Business Continuity Plan

Seminar and Workshop

L.A. County EMS Agency
Hospital Preparedness Program

Terry Crammer
Los Angeles County EMS Agency

- **HPP Program Manager**

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Los Angeles County EMS Agency

- **Disaster Program Manager**
  - Exercises and Drills Program
  - Business Continuity Program

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    - Please no talking on phones during presentations.
    - Please step outside if you need to take a call.
    - Online audience we ask that you turn off your video camera and mute your microphone.
    - Agenda placed into Zoom chat
    - Type questions into chat.
- Wi-Fi
    - To maximize bandwidth for our online presentation, please do not use the Town Center's Hall Wi-Fi.
- Restrooms
- Emergency Exits/Routes

Thank you!

Seminar Session Program

- Speakers:
  - Jennifer Waldron   Huntington Hospital

  - Alex Lichtenstein   Ronald Reagan UCLA Medical Center
  - Adam Richards   Kaiser Permanente – Los Angeles

  - Troy Adams (Virtual)   U.S. Health and Human Services HC3

Presentation 1

COVID-19 Playbook

Jennifer Waldron, RN, BSN, MBA-HCM
Disaster Program Manager/Business Continuity Planner
Huntington Hospital

Objectives

1. *State why it is important to capture surge strategies during a pandemic*

2. *List options for motivating leaders to contribute their expertise to a playbook document*

3. *Understand how tactics may develop and change as an event evolves*

Background

Located in Pasadena, CA

619 Beds:
- 38 ICU
- 51 NICU
- 56 Perinatal
- 25 Pediatric
- 24 Rehab
- 12 Chemical Dependency
- 372 General Acute Care
- 41 Acute Psychiatric

Additional Services: ED/Trauma Center
Cardiovascular Surgery
Heart/Vascular Lab Stroke Center
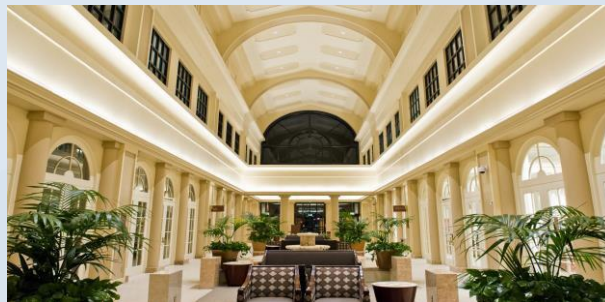GI Services Radiation Therapy
Respiratory Care Services Social Services
Cancer Center Neurosciences/Sleep Cente
Speech Pathology
Physical/Occupational/Speech Therapy
Senior Care Network

City of PASADENA

Population: 138,699
San Gabriel Valley population: 2 million
Only Trauma Center in the San Gabriel Valley
Unique features/events: Rose Bowl & Parade, Caltech, JPL, USGS

Capturing our COVID-19 Response
June 2021

Identified critical pandemic response areas

Closure and Resumption of Services
Communications
Data Analytics
EVS
Facilities
Food Service
Hospital Command Center
HR
Infection Prevention
Labor Pool

Laboratory
Materials Management
Pharmacy
Screening Stations
Security
Surge Planning
Telehealth
Testing
Transportation
Vaccine Clinic
Visitation

Roadblocks

- **Slow progress**
- **Minimal compliance from assigned departments**
- **Submissions weren't thorough**
- **Leaders didn't understand the task**
- **Competing priorities**

COVID-19 Playbook
LAC/EMS BC Workshop

Helpful Highlights

- ***Tell leaders what you expect***

- ***Pick a date for completion***

- ***Share details via Email***

- ***Be flexible with training: Small group, one-on-one***

- ***Develop a format for your document in advance***

- ***Solicit leadership oversight***

- ***Acknowledge contributors***

Develop a Template

- **Leaders were unsure of the ask**
- **Template provided a simple and helpful solution**

- **Categories included:**
  - **Background**
  - **Goals**
  - **Challenges**
  - **Audience**
  - **Tactics**

TEMPLATE

COVID-19 Playbook: (DEPARTMENT NAME)

Background: (BRIEF SUMMARY OF HOW THE PANDEMIC HAS CREATED NEW OR DIFFERENT PRACTICES IN YOUR DEPARTMENT)

Goals: Coordinate response to the COVID-19 Pandemic and accomplish the following:
1.
2.
3.

**Challenge:** (WHAT HAS BEEN ESPECIALLY DIFFICULT OR REQUIRED NEW PROCESSES?)

Audience: (Who needs to know this - PATIENTS? STAFF? PHYSICIANS? COMMUNITY? PUBLIC HEALTH? MEDIA? GOVERNMENTAL AGENCIES?)

Tactics: (LIST THE STEPS UTILIZED TO ADDRESS THE CHALLENGES AND MEET DEPARTMENTAL GOALS ABOVE. BE SPECIFIC AND DETAILED. THIS DOCUMENT WILL ALLOW A NEW OR ALTERNATE LEADER TO UNDERSTAND YOUR RESPONSE PROCESS FOR USE IN THE FUTURE).
1.
2.
3.

COVID-19 Playbook
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Playbook areas Highlighted Today

- *External Surge Planning*

- *Facilities*

- *Labor Pool*
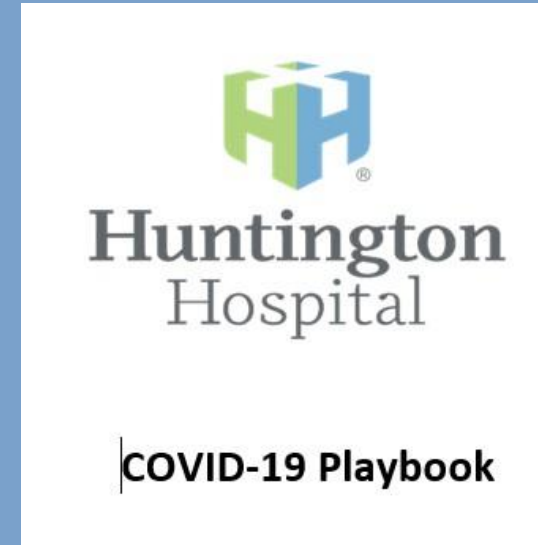
*Note: Supplemental materials for each section are kept on Sharepoint for leaders to reference*

External Surge Plan

- ED Tents: DLX
- MOMS Unit: Trailer Hospital and Tent Hospital
- Pasadena Convention Center

ED DLX Tents

- ***Uses***
  - ***Triage***
  - ***Waiting area for PUI or COVID-19+ patients***
  - ***Monitoring of low acuity PUI/COVID-19+ patients***

- ***Activation***
  - ***Dependent on ED volume and available resources, including staffing***

- ***Deactivation***
  - ***When the average daily census is less than 30 COVID-19 positive inpatients for 3 consecutive days on the 7 Day Moving Average Dashboard***
  - ***Dependent on ED volume, resources and staffing***
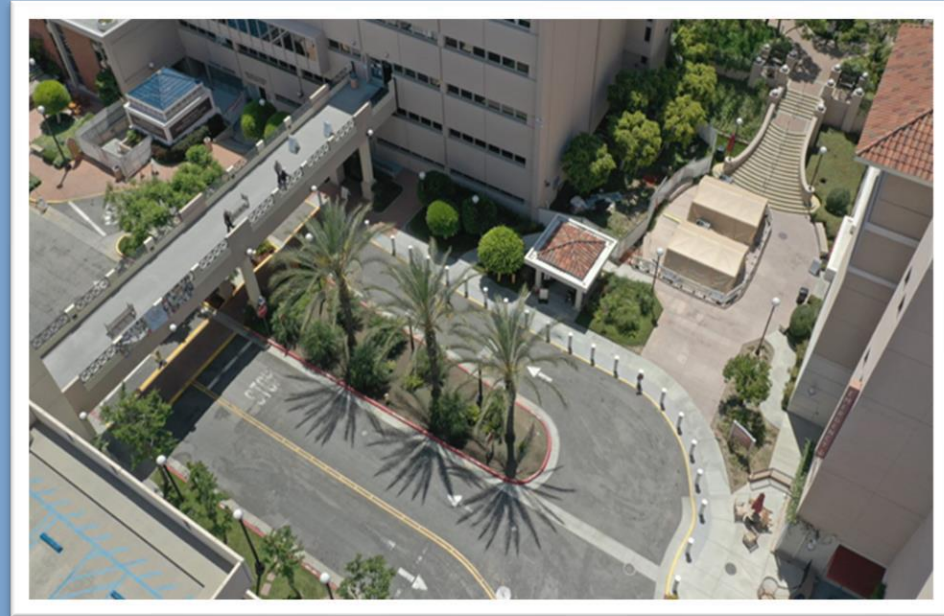
EMS MOMS: Trailer Hospital

- **Overflow ICU Patients**

- **Staffed by ED RNs and ED or Community MDs**

- **10 Monitored Beds**

10 Monitored Beds
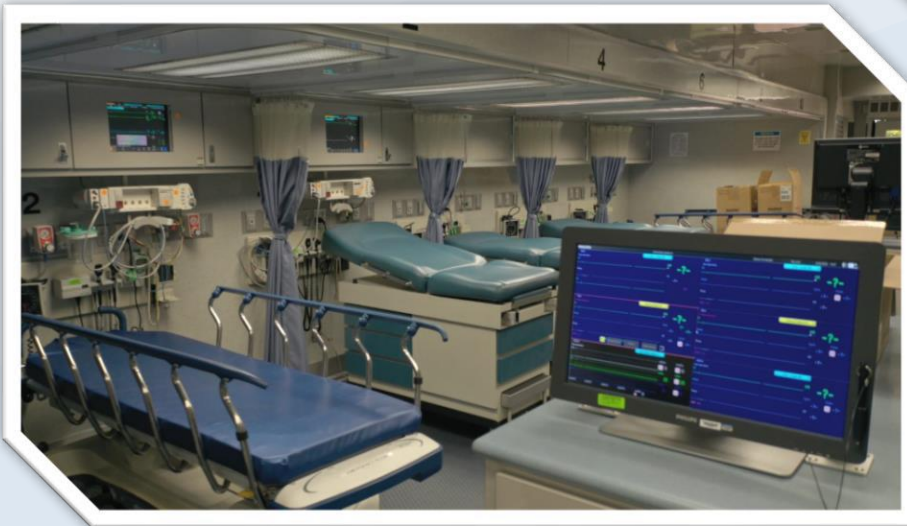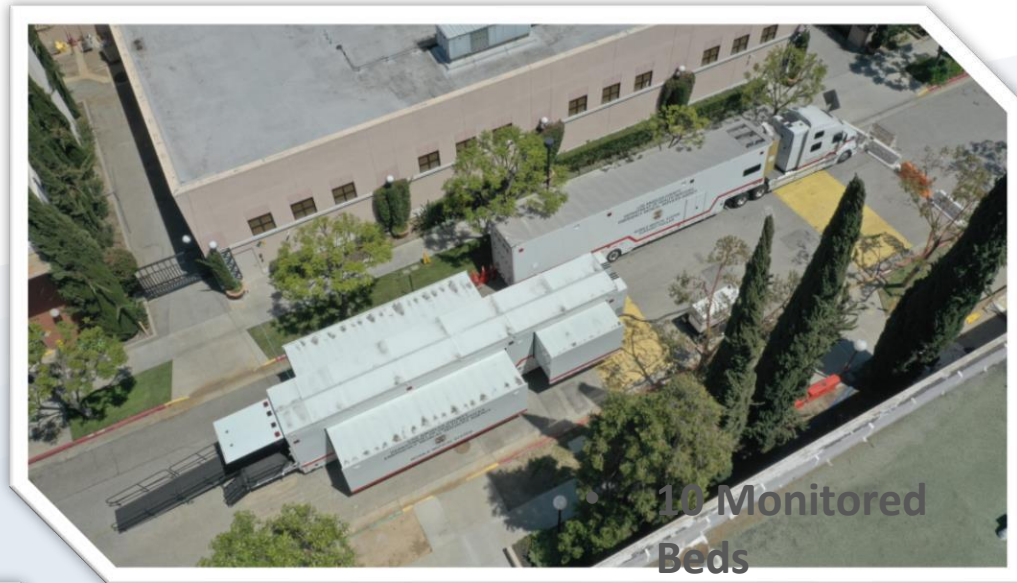
- **Excellent Resource**

- **Free!!**

EMS MOMS: Tent Hospital

- Uses: Treatment area for low acuity, COVID-19+ patients or low acuity COVID-19+ patients awaiting an inpatient bed

- Staffing:
  - ED Nursing/Support Staff
  - ED and Community Physicians
  - Ancillary Teams

- Activation: Midnight census of 120 admitted COVID-19+ patients for 3 consecutive days

- Deactivation: Holding <5 tent eligible COVID-19+ patients in the ED for 24 hours

Pasadena Convention Center

- **Established Alternate Care site with 237 Licensed Beds**
  - **Collaboration with the City of Pasadena**
  - **Contracted with Red Rock Event Planning**

- **Uses: Treatment of Mild COVID+ patients or end of life COVID+ patients when hospital has reached capacity, including surge spaces**
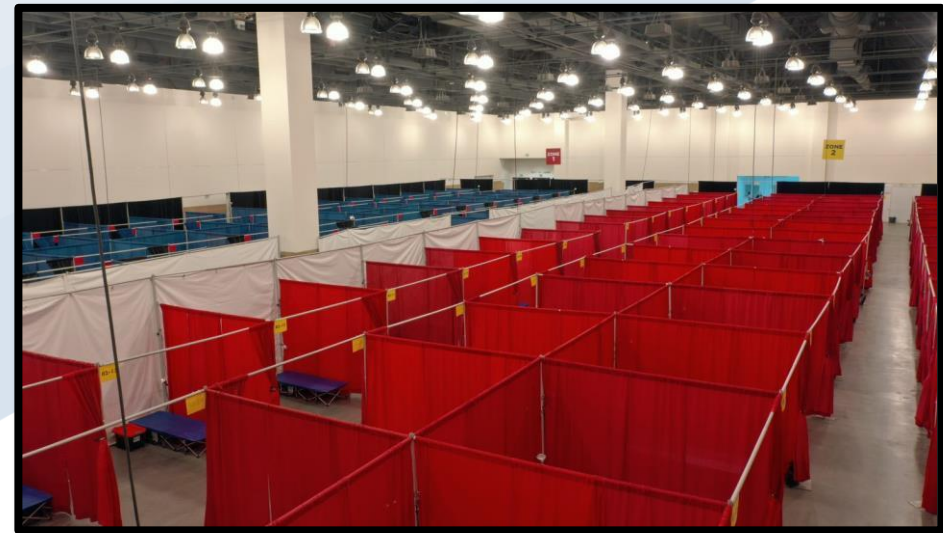
Pasadena Convention Center

- **Plans and workflows:**
  - **Patient Criteria, Flow and Registration**
  - **Downtime Documentation:** Chart Packs/Ambulance Forms/ Transfer Forms/MCI Orders/Aftercare Instructions/Decedent Forms
  - **EMS Transports**

COVID-19 Playbook

Pasadena Convention Center

- **Plans and workflows:**
  - **Security/Access Control and Parking Plans**
  - **Food Service and EVS – Expanded current contracts with Sodexo**
  - **Staffing for RNs, Physicians, Support Staff**
  - **Mass Fatality Plans**
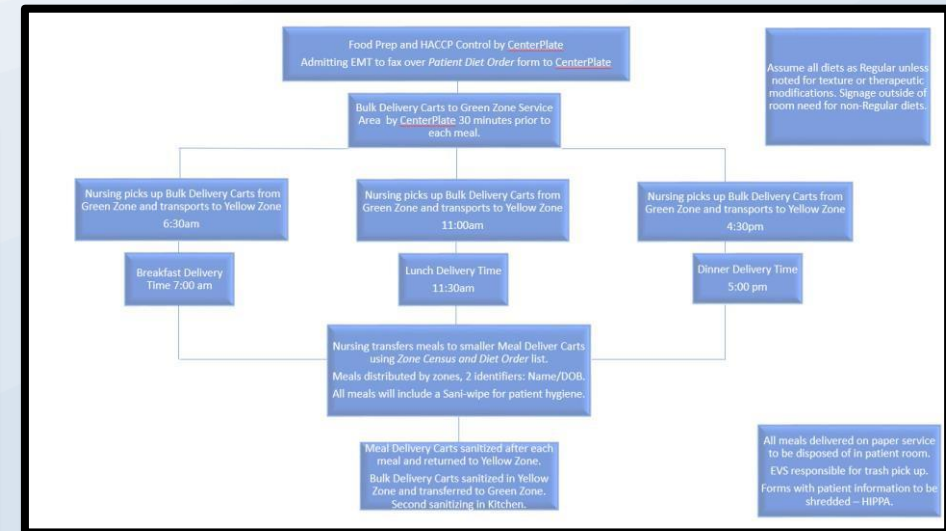
Pasadena Convention Center

- **Plans and workflows:**
  - **IT/Software Updates:**
    - **Built out new surge locations**
    - **New Revenue Cycle Workflow for Location Changes**
    - **Interfaced with Teletracking, Lab, Pyxis, etc.**
  - **Supplies**
  - **Transportation**
  - **Clinical Laboratory**
  - **Pharmacy**
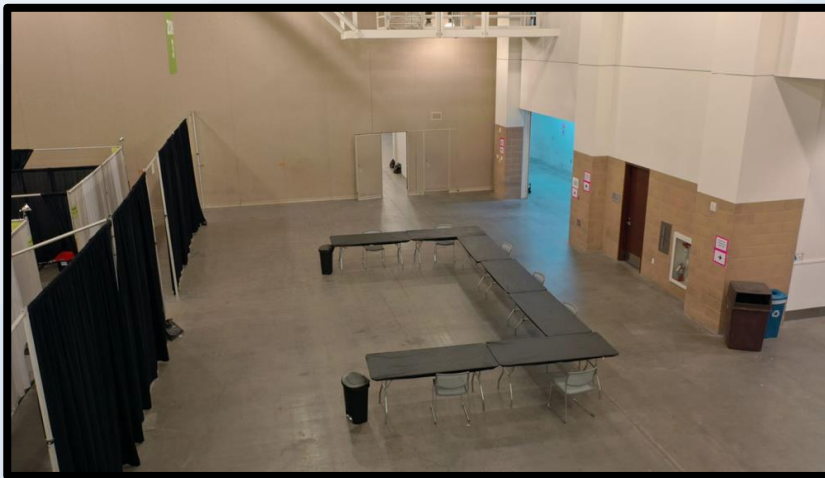
Facilities Support – Air Balance

- *Positive vs Negative Pressure*
  - *Ventilation System Considerations and Strategies*
  - *Airflow Relationships with adjoining spaces and departments*
- *Goal: Prevent Recirculation: Intercept return air and divert to exterior*
- *Challenges: No Return Air Pathways in older buildings*
Labor intensive and costly

HANDS   FACE   SPACE
FRESH AIR

Facilities Support – Air Balance

- *Process:*
  - *Used Building Automated System (BAS) to adjust airflow to the identified unit/module*
  - *Clinical Unit configurations changing continuously*
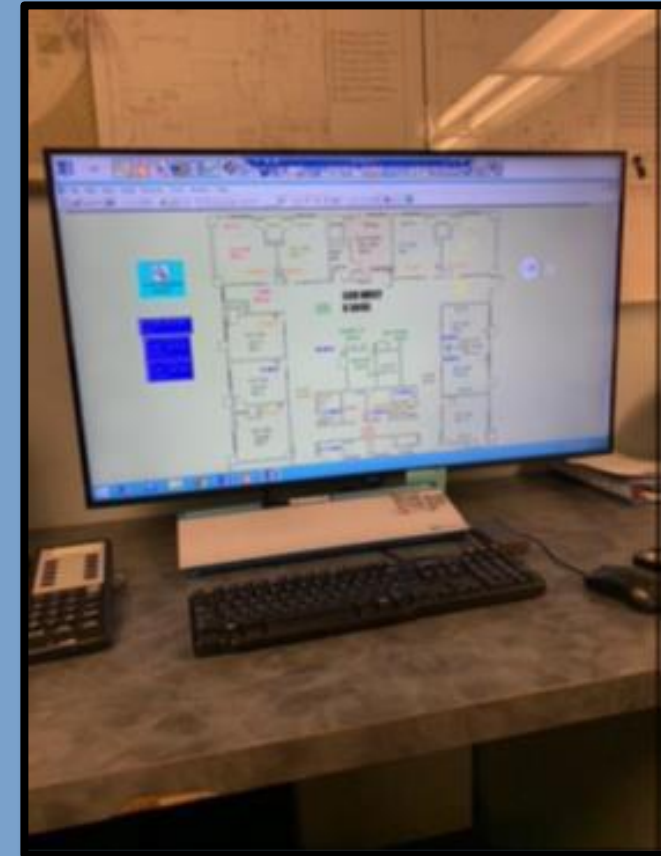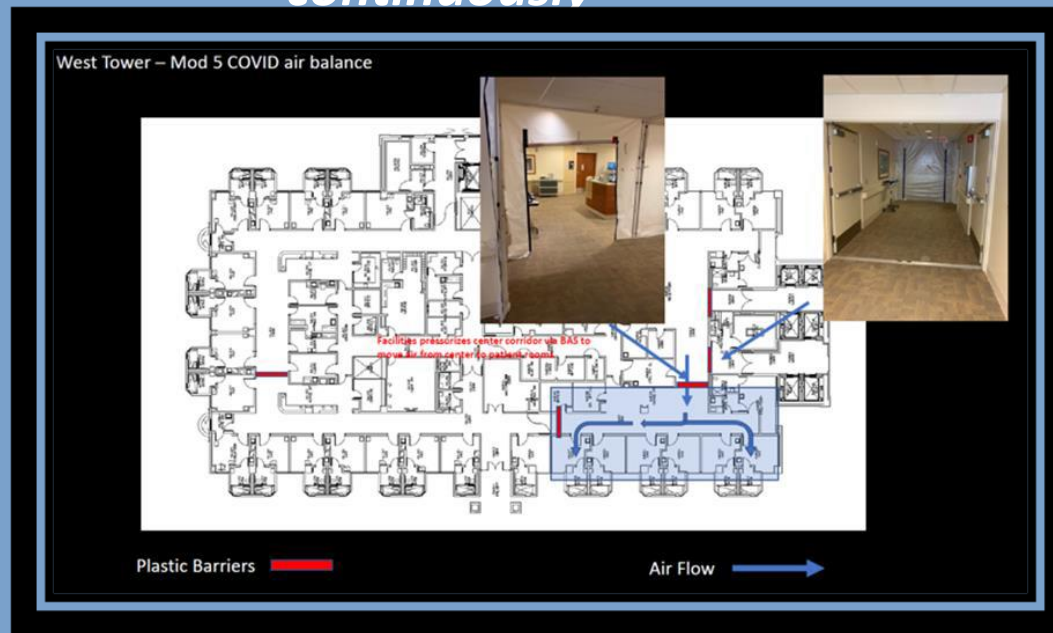
Facilities Support – Air Balance

- *Process*
  - *Install plastic barriers to affected modules if needed*
  - *Instruct staff to keep restroom doors open when not in use*
  - *Air flow goes from center corridor to patient rooms then outside*

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Facilities Support – Air Balance

- *Entrances to module remains closed using either doors or plastic barriers*

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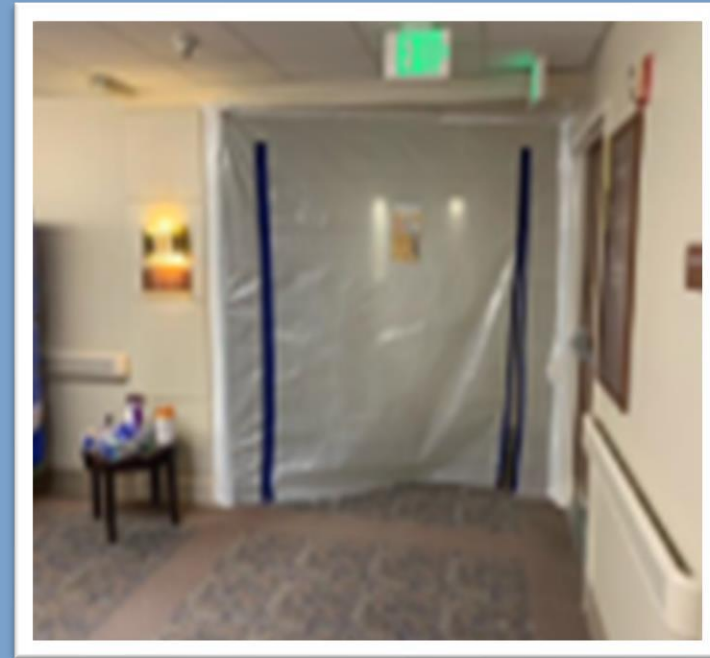
Facilities Support – Air Balance

- *CCU example*

Entrance barrier to CCU 1

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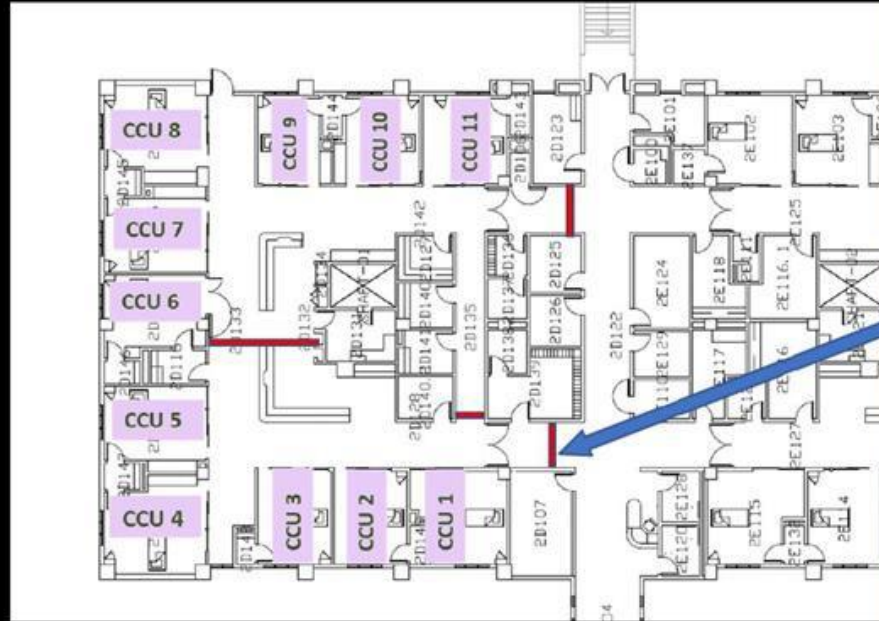
Facilities Support – Air Balance

- *Della Martin Center - DMC: Psychiatric Unit*
  - *Patient outbreak required Facilities to adjust air balance manually to achieve negative airflow in 8 rooms*
  - *Placed air scrubber outside each room with ducting from window*

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Facilities Support – Air Balance

- *Della Martin Center - DMC: Psychiatric Unit*
  - *Removed or modified window in each room*
  - *Covered opening with fire rated plywood*
  - *Cut hole to fit exhaust grill and secured with tamper-proof screws*
  - *Measured air balance to achieve negative air pressure of >12 ACH*
  - *Painted Plywood*

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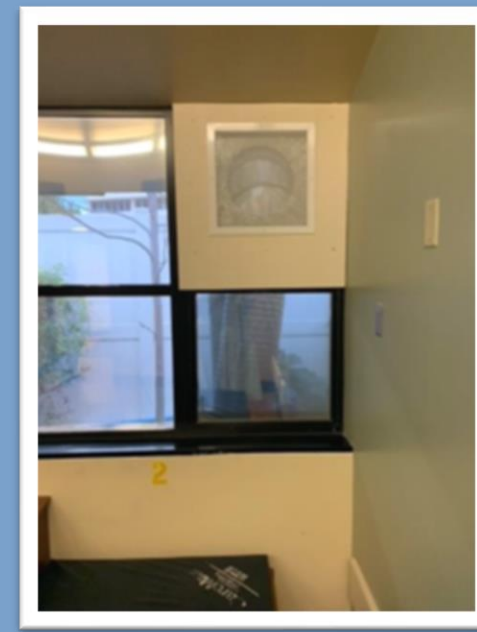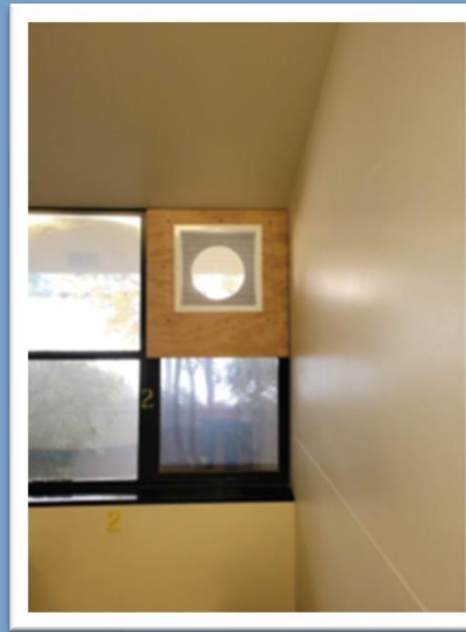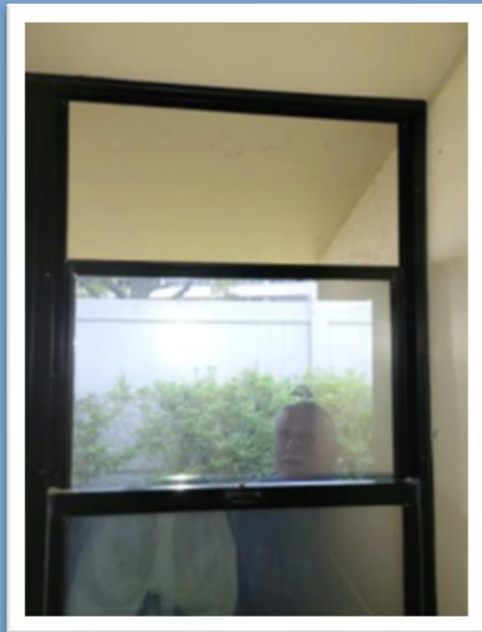
Facilities Support – Air Balance

- *Della Martin Center – DMC: Psychiatric Unit*
  - *Outside Room: Installed duct from window to HEPA air scrubber and mounted exhaust duct above roof*

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Facilities Support – Air Balance

- *Della Martin Center - DMC: Psychiatric Unit*
  - *Electrical connection*
    - *Power from adjacent panel in parking lot*
    - *Wires connected to spider box located by exterior of building*
    - *HEPA air scrubbers connected to spider box*

Facilities Support – Air Balance

- *Della Martin Center - DMC: Psychiatric Unit*
  - *Playbook includes a list of equipment needed for this project with photos*

Equipment Purchased

Syclone MK4 HEPA Air Machine

Negative Air Machine/Air Scrubber
Built with roto-molded housing that can withstand years of service life, the Syclone MK4 is one of the most durable machines on the market today.
The unique 8-point motor and cage assembly keeps the motor unit in place even under the harshest conditions. Three-stage filtration provides 99.97% HEPA level efficiency. Other filter options allow you to configure the MK4 to use pleated filters, ring panels, or odor control filters such as activated carbon.
- Powerful 2HP motor for true 2000+ CFM performance
- Durable rotational molded housing for long service life
- 2 speed operation high and low
- 8 point motor/cage mounting prevents motor and cage shifting under the harshest conditions
- Molded-in lifting handles on both sides of the unit
- Seamless construction guarantees leakproof operation
- Positive lock filter prevents filter movement for uninterrupted filtration
- Uses standard 24" x 24" HEPA filters, rated 99.97% efficiency
- 3-stage filtration for maximum efficiency
- Vertical slide door for easy access to filters
- Molded-in stackable nesting grooves

Dimensions 37" x 26" x 31"
Weight 135 lbs.
Motor 2.0 HP
Power 115 volts, 60 Hz, 15 amps
Exhaust 12"
CFM 2000
Speeds High and Low
Filtration 99.97% HEPA, three stage

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Facilities Support – Air Balance

- *Della Martin Center - DMC: Psychiatric Unit*
  - *Validations and Assessments*
    - *Confirmation more challenging: BAS not available*
      - *Measure airflow of each room with portable tool*
      - *Do the Math:*
        - *Determine cubic feet of room (SF x Height)*
        - *Calculate ACH:*
        Airflow x 60 (minutes) ÷ Cubic Feet = ACH
    - *Ligature risk assessment: Safety Officer*
    - *Final room checks, signage: DMC Manager*

AIR PURIFIER GUIDE

AIR CHANGES PER HOUR CALCULATOR

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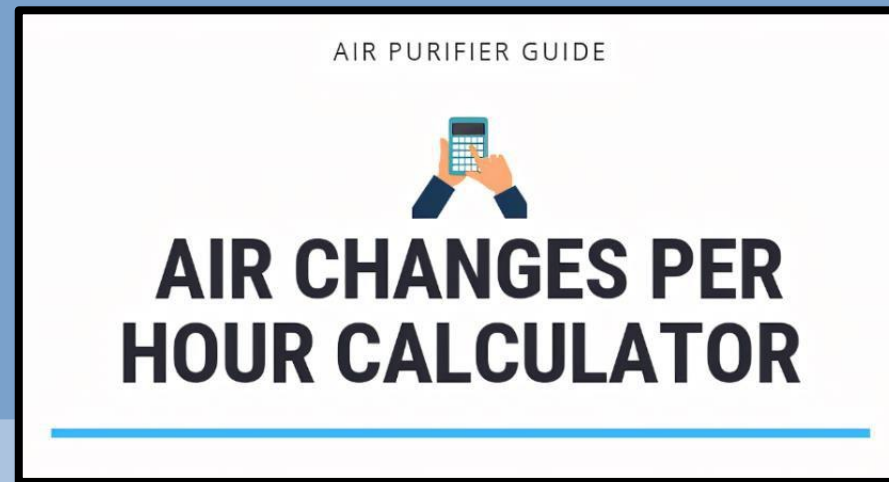
Labor Pool

- **In-Person Labor Pool for first year**
  - **Coordinated with Managers to identify resources that can be released to the Labor Pool due to cancellation of non-essential services**
  - **Developed tools for matching displaced staff with an identified job/need**

Employee Name	Title	Department	Labor Pool Position	Shift Hours	Days Scheduled	Employee contact information	Willing to adjust hours? (Y/N) (if Y how)	Schedule Created	Email Sent with new Schedule	Phone Notification or VM left with new schedule	Unable to reach staff
Example											
John Smith	RN	SDS	AM BRAUN RN	0700-1930	1/8, 1/9, 1/11	johnsmith@johnsmith.com	Y- Changed to 12 hou				

Labor Pool

- **Establish procedures for sick calls/cancellation/flexing**
- **Confirm process for credentialing: Contract Labor/Vols**
- **Determine thresholds for activation of**
  - **Everbridge**
  - **Reddinet Resource Request for Staffing**

Labor Pool

Labor Pool developed a _Virtual_ process during Omicron surge
- **Utilized Labor Pool email**
- **Developed tools in Sharepoint for**
  - **Managers to submit staffing needs**
  - **Employees to submit availability**
- **Ran Smoothly**

Labor Pool

Establish Daily Calendar and Log for all staff

- **HICS Form 252:**
  - **Tracked all staff signing in and out**
  - **Tracked ongoing need for resource deployment**
  - **Tracked returns to the labor pool for re-deployment**
  - **Tracked lunch breaks and missed meal claims**

Labor Pool – Resource Requests for Staff

Resource Requests made for Staffing

- 33 RNs
- 17 LVNs/CNAs

Registries Overbilled us for:

- Missed Lunches
- Overtime
- Billed days even when staff called in sick

COVID-19 Playbook

Labor Pool – Resource Requests for Staff

After lengthy and ongoing invoice reconciliation:

Amount of Variance is **$500,000 CONSERVATIVELY**

HICS FORM 252 Saved Us!!!

COVID-19 Playbook

Final Thoughts

- **Having back-to-back surges helped us understand what was most importa to include in playbook**

- **Leaders became more engaged once they understood how useful the playbook was**

- **Added additional departments after last surge**

- **An excellent framework for future pandemics**

Questions?

Presentation 2

Learning Objective
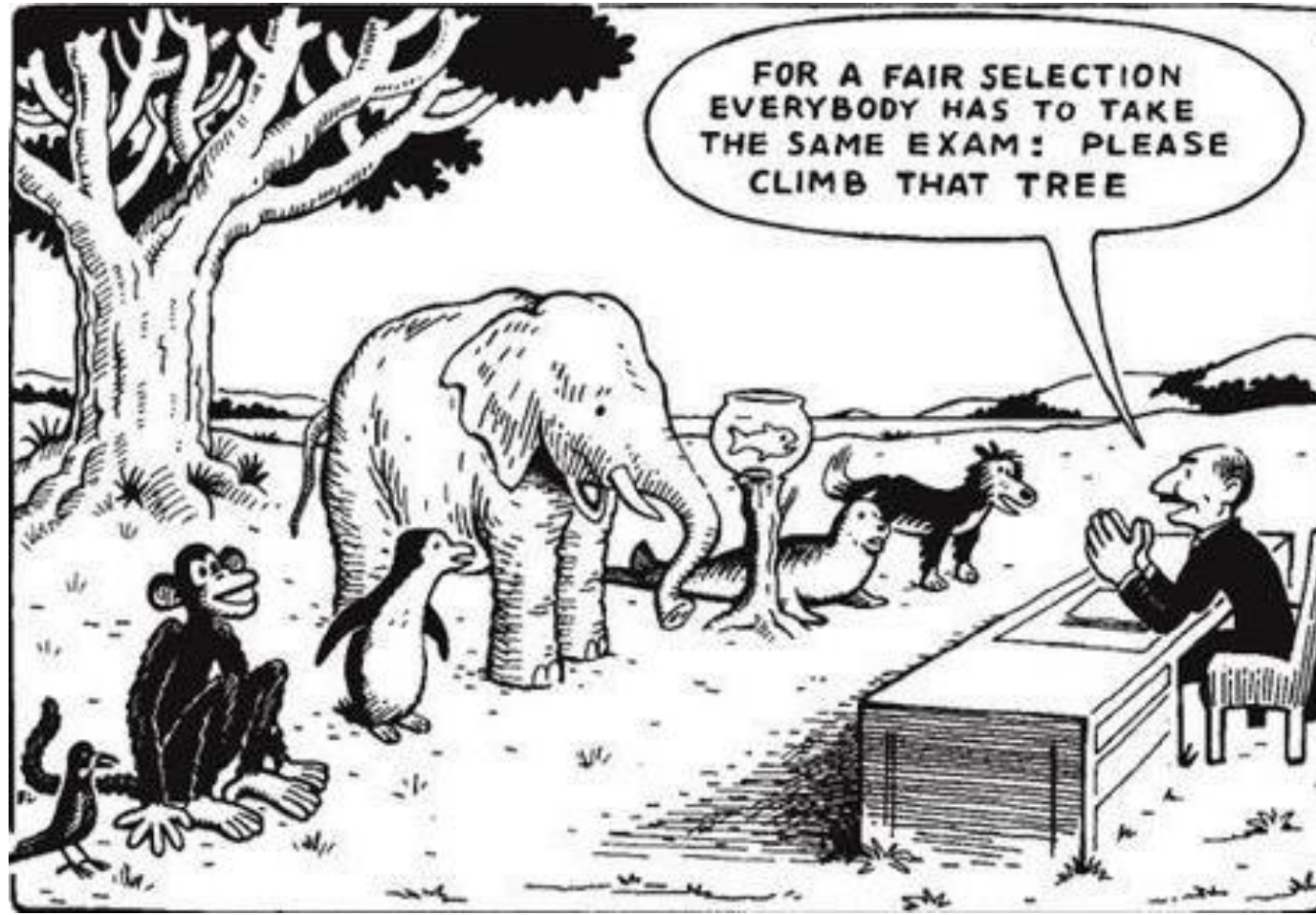
Agenda

- Business Continuity 101
- New TJC Standards
- Standard, Adaptive, Homegrown Solutions
- Scenarios
- Wrap-up
- Q&A

Business Continuity 101

What is Business Continuity?

- **Definition**
  - The process by which an organization <u>plans</u> to do tomorrow what we were doing yesterday
- **What motivates us?**
  - Maintain safe patient care
  - Safe & secure facilities for patients, staff, visitors, and families
  - Good stewards of environment
  - Regulatory Compliance

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TJC & Continuity – Effective 7/1/2022

NEW	OLD	Summary of changes
EM 13.01.01 1,D	EM 02.01.01 EP12	Extensive expansion on COOP requirements to include leadership participation in ID and prioritization of critical services/functions – **documented committee meetings**
EM 13.01.01 2,D	EM 02.01.01 EP12	Extensive expansion on identifying alternate **locations (off-site, another organization, existing facilities/space, telework, or telehealth)** to perform essential business functions
EM 13.01.01 4,D	EM 02.01.01 EP12	Identification and documentation of individuals that have decision making authority if the primary individual(s) are unavailable – **succession and delegation of authority plan**
EM 17.01.01	EM 03.01.03 EP 13, EP 14	Additional focus on leadership review and oversight of after-action and improvement planning processes as part of the continued improvement of the emergency management program

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How do we do it?

- Organization level
- Department level
- Community/Vendor
- Incident/hazard
- By class

10 Professional Practices for Business Continuity

- Develop a program
- Risk Assessment
- Business Impact Analysis
- Business Continuity Strategies
- Incident Response
- Plan development and implementation
- Awareness/Education/Training
- BC Exercises, Audits, Annual Maintenance
- Crisis Communications
- External Agency Coordination

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Nursing - Traditional BC Approach in Practice

- Challenges
  - Commitment
  - Teaching key concepts
  - Bandwidth
  - Demonstration of value
- Benefits
  - Engagement
  - EM/BC staff develop awareness of depts.
  - Relationship building
  - Identified gaps
    - **Resources & Plans**

Essential Function Name	Description of Essential Function	on-site to perform?	Est. number of staff required onsite	Onsite staff comments	Healthcare Essential Functions Supported	Breadth of Impact
	Unit provides care for ill or injured patients	Yes	See staffing workbook page	See staffing workbook page	Continue Patient Care	Multiple Units
					Continue Research	
Patient Care					Continue Med Ed	

Other Units/Departments This Function is Dependent On	Explanation of Dependency	Disruption Tolerance (MTD)	Rationale for selection the MTD
Labor and Delivery	We admit infants directly from this department		
Blood Bank'	Provides blood supply to the units. Blood bank r	1 hour	Blood is not stored on units (7ICU and ED are exceptions)
Clinical Microbiology	Process lab orders and provide results for tests with a longer turn around time than clinical labs		
Core Clinical Laboratory	Provide diagnostics (lab orders/results) to clini	Less than 1hr	Unable to treat patients without the lab. STAT result turnaround time are usually less than 1 hour
EVS	EVS cleans the bed the room, the equipment in be	1 day	Nursing staff can do some level of cleaning before the dirty utility room is full on the units
Laundry & Linen Services	Provide clean linens/laundry to patients	1 day	In a disaster would only change soiled linen once a day. Units have less than 1 day supply of linen on the units.
Materials Management	Materials Management supplies the unit with m	1 day	Materials Management is needed to pick up used equipment trays and replace them with clean ones. This service is consistently neede
Nursing Float Pool	Staffing for patient care when scheduled staff ar	12 hours	Without staff, patient care cannot continue. Could likely be mitigated for a shift. UCLA Health staffing ratios are well beyond as requi
Nutrition	Needed to feed the patients. Ensures feeds meet	3 hours	In most cases, feeding can be paused for a short period of time without putting patient care at risk.
Patient Placement	Patient placement manages assigning the patier	12 hours	Patient flow is constant and needs to continue
Pharmacy	Pharmacy provides medication to the inpatient	Less than 1hr	Must have access to medication at all times.
Radiology	Imaging needed for diagnostics and treatments.	Less than 1hr	Need diagnostic imaging for treatment. XRAY is a critical clinical resource for neonatal patients.
Respiratory Therapy	Responsible for all breathing treatments, intuba	Less than 1hr	Constantly dependent on RT for ongoing patient care on the unit
Social Work	Assist with providing social services to the patie	3 days	This service can be temporarily suspended without stopping patient care
Spiritual Care	Assist families with providing spiritual care	Greater than 4 wks	Asence of this service will not disrupt operations essential to patient safety
Medical Staff			
Cardiology	Nurses are unable to provide patient care until a	Less than 1hr	Physician orders are required to provide emergent patient care (such as medication).

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Resource Name	Description	Quantity Req'd for Normal Operations	How long you can be without this resource (MTD)
Computer Workstations/Desktop Computers	Area to chart and have access to patient medical records	13	less than 1hr
Data Drop/Network Connectivity	Wall panel where ethernet cables are plugged into		less than 1hr
Deonized Water			
Desk Phones	Landlines used to make/receive phone calls		less than 1hr
Domestic Water	Tap water	In sufficient quantity to support patient census	
Electrical Power	Electricity	In sufficient quantity to support patient census	less than 1hr
HVAC	Heating, ventilation, air condi	1	
Internet Connectivity	Connection to the internet.	In sufficient quantity to support patient census	less than 1hr
Printers	Print patient information and blood gas recrequisitions	1	6hrs
Steam	Provide sterilization to supplies. Provide heat	In sufficient quantity to support patient census	
Zebra Phones/iPhone	Used to call ancillary units and medical staff	10	less than 1hr
Medical Gas	Oxygen and air supply	In sufficient quantity to support patient census	less than 1hr
Draeger Incuwarmer isollettes with accessories	Infant isolette	22	
	Stores refrigerated		

NICU Disaster and Evacuation Guidelines

UCLA Children's Hospital

At Ronald Reagan-UCLA Medical Center

A. Unit-Specific Emergency Response System for the NICU

1. <u>Purpose</u>: In addition to the hospital-wide evacuation policy for the inpatient care areas, the ***NICU-specific disaster and evacuation guidelines*** serve as an individualized and detailed Emergency Operations Plan (EOP) of the neonatal patient(s) in executing the "Response Protocol" per hospital policy. This will help to minimize the impact on department or unit operations.

2. <u>Initiation</u>: The unit's priority in a major emergency is the protection of its patients, families/visitors, personnel, property and environment.
   - An **Internal Code Triage** can be activated per hospital policy **(HS 8306)**

3. <u>Communication</u>:

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10 Principles of Adaptive Business Continuity

- Deliver Continuous Value
- Document only for Mnemonics
- Employ Time as a Restriction, Not a Target
- Engage at many levels in the organization
- Exercise for improvement, not for testing
- Learn the organization
- Measure and benchmark
- Obtain incremental direction from leadership
- Omit risk assessments and BIAs
- Prepare for effects, not causes

Adaptive Business Continuity: A New Approach
David Lindstedt Ph.D., PMP, CBCP   Mark Armour CBCP
Kristen Noakes-Fry, Editor
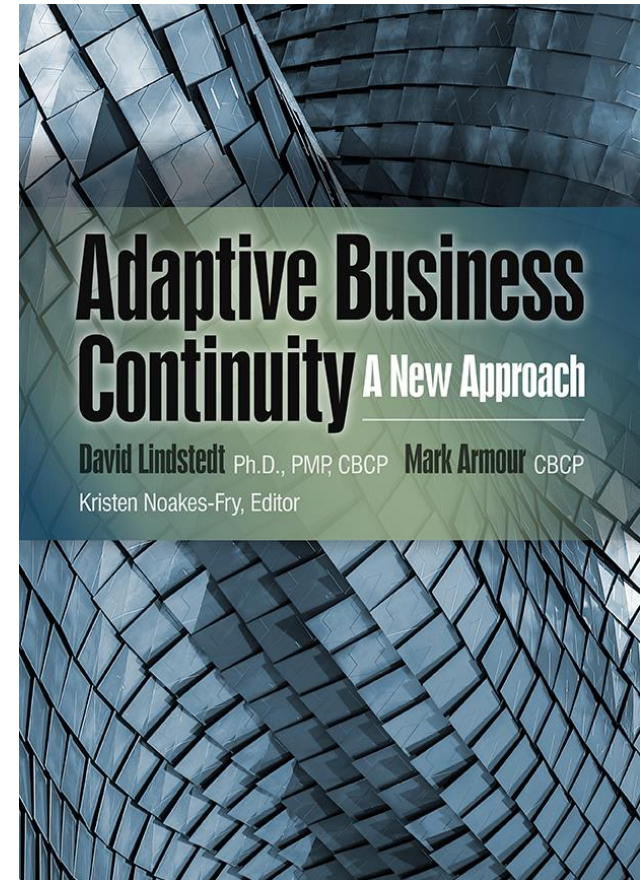
Sterile Processing - Adaptive BC Approach

- ## Challenges
  - May miss the forest for the tree
  - Interest in using plan for normal ops
    - **Set activation criteria**
- ## Benefits
  - Learned the dept.
  - Demonstrates value
  - Efficient use of time & resources
  - Practical use
  - Closed a gap
    - **Transportation Plan**

"Prepared for the effects"

Stakeholder engagement as needed

No BIA, only relevant data

Integrated with Incident Response

Awareness, Education, Training

Mission Continuity Plan

Org. Unit:	RRUCLA Sterile Processing Department
Type:	Loss of Critical Resource
Description:	Transportation Plan for off-site decontamination and sterilization of reusable medical devices and instrumentation

Activation Guidelines:

Upon activation of the SPD Mission Continuity Transportation Plan, the following information should be determined:

1. What is the anticipated duration of the outage?
2. Based on current inventory of ready to use instrumentation, what will we need to process to maintain appropriate par levels for emergency and scheduled cases?
3. Based on the assessment, SPD leadership will notify OR leadership and will identify the appropriate facility to assist with the continuity plan. SPD and OR leadership will call the receiving SPD and OR leadership to activate the continuity plan.
4. Guidelines for determining support locations:
   a. If RR SPD is impacted:
      i. MP 200 SPD
      ii. SMH SPD
   b. IF SMH SPD is impacted
      i. SM Surgery Center
      ii. RRH SPD
      iii. MP 200 SPD

- Goal is to safely decontaminate and sterilize reusable medical devices in accordance with all applicable standards and regulations.
- Secondary goal is to maintain supply for clinical operations in impacted department's facility while working with off-site locations to minimize operational disruption.
- SPD will identify instrumentation needs based on operative schedule and maintenance of instrumentation par levels.
- Processing of soiled instrumentation will occur up to the final point of processing that can occur. If no further processing can occur and instrumentation is not in a state of readiness for reuse, then transport plan may be activated.
- Upon activation of transport plan, a process map should be developed to determine path of travel for soiled instrumentation depending on impact.

Transportation Guidelines for Contaminated Reusable Medical Devices:

- SPM scanning of all instrumentation must occur at all sites for tracking purposes. Due to the circumstances, if the staff is not able to scan, we must document all instrumentation on a handwritten log using downtime procedures for SPM.
- Personal protective equipment and biohazardous spill kits are available.
- Infection Prevention will review transportation plan prior to activation.
- Education should take place prior to implementation of this plan. All instrumentation must comply with organizational and regulatory standards, proper universal precautions and proper containment must be utilized. Clean and biohazardous must have clear visible identifiers.

   o **Off-site transport:** If the same vehicle is being used to transport both contaminated and decontaminated devices, the devices must be placed in separate, secure areas of the vehicle. The design and materials used in the construction of all transport vehicles

Challenges with each approach..

- Where theory meets practical application

  - Hospitals are busy places

  - Limited bandwidth

  - Competing priorities

  - Proactive vs. Reactive

  - End users may not see the value

  - Staff turnover

  - …..so where can your continuity program find success?

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Scenario 1

Your facilities department comes to you and says they have to turn off normal power to the hospital for 8 hours to make necessary repairs. What do you do?

~~Develop a program~~
~~Risk Assessment~~
~~Business Impact Analysis~~
Business Continuity Strategies
Incident Response
Plan development and implementation
Awareness, ~~Education, Training~~
~~BC Exercises, Audits, Annual Maintenance~~
Crisis Communications
External Agency Coordination

Deliver Continuous Value
~~Document only for Mnemonics~~
Employ Time as a Restriction, Not a Target
Engage at many levels in the organization
~~Exercise for improvement, not for testing~~
Learn the organization
~~Measure and benchmark~~
Obtain incremental direction from leadership
Omit risk assessments and BIAs
Prepare for effects, not causes

Mission Continuity Recovery Plan

Department Mission Continuity Plan for Loss of Normal Power

Under a loss of normal power scenario, the following conditions are experienced in the hospital:

- Back-up generators will provide power to all critical and life safety branches of the infrastructure.
- Private offices and most storage rooms will not have power.
- Normal (beige or orange) power outlets will NOT provide electricity. Any equipment plugged into these outlets will not work.
- ONLY red emergency power outlets will provide electricity. Additionally, some orange outlets may be connected to emergency power. (See Appendix A – Outlet Huddle Message)
- Reduced lighting in some areas. Inpatient bathrooms will not have lighting.
- The hospital's network WILL be available during this time.
- Only one elevator per bank will function. This includes case carts, nutrition, and blood bank elevators.
- Critical building utility systems will continue to function.

Department Impact Assessment & Recovery Plan

Under a loss of normal power scenario, on-site department leadership will coordinate the recovery by implementing the following mitigation measures.

If the department's recovery strategy requires a relocation to alternate space, check the following box and reference the department's "Relocation Plan" ☐

Department:	[RNPH 4 East Adult]			
Room #	**Equipment Requiring Emergency Power**	**Temporary Emergency Power Source**	**Supplies Needed for Temporary Power**	**Location of Supplies Needed for Temporary Power**
Example: B220	*Tabletop Washer*	*Nearby red outlet*	*15' Extension Cord Zip Ties Duck Tape*	*Blue Tote in Manager's Office (B220A)*
4 East (all neighborhoods)	Stryker (psych) beds (cords NOT to be left unattended)		(10) 12' extensions cords	

Notes:

-Roll down doors (greeter stations; snacks area in both dayrooms): Need research on how to operate manually, as necessary. Dayroom roll downs can be kept up during the outage, but the usual practice of locking the dayroom/escorts must be enforced.

-Noel to alert Nutrition to dialogue with Nursing Leadership about removing food for the evening (and stocking for the night with non-perishables). The extension cords requested above can be used as well, but have also been requested for general outage backup after 8/28/2021.

-Check all CPUs in nursing stations to ensure the most-essential ones are plugged into red outlets.

-Room review: Submit tickets now for any patient room light bulbs (dim or not working) on the red switches.

-FYI: Conference rooms on the unit appear to have many red (backed up) outlets available for charging WOWs, iphones, and the like. Red outlets also available in the core hallway and greeter station.

-Greeter Stations: Certain machines related to Admissions (band maker) should be moved to red outlets.

-iPads for Q15 rounding: Move to red outlets, now and ongoing.

-AccuChecks should be plugged into red outlets, now and ongoing.

-The staff breakroom (core hallway) fridge will be out of commission, so please plan accordingly.

-Security monitors should be plugged into red outlets.

-Heads-up: Facilities is checking on whether 4 West's panic buttons (Greeter Station, 4W-B) is connected to backed-up power, in case you also have panic buttons to review.

-Laundry room plugs are mixed (red, white) in case one set should always be on red outlets.

Scenario 2

You receive a call that there is a phone system failure in your Nutrition Dept's call system. Failure led to several patient complaints with delayed breakfast and lunch. Nutrition Dept. is on full downtime until repairs can be made and the legacy phone system is only used in that one area which prevents a hot swap. Next steps?

Develop a program
Risk Assessment
Business Impact Analysis
Business Continuity Strategies
Incident Response
Plan development and implementation
Awareness, Education,Training
BC Exercises, Audits, Annual Maintenance
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UCLA Health

UCLA Health

Ronald Reagan UCLA Medical Center Nutrition ACD System Downtime Procedure

During outages of the ACD phone system at Nutrition, downtime procedures will need to be implemented so that patient care can continue. During downtimes, the priorities will be to preserve the ability of patients to order food, to ensure that call center staff can answer calls in a timely manner, and to ensure that call center staff can input patient orders into Computrition.

During the Downtime
During the downtime, normal processes should be used for entering orders into Computrition, provided there is network reliability.

ISS (7CARE) should be notified of any Nutrition-related downtimes. The Nursing Supervisor should also be notified and may assist in providing communications to the individual nursing units.

Loss of ACD System/Phones
When there is an outage of the ACD phone system, alternative phones and phone numbers will need to be procured and given to Nutrition call center staff. The number of phones needed will vary during peak hours and non-peak hours. During peak hours (6:40am-8:30am and 11:30am-1:30pm), 4 phones will be needed (3 agents, 1 supervisor). During non-peak hours, 2 phones will be needed (2 agents).

The new phone numbers will then need to be shared with nursing units. In order to ensure that each phone number is not overwhelmed, each phone number may need to be assigned to a small number of nursing units – please collaborate with the Nursing Supervisor to decide on phone number assignments and a communication plan. A Desktop Alert template has been created to support communication: *RR Nutrition Call Center Downtime*

Loss of Nutrition Call Center Space
If the Nutrition call center space is not useable during the ACD system downtime, the Nutrition call center team will need to collaborate with Hospital Command Center staff, Facilities staff, and Planning, Design, and Construction staff to identify an alternate space suitable for the call center's needs.

UCLA Health

Healthcare Mission Essential Functions

- Continue Patient Care
- Continue Research
- Continue Medical Education
- Maintain Visible Leadership
- Maintain Continuity of Administration
- Maintain Reputation of a Medical Enterprise
- Maintain Relationships with Partners/Stakeholders
- Maintain Safety & Security
- Maintain Financial Viability of the Organization

UCLA Health

10-Minute Break

Presentation 3

Business Continuity Planning

Providing Care through both Planned and Unplanned Events

Agenda

What does Continuity Mean for your facility

Risk Assessments and BIA

Planned and Unplanned Events Incident Response

Crisis Communication

What does Continuity Mean for your facility?

Planning

- The practice of planning is as important as the plan itself
  - Ensure you have:
    - The correct stakeholders at the table
    - Decision makers at the table
    - Subject matter experts at the table
- The BC Plan for each facility and each department should be specific to the needs and identify the critical functions of that department

Business Continuity Plans Should Be Simple

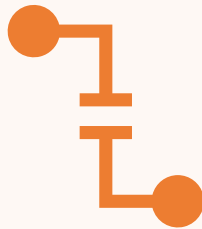| Space	Staff	Stuff/Supplies
• How much space is needed? • What are the bare minimum space requirements? • What alternate spaces can be used?	• How many staff does a department have on a daily basis? • What is the minimum staff they can operate with? • What type of staff is required? • What type of regulatory notifications are needed if you change from daily operations?	• What Supplies are needed? • What basic Equipment is needed? • Where can you get the necessary equipment if your primary source is compromised?

Interdependencies

Up stream Interdependencies

Who are you reliant on to operate?

Do you have plans in place if they are incapable of provided the services you need?

Where do you get patient referrals from?

Space, Staff, Supplies

Down stream interdependencies

Who is impacted by your impacts to provide services?

What alternate plans are in place if there is a clog in the pipeline?

Space, Staff, Supplies

Risk Assessments and Business Impact Analysis
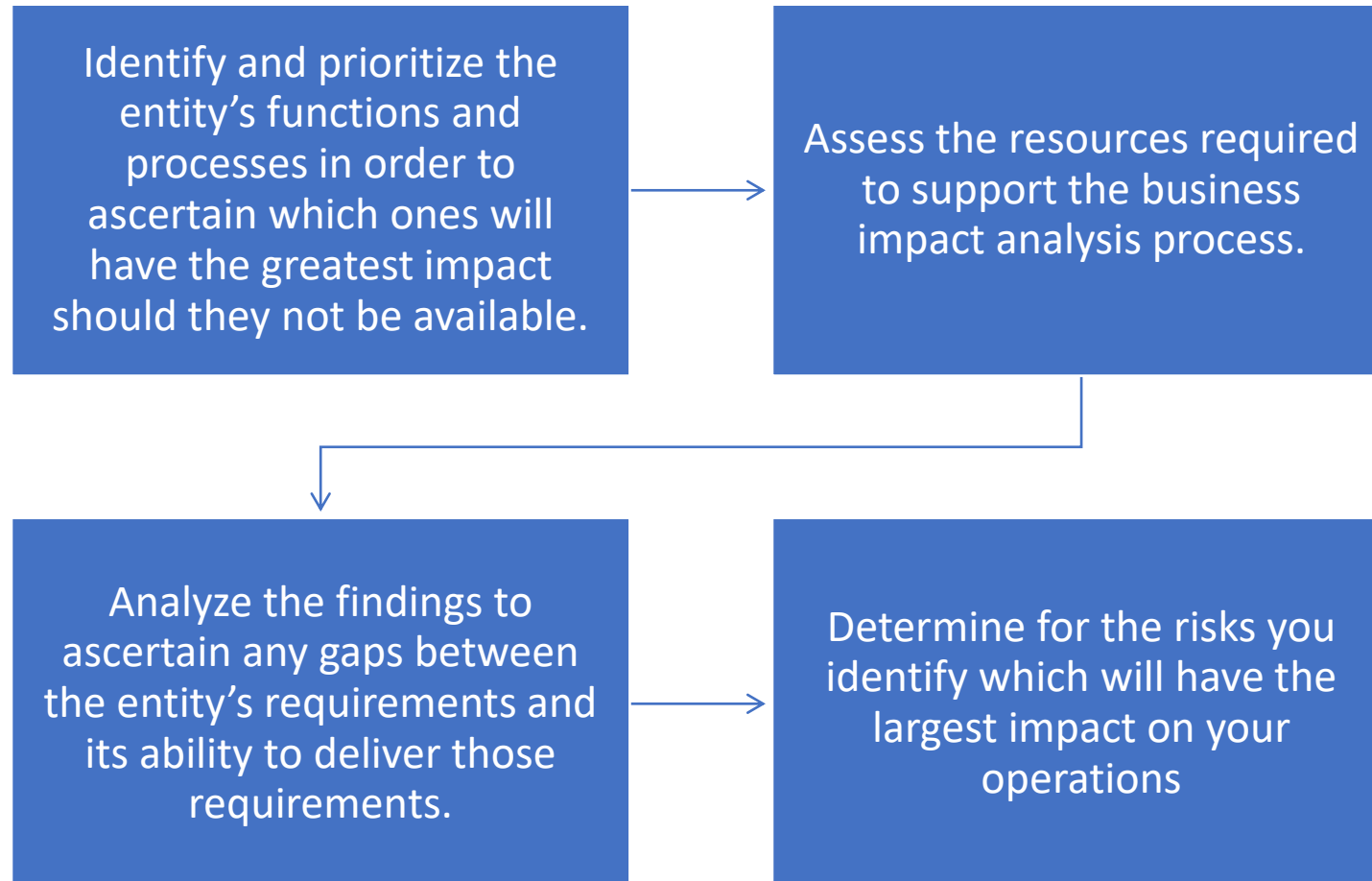
Risk Assessments

Conduct your annual risk assessments and ensure your Business Continuity Plans match the potential risks you identify.

If there is any percentage of risk for an event to occur ensure your BCP can be adapted to meet the needs

Risk Assessments should be specific to your organization, your facility, and your department.

Incorporate the work that has already been accomplished into your BCP Plan (specific organizational plans such as earthquake or HICS IRG's)

Business Impact Analysis

Identify and prioritize the entity's functions and processes in order to ascertain which ones will have the greatest impact should they not be available.

→

Assess the resources required to support the business impact analysis process.

Analyze the findings to ascertain any gaps between the entity's requirements and its ability to deliver those requirements.

→

Determine for the risks you identify which will have the largest impact on your operations

Planned and unplanned incident response

KP Unplanned Event (September Fire)

- On Friday September 11, 2021 at 00:00 our suspect entered the hospital main lobby, contacted security and requested a visitor pass to go to the discharge pharmacy located at 4867 W. Sunset Blvd.

- The Suspect went toward the pharmacy where he strategically waited until the security guard was busy assisting another member/visitor.

- The suspect entered the visitor elevators and proceeded to the 7th floor

- Upon arriving at the 7th floor the suspect found a location located just outside the CCU. The suspect took a gasoline can out of his backpack, poured it on the ground and lit the fluid.
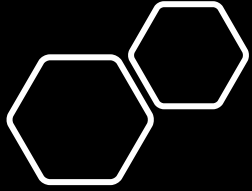
Impacts

- $2.1 million dollars in damage

- 8 of 12 Elevators left out of service due to water damage

- CCU (16 Beds) Out of Service
  - 12 Patients Moved

- 31 Administrative offices displaced
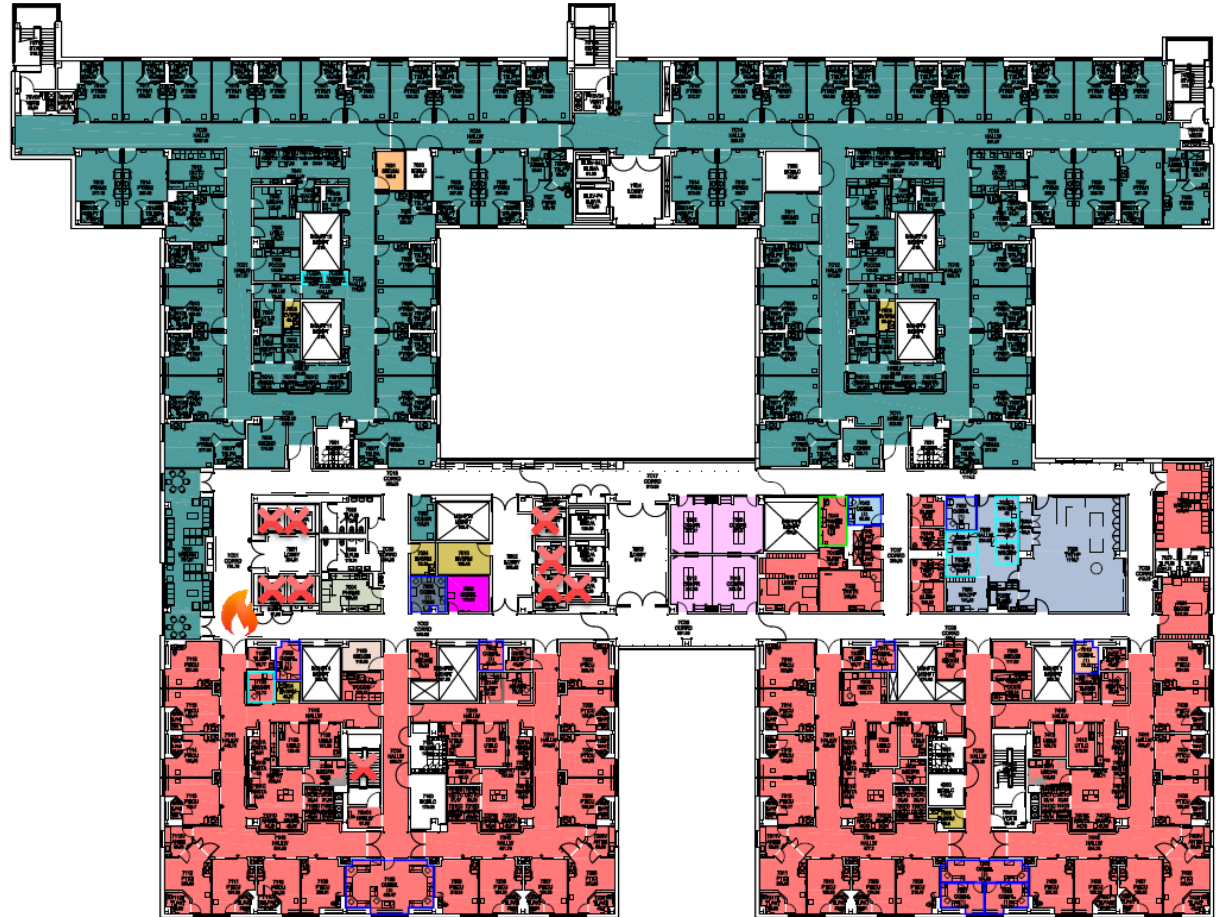
Impacts Detailed

- Cosmetic Burn and Smoke Damage
- Fire Sprinkler System Repairs/Reset
  - (3 Sprinkler Heads, 4 Smoke Detectors)
- **Elevators out of Service**
- Water Damage to Drywall in corridors
- Mold Prevention
- Clinical Equipment Water Damage on Floors Below Incident

Business Continuity

Space

Patients were moved between three open units

Because this was CCU we had identified the departments available that had a similar set up and capabilities

Staff

Staff were moved with the patients

Managers of staff ensured the staff received the support they needed post an incident

Supplies

Supply Chain team increased the par levels in all departments that received patients

Increased rounding was conducted

Specialty patients (CRRT) received direct physician oversight and review of procedures to ensure their needs were being met.

KP Planned Continuity Event (Labor Action)

- In September 2021 Kaiser Permanente received notice of one of the largest potential labor actions in organizational history.

- The "Alliance" which is a co-hort of unions making up approximately 70% of KP Staff were working with management leaders to negotiate a new contract.

- With advanced planning the KP National, Regional, and Local teams were able to come up with a plan in the event of a labor action to ensure the most amount of services were offered to our members and the community with the least impact.

BCP Review and Implementation

Since this was a known event it allowed the leaders to take time to review our current BC Plans.

During the Review the following were considered

| Impacted Staff | Impacted Services | Interdependencies | Mitigation Plans |

BC Plans Tailored to the Event

- Business Continuity Plans were tailored to the impacts we expected to receive.

- Services were planned to be consolidated.

- Staff were asked to lean in and cover areas not normally covered by specific unions (i.e. ED)

- Regionally services were consolidated to manage staff and critical patients as best as possible.

- Plans were broadly shared with the various leadership groups to gain stakeholder engagement.
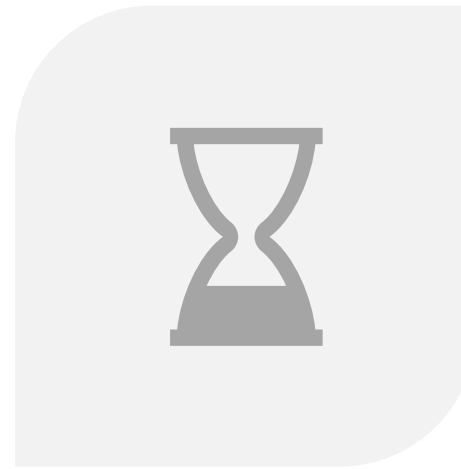
Crisis Communication

Purpose of Crisis Communication

PROVIDE TIMELY, EFFECTIVE COMMUNICATION WITH INTERNAL AND EXTERNAL PARTIES

ENSURE A FRAMEWORK IS IN PLACE TO QUICKLY ACTIVATE WHEN THE TIME COMES UP.

Crisis Communication

Communicate Early and Often

Ensure all stakeholders know the situation, the actions that are being taken and when to expect future communication.

Ensure your asks are clearly identified

If possible, pre-draft communications and get the necessary approvals before an incident occurs to expedite the timeliness.

Make sure communications are clear, consistent, and curtailed to the incident at hand.

Questions?

Contact:

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Presentation 4

Health Sector Cybersecurity: 2021 Retrospective and 2022 Look Ahead

5/10/2022

- Introduction to HC3

- Introduction/Overview

- Healthcare Cybersecurity up to 2021
  - Timeline of Events and Incidents

- Healthcare Cybersecurity Throughout 2021
  - Detailed Timeline of Events and Incidents

- Healthcare Cybersecurity – 2022 and Beyond
  - How to Move Forward

- Conclusions
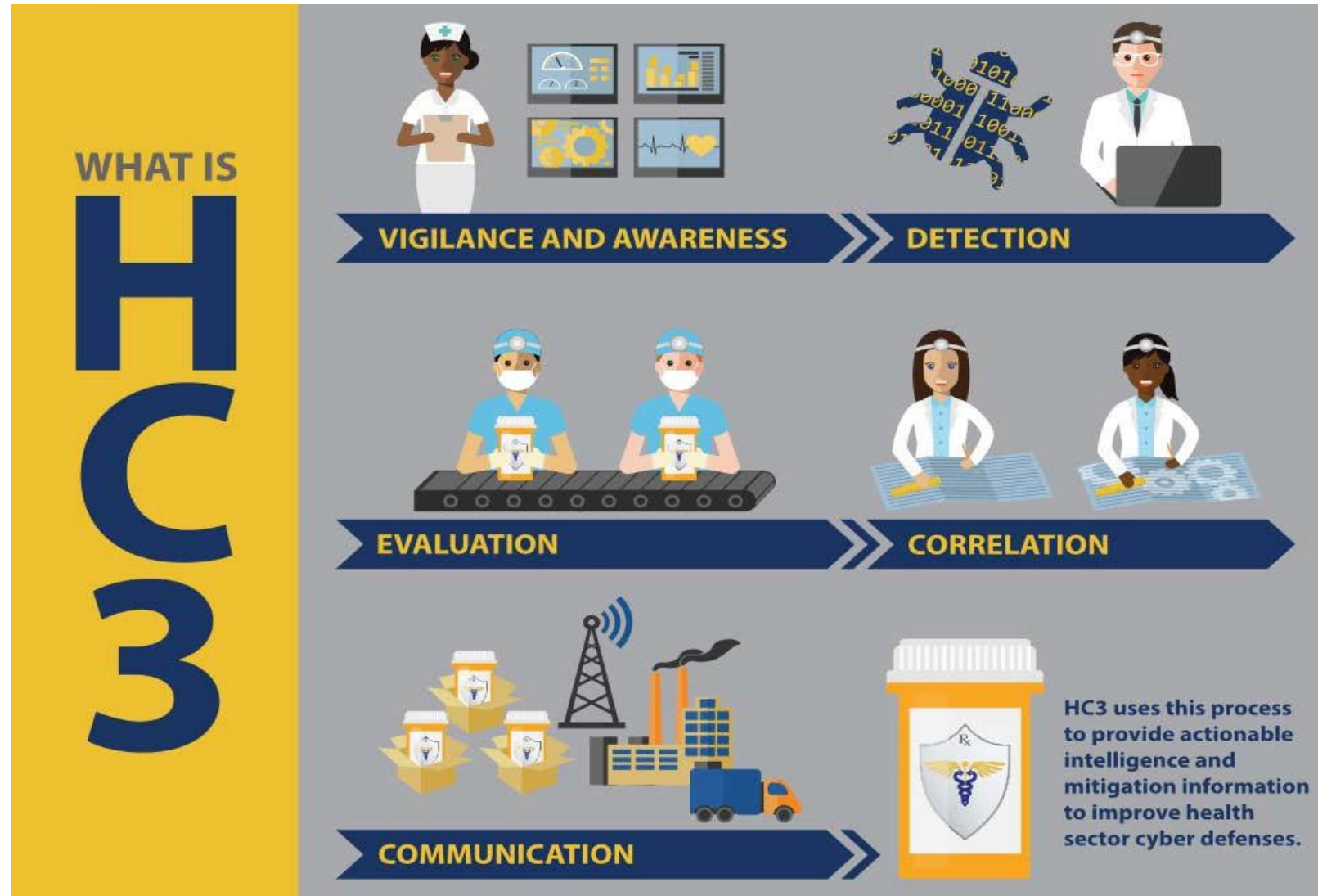
- References

Slides Key:

Non-Technical: Managerial, strategic and high-level (general audience)

Technical: Tactical / IOCs; requiring in-depth knowledge (sysadmins, IRT)

HC3's Mission Statement: To support the defense of the healthcare and public health sector's information technology infrastructure by strengthening coordination and information sharing within the sector and by cultivating cybersecurity resilience, regardless of organizations' technical capacity.

Health Sector Cybersecurity Coordination Center in 2021

PRODUCTS DISTRIBUTED

18 analyst notes **14** sector alerts **13** alerts **6** vulnerability bulletins **34** threat briefings

VICTIM NOTIFICATIONS

369 victim notifications conducted in partnership with OIG

FOSTERING A COLLECTIVE AND ENGAGED COMMUNITY

HC3's mission and operational focus is to keep the sector apprised of threats and solutions, provide bilateral support, and promote information sharing which is critical to success.
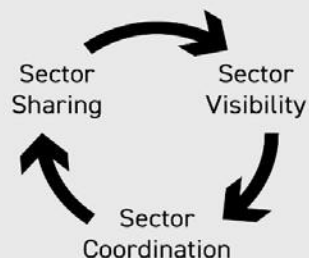
Opportunity Areas for Sector Sharing

- Anomalous Activity
- Defensive Measures
- Indicators of Compromise (IoC)

HC3

HPH Sector Defense

Sector Sharing → Sector Visibility → Sector Coordination →

HC3 IN ACTION

In April 2021, HC3 led a Microsoft Exchange response to identify vulnerable HPH entities.
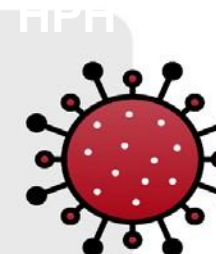
84 entities identified as vulnerable to CVE-2021-26855 MS Exchange RCE, and each were notified via OIG

COVID-19

October 2020 through September 2021, the HC3 has reviewed and reported:

149,377 websites reviewed

15,522 malicious websites HC3 reported for takedown

HC3 focuses on assisting entities in defending against cybersecurity threats and ultimately reducing risk.

HC3 develops unclassified, knowledge-based resources geared towards promoting and increasing HPH sector cyber knowledge and hosts a weekly and monthly forum (via webinar) to brief active cybersecurity threats for agency/sector-wide participation.

Threat Briefing Webinar

Sector Alerts

Product Overview
Provides high-level, situational background information and context for technical and executive audiences. Designed to assist the sector with defense of large scale and high-level vulnerabilities.

Distro Method
- Email
- ASPR Sector Newsletter
- Uploaded to CHWG Portal
- HC3 Listserv
- HC3 Website

Forum Overview
Briefing that provides actionable information on health sector cybersecurity threats and mitigations. Analysts present current cybersecurity topics, engage in discussions with participants on current threats, and highlight best practices and mitigation tactics.

Analyst Notes

Product Overview
Document that provides analysis from the perspective of HC3 analysts on threats around the HPH sector. Analysts provide a high-level executive summary, in-depth technical analysis, and possible mitigations to threats.

Distro Method
- Email
- ASPR Sector Newsletter
- Uploaded to CHWG Portal
- HC3 Listserv
- HC3 Website

Frequency
HC3 conducts bi-monthly threat briefings to inform the HHS OpDivs/StaffDivs and the public on ongoing and emerging threats to the HPH Sector.

- Cybercriminals and nation-states have engaged in cyberattacks against healthcare organizations for years
  - What is different about today?
  - What will we have to be concerned with tomorrow?

- In recent years and continuing today:
  - Ransomware continues to be relevant despite efforts to combat it
  - Data breaches are as common as ever
  - Vulnerabilities continue to be released; phishing and RDP continue to be compromised

- What's different about today?
  - Threat actors continue to evolve and become more sophisticated and effective
    - Distributed attack vectors are increasingly used
      - Managed service provider compromise
      - Supply chain compromise
      - Open-source software compromise
  - Governments are increasingly aggressive in fighting back
    - Despite this, healthcare organizations have as big a role as ever in defending themselves

1989 PC Cyborg "AIDS Trojan"

- The first ransomware attack occurred in 1989 and had a healthcare theme
  - Biologist Joseph Popp distributed 20,000 floppy disks at the World Health Organization AIDS conference in Stockholm in 1989.
  - The trojanized disks would install malicious code to track reboots, display ransom demand after 90 reboots on a victim system that would count reboots. After 90 reboots, the system would display a message claiming to be from 'PC Cyborg Corporation' which said their software lease had expired and that they needed to send $189 to an address in Panama to regain access to their system.
  - Popp was eventually charged with blackmail but was later declared mentally unfit to stand trial.
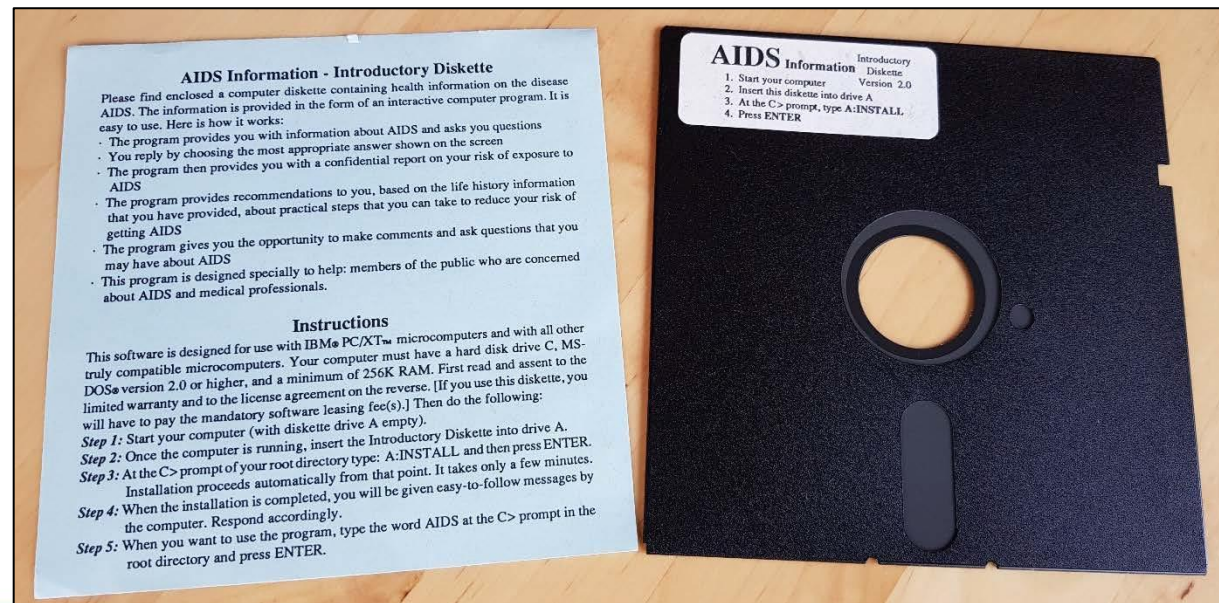
Anonymous attacks Boston's Children's Hospital with distributed denial-of-service (DDoS) attacks.

APRIL 2014

Hollywood Presbyterian Medical Center was attacked with ransomware and paid a then unheard-of ransom of $17,000 to recover their files.

FEBRUARY 2016

Anthem Health Insurance attacked, with 80 million customer records accessed, including PII/PHI. China was likely the attacker.

FEBRUARY 2015

WannaCry exploits 200,000 systems across 150 countries, including 70,000 British NHS systems. Cost of the attack estimated to be £92 million.

MAY 2017

Brookside ENT and Hearing Center of Creek, MI announced it will close due to ransomware attack.

APRIL 2019

Wood Ranch Medical in Simi Valley, CA announced it will close due to a ransomware attack.

SEPTEMBER 2019

400 dental offices attacked with Ryuk ransomware via compromised managed service provider.

AUGUST 2019

Campbell County Health in Gillette, WY, was attacked with ransomware and canceled surgeries, transferred ER patients to alternative facilities and stopped accepting new patients.

SEPTEMBER 2019

DCH Health Systems of Alabama was attacked with Ryuk ransomware and was forced to stop admitting new non-critical patients.

OCTOBER 2019

1.19 billion medical images discovered to have been leaked to the public over three months.

NOVEMBER 2019

Rouen University Hospital-Charles Nicolle in northern France attacked by ransomware that disabled 6,000 systems, hospital temporarily operated in "degraded mode".

NOVEMBER 2019

Milwaukee, WI based Managed Service Virtual Care Provider attacked with Ryuk ransomware, 110 customer nursing homes temporarily lose access to resident health records.

NOVEMBER 2019

Cancer Center of Hawaii suffers ransomware attack and suspended cancer radiation services for a few days.

DECEMBER 2019

Comparitech research on U.S. healthcare ransomware attacks observed 172 attacks on U.S. healthcare organizations since 2016 (costing over $157M)

FEBRUARY 2020

Hackensack Meridian Health of New Jersey was attacked with ransomware and was forced to cancel some surgical and other procedures.

DECEMBER 2019

World Health Organization-themed phishing campaign dropping HawkEye malware (keylogger, credential stealer, dropper).

MARCH 2020

Despite promises to not target healthcare during the pandemic, Maze attacks Hammersmith Medicines Research prior to conducting coronavirus vaccine trials.

MARCH 2020

Google reports significant increase in phishing attacks since the Covid outbreak:

149,195 in January, 293,235 in February 522,495 in March

MARCH 2020

Barracuda Networks notes spike in covid-themed phishing attacks.

137 in January, 1,188 in February 9,116 in March

MARCH 2020

INTERPOL issues alert on an increase in cyberattacks, targeting organizations engaged in virus response.

APRIL 2020

McAfee report:
Observed average of
375 covid-themed
threats per minute in
2020 Q1.

JULY 2020

Ransomware attack
on Dusseldorf
University Hospital
causes relocation of
patients and one
death.

SEPTEMBER 2020

Ryuk ransomware
attack on Universal
Healthcare Services
resulted in EHR
outages at all 400
sites for about three
weeks, cost $67M in
lost revenue &
recovery.

SEPTEMBER 2020

Maze ransomware
ceases operations.

OCTOBER 2020

October 2020 – Disruption of Trickbot

- Cyber Command conducted disruptive cyber operations against the TrickBot – specifically the command-and-control servers, starting on September 22.
  - It was speculated that this was to head off any potential cyberattacks during the 2020 Presidential election in November.

- Microsoft formed a coalition including ESET, Lumen's Black Lotus Labs, NTT, Symantec, and the Financial Services Information Sharing and Analysis Center (FS-ISAC).
  - Each of the organizations sent technical data to law enforcement to turn off parts of the TrickBot infrastructure, the idea being that if the C&C capability is shut down, TrickBot would be rendered useless.

- Microsoft launched another wave of disruptive attacks and is now claiming that they took down 94% of TrickBot's C2 infrastructure.

- They initially identified 128 command and control servers and eventually took down 120 of them.
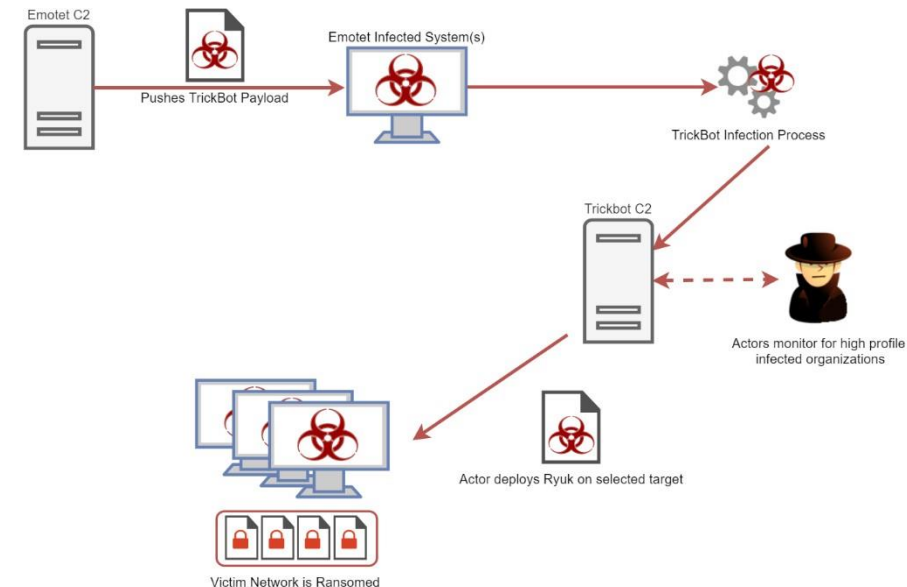
December 2020 – SolarWinds

- Backdoor was included in malicious dynamic link library
  - Filename: SolarWinds.Orion.Core.BusinessLayer.dll (SUNBURST)

- SolarWinds download site password: SolarWinds123

- Malicious update dll is distributed to customers (manually or automatically)

- Compromised update signed with legitimate digital signature

- C2 Beaconing waits for several weeks after initial installation to begin

- SUNBURST backdoor is distributed to all customers via the standard software update distribution channels:

December 2020 – SolarWinds attack timeline
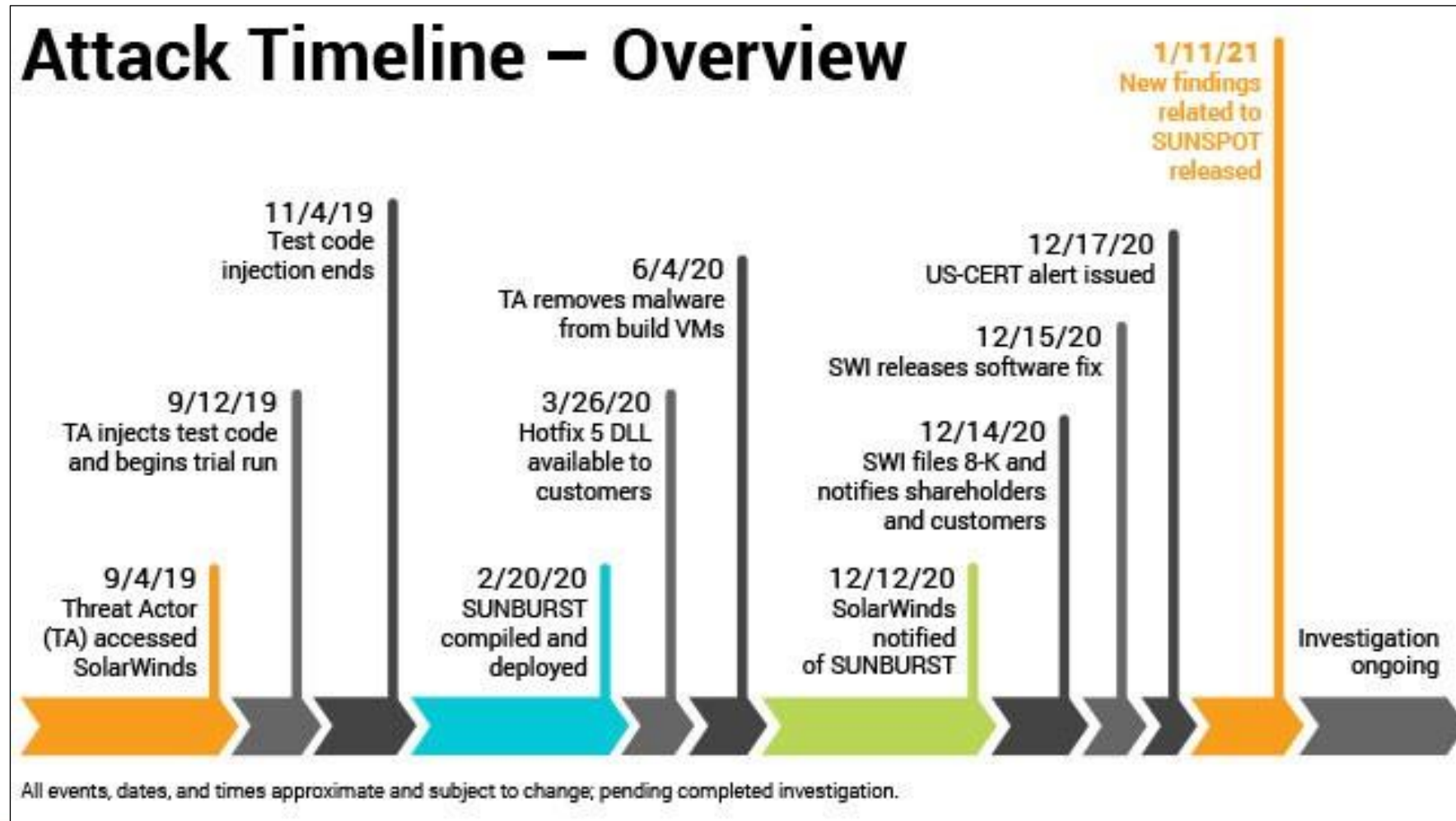
Emsisoft's 2020 numbers

- Emsisoft would later release data on the cost of ransomware in 2020:
  - o Their data showed that the average ransom demand grew by more than 80%.
  - o They tracked a minimum of $18.6 billion in ransom payments based on the data that they have access to – but they estimate the real total is around $75B globally.
  - o They reported that the U.S. paid a minimum of about $1B but possibly as much as $3.7B.
  - o They noted that these numbers go up significantly once you factor in downtime costs, and this may provide a little more insight as to why organizations pay ransom.
  - o Including downtime costs, according to Emsisoft, U.S. victims paid a minimum of about $5B and are estimated to have paid as much as $20B.

Total cost: ransom demand costs + downtime costs

Country	Total Submissions	Minimum Cost (USD)	Estimated Costs (USD)
United States	15,672	$4,893,699,209	$19,574,796,838
France	4,476	$1,387,058,087	$5,548,232,346
Spain	4,088	$1,272,238,829	$5,088,955,314
Italy	3,835	$1,198,933,932	$4,795,735,727
Germany	3,747	$1,159,985,450	$4,639,941,801
Canada	3,236	$1,011,008,551	$4,044,034,203
U.K.	2,718	$838,750,742	$3,355,002,968
Australia	2,072	$648,093,574	$2,592,374,295
Austria	819	$256,822,720	$1,027,290,881
New Zealand	265	$82,569,552	$330,278,209

Other items of note for 2020:

- Per IBM research, the Sodinokibi (also known as Revil) operators:
  - Were the most active ransomware operators in 2020
  - Had revenues of $123M, their biggest single demand being $42M
  - Two-thirds of Sodinokibi's victims paid the ransom; 40% still had their data leaked anyway
  - 58% of Sodinokibi victims were based in the United States, the UK was second with 8%

- Per Palo Alto Unit 42, research on Covid-themed phishing:
  - Just under 70,000 coronavirus-themed phishing URLs were used in 2020
    - Most of them intended to steal business credentials

- Per Emsisoft research:
  - "In 2019, the U.S. was hit by an unprecedented and unrelenting barrage of ransomware attacks."
  - 2020 was the year of double extortion:
    - At the beginning of 2020, Maze was the only ransomware operators using double extortion
    - By the end of 2020, a total of 18 ransomware operators now engaged in double extortion
  - At least 560 healthcare facilities impacted in 80 separate ransomware incidents
  - PHI and other sensitive data was stolen and published online in at least 12 incidents
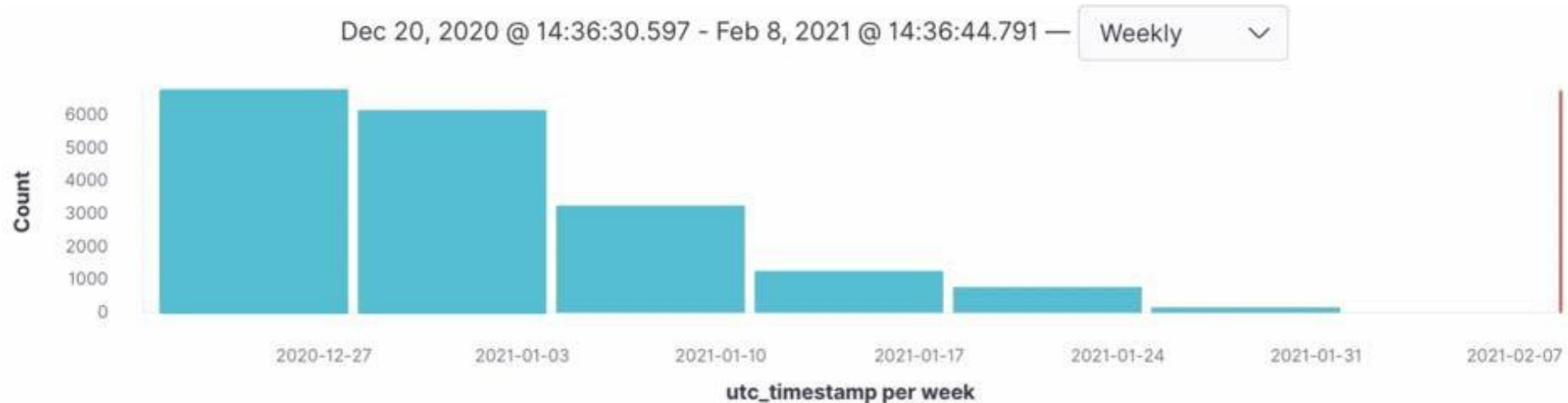
"2021 need not be a repeat of 2020. Proper levels of investment in people, processes and IT would result in significantly fewer ransomware incidents and those incidents which did occur would be less severe, less disruptive and less costly." — Fabian Wosar, CTO of Emsisoft.

Emotet disruption

- International effort to takes down Emotet's global botnet infrastructure in late January
    - Included the U.S., Canada and several European countries
    - Video released by Ukrainian law enforcement shows raid with arrests and asset seizure
    - Authorities have pushed timed wiper for April 25th

FURTHER INFORMATION:
https://blogs.vmware.com/networkvirtualization/2021/02/death-of-emotet.html/
https://www.wired.com/story/emotet-botnet-takedown/
https://www.zdnet.com/google-amp/article/authorities-plan-to-mass-uninstall-emotet-from-infected-hosts-on-march-25-2021/

- TrickBot is back!
  - Per a Menlo Security report, Trickbot launched a new attack campaign
  - Phishing campaign, targeting legal and insurance industry
- Adobe Flash reaches end-of-life
  - Final release: December 8, 2020
  - Flash content blocked by Flash Player on Jan 12, 2021
  - Adobe advises complete uninstallation of all instances
- Disruption of Netwalker by the Department of Justice
  - Department of Justice coordinated an international law enforcement effort to disrupt Netwalker
  - Canadian national alleged to be a member of Netwalker arrested in Florida
    - Accused of having been a part of stealing over $27M via ransomware
  - Seizure of ~$500K worth of cryptocurrency
  - Coordinated with the Bulgarian government to have the Netwalker leak website shut down
- Checkpoint research: Targeting of healthcare organizations globally increases over previous two months
  - 22% increase in targeting non-healthcare organizations; 45% increase in targeting healthcare organizations
  - Attacks against the health sector increased from 430 per week in October to 626 per week in November
  - Ryuk was the most frequently used ransomware variant to target healthcare and REvil was second
- FBI releases a Private Industry Notification on the aggressiveness of the Egregor ransomware operators
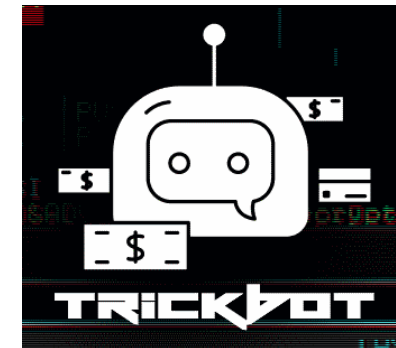
Accellion compromised by Clop Ransomware

- It was discovered in February that Accellion was breached by a Clop ransomware attack in December
    - Managed service provider focused on collaboration and secure file sharing
    - It's believed over 100 clients were impacted and at least 25 had data stolen
    - Targeted Accellion's legacy File Transfer Appliance (FTA)
    - Accellion agreed to $8.1 million settlement in January 2022
    - HC3 released an Analyst Note on the Accellion breach
    - At least Eleven healthcare organizations were impacted by the breach, some of which are:
        - Kroger Pharmacy: 1,474,284
        - Health Net: 1,236,902
        - Trillium Health Plan: 50,000
        - Arizona Complete Health: 27,390
        - Trinity Health (MI): Unknown
        - Stanford Medicine (CA): Unknown
        - The University of Miami Health (FL): Unknown
        - Centene Corp. (multiple companies): Unknown

ProxyLogon vulnerabilities announced by Microsoft

- Microsoft released out-of-cycle, emergency patches for four high-priority, zero-day Exchange (versions 2013, 2016, and 2019) vulnerabilities that were being actively exploited at the time of release:
    - CVE-2021-26855 is a server-side request forgery vulnerability which allows an attacker to send arbitrary HTTP requests and authenticate to the exchange server
    - CVE-2021-26857 is a remote code execution vulnerability via insecure deserialization.
    - CVE-2021-26858 is a remote code execution vulnerability, more specifically a post authentication arbitrary file-write vulnerability. This requires either the exploitation of the first vulnerability (26855) or compromising legitimate administrative credentials first.
    - CVE-2021-27065 is a remote code execution vulnerability, in the form of a post authentication arbitrary file-write vulnerability.

- Microsoft attributed "with high confidence" the Chinese state-sponsored group, HAFNIUM, as attempting to exploit these vulnerabilities on US systems. HAFNIUM has been known to attack infectious disease researchers, among other targets. Also reported to be exploited by Tick, LuckyMouse, Winnti Group, Calypso and Websiic before Microsoft released patches

- HC3 Analyst note on ProxyLogon vulnerabilities can be found here.

- HC3 Analyst note on ProxyLogon detection tools can be found here.

FURTHER INFORMATION:
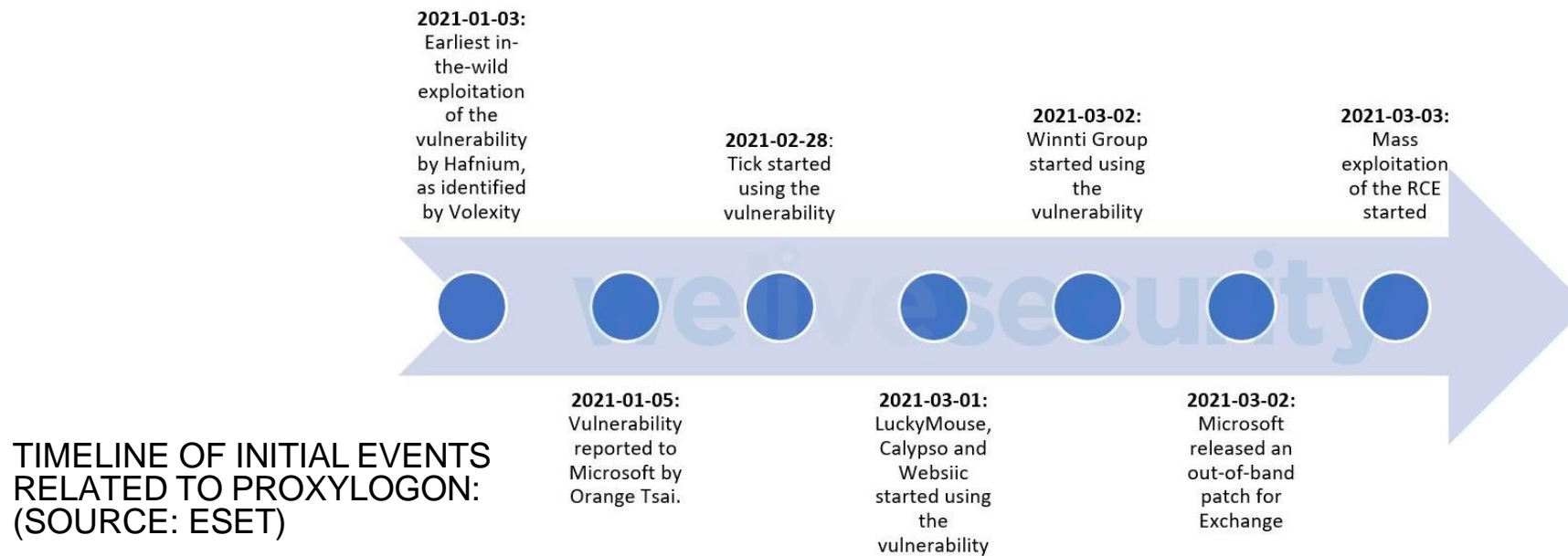https://www.infosecurity-magazine.com/news/microsoft-patch-four-zeroday/
https://proxylogon.com/

ProxyLogon vulnerabilities were heavily exploited

- The Lockfile ransomware gang were observed exploiting Proxylogon

- Two researchers noted that they have observed 34,000 vulnerable, Internet-facing exchange servers
  - 1900 were compromised over a 48-hour period

- Tech journalist Brian Krebs reported that at least 30,000 US organizations were attacked by China exploiting ProxyLogon vulnerabilities in the 72 hours following the patch release.
  - According to Krebs, the attackers deployed web shells on each system they compromised
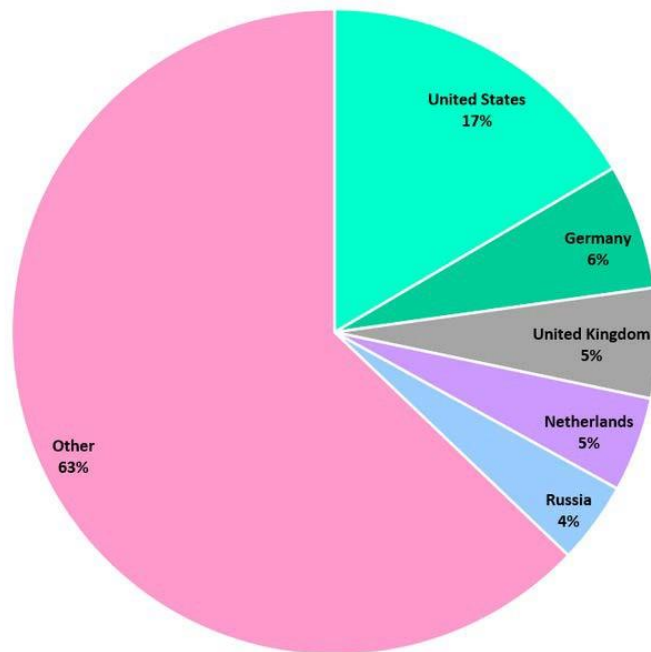
2021-01-03: Earliest in-the-wild exploitation of the vulnerability by Hafnium, as identified by Volexity

2021-02-28: Tick started using the vulnerability

2021-03-02: Winnti Group started using the vulnerability

2021-03-03: Mass exploitation of the RCE started

2021-01-05: Vulnerability reported to Microsoft by Orange Tsai.

2021-03-01: LuckyMouse, Calypso and Websiic started using the vulnerability

2021-03-02: Microsoft released an out-of-band patch for Exchange

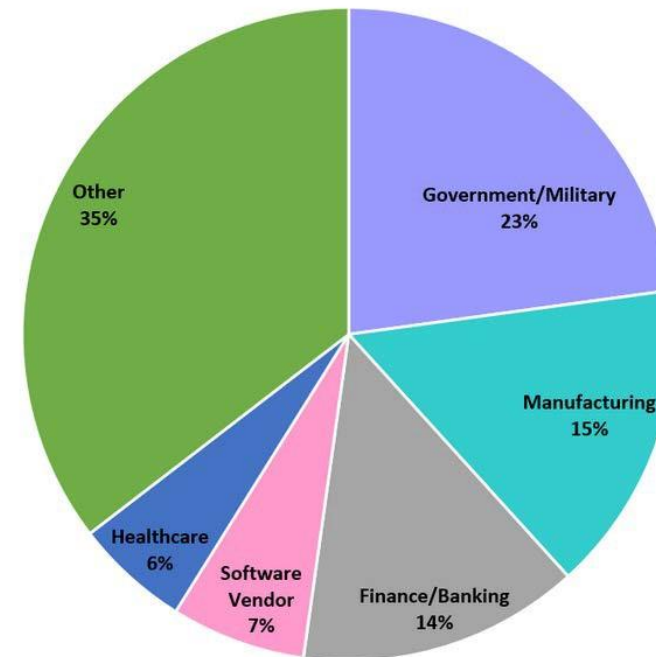TIMELINE OF INITIAL EVENTS RELATED TO PROXYLOGON: (SOURCE: ESET)

CheckPoint research on ProxyLogon exploitation:

- CheckPoint posted a blog noting that attacks on vulnerable organizations double every two or three hours.
  - U.S. organizations have by far been the most targeted country with 17% of all attempted compromises.
  - Healthcare was one of the most targeted industries, accounting for 6% of all attacks.
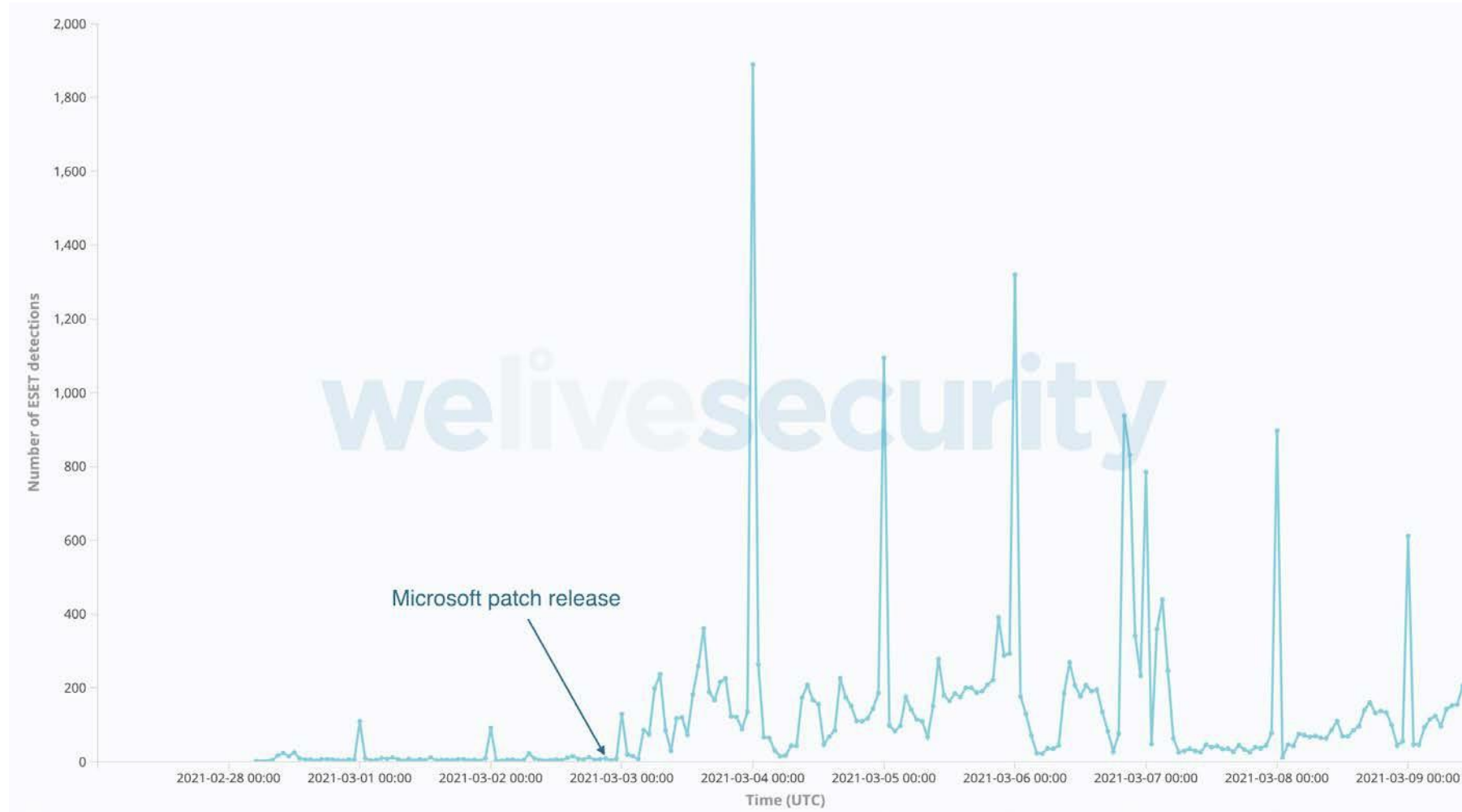
Targeted Organizations by Countries

- United States 17%
- Germany 6%
- United Kingdom 5%
- Netherlands 5%
- Russia 4%
- Other 63%

Targeted Organzation by industry

- Government/Military 23%
- Manufacturing 15%
- Finance/Banking 14%
- Software Vendor 7%
- Healthcare 6%
- Other 35%

ProxyLogon exploitation followed by webshell drops: Source: ESET
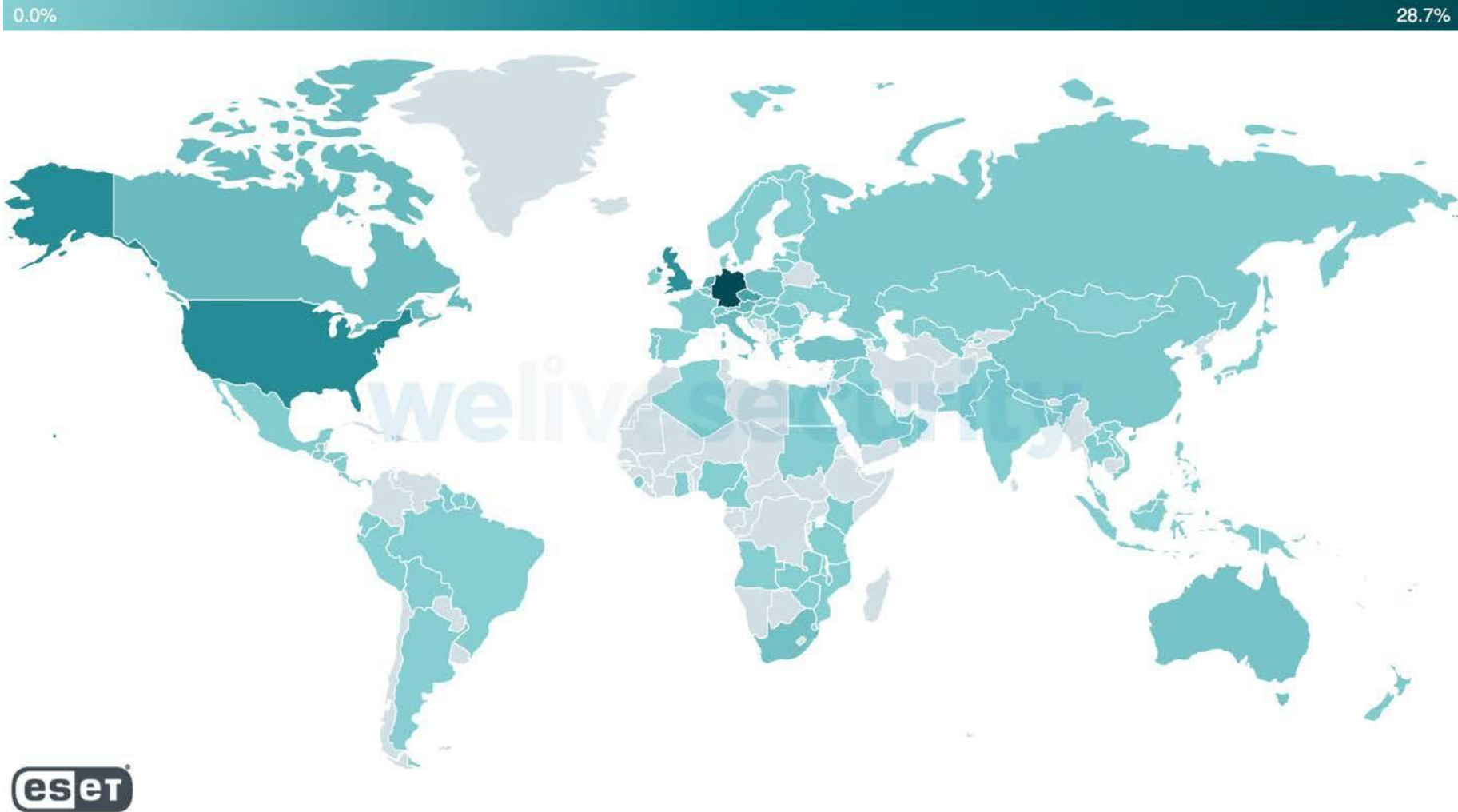
Geographic distribution of ProxyLogon webshell drops: Source: ESET

ProxyLogon vulnerabilities exploited by BlackKingdom/Pydomer:

- A ransomware variant known as BlackKingdom was used in attacks leveraging the ProxyLogon vulnerability.

- According to Sophos, BlackKingdom is written in Python, and they traced it back to an IP address (TOR exit node) in Germany.

- According to Microsoft, the web shells dropped by the BlackKingdom operators were detected on at least 1,500 systems worldwide, and at least one of the ransom notes demands $10K in bitcoin.
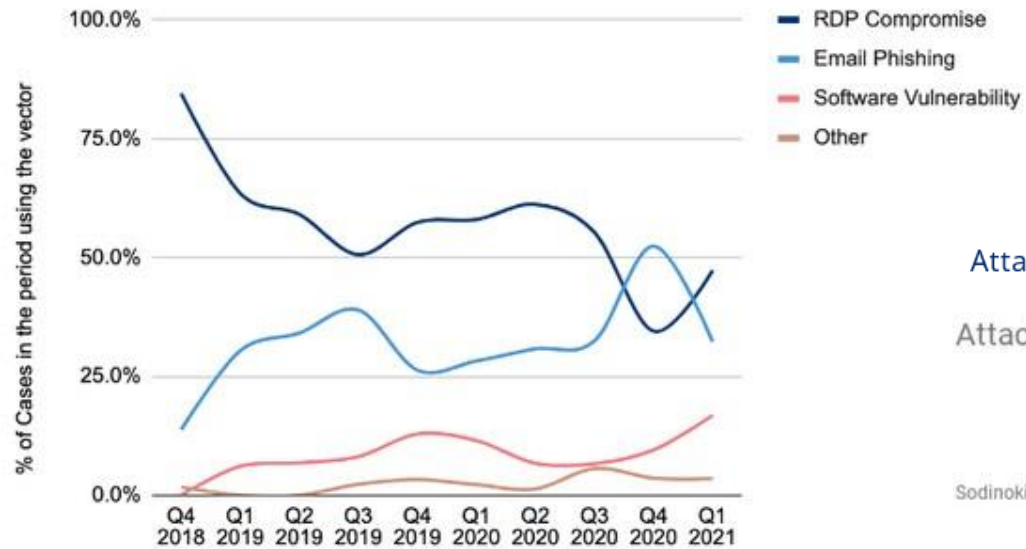
- A timeline of ProxyLogon events is here.
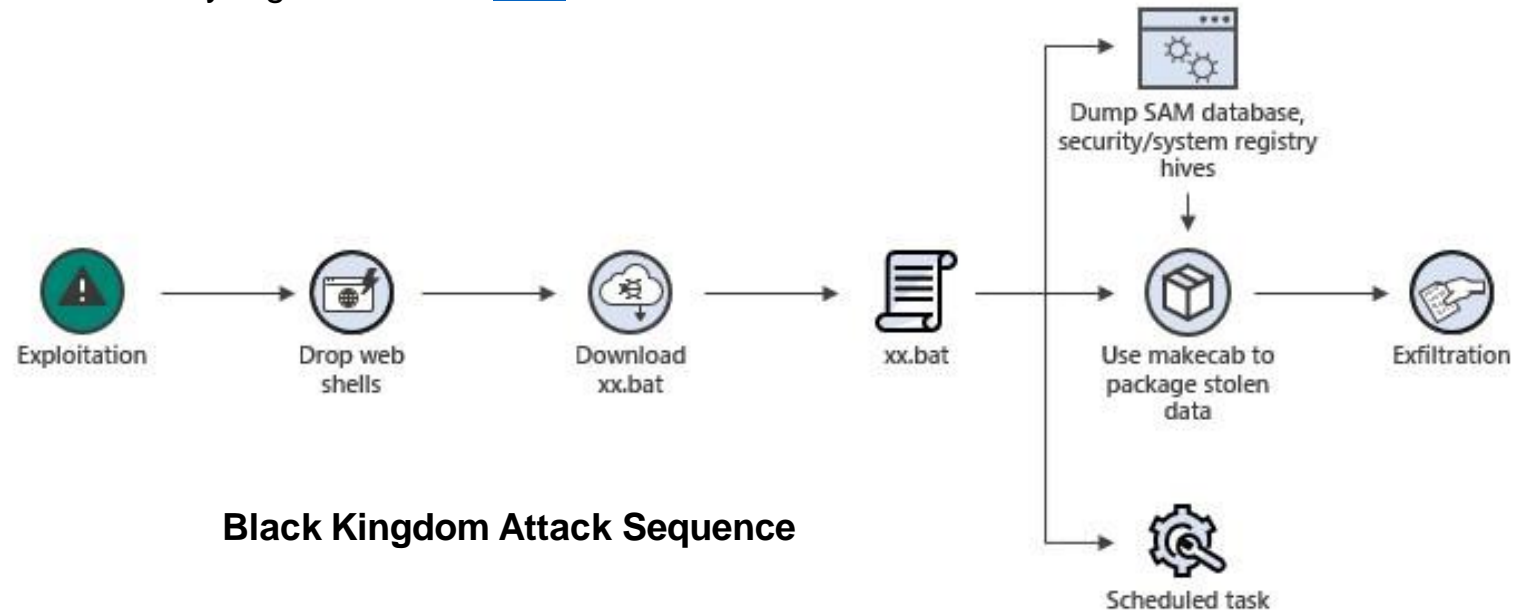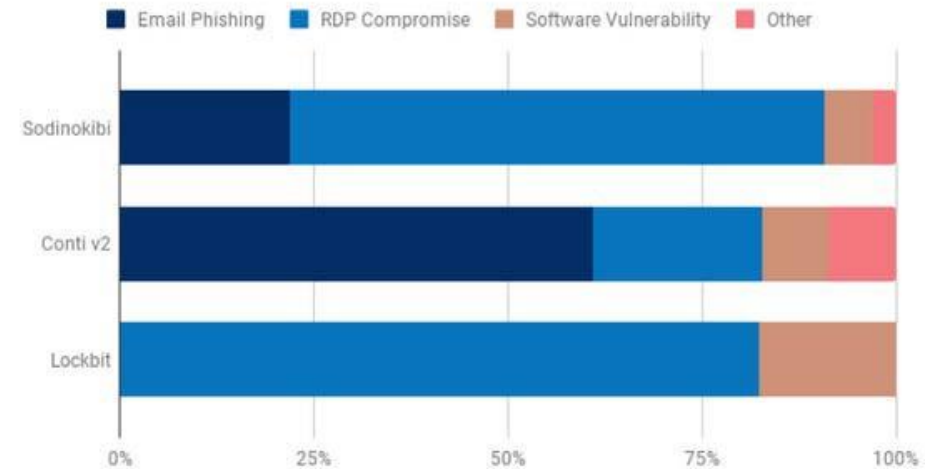
Black Kingdom Attack Sequence

Coveware Q1 data:

Coveware Quarterly Ransomware Report: 2021 Q1

Average and Median Ransom Payments in Q1 2021

Average Ransom Payment

$220,298

+43% from Q4 2020

Median Ransom Payment

$78,398

+59% from Q4 2020

Most Common Ransomware Variants in Q1 2021

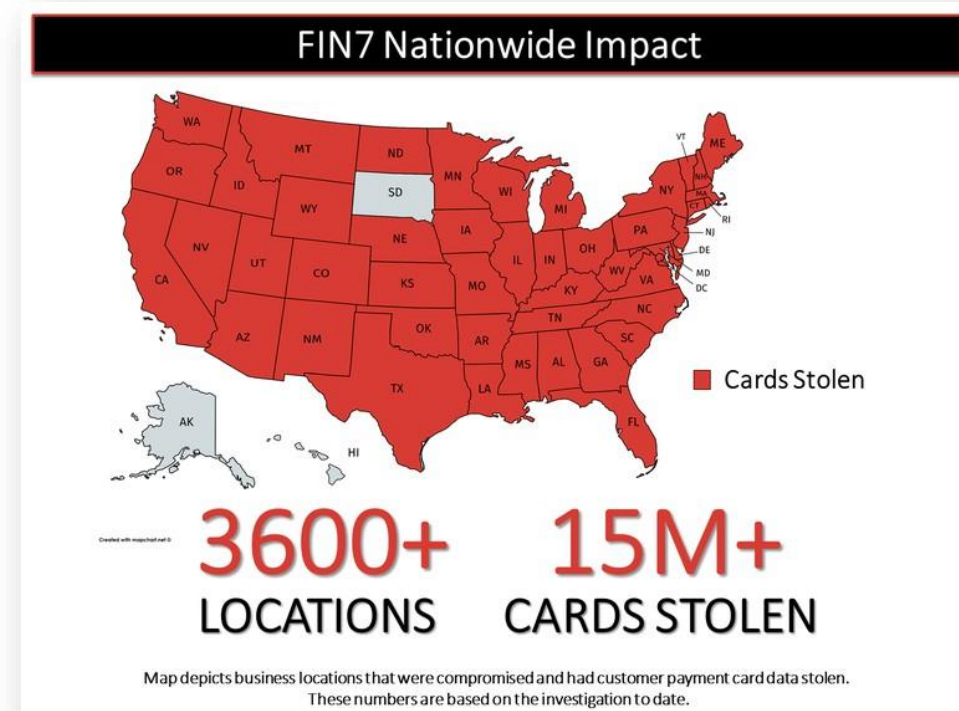| Rank	Ransomware Type	Market Share %	Change in Ranking from Q4 2020
1	Sodinokibi	14.2%	-
2	Conti V2	10.2%	+4
3	Lockbit	7.5%	+6
4	Clop	7.1%	New in Top Variants
5	Egregor	5.3%	-3
6	Avaddon	4.4%	+3
7	Ryuk	4.0%	-4
8	Darkside	3.5%	New in Top Variants
9	Suncrypt	3.1%	-1
9	Netwalker	3.1%	-5
10	Phobos	2.7%	-1

Top 10: Market Share of the Ransomware attacks

Sentencing of FIN7 System Administrator

- In January 2018, Fedir Hladyr, an alleged member of FIN7/Carbanak and a Ukrainian national, was arrested
  - He was extradited to the U.S. on charges related to alleged membership in cybercriminal group Carbanak/FIN7
  - He pleaded guilty to one count of conspiracy to commit wire fraud and one count of conspiracy to commit computer hacking; he was sentenced to 10 years in prison.

- Operating since at least 2015; believed to have ~70 members; alleged activities include both hacking and credit card fraud; estimates put Carbanak's theft between $1 billion and $5.7 billion.

- According to court documents, the gang stole 20 million credit card records from over 6,500 individual point-of-sale (PoS) terminals at more than 3,600 separate locations.

- https://therecord.media/fin7-hacker-sentenced-to-10-years-in-prison/

FIN7 Nationwide Impact

■ Cards Stolen

3600+ LOCATIONS

15M+ CARDS STOLEN

Map depicts business locations that were compromised and had customer payment card data stolen. These numbers are based on the investigation to date.

Emotet Takedown Complete

- Arrests were made and law enforcement took control of the Emotet infrastructure, authorities pushed an update which was scheduled to uninstall Emotet across its infrastructure at midnight on April 25th. Law enforcement distributed a new Emotet module in the form of a 32-bit EmotetLoader.dll. This was deployed via the standard Emotet deployment channels. When law enforcement took control of Emotet, they took control of their normal update channel.

Microsoft researchers identify BlocAlloc vulnerabilities:

- Microsoft's published research on a series of critical memory allocation vulnerabilities in IoT and OT devices that can be exploited to bypass security controls, leading to remotely execute arbitrary code or a system crash.
  - These are vulnerabilities in real-time operating systems (RTOS), embedded software development kits (SDKs), and C standard library (libc).
  - These vulnerabilities are associated with over 25 CVEs, have a CVSS score of 9.8 and apply to a number of domains including IoT, Industrial IoT, Operational Technology and IoMT.
  - CISA released an advisory (ICSA-21-119-04) listing the affected devices.
  - These vulnerabilities affected infusion pumps and wearable devices at a minimum.

Darkside Ransomware operators targeting stock prices:

- The Darkside operators began advertising on their dark web site for corrupt stock traders to work with.
  - Their plan is to partner up with stock traders who are willing to work with them, notify these partners after they have compromised a publicly traded company (but before a ransomware attack) so the trader can short the company, launch the ransomware attack, have the broker buy the shares back at the cheaper price and then split the profit.

CaptureRX Cyberattack

- CaptureRX is a pharmacy benefits management company that provides services such as prescription claims processing, patient assistance program administration, and public health service drug program administration.
  - Compromised by what was likely a combination of ransomware and data breach
  - At least 22 hospitals and healthcare providers have been affected by the breach and almost 2.5M victims have had their information leaked.

Scripps Cyberattack

- Scripps health network is San Diego's primary health system, a nonprofit that runs five hospitals and 19 outpatient facilities.
  - Attacked with ransomware; CEO confirmed that their systems were "damaged by malware"
  - Website disabled; Electronic health record access and online patient portal disrupted
  - Total cost of attack: $106.8M
    - ~$21 million in incident response and recovery costs
    - ~$91 million in lost revenues - they managed to recover about $6 million from their insurance.

Colonial Pipeline Ransomware Attack

- Colonial Pipeline: One of the nation's biggest pipeline operators
  - 2.5 million barrels/day (gasoline, diesel, home heating oil and jet fuel)
  - East coast (Linden, NJ to Houston, TX) – 5,500 miles; 45% of all fuel on east coast

- Department of Transportation' issued a regional emergency declaration for 17 states and Washington, D.C., to keep fuel supply lines open (relaxed fuel regulations regarding road transportation)

- Pipeline operations stopped immediately; ransom payment: $4.4 million; restored operations 6 days later

- Darkside RaaS (Ransomware-as-a-Service); attack began with a single compromised VPN password

- Brief fuel shortage, price spike; first time in 57-year history of pipeline that it was completely shut down

- The breached data contained names, contact information, date of birth, government-issued ID numbers and health-related information (including health insurance information)

- The Darkside operators shut down operations shortly after the attack, ostensibly due to the public scrutiny and political pressure on them; technical indicators point to a rebranding to the BlackMatter group

Executive Order on Cybersecurity

- The White House released an Executive Order on cybersecurity, outlining requirements for federal government and contractors.
  - Contractors will have new requirements to collect, preserve and report data related to compromises. Federal agencies required to implement modernization efforts and best practices such as:
    - Deployment of multi-factor authentication
    - More comprehensive deployment of strong encryption technologies
    - Rearchitecting their infrastructure for zero trust
    - Adopt secure cloud services (as much as practical)
    - Centralize and streamline access to cybersecurity incident data to drive analytics for identifying and managing cybersecurity risks and accelerate reporting
    - Establish baseline security standards for the development of software sold to the government
    - Establish a cybersecurity review board, composed of both government and private-sector members to analyze major incidents and make concrete recommendations afterwards
    - Create a standardized playbook for federal departments and agency incident handling, improve incident detection by further deployment of endpoint security systems

Executive Order on Improving the Nation's Cybersecurity

MAY 12, 2021 • PRESIDENTIAL ACTIONS

Ransomware Attack on Irish Health Service Executive

• The Health Service Executive, Ireland's nationally publicly funded healthcare system, was attacked by ransomware

• Conti ransomware group carried out the attack; all IT systems were shut down; reverted to pen and paper

• National ambulance system continued operations; no interruption to COVID-19 vaccine appointments

• Conti also attempted an attack against Ireland's Department of Health, which apparently was not successful

• Most significant cyberattack in Irish government history

• Four months for full recovery

• HC3 developed a brief on the incident

FURTHER INFORMATION:
https://www.hse.ie/eng/services/publications/conti-cyber-attack-on-the-hse-full-report.pdf

Department of Homeland Security: New Cybersecurity Requirements for Critical Pipeline Owners/Operators

- The Department of Homeland Security released a directive requiring critical pipeline owners/operators to report cybersecurity incidents to them and require them to designate cybersecurity coordinators and to report risks, security gaps, and remediation measures to the federal government within 30 days.

Justice Department elevates ransomware cases to the same priority given to terrorism

- A memo was circulated throughout U.S. attorney's offices across the country which required that information about ransomware investigations in the field to be centrally coordinated with a Washington DC-based task force.

- Investigators in U.S. attorney's offices around the country handling ransomware attacks will be expected to share both updated case details and active technical information with leaders in Washington.

Department of Justice charges Latvian national with being part of Trickbot

- The Department of Justice announced that a Latvian-national was charged with 19 counts in an indictment for her role with Trickbot including conspiracy to commit computer fraud and aggravated identify theft

- She was previously arrested in Miami, charged with being a developer, and specifically having written code to control, deploy and manage payments. She was also accused of having provided the Trickbot Group with the code needed to monitor and track authorized users and she also stands accused of having developed the tools and protocols required to store login credentials stolen from victims' networks.

Avaddon ransomware shuts down and releases decryption keys

- The Avaddon ransomware operators released just under 3,000 decryption keys – one for each of their victims – which were confirmed to be valid. Also, all their TOR sites became inaccessible.

- Avaddon was in operation for 12 months, and were the subject of alerts by both the FBI and Australian law enforcement.

Putin Says Russia Might Accept Conditional Handover of Cyber Criminals

- Russian President Putin made comments that aired on Russian state television, which indicated that he would be ready to hand over cyber criminals to the U.S. if the U.S. did the same for Russia and the two powers reached an agreement to that effect.

- Presidents Biden and Putin held a summit in Geneva, Switzerland and discussed ransomware.

PrintNightmare

- Techical details of a Windows remote code execution print vulnerability as well as a proof-of-concept (PoC) exploit were accidentally leaked by researchers:
  - CVE-2021-34527

- This exploit requires authentication, but it's still a severe issue because it allows attackers to use it to take over a Windows domain controller and then potentially deploy malware across a company's network
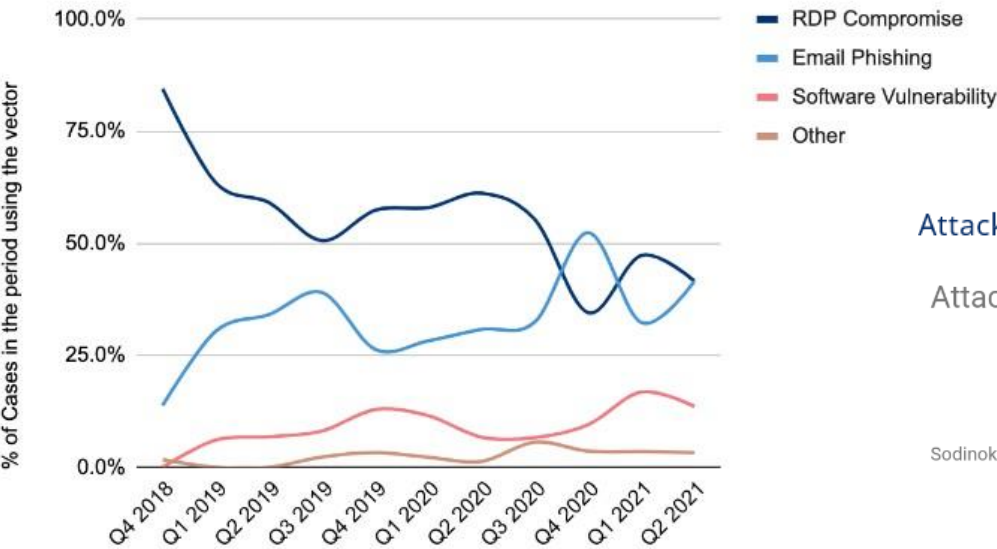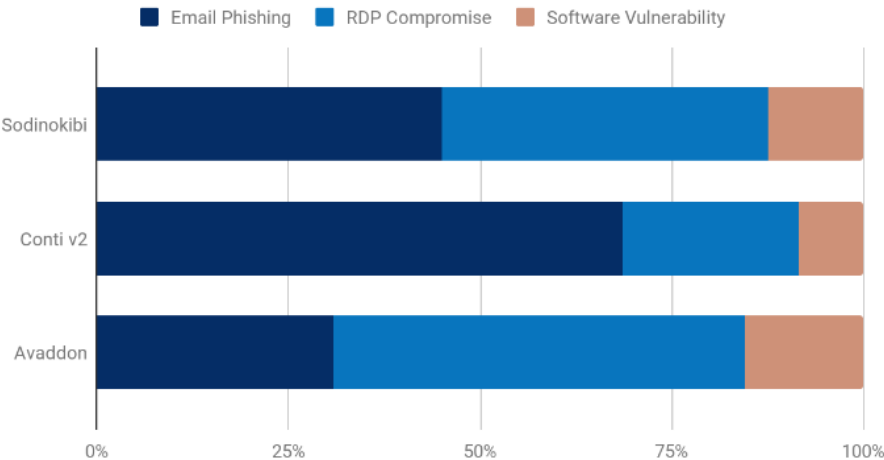
Coveware Q2 Data:

Most Common Ransomware Attack Vectors in Q2 2021

Ransomware Attack Vectors

Attack Vectors used by the Top Three Ransomware Variants

Attack Vectors - Top 3 Ransomware Types

Coveware Quarterly Ransomware Report: 2021 Q2

Average and Median Ransom Payment Amounts Declined in Q2 2021

Average Ransom Payment

$136,576

-38% from Q1 2021

Median Ransom Payment

$47,008

-40% from Q1 2021

Most Common Ransomware Variants in Q2 2021

Rank	Ransomware Type	Market Share %	Change in Ranking from Q1 2021
1	Sodinokibi	16.5%	-
2	Conti V2	14.4%	-
3	Avaddon	5.4%	+3
4	Mespinoza	4.9%	New in Top Variants
5	Hello Kitty	4.5%	New in Top Variants
6	Ryuk	3.7%	+1
7	Clop	3.3%	-3
8	THT v2	2.9%	New in Top Variants
9	LV	2.5%	New in Top Variants
9	Zeppelin	2.5%	New in Top Variants

Top 10: Market Share of the Ransomware attacks

BitDefender: TrickBot is back

- The company BitDefender [published research on Trickbot](#)

- This research implies that the TrickBot operators are trending towards full operations once again

COMMAND AND CONTROL SERVERS PER MONTH
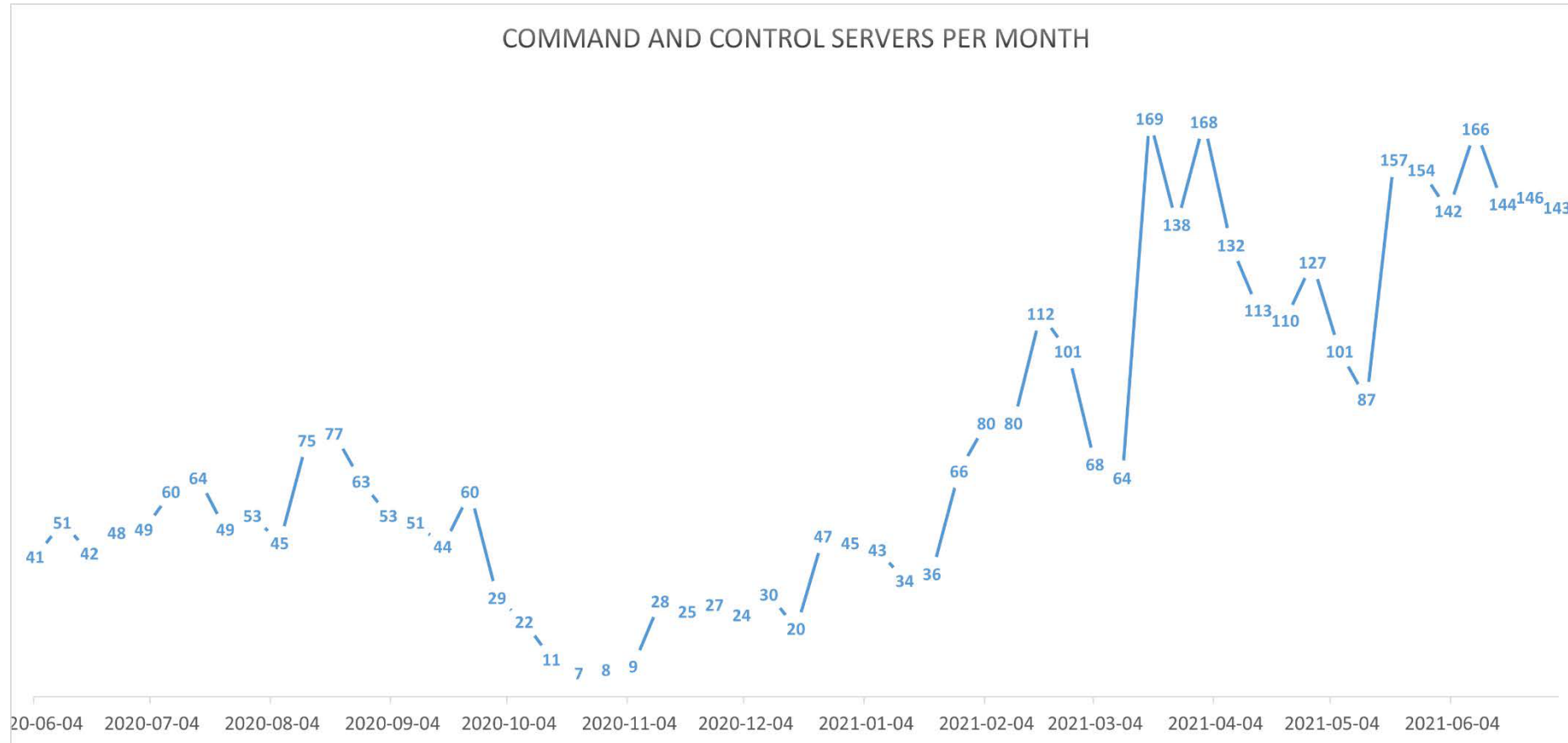
Kaseya VSA Ransomware Attack

- Kaseya is an IT managed service provider that was attacked by the Revil/Sodinokibi operators.

- Specifically, the virtual systems administrator (VSA) platform was compromised.
    - Kaseya sells the VSA to managed service providers, who then use it to support their customer base.

- It is believed that between 50 and 60 of their customers were impacted, and those 50 or 60 customers manage IT services for about 1,500 companies worldwide.

- The company announced that they had obtained a decryption key for its own systems and those of its customers.
    - They did not name the source of the key, they just called them a "trusted third party".

- Initially, the attackers demanded $70 million for the key but quickly dropped their demands to $50 million, and it is not known if any amount was ever paid.

IBM Annual Data Breach Cost Report

- IBM released their 2021 Cost of a Data Breach report

- They assessed that the data breaches in 2021 cost a company $4.24 million per incident on average, which is the highest figure in the 17-year history of this report.
  - In the United States, data breach costs averaged about $9 million per incident.
  - The cost of breaches increased about 10% in a year, and IBM largely attributes that to the remote workforce which has increasingly been in place since the beginning of the pandemic.
  - On that note, IBM also found that the average cost of a breach increased about $1 million when remote work was a factor in the breach.

- The average healthcare breach was $9.23 million, which was a dramatic increase, about 30%, from $7.13 million in 2019.

11	$180
Consecutive years healthcare had the highest industry cost of a breach	Per record cost of personally identifiable information
Healthcare organizations experienced the highest average cost of a data breach, for the eleventh year in a row.	Customer personally identifiable information (PII) was the most common type of record lost, included in 44% of breaches.

Biden Administration Anti-ransomware Actions:

- Stopransomware.gov launched – intended to be a hub of resources for the public to defend against ransomware.

- The Department of State announced a $10 million reward for information related to the identification of state-sponsored cyber attackers as part of their Rewards for Justice Program. Specifically, these actions include:
  - Transmitting extortion threats as part of a ransomware attack
  - Intentional unauthorized access to a system to obtain information from it
  - Knowingly transmitting code or commands which cause damage to a system

- The White House announced a cross-government task force to coordinate both offensive and defensive measures against ransomware attacks
  - Some of the responsibilities of the task force include:
    - Promoting digital resilience among critical infrastructure companies
    - Working to halt ransom payments made through cryptocurrency platforms
    - And coordinating various actions with U.S. allies

- The U.S. and allies attributed the Microsoft Exchange (ProxyLogon) hacking campaign to China
  - The attacks targeted over a quarter of a million Exchange servers worldwide

- The Justice Department released an indictment for four members of the Chinese cyber threat group APT40 for cyberattacks related to theft of trade secrets and intellectual property

BlackMatter

- The [Backmatter ransomware gang begins operations](#)
    - Speculation is that they are either a rebranded version of a previous group, or they at least consist of members with significant operational experience.
        - REvil? Speculation they disbanded after the Kaseya attack
        - Darkside? Claimed to disband after the Colonial Pipeline attack
    - Initial analysis is they are organized and prepared for operations early with an operational leak site, and several darkweb advertisements looking to purchase corporate access with significant cryptocurrency deposits
    - They claim to have highly capable ransomware capable of compromising multiple platforms

PwnedPiper

- Armis identified nine vulnerabilities in pneumatic tubes produced by TransLogic which are collectively referred to as PwnedPiper. TransLogic PTS are believed to be present in more than 2,300 hospitals in North America.

- That research revealed that an unauthenticated attacker could gain full control over TransLogic pneumatic tube systems that are connected to the internet and then compromise the entire tube network of a hospital.

- The vulnerabilities cover a variety of potential impacts including password leakage, remote code execution, denial-of-service, and full device compromise. Firmware has been available to address them since August.

ProxyShell Vulnerabilities Impacting MS Exchange Servers

- Three chained Microsoft Exchange vulnerabilities were briefed at the Black Hat conference. They are collectively called ProxyShell and they allow for unauthenticated, remote code execution.

- CVE-2021-34473 - Pre-authentication Path Confusion leads to Access control list Bypass

- CVE-2021-34523 - Elevation of Privilege on Exchange PowerShell Backend

- CVE-2021-31207 - Post-authentication Arbitrary-File-Write leads to RCE

- The first two were patched in April and the third was patched in May, but apparently there are a lot of unpatched Exchange servers connected to the Internet
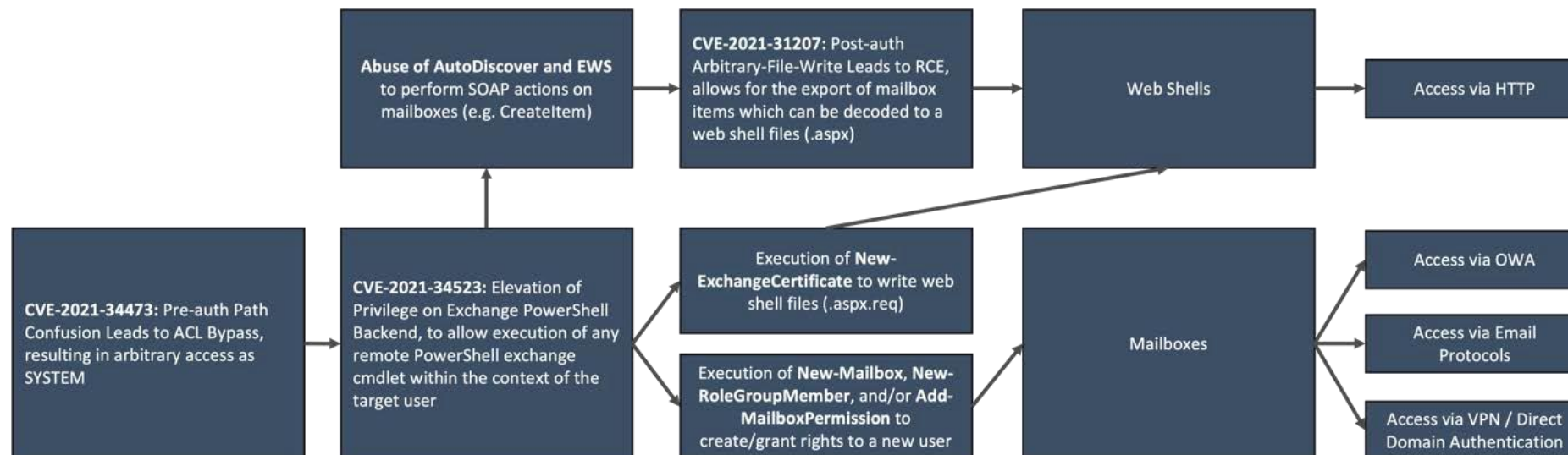
Trickbot Developer Arrested

- An alleged Trickbot developer was arrested in South Korea. He claimed that he did not know he worked for a cybercrime gang after getting hired from an employment site.

- 38-year old Vladimir Dunaev was alleged to be a malware developer that supervised the creation of TrickBot's browser injection module. He is facing charges that could get him 60 years in prison.

United Health Centers falls victim to ransomware attack by Vice Society

- The Vice Society Ransomware gang compromised United Health Centers

- The attack caused disruptions of IT systems across all their locations and they have been in the process of reimaging their systems and attempting to recover from offline backups

- They leaked UHC files from UHC including PHI

**Cyberattack on Alabama hospital linked to 1st alleged ransomware death**

- According to a lawsuit filed against Springhill Medical Center of Alabama, a ransomware attack that caused the facility to facility shut down its network for almost eight days is alleged to have caused the death of a baby.

- A baby was born at the hospital with her umbilical cord wrapped around her neck. The baby suffered severe brain damage as a result, and she died nine months later due to related complications.

- The doctor who delivered the baby texted the nurse manager that she would have delivered the baby by cesarean section had she seen the monitor readout.
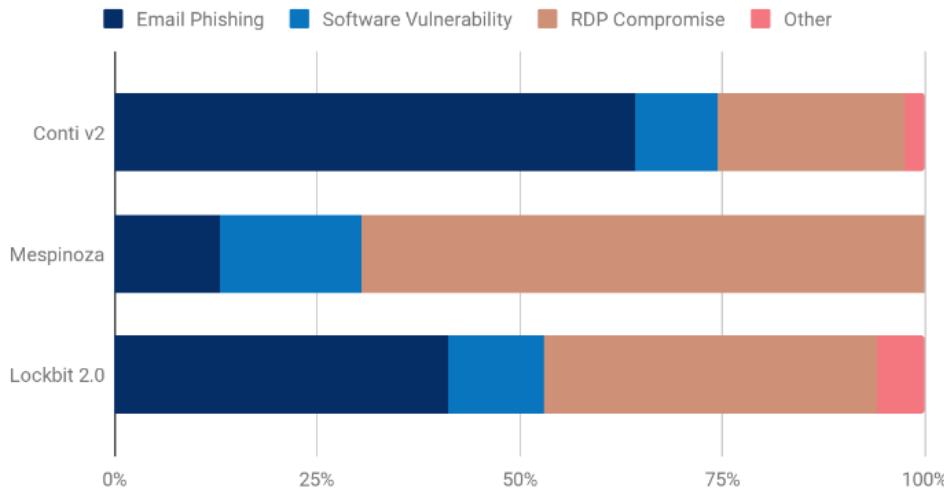
Coveware Q3 data:

The Most Common Ransomware Attack Vectors in Q3 2021

Ransomware Attack Vectors
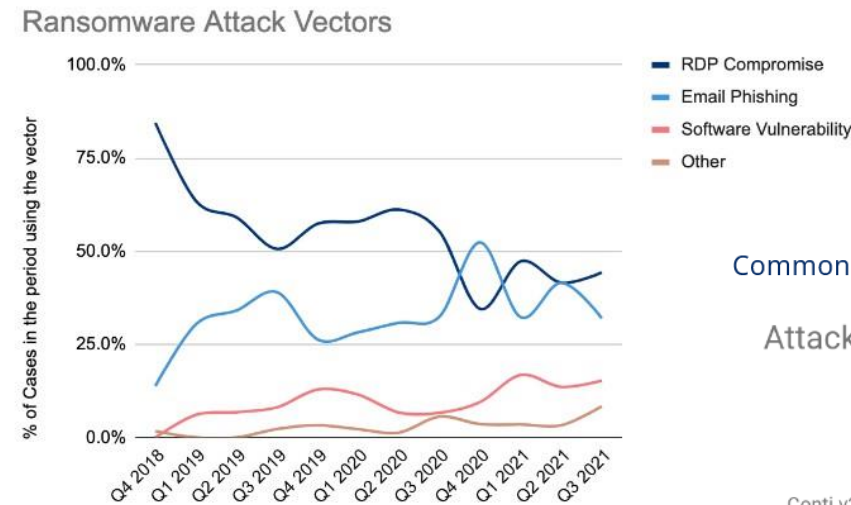
Common Attack Vectors used by the top 3 Ransomware Variants in Q3 2021

Attack Vectors - Top 3 Ransomware Types

Coveware Quarterly Ransomware Report: 2021 Q1

Average Ransom Payment Amounts Flat in Q3 2021

Average Ransom Payment

$139,739

+2.3% from Q2 2021

Median Ransom Payment

$71,674

+52.5% from Q2 2021

The Most Common Ransomware Variants in Q3 2021

Rank	Ransomware Type	Market Share %	Change in Ranking from Q2 2021
1	Conti V2	19.2%	+1
2	Mespinoza	11.3%	+2
3	Sodinokibi	8.9%	-2
4	Lockbit 2.0	8.4%	New in Top Variants
5	Hello Kitty	5.4%	-
6	Zeppelin	4.4%	+3
7	Ranzy Locker	3.0%	New in Top Variants
8	Suncrypt	2.5%	New in Top Variants
8	Hive	2.5%	New in Top Variants
9	Ryuk	2.0%	-3
9	BlackMatter	2.0%	New in Top Variants

Top 10: Market Share of the Ransomware attacks

Biden Announces 30-Country Coalition Against Ransomware

- The Biden administration convened a meeting of 30 countries to collaborate against ransomware operators incuding improving law enforcement cooperation, reducing illicit use of cryptocurrency and diplomatic engagement.

FinCEN report: Top 10 ransomware groups responsible for 5.2 billion in transactions

- The Treasury Department's Financial Crimes Enforcement Network (FinCEN) released a report on ransomware trends. They examined 177 wallet addresses tied the top 10 ransomware gangs and noted that they have extorted $5.2 billion dollars total since they've been operating. In the first half of 2021 – they extorted a total of $1.56 billion.

Man sentenced to 7 years in prison for hacking healthcare provider

- Justin Sean Johnson, known online as TheDearthStar and Dearthy Star, was sentenced to seven years in prison for the 2014 hack of the University of Pittsburgh Medical Center. He was convicted of having breached UPMC's human resources databases, stealing PII and W-2 info associated with over 65,000 employees, which he subsequently sold on the dark web.

REvil ransomware operators claim to be shutting down operations

- A REvil operator claimed in a conversation with Recorded Future Analyst Dimitry Smilyanets that the group was shutting down. Their dark web/Tor sites were taken down by a coalition of law enforcement agencies.

BlackMatter

- Darkside ransomware operators have moved approximately 107 BTC ($6.8M) to other wallets about six hours after reports broke that a coalition of law enforcement agencies hijacked the servers of REvil. Members of the group later published a public notification that they were disbanding due to law enforcement pressure.

State Department – Rewards for Justice Program

- The Department of State announced a $10,000,000 reward for the identification or location of DarkSide ransomware members (or any rebrand group) operating in key leadership positions.

- A reward of $5,000,000 is also being offered for information leading to the arrest of any individual who attempts to participate in a Darkside attack.

Europol detains suspects behind LockerGoga, MegaCortex, and Dharma ransomware attacks

- Europol, the EU's top law enforcement agency arrested 12 people accused of engaging in ransomware operations. They were accused of deploying a number of ransomware strains including LockerGoga, MegaCortex and Dharma as well as using other malware variants including Trickbot and post-exploitation tools such as Cobalt Strike. Their accusations include launching attacks against 1800 victim organizations across 71 countries since 2019. The arrests involved efforts by eight countries, including the US.
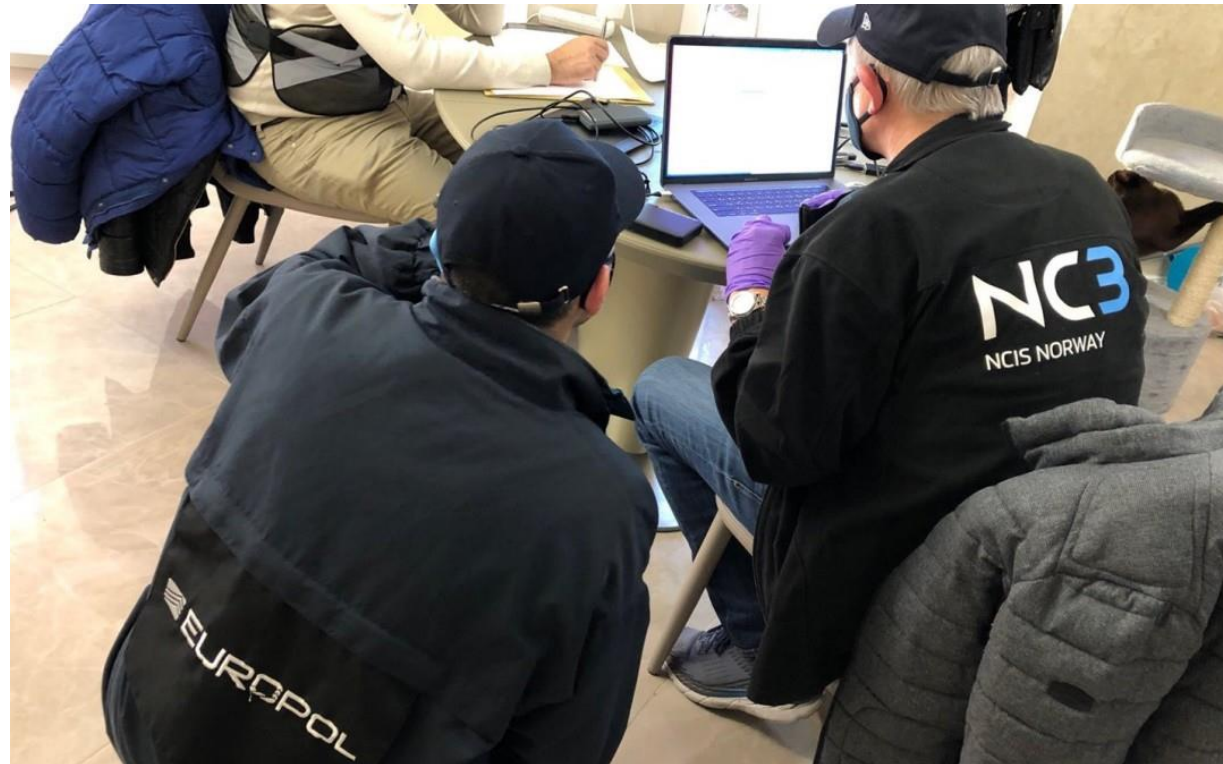
The government pressure continued…

- Romanian law enforcement arrested two suspects believed to be REvil ransomware affiliates

- Kuwaiti authorities arrested a GandCrab ransomware affiliate (predecessor to REvil), the three of them combined are suspected of being behind roughly 7,000 attacks demanding over $200 million in ransoms.

- The Department of Justice (DoJ) unsealed two grand jury indictments for two individuals associated with the REvil ransomware group. One of those individuals was arrested in Poland, which maintains an extradition treaty with the United States. also announced they seized more than $6M in cryptocurrency from one of the indicted operators

- The Department of State announced a reward of up to $10 million for information leading to the identification or location of any individual holding a key leadership position in the REvil ransomware group.
   - 7 REvil operators or affiliates have been arrested since February

- The US Treasury Department announced sanctions yesterday on the cryptocurrency exchange Chatex for "facilitating financial transactions for ransomware actors". They asserted that over half of the transactions on the exchange are directly traced to illicit or high-risk activities such as darknet markets, high-risk exchanges, and ransomware"

Emotet is back

- [Emotet is active again](#) - its back and rebuilding its infrastructure. Security researchers and companies have been releasing small indications of its activity on social media

- It appears to have new and updated capabilities:
  - Changes to the loader – new commands are available for it.
  - Changes to the dropper capability.
  - New command and control infrastructure operational
    - 246 systems believed to be part of it
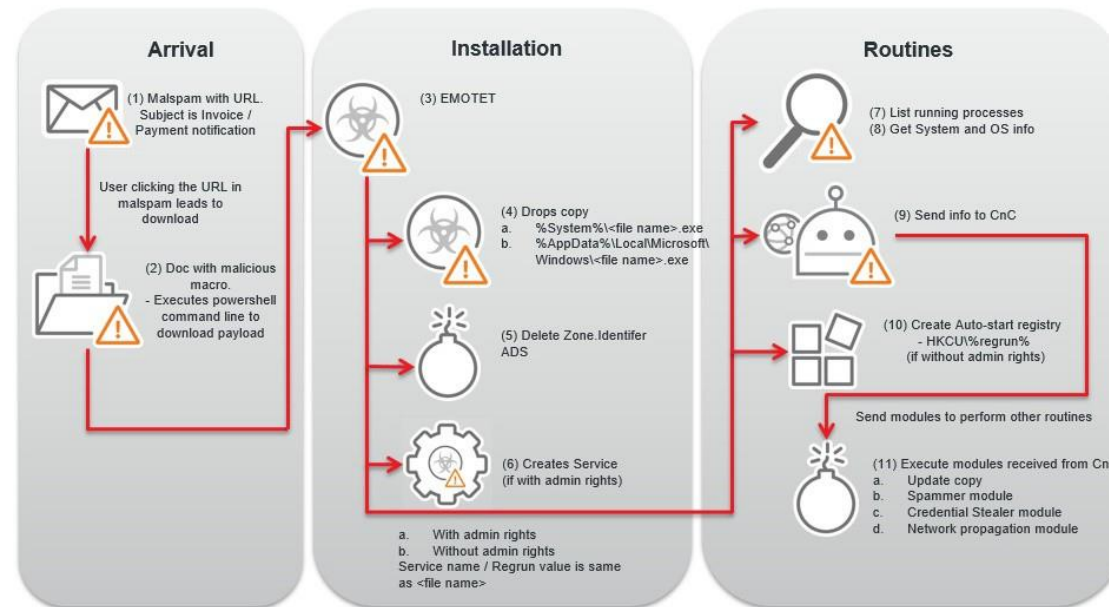
Log4J

- Log4J is a Java-based, ubiquitous logging tool now known to have multiple vulnerabilities, including multiple remote code execution flaws that can provide an attacker total control of a system.

- Initially discovered in November 2021, multiple Log4J updates have been released since then.

- No major compromises in the health sector to date; however, the health sector remains highly vulnerable, as do other industries.

- Health sector adversaries are actively leveraging these vulnerabilities.

- Updating can be a time-consuming and tedious process.

- Further vulnerabilities may continue to be identified soon.

- There are both short- and long-term steps to take in order to remain secure.

- Vulnerabilities in ubiquitous apps will present similar issues in the future.

Five vulnerabilities in Log4J (plus one in Logback framework)

| CVE	TYPE	Description/Notes
CVE-2021-44228	Remote Code Execution	Rated Critical; present in Log4j2 2.0-beta9 to 2.12.1 and 2.13.0 through 2.15.0; called Log4Shell; CVSS: 10 of 10; fixed in version 2.15.0
CVE 2021-45046	Denial of Service	Fix to address CVE-2021-44228 in 2.15.0 was incomplete in certain non-default configurations; fixed in version 2.16.0
CVE-2021-4104	Remote Code Execution	Rated High; present in versions 1.x; CVSS: 7.5; fixed in version 2.17.0 (no fix for Log4J version 1 - EoL)
CVE-2021-42550	Arbitrary Code Execution	Rated Moderate; present in Logback logging framework (successor to the Log4j 1.x); fixed with Logback versions, 1.3.0-alpha11 and 1.2.9
CVE-2021-45105	Denial of Service	Versions 2.0-alpha1 through 2.16.0 did not protect from uncontrolled recursion from self-referential lookups; CVSS: 7.5 of 10; fixed in version 2.17.0
CVE-2021-44832	Remote Code Execution	Present in version 2.17.0; CVSS score of 6.6; fixed in version 2.17.1

Log4Shell timeline
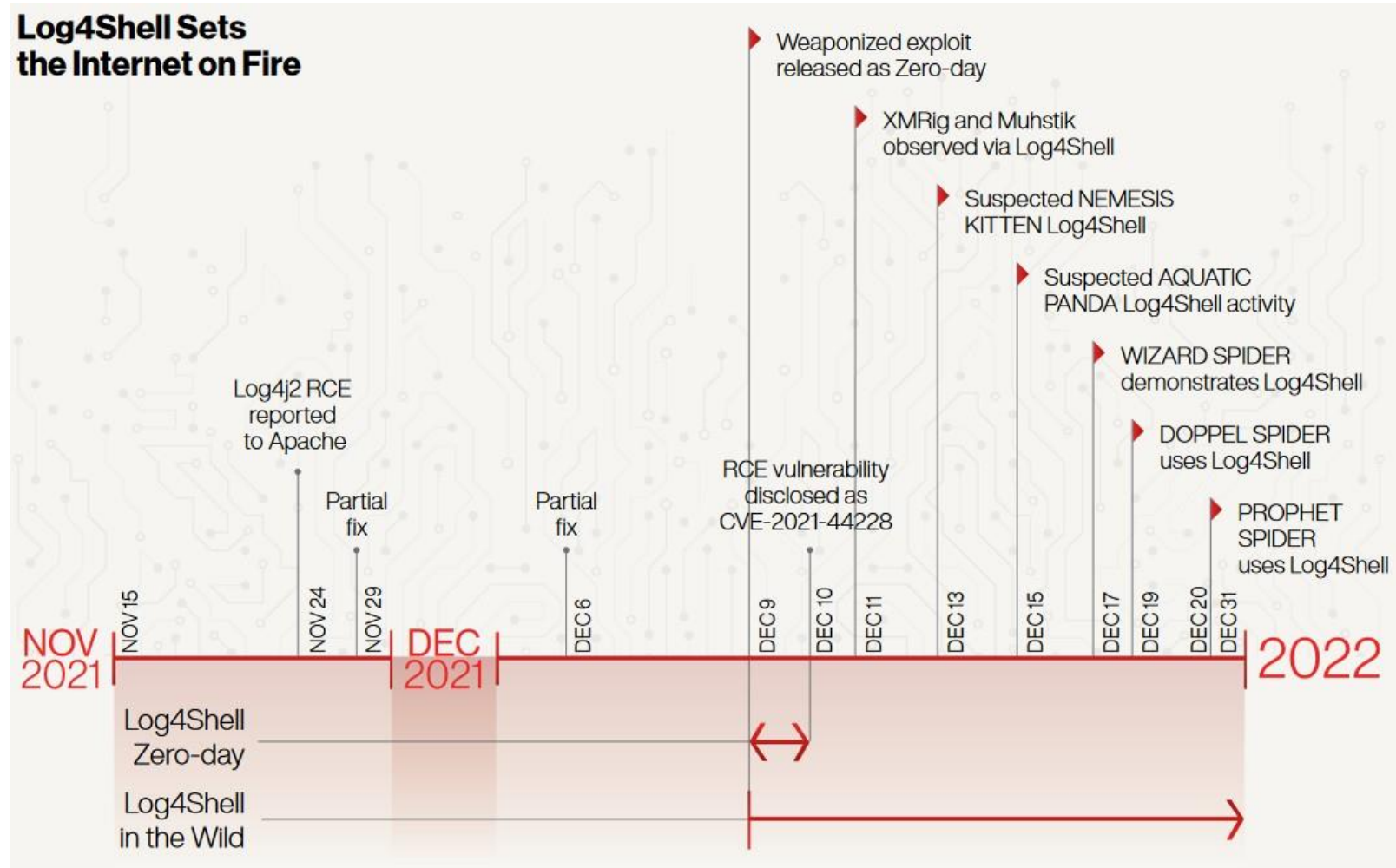
Coveware Q4 data:

The Most Common Ransomware Initial Ingress Vectors in Q4 2021
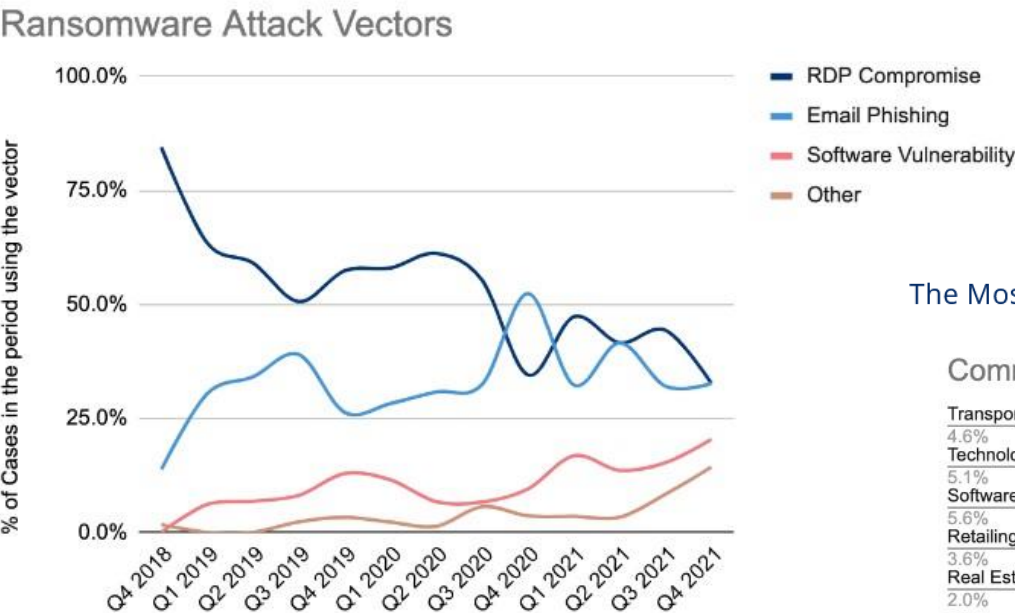
The Most Common Industries Impacted by Ransomware in Q4 2021
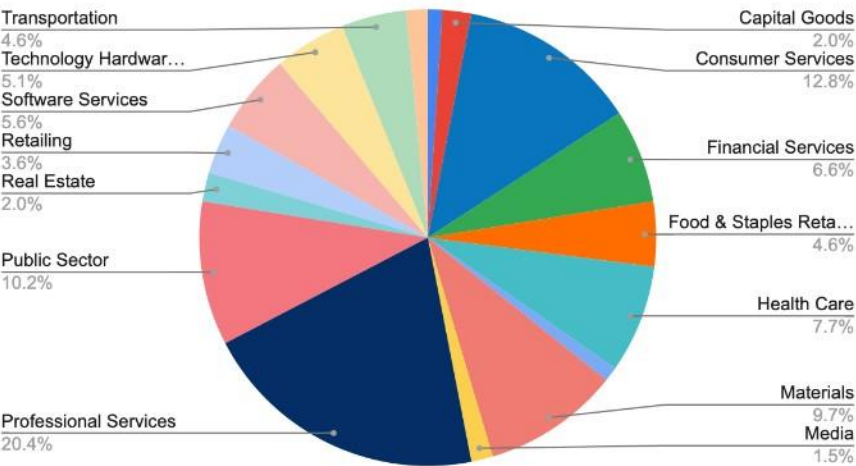
Coveware Quarterly Ransomware Report: 2021 Q4

Average Ransom Amount up Sharply in Q4 2021

Average Ransom Payment

$322,168

+130% from Q3 2021

Median Ransom Payment

$117,116

+63% from Q3 2021

The Most Common Ransomware Variants in Q4 2021

Rank	Ransomware Type	Market Share %	Change in Ranking from Q3 2021
1	Conti V2	19.4%	-
2	LockBit 2.0	16.3%	+2
3	Hive	9.2%	+5
4	Mespinoza	4.1%	-2
5	Zeppelin	3.6%	+1
5	BlackMatter	3.6%	+4
6	Karakurt	3.1%	New in Top Variants
6	Suncrypt	3.1%	+2
6	AvosLocker	3.1%	New in Top Variants

Top 10: Market Share of the Ransomware attacks

2021 Ransomware as compared to 2020:
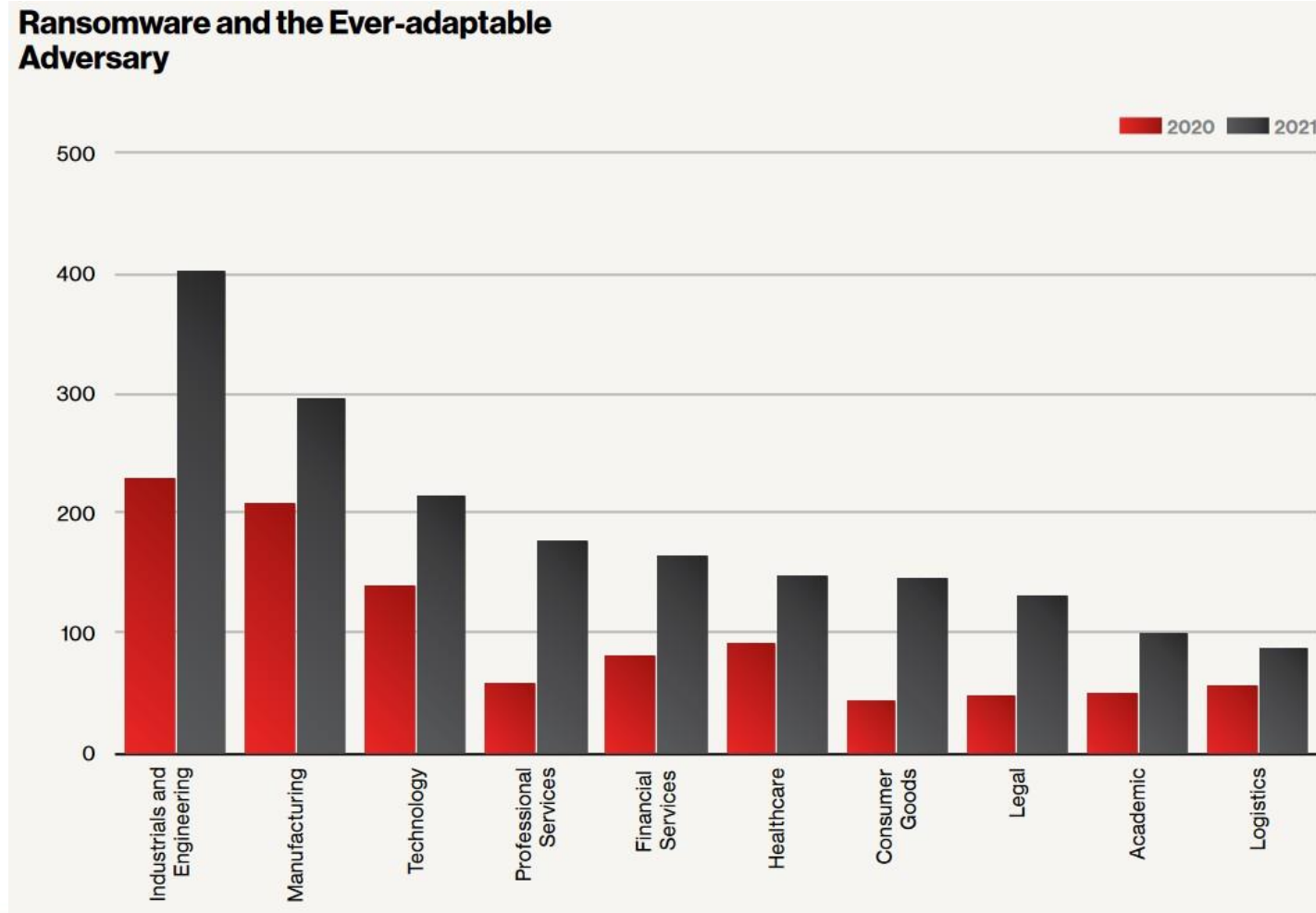
What does all this mean for healthcare cybersecurity for 2022 and beyond?

- The continuation of conventional wisdom and existing trends applies in many cases
  - **<u>Healthcare organizations should continue to defend against phishing</u>**
    - Training and employee awareness
      - Current events can and do serve as themes for phishing campaigns
    - Phishing test programs
    - Gateway/mail server filtering
    - Blacklisting/whitelisting
    - Operationalization of indicators of compromise
  - **<u>Remote access technologies should be locked down</u>**
    - Virtual Private Networks and technologies leveraging the Remote Desktop Protocol should be operationally minimized
    - Turn off services where they are not needed
    - Limit services to only when they are needed
    - Log and periodically review activity
    - Update all tools as soon as updates are released
    - Always apply the principle of least privilege

What does all this mean for healthcare cybersecurity for 2022 and beyond?

- The continuation of conventional wisdom and existing trends applies in many cases (continued)
  - **Vulnerability Management**
    - Situational awareness begins with knowing your own infrastructure
      - Develop and aggressively maintain enterprise asset inventory
      - Must be systematic – comprehensive and repeatable
      - Must have mechanisms of enforcement
    - Maintain situational awareness of applicable vendor updates and alerts
    - Develop repeatable testing, patching and update deployment procedures
  - **Understand the value of what your organization has to offer to the adversary**
    - Patient records/PII/PHI can be sold for a high price
    - If you operate in such a way that you can be disrupted then you can also be extorted
    - Foreign countries may want/need your intellectual property
  - **Operate with resilience in mind**
    - High probability of compromise
    - What will you do if it happens?
    - Incident response
    - Continuity of Operations (COOP)

CYBERSECURITY FRAMEWORK VERSION 1.1 — RECOVER, IDENTIFY, PROTECT, DETECT, RESPOND

What does all this mean for healthcare cybersecurity for 2022 and beyond?

- Relatively new(ish) ways of thinking about defense
  - **<u>Distributed attack vectors</u>**
    - Adversaries are thinking in terms of maximizing their victims with a single attack
      - Managed service provider compromise
      - Supply chain compromise
      - Software components
    - Examples: Solar Winds, Kaseya, Log4J
    - How to prevent and mitigate?
      - Request MSPs to enumerate the their security capabilities
      - Request software bill of materials
      - Develop/implement/test contingency plans
      - <u>Most important</u>: Think in terms of how you can be compromised by your suppliers, vendors, business partners, customers and service providers
  - **<u>The government can help you; You still have the most important role in defending yourself</u>**
    - Diplomacy, law enforcement and other government actions have been impactful
      - Technical disruptions, arrests, bounties
    - The cybercriminal ecosystem is resilient
      - As long as there are victims to compromise there will be someone willing to try

- Moving through 2022 and beyond…
  - Situational awareness will continue to be more and more important…
    - New threats and their tactics, techniques, procedures and weapons
    - New vulnerabilities and the means to correct them or mitigate exploitation
  - Maintaining trusted defense measures
  - Defending against distributed attacks and other new avenues of compromise

- Government resources:
  - DHS/CISA Stop Ransomware: https://www.cisa.gov/stopransomware
  - FBI Cybercrime: https://www.fbi.gov/investigate/cyber
  - FBI Internet Crime Complaint Center (IC3): https://www.ic3.gov/Home/ComplaintChoice/default.aspx/
  - HC3 Products: https://www.hhs.gov/about/agencies/asa/ocio/hc3/index.html

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Questions

Upcoming Briefs

- 3/17 – Analysis of the Potential Russian Cyberthreat to the U.S. Health Sector

Requests for Information

Need information on a specific cybersecurity topic? Send your request for information (RFI) to **HC3@HHS.GOV**.

Product Evaluations

Recipients of this and other Healthcare Sector Cybersecurity Coordination Center (HC3) Threat Intelligence products are highly encouraged to provide feedback. If you wish to provide feedback, please complete the HC3 Customer Feedback Survey.

Disclaimer

These recommendations are advisory and are not to be considered as Federal directives or standards. Representatives should review and apply the guidance based on their own requirements and discretion. HHS does not endorse any specific person, entity, product, service, or enterprise.

HC3 works with private and public sector partners to improve cybersecurity throughout the Healthcare and Public Health (HPH) Sector

Products

Sector & Victim Notifications

Direct communications to victims or potential victims of compromises, vulnerable equipment or PII/PHI theft, as well as general notifications to the HPH about current impacting threats via the HHS OIG.

White Papers

Document that provides in-depth information on a cybersecurity topic to increase comprehensive situational awareness and provide risk recommendations to a wide audience.

Threat Briefings & Webinar

Briefing presentations that provide actionable information on health sector cybersecurity threats and mitigations. Analysts present current cybersecurity topics, engage in discussions with participants on current threats, and highlight best practices and mitigation tactics.

Need information on a specific cybersecurity topic, or want to join our Listserv? Send your request for information (RFI) to **HC3@HHS.GOV**, or visit us at **www.HHS.Gov/HC3**.

Contact

www.HHS.GOV/HC3

HC3@HHS.GOV

End Presentations

Closing Remarks

Thank you for attending the 2022 Business Continuity Plan Seminar

Thank you Planning team!

- Team Members:
  - Jason Belden, CAHF
  - Laurie Lee-Brown, EMS
  - Jennifer Calderon, EMS
  - Alex Lichtenstein, UCLA
  - Katie Meyer, Huntington Hospital
  - Andrew Pagsisihan, All Care Home Health
  - Adam Richards, Kaiser LA
  - Brenda Rodriguez, LA City EMD
  - Christopher Sandoval, EMS
  - Isabel Sanchez, EMS
  - Brenda Smith, Northeast Valley Health Corp.
  - Jennifer Waldron, Huntington Hospital

Business Continuity Plan

Seminar and Workshop

L.A. County EMS Agency
Hospital Preparedness Program

https://www.surveymonkey.com/r/DCCRPRN

In order to receive a certificate of participation, please complete the participant feedback survey on Survey Monkey by May 31, 2022. You can scan the QR code or click on the link placed in chat.

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