2020

FY20 Annual ITACS Accountability Report

Monterey, California. Naval Postgraduate School

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Information Technology and Communications Services (ITACS)

Mission Statement

The mission of the Naval Postgraduate School’s Information Technology and Communications Services is to provide technology and communications support for the NPS core mission of teaching, research and service to the Navy and Department of Defense, and to provide voice, video, and data infrastructure as mission-crucial enablers of innovation and ex-perimentation within the educational enterprise.
Message From the CIO

This 2020 review provides ITACS metrics as a summary and a baseline going forward.

Overall, a productive year for ITACS. The major transition to online learning in March without much technical pain was a result of planning and thoughtful purchases in prior years. (And a bit of luck I’m sure.) In close partnership with the Teaching and Learning Commons, user training happened quickly, and we were off and running in the COVID era.

Highlights from 2020 include: (1) the number of courses completed remotely on Zoom and Teams; (2) reliability of our physical and virtual infrastructure including firewalls, VPN, and cloud tools enabling immediate remote work; (3) the transition of the staff directorates and administrative units to telework with adoption of Microsoft Teams and other enterprise tools; and (4) continued classified learning and research in the STBL and SCIF. Another notable mention is the communication we are getting from campus with the IT Task Force. We rely on this conversation to improve our service.

From a staffing perspective, ITACS filled key gaps on the org chart. Engineering positions in DevOps and Cybersecurity are paying dividends as we advance our architecture and improve security. On the downside, we identified a lack of formal professional education throughout the department - a focus area in ’21. We have historically relied on employees to learn on the job or teach themselves. We must do better than the “go google it” method and help our staff improve technically and foundationally. I expect to see more continual learning and certificates earned. Remote work did not negatively affect production, we actually saw an uptick in the Technology Assistance Center, this will influence how we run operations in the future.

There were several research projects completed or ongoing on our networks. The NPS .edu network, separate from the DoD Information Network, provides opportunity to safely and securely experiment in the Cybersecurity domain and beyond.

Please dig into the numbers, I highlight over 250 courses conducted on Zoom; ~50 on Teams each quarter; establishment of a Sakai instance on SIPR to assist our remote classified learners; many automated workflows; and over a dozen Virtual Town Halls and SecNav Guest Lectures.

We look forward to improving and modernizing while making IT easy and invisible for you in 2021.

Scott Bischoff
CIO and Director ITACS

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Proactive Hunt

COVID-19 has thrust all of us into a new work dynamic. In some ways this forcing function demanded agility, creating new, and accelerating lower priority projects. Threat actors took notice globally and attacked the much-expanded attack surface displayed by our enhanced telework environment. Dramatic increases in phishing, scams, and spam incidents continue to impact our networks. Your CSOC took this opportunity to sharpen skills and push the fight outside the fence line by enhancing our prevention capabilities. Superficial comparison of FY19 and FY20 spam statistics would leave the reader believing the CSOC was less capable. A closer look would reveal the truth. It is better to not have to block a spam email because it was prevented from arriving in the first place. This is one simple capability the CSOC has employed.

### CS Statistics

<table>
<thead>
<tr>
<th></th>
<th>FY19</th>
<th>FY20</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Email</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Emails Received:</td>
<td>5,335,570</td>
<td>9,767,100 est.</td>
</tr>
<tr>
<td>Barracuda Blocked:</td>
<td>2,272,836</td>
<td>2,373,270</td>
</tr>
<tr>
<td>Barracuda Quarantined:</td>
<td>50,748</td>
<td>50,748</td>
</tr>
<tr>
<td>O365 Transport Rule Blocks:</td>
<td>232,488</td>
<td>232,488</td>
</tr>
<tr>
<td>O365 Quarantined:</td>
<td>10,938</td>
<td>10,938</td>
</tr>
<tr>
<td>Cost Saving to NPS by using spam filters:</td>
<td><em>$3,014,597.05</em></td>
<td><em>$1,450,360.65</em></td>
</tr>
<tr>
<td><em>Calculation $ 0.565 x blocked/quarantined emails</em></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Events</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Phishing, Extortion Incidents:</td>
<td>538</td>
<td>807</td>
</tr>
<tr>
<td>Malware blocked</td>
<td>623</td>
<td>1011</td>
</tr>
<tr>
<td>Network remediation</td>
<td>8700(individual)</td>
<td>292(events)</td>
</tr>
<tr>
<td></td>
<td>85</td>
<td>469</td>
</tr>
</tbody>
</table>

### Attacks Blocked by Type and Severity

- **Information Leak**: 3%
- **Code Execution**: 1%
- **Virus**: 73%
- **Spyware**: 1%
- **SQL Injection**: 22%

- **Critical**: 11%
- **High**: 46%
- **Medium**: 43%
Plans and Projects

KFS:
KFS enhancements were primarily related to the STARS to SABRS transition, to include a FIP to JON mapping tool and switching from an estimated fringe to actual fringe calculation.

FY20 KFS Metrics
- Number of research and data call requests: 65
- Number of new KFS features implemented: 26
- Number of bugs fixed: 11

PYTHON:
PYTHON improvements included many additional enhancements to the Thesis Tracking Module, single-course enrollment functionality, and Active Directory account switch to using OneDrive in place of home and profile directories.

FY20 PYTHON Metrics
- Number of improvements and new features implemented: 230
- Number of bugs fixed: 30

Technology Assistance Center

The Technology Assistance Center (TAC) is the primary means of information technology support for students, staff and faculty. The TAC receives, prioritizes, and handles a high call volume of IT trouble tickets daily. The TAC is dedicated to providing a high level of customer service to support the academic mission.

TAC’s Remote Call Center

Top Five Trouble Ticket Categories:
- Account Administration
- Software
- Hardware
- Network
- Web

Tickets Created Via:
- Walk-in: 2,178
- Phone: 12,423
- Email: 10,823
- Total: 25,424
**Education Technology**

Sakai Learning Management System

For any Sakai related questions, please contact the Sakai helpdesk at 831-656-2020 or email clehelp@nps.edu

**FY-20 Sakai metrics include:**

- 4,399 service tickets
- 1,432 course creation tickets

NPS maintains two Sakai instances – NPS courses and “DoD Learn” where non-NPS DoD entities host courses. Customers include SOCOM, the Navy Chaplain School, and Fleet and Family Readiness.

**DoD Learn:**

- 222 Courses
- 11,523 Users enrolled

Version upgrades occurred on both instances and DoD Learn moved to the Cloud further reducing dependence on local hardware.

**ZOOM Statistics**

- Active Users 637
- Meetings 49,696
- Webinars 95

- Totals 718
- Participants 439,977
- Participants 2,090

**FY20 VTE/VTC Statistics**

- Video tele-education hours streamed:
  - Fall quarter: ..................468
  - Winter quarter: ..................648
  - Spring quarter: ..................n/a
  - Summer quarter: ..................n/a

- Number of video tele-education connections: ........843

- Video tele-education instruction hours: ................3,584

- Number of video tele-education classes: .................27

- Number of video tele-conference events: .................66

**TEAM Statistics**

- Active Users 5,200
- Meetings 76,000
- Calls 62,000
- Chats 3,500,000
- Classes 195

**Classified Computing Programs**

**FY20 STBL Statistics**

- Number of accounts: 320 (SIPR)
- Secure video tele-conferences: 250
- Meetings and briefings: 200
- Classes: 12
- Special events: 25

**FY20 SCIF Statistics**

- Number of accounts: 218
- Secure video tele-conferences: 44
- Special events: 12
- Classes: 17
Development and Operations

DevOps provides the underlying network, server infrastructure, cloud offerings, and a broad spectrum of applications and web services for the NPS community. Over the past year, DevOps has focused heavily on migrating services to the cloud and upgrading systems to the latest versions for compatibility and security requirements. Some major accomplishments include:

- Migrated all user profiles and H drives to OneDrive
- Upgraded Liferay to version 7.2 with migration to AWS.
- Migrated all SharePoint sites from legacy on-premise system to SharePoint Online.
- Completion of the NetApp storage migration and upgrade
- Business process workflow automations and enhancements for Timekeeping, Registrar, R2R and R2C processes.

DevOps has also been heavily engaged in supporting Sea Land Air Military Research Initiative (SLAMR) and their efforts to enable all-domain solutions across the DoD, improve the DoD’s ability to make quicker, more informed decisions, and perform collaborative cross-organization research and development (R&D). This has culminated in a completely redesigned SLAMR website launched in September 2020 with more capability than anticipated. A CAC file sharing application was developed for identity-based access control and distribution levels that facilitates secure collaboration across Private Sector, Academia, NGOs, and state and federal governments. These efforts demonstrate the impact ITACS has on the mission of NPS and the strategic efforts to align research activities across DoD R&D community.

FY20 Cloud Services Storage and Usage:

- Exchange Online - 16,625 Mailboxes (15.4TB)
- SharePoint Online - 1,252 Sites (2.1TB)
- OneDrive - 11,377 Sites (109TB)
- Teams - 726 Teams
- Groups - 807 Groups (1TB)
- Box - 5,210 Users (60TB)

User Data Stats for FY20:

- Profile & network storage: 161 TB
- Group Shares: 129 TB
- Virtualized server storage/Databases: 301 TB
- Total backup/recover storage: 340 TB
The image above shows the load on Hamming for most of FY20. There are a few periods where the load goes to zero: October 2019 (cooling outage); December 2019 (winter maintenance); June and July of 2020 (cooling outage); September 2019 (cooling outage). A load of 100% (all processors in use) would be about 4,000 on the vertical axis. A year ago loads were only in the 600 – 1,000 range (less than 25% load). From August – October of 2020, the loads are double the loads of a year ago.

- There are over 700 current HPC users, ~450 active (inactive are typically students who are still here but may have used resources for a one-time class). Roughly 50% of usage is Faculty / Research. At least 1 class per quarter is taught using HPC, and sometimes as many as 4 classes per quarter use HPC resources.
- Around 10 million “core-hours” consumed per year (to put this in something easily understandable, a typical laptop might have dual-core or quad-core, so 10 million core hours is equivalent to running a single quad-core laptop for 2.5 million hours = 285 years. This means the processing done on hamming in a single year would take 285 years to do on a single laptop).
- Users: GSOIS 60% (CS, OR biggest departmental users), GSEAS 30% (MAE, ECE, Math, PH), GSDM 10%, SIGS 0%.
- This past fiscal year we brought a new storage system online: we now have 6 petabytes of online storage.
- We purchased several new “GPU” systems at the end of FY20 that will be brought online soon. These are important for Machine Learning / Artificial Intelligence.
- NSAM will be replacing the HPC cooling system in FY21.
Resource Management

Resource Management fully supports all operational areas within ITACS in budget, procurement, contracts, human resource services, and facilities. In addition, Resource Management supports ITACS in areas of training, travel, and communications.

Resource Management is committed to providing a stable work environment with equal opportunity for learning and personal growth. Creativity and innovation are encouraged for improving the effectiveness of ITACS. Above all, employees are provided the same concern, respect, and caring attitude within the organization that they are expected to share externally with every customer.

The mission of ITACS Resource Management is dedication to the highest quality of customer service delivered with excellence and integrity.

ITACS Staffing

<table>
<thead>
<tr>
<th>Number of government civilian employees by team:</th>
<th>On-Board</th>
<th>Billets</th>
</tr>
</thead>
<tbody>
<tr>
<td>Client Services</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Classified Computing Programs</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Educational Technologies</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Technology Assistance Center</td>
<td>11</td>
<td>15</td>
</tr>
<tr>
<td>Development and Operations</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Application Development</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>Cloud Services</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Engineering</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Operations</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Cybersecurity</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>High Performance Computing</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Records Management</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Resource Management</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>CIO, Deputy CIO</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>52</strong></td>
<td><strong>62</strong></td>
</tr>
</tbody>
</table>

Professional Development

Continuous information technology training is crucial to the success of ITACS, as well as NPS. Technology is always changing and new applications and capabilities are constantly released in an effort to streamline business practices. In order to keep updated with the latest technology and with campus demands, it is mission essential that ITACS personnel be trained. Part of keeping up with the newest technology is also the attendance at DoD and non-DoD conferences where networking with IT professionals can be very beneficial.

Military Staffing

Military staff are valued for their exemplary professionalism, specialized knowledge, and genuine representation of the service component of ITACS’ core values. Tour of duty is normally between 2-4 years.

<table>
<thead>
<tr>
<th>Number of Military staff per team:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Classified Computing Programs.................5</td>
</tr>
<tr>
<td>Cybersecurity.................................3</td>
</tr>
<tr>
<td>Development and Operations...............5</td>
</tr>
<tr>
<td>Educational Technologies...............1</td>
</tr>
<tr>
<td>Technology Assistance Center..............5</td>
</tr>
</tbody>
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