightly late. The points awarded will depend on the complexity of each inject.

Q: How long will I have on the system before the red team is allowed to start attacking?

A: College teams will have approximately 30 minutes, and high school teams will have approximately 1 ½ hour before the red team will be allowed to actively attack. Pro teams will have no time to prepare before attacks.

Q: Do we have to give a presentation at the end of the competition?

A: Yes. Each team's captain (or multiple people) will give a short brief on what the team thought of the competition and recommend any changes for future. A PowerPoint can be used to project on the large screen.

Q: What type of firewall will be used in the competition network?

A: The firewall that will be used this year in the competition will be Endian Firewall Community. The specific version will not be released before the start of the competition. The firewall can be downloaded at: http://www.endian.com/community/download/

Q: How can we identify and respond to Red Team attacks?

A: You will be competing against professional hackers on a network that is definitely vulnerable, poorly secured, and possibly already hacked. A major tool that may assist you is Security Onion/Snort. Security Onion is a Linux distro for IDS (Intrusion Detection) and NSM (Network Security Monitoring). It's based on Xubuntu 10.04 and contains Snort, Suricata, Sguil, Squert, Snorby, Bro, NetworkMiner, Xplico, and many other security tools. The easy-to-use Setup wizard allows you to build an army of distributed sensors for your enterprise in minutes. Being disciplined in your approach and how you use tools like Snort and the Security Onion will greatly help your chances of standing your ground against the pros and winning the competition. The pcdc-sc.com website already has study materials for Security Onion for high school students. Where to get Snort: http://www.snort.org. Also part of the Security Onion, https://securityonion.net!

Q: **Should we accept deals from the Red Team?**

A: Depends on the cost. Deals are improvised/negotiated, buyer beware. Some work out well, others, not so much.

TOPOLOGY DIAGRAM

The topology will be provided in a separate document on the PCDC website.