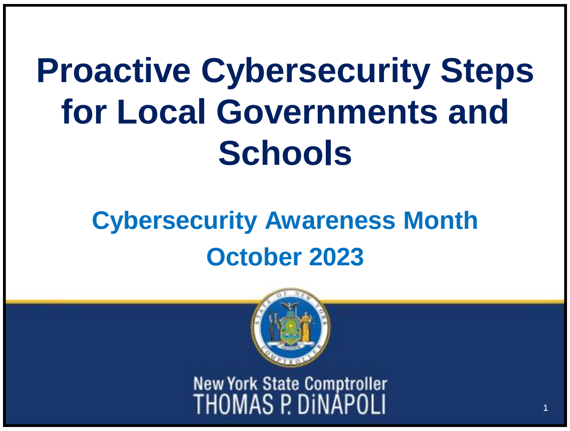
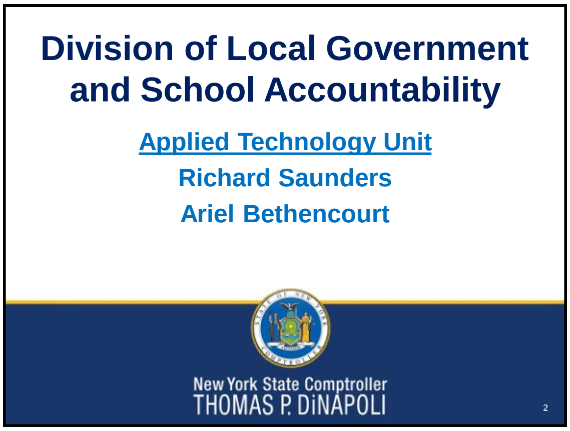


Proactive Cybersecurity Steps for Local Governments and Schools

Cybersecurity Awareness Month

October 2023

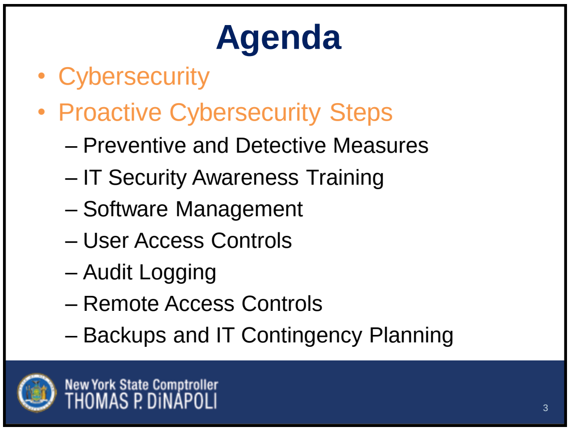


Division of Local Government and School Accountability

Applied Technology Unit

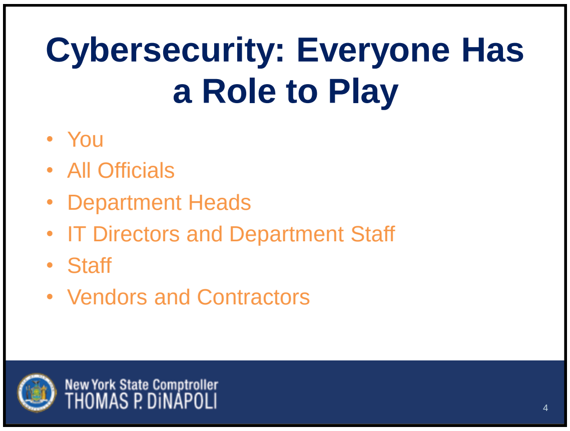
Richard Saunders

Ariel Bethencourt



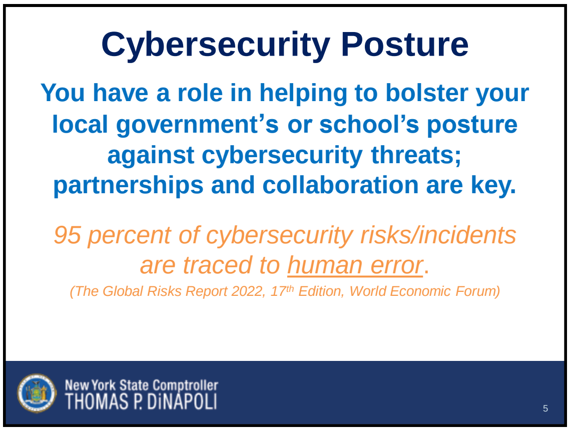
Agenda

- Cybersecurity
- Proactive Cybersecurity Steps
  - Preventive and Detective Measures
  - IT Security Awareness Training
  - Software Management
  - User Access Controls
  - Audit Logging
  - Remote Access Controls
  - Backups and IT Contingency Planning



Cybersecurity: Everyone Has a Role to Play

- You
- All Officials
- Department Heads
- IT Directors and Department Staff
- Staff
- Vendors and Contractors

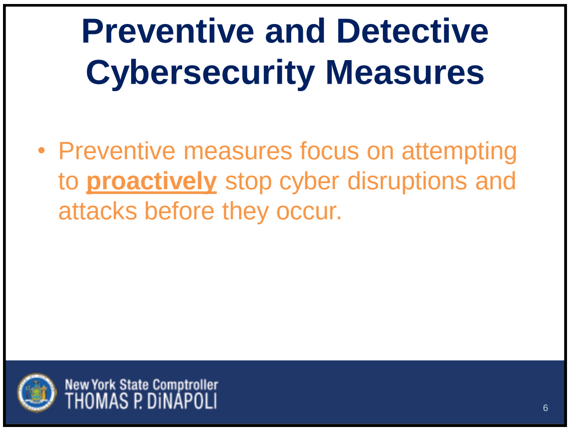


Cybersecurity Posture

You have a role in helping to bolster your local government's or school's posture against cybersecurity threats; partnerships and collaboration are key.

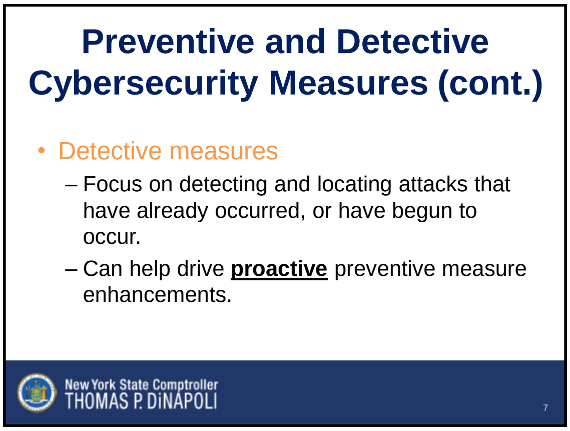
95 percent of cybersecurity risks/incidents are traced to human error.

(The Global Risks Report 2022, 17th Edition, World Economic Forum)



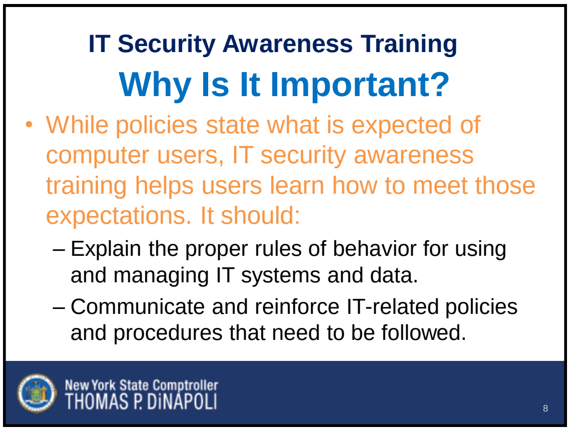
Preventive and Detective Cybersecurity Measures

- Preventive measures focus on attempting to **proactively** stop cyber disruptions and attacks before they occur.



Preventive and Detective Cybersecurity Measures (cont.)

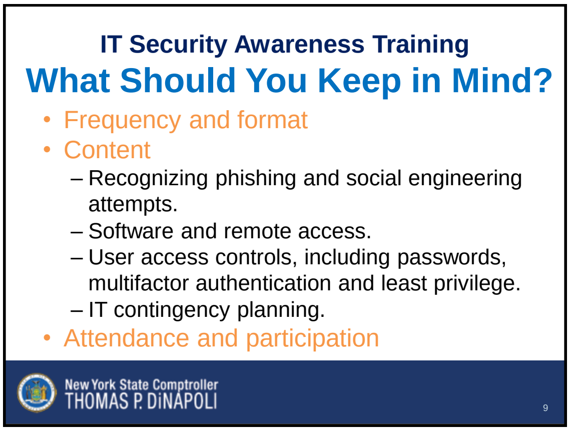
- Detective measures
  - Focus on detecting and locating attacks that have already occurred, or have begun to occur.
  - Can help drive **proactive** preventive measure enhancements.



IT Security Awareness Training

Why Is It Important?

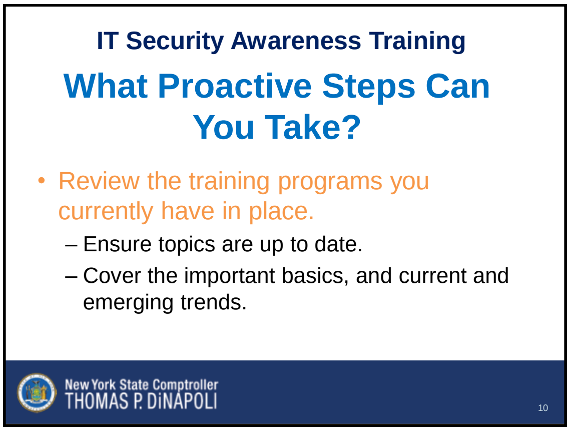
- While policies state what is expected of computer users, IT security awareness training helps users learn how to meet those expectations. It should:
  - Explain the proper rules of behavior for using and managing IT systems and data.
  - Communicate and reinforce IT-related policies and procedures that need to be followed.



IT Security Awareness Training

What Should You Keep in Mind?

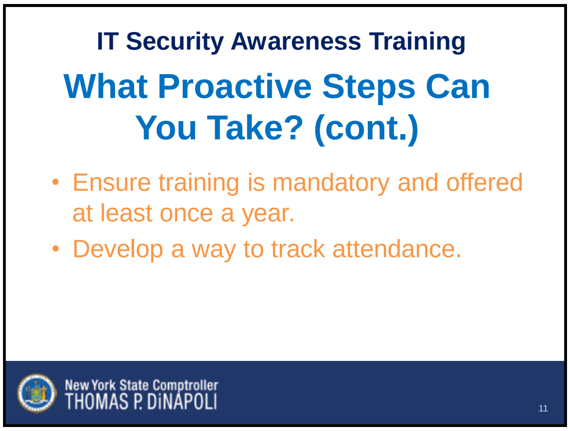
- Frequency and format
- Content
  - Recognizing phishing and social engineering attempts.
  - Software and remote access.
  - User access controls, including passwords, multifactor authentication and least privilege.
  - IT contingency planning.
- Attendance and participation



IT Security Awareness Training

What Proactive Steps Can You Take?

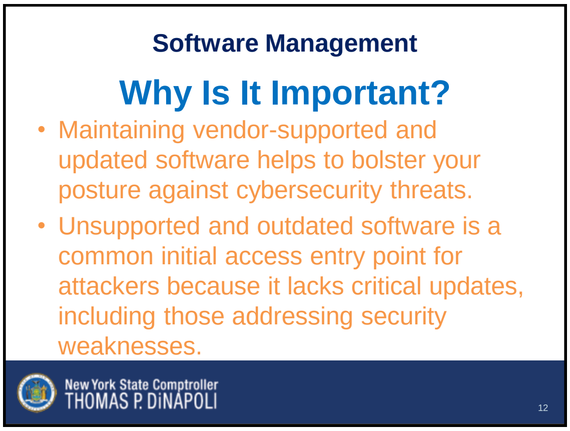
- Review the training programs you currently have in place.
  - Ensure topics are up to date.
  - Cover the important basics, and current and emerging trends.



IT Security Awareness Training

What Proactive Steps Can You Take? (cont.)

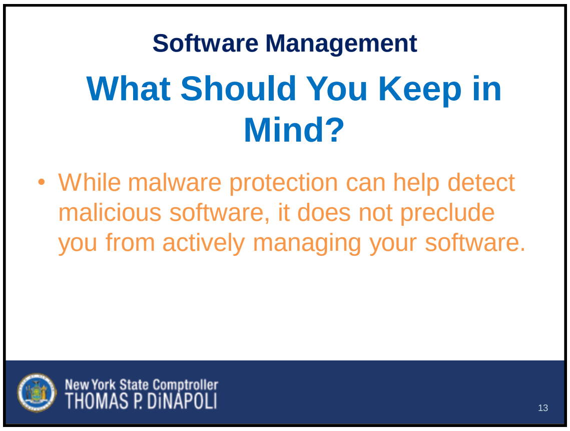
- Ensure training is mandatory and offered at least once a year.
- Develop a way to track attendance.



Software Management

Why Is It Important?

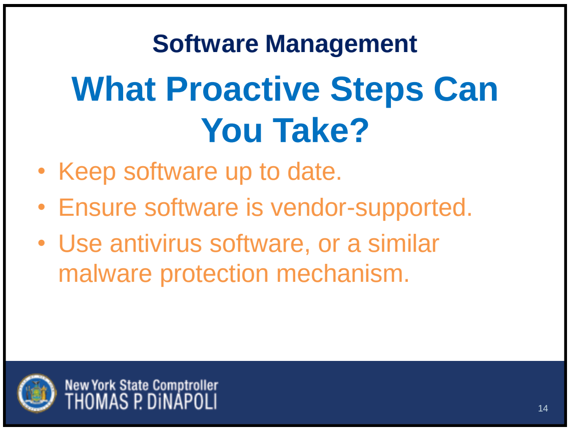
- Maintaining vendor-supported and updated software helps to bolster your posture against cybersecurity threats.
- Unsupported and outdated software is a common initial access entry point for attackers because it lacks critical updates, including those addressing security weaknesses.



Software Management

What Should You Keep in Mind?

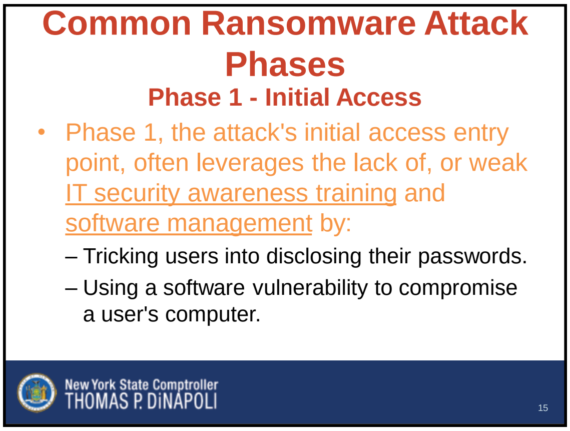
- While malware protection can help detect malicious software, it does not preclude you from actively managing your software.



Software Management

What Proactive Steps Can You Take?

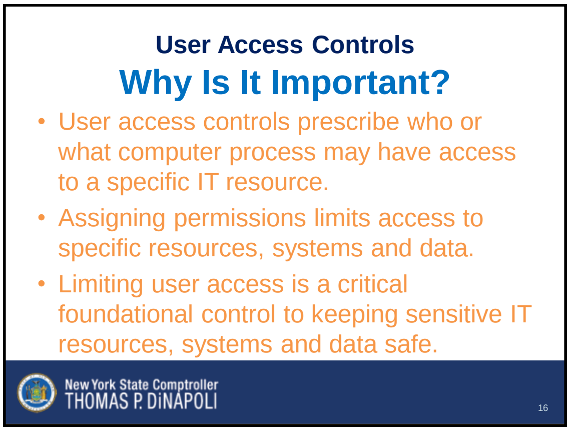
- Keep software up to date.
- Ensure software is vendor-supported.
- Use antivirus software, or a similar malware protection mechanism.



Common Ransomware Attack Phases

Phase 1 - Initial Access

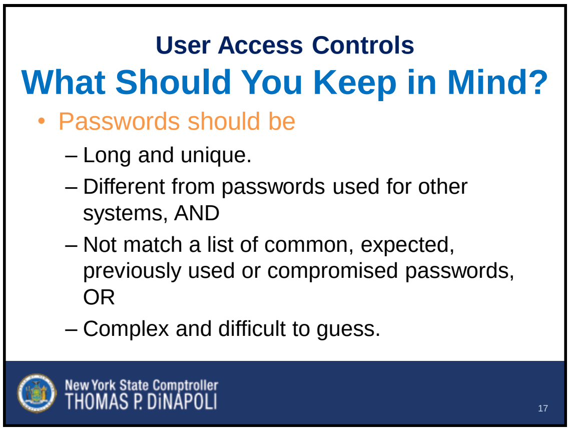
- Phase 1, the attack's initial access entry point, often leverages the lack of, or weak IT security awareness training and software management by:
  - – Tricking users into disclosing their passwords.
  - – Using a software vulnerability to compromise a user's computer.



User Access Controls

Why Is It Important?

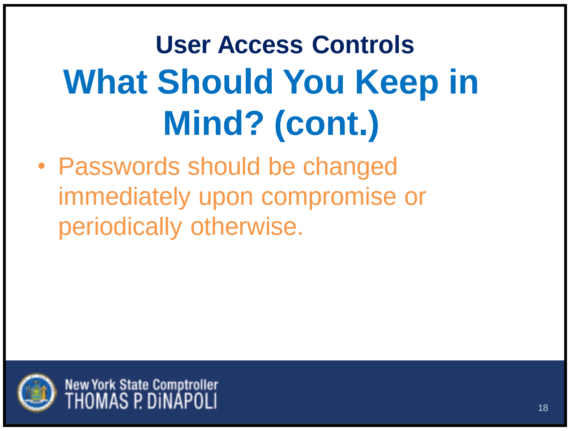
- User access controls prescribe who or what computer process may have access to a specific IT resource.
- Assigning permissions limits access to specific resources, systems and data.
- Limiting user access is a critical foundational control to keeping sensitive IT resources, systems and data safe.



User Access Controls

What Should You Keep in Mind?

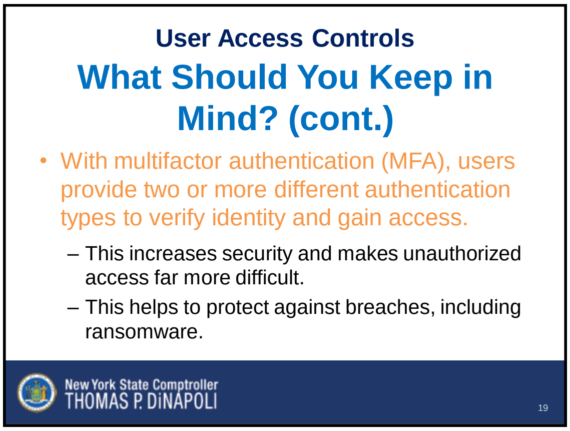
- Passwords should be
  - Long and unique.
  - Different from passwords used for other systems, AND
  - Not match a list of common, expected, previously used or compromised passwords, OR
  - Complex and difficult to guess.



User Access Controls

What Should You Keep in Mind? (cont.)

- Passwords should be changed immediately upon compromise or periodically otherwise.



User Access Controls

What Should You Keep in Mind? (cont.)

- With multifactor authentication (MFA), users provide two or more different authentication types to verify identity and gain access.
  - – This increases security and makes unauthorized access far more difficult.
  - – This helps to protect against breaches, including ransomware.

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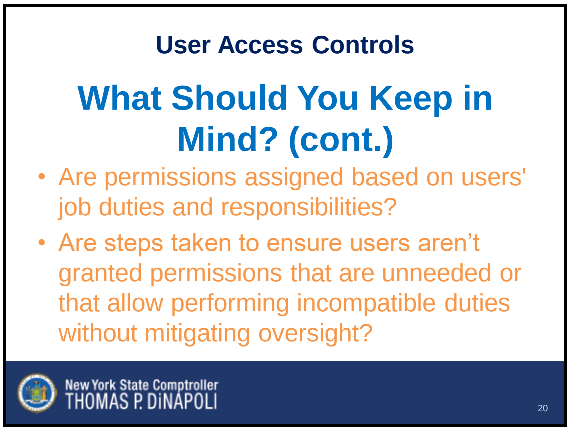

User Access Controls

What Should You Keep in Mind? (cont.)

- Are permissions assigned based on users' job duties and responsibilities?
- Are steps taken to ensure users aren’t granted permissions that are unneeded or that allow performing incompatible duties without mitigating oversight?

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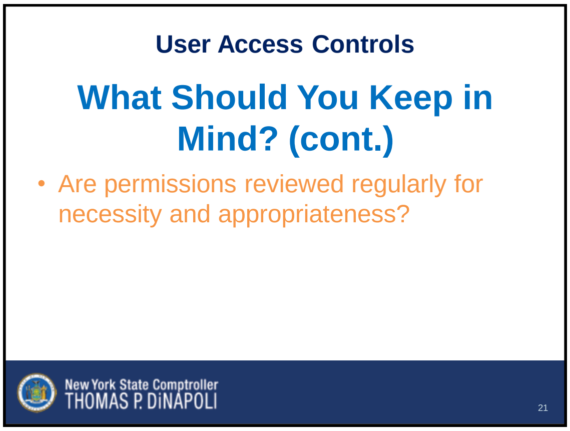

User Access Controls

What Should You Keep in Mind? (cont.)

- Are permissions reviewed regularly for necessity and appropriateness?

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User Access Controls

What Proactive Steps Can You Take?

- Enforce strong password requirements.
- Implement MFA for administrative, remote and other key user access.
- Remove unneeded access in a timely manner.

Common Ransomware Attack Phases

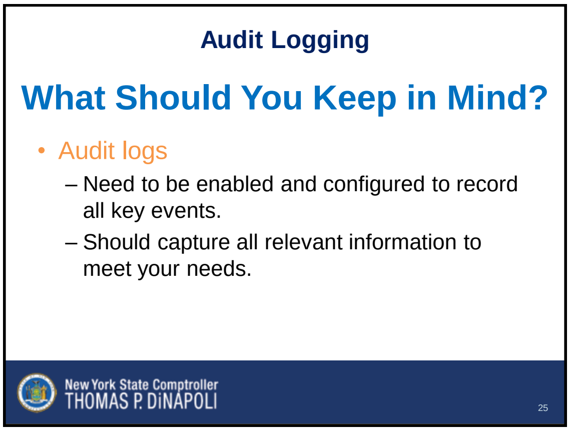
Phase 2 - Gained Foothold

- Phase 2, the attack's gained access or foothold, often leverages lacking or weak user access controls by:
  - Exploring initial access and escalation potential.
  - Determining ransomware infection initiation capabilities.

Audit Logging

Why Is It Important?

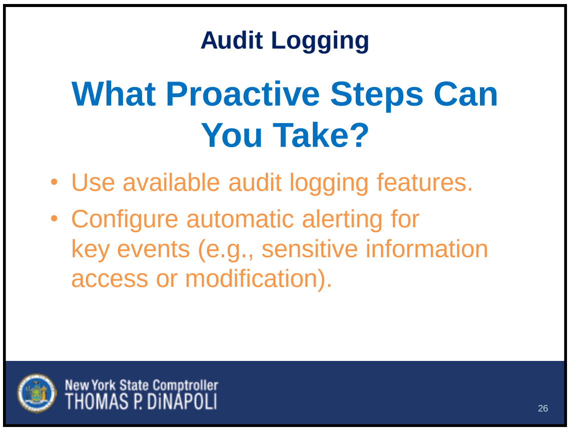
- Audit logs contain information for events that happen within networks, systems, and software.
- Audit logs can help determine:
  - Who accessed data or systems.
  - What data or systems were accessed.
  - When the data or systems were accessed.
  - Where data or systems were changed.



Audit Logging

What Should You Keep in Mind?

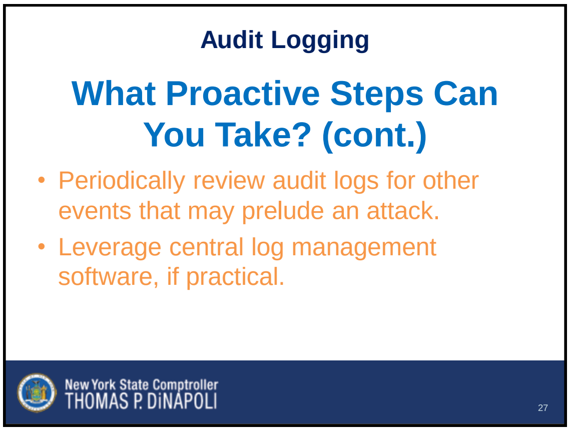
- Audit logs
  - Need to be enabled and configured to record all key events.
  - Should capture all relevant information to meet your needs.



Audit Logging

What Proactive Steps Can You Take?

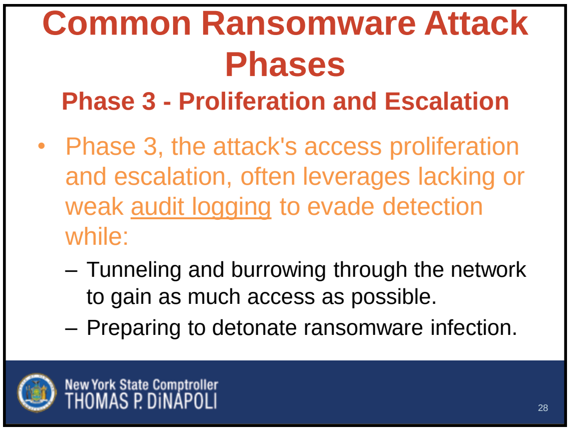
- Use available audit logging features.
- Configure automatic alerting for key events (e.g., sensitive information access or modification).



Audit Logging

What Proactive Steps Can You Take? (cont.)

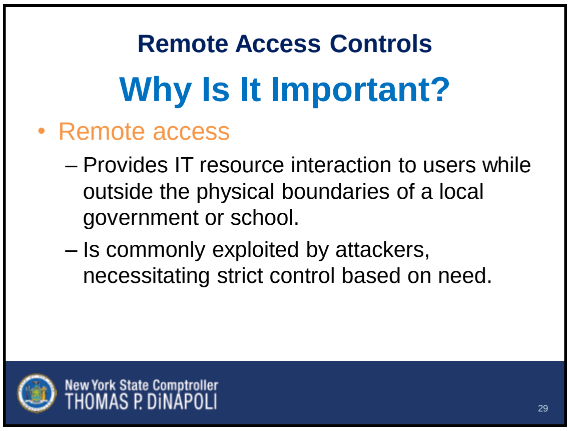
- Periodically review audit logs for other events that may prelude an attack.
- Leverage central log management software, if practical.



Common Ransomware Attack Phases

Phase 3 - Proliferation and Escalation

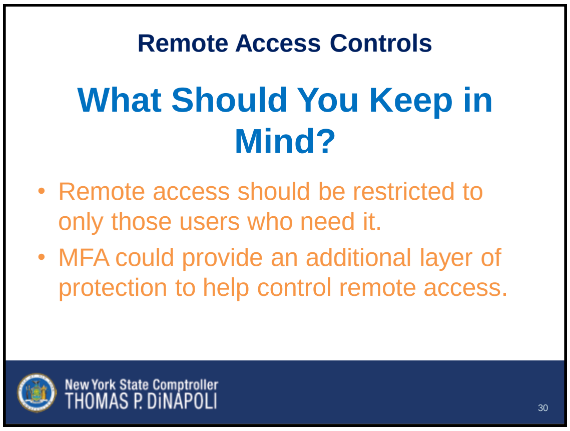
- Phase 3, the attack's access proliferation and escalation, often leverages lacking or weak audit logging to evade detection while:
  - Tunneling and burrowing through the network to gain as much access as possible.
  - Preparing to detonate ransomware infection.



Remote Access Controls

Why Is It Important?

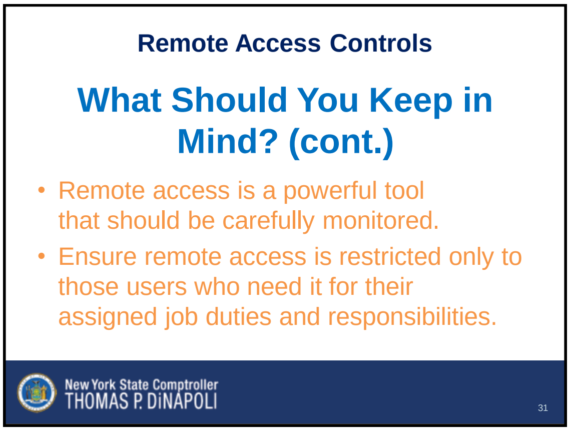
- Remote access
  - Provides IT resource interaction to users while outside the physical boundaries of a local government or school.
  - Is commonly exploited by attackers, necessitating strict control based on need.



Remote Access Controls

What Should You Keep in Mind?

- Remote access should be restricted to only those users who need it.
- MFA could provide an additional layer of protection to help control remote access.



Remote Access Controls

What Should You Keep in Mind? (cont.)

- Remote access is a powerful tool that should be carefully monitored.
- Ensure remote access is restricted only to those users who need it for their assigned job duties and responsibilities.

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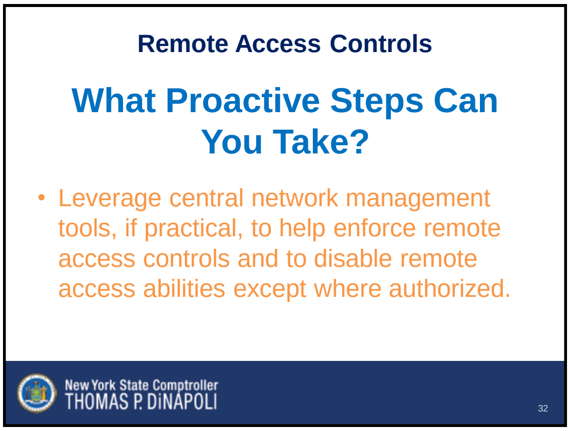

Remote Access Controls

What Proactive Steps Can You Take?

- Leverage central network management tools, if practical, to help enforce remote access controls and to disable remote access abilities except where authorized.

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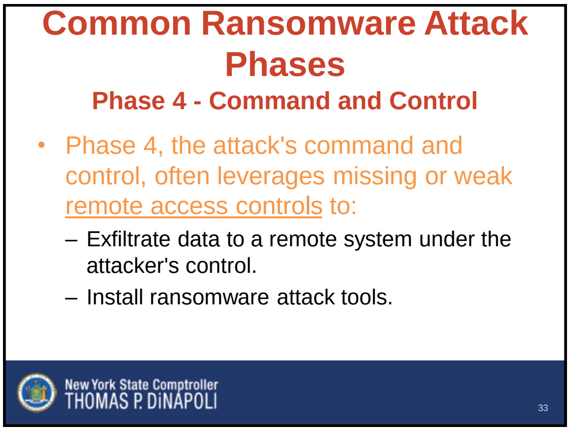

Common Ransomware Attack Phases

Phase 4 - Command and Control

- Phase 4, the attack's command and control, often leverages missing or weak remote access controls to:
  - Exfiltrate data to a remote system under the attacker's control.
  - Install ransomware attack tools.

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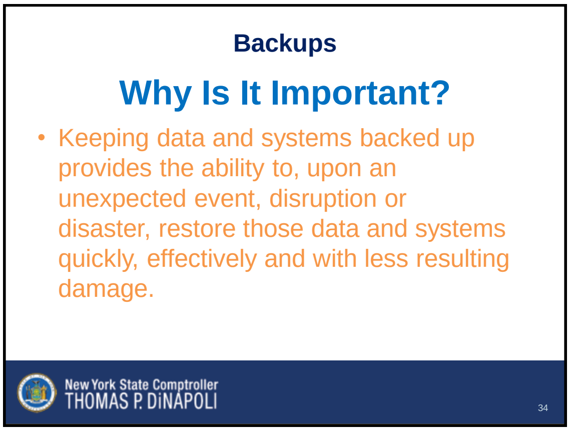

Backups

Why Is It Important?

- Keeping data and systems backed up provides the ability to, upon an unexpected event, disruption or disaster, restore those data and systems quickly, effectively and with less resulting damage.

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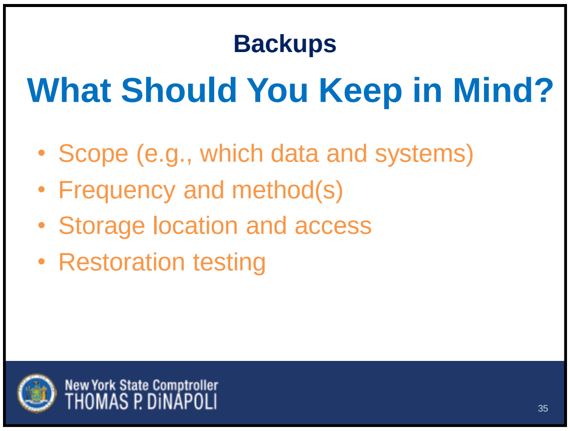

Backups

What Should You Keep in Mind?

- Scope (e.g., which data and systems)
- Frequency and method(s)
- Storage location and access
- Restoration testing

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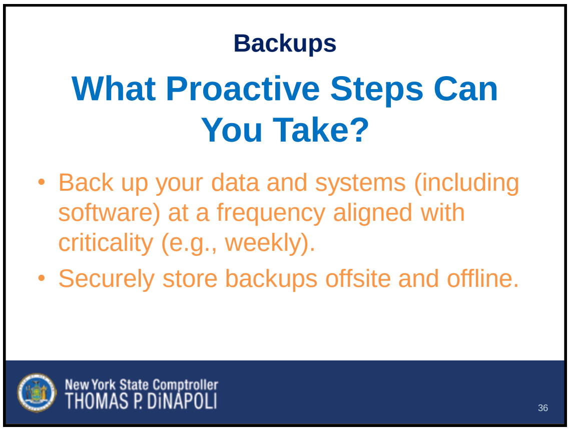

Backups

What Proactive Steps Can You Take?

- Back up your data and systems (including software) at a frequency aligned with criticality (e.g., weekly).
- Securely store backups offsite and offline.

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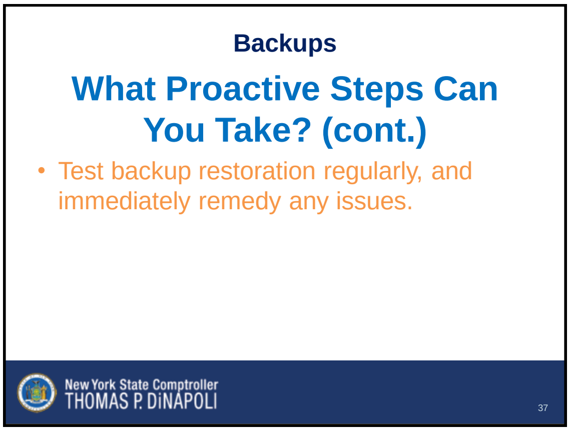
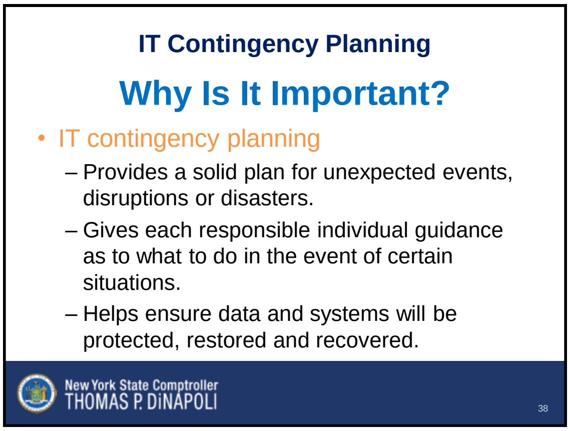


Backups

What Proactive Steps Can You Take? (cont.)

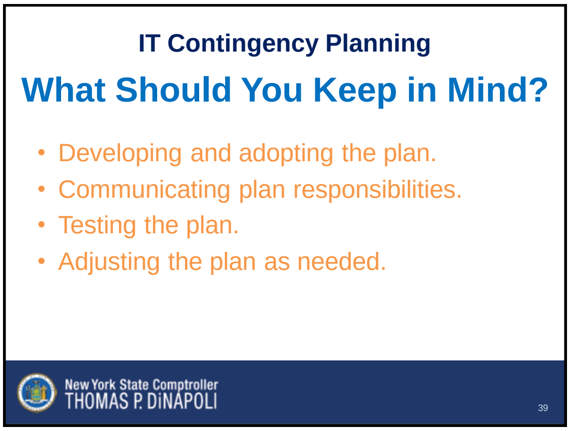
- Test backup restoration regularly, and immediately remedy any issues.



IT Contingency Planning

Why Is It Important?

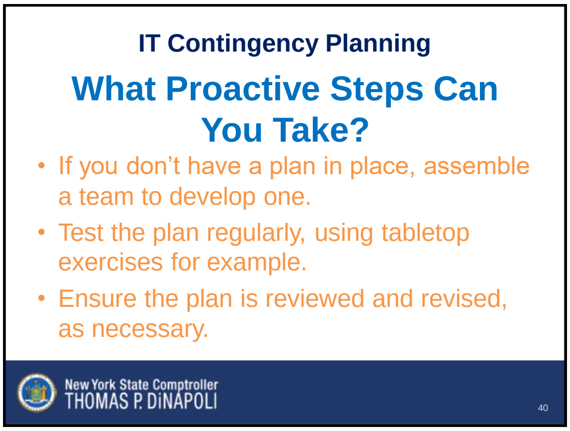
- IT contingency planning
  - – Provides a solid plan for unexpected events, disruptions or disasters.
  - – Gives each responsible individual guidance as to what to do in the event of certain situations.
  - – Helps ensure data and systems will be protected, restored and recovered.



IT Contingency Planning

What Should You Keep in Mind?

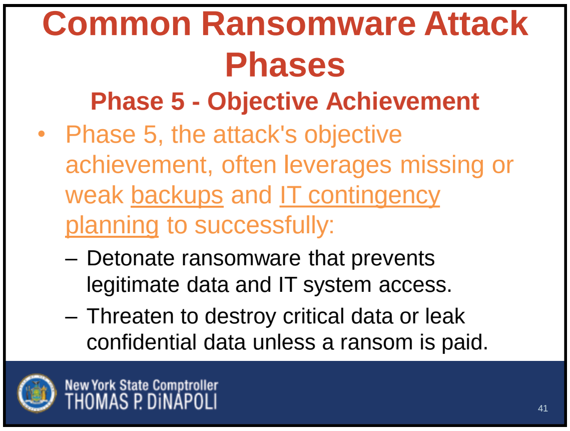
- Developing and adopting the plan.
- Communicating plan responsibilities.
- Testing the plan.
- Adjusting the plan as needed.



IT Contingency Planning

What Proactive Steps Can You Take?

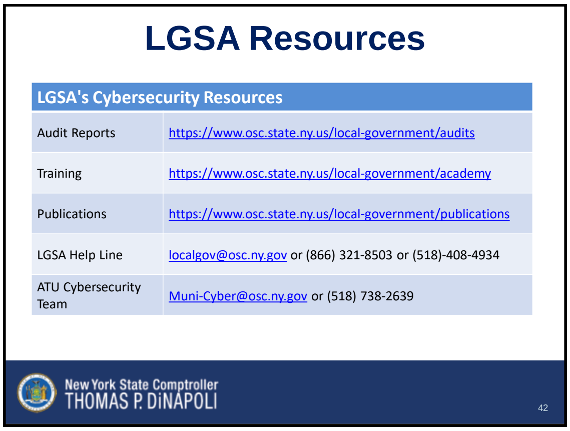
- If you don't have a plan in place, assemble a team to develop one.
- Test the plan regularly, using tabletop exercises for example.
- Ensure the plan is reviewed and revised, as necessary.



Common Ransomware Attack Phases

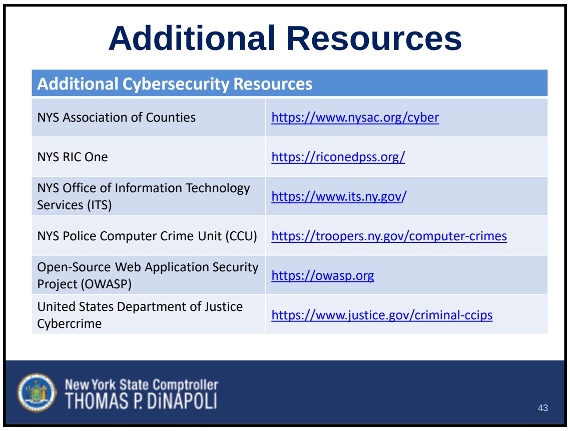
Phase 5 - Objective Achievement

- Phase 5, the attack's objective achievement, often leverages missing or weak backups and IT contingency planning to successfully:
  - Detonate ransomware that prevents legitimate data and IT system access.
  - Threaten to destroy critical data or leak confidential data unless a ransom is paid.



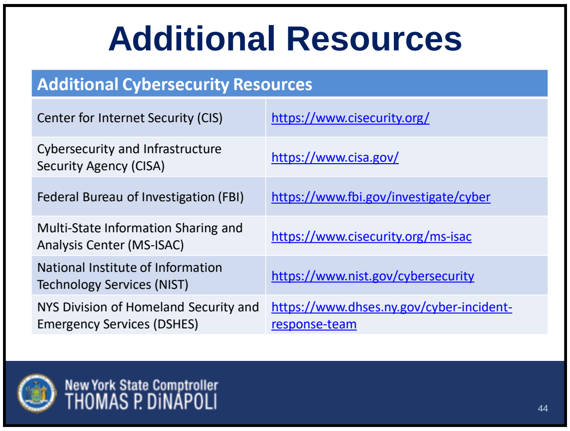
LGSA Resources

LGSA's Cybersecurity Resources	
Audit Reports	https://www.osc.state.ny.us/local-government/audits
Training	https://www.osc.state.ny.us/local-government/academy
Publications	https://www.osc.state.ny.us/local-government/publications
LGSA Help Line	localgov@osc.ny.gov or (866) 321-8503 or (518)-408-4934
ATU Cybersecurity Team	Muni-Cyber@osc.ny.gov or (518) 738-2639



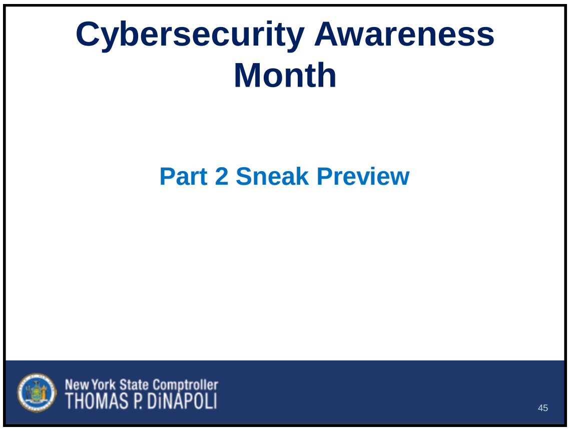
Additional Resources

Additional Cybersecurity Resources	
NYS Association of Counties	https://www.nysac.org/cyber
NYS RIC One	https://riconedpss.org/
NYS Office of Information Technology Services (ITS)	https://www.its.ny.gov/
NYS Police Computer Crime Unit (CCU)	https://troopers.ny.gov/computer-crimes
Open-Source Web Application Security Project (OWASP)	https://owasp.org
United States Department of Justice Cybercrime	https://www.justice.gov/criminal-ccips



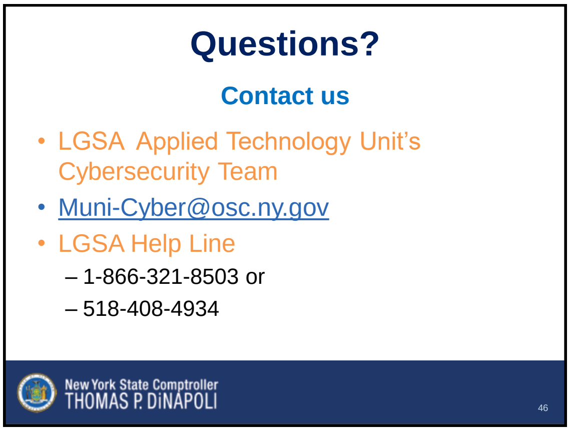
Additional Resources

Additional Cybersecurity Resources	
Center for Internet Security (CIS)	https://www.cisecurity.org/
Cybersecurity and Infrastructure Security Agency (CISA)	https://www.cisa.gov/
Federal Bureau of Investigation (FBI)	https://www.fbi.gov/investigate/cyber
Multi-State Information Sharing and Analysis Center (MS-ISAC)	https://www.cisecurity.org/ms-isac
National Institute of Information Technology Services (NIST)	https://www.nist.gov/cybersecurity
NYS Division of Homeland Security and Emergency Services (DSHES)	https://www.dhses.ny.gov/cyber-incident-response-team



Cybersecurity Awareness Month

Part 2 Sneak Preview



Questions?

Contact us

- LGSA Applied Technology Unit's Cybersecurity Team
- Muni-Cyber@osc.ny.gov
- LGSA Help Line
  - – 1-866-321-8503 or
  - – 518-408-4934

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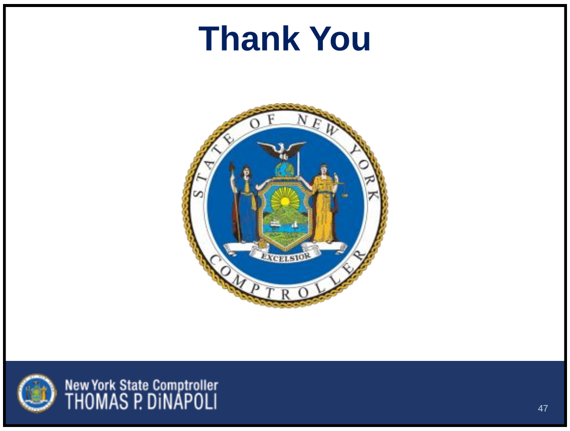

Thank You

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