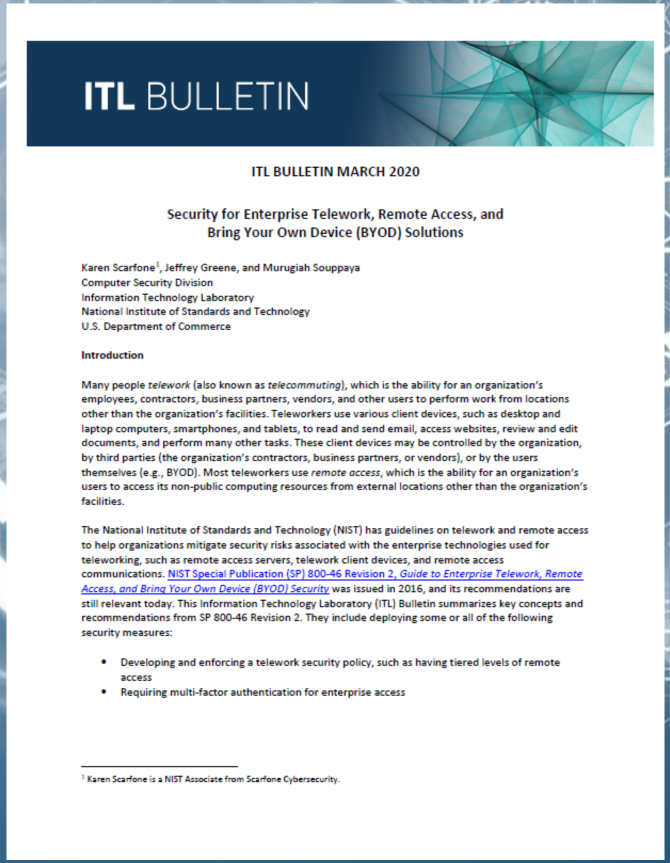
NIST CYBER

Cybersecurity Considerations for Telework

Security for Enterprises



ITL BULLETIN

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Security for Enterprise Telework, Remote Access, and Bring Your Own Device (BYOD) Solutions

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Introduction

Many people *telework* (also known as *telecommuting*), which is the ability for an organization's employees, contractors, business partners, vendors, and other users to perform work from locations other than the organization's facilities. Teleworkers use various client devices, such as desktop and laptop computers, smartphones, and tablets, to read and send email, access websites, review and edit documents, and perform many other tasks. These client devices may be controlled by the organization, by third parties (the organization's contractors, business partners, or vendors), or by the users themselves (e.g., BYOD). Most teleworkers use *remote access*, which is the ability for an organization's users to access its non-public computing resources from external locations other than the organization's facilities.

The National Institute of Standards and Technology (NIST) has guidelines on telework and remote access to help organizations mitigate security risks associated with the enterprise technologies used for teleworking, such as remote access servers, telework client devices, and remote access communications. NIST Special Publication (SP) 800-46 Revision 2, *Guide to Enterprise Telework, Remote Access, and Bring Your Own Device (BYOD) Security* was issued in 2016, and its recommendations are still relevant today. This Information Technology Laboratory (ITL) Bulletin summarizes key concepts and recommendations from SP 800-46 Revision 2. They include deploying some or all of the following security measures:

- Developing and enforcing a telework security policy, such as having tiered levels of remote access
- Requiring multi-factor authentication for enterprise access

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Enterprise Planning

Plan telework-related security policies and controls based on a zero-trust model.

- Encrypt client devices’ storage, encrypt all sensitive data stored on client devices, or don’t store sensitive data on client devices
- Use strong authentication, preferably multi-factor, for enterprise access
- Use encryption technologies to protect the confidentiality and integrity of communications
- Authenticate each endpoint to the other to verify their identities

Develop a telework security policy that defines telework, remote access, and BYOD requirements.

- Define in the policy which forms of remote access are permitted and how the remote access servers will be administered
- Make risk-based decisions about what levels of remote access should be permitted from which types of telework client devices

Enterprise Implementation

Ensure that remote access servers are secured effectively and configured to enforce telework security policies.

- Keep remote access servers fully patched
- Only allow remote access servers to be managed from trusted hosts by authorized administrators
- Carefully choose the placement of each remote access server

Secure organization-controlled telework client devices against common threats, and maintain their security regularly.

- Ensure all types of telework client devices are secured, including smartphones and tablets
- Include all of the local security controls used for non-telework client devices, such as applying updates promptly, disabling unneeded services, and using anti-malware software (for desktops and laptops)
- Use additional security controls, such as encrypting sensitive data stored on the devices

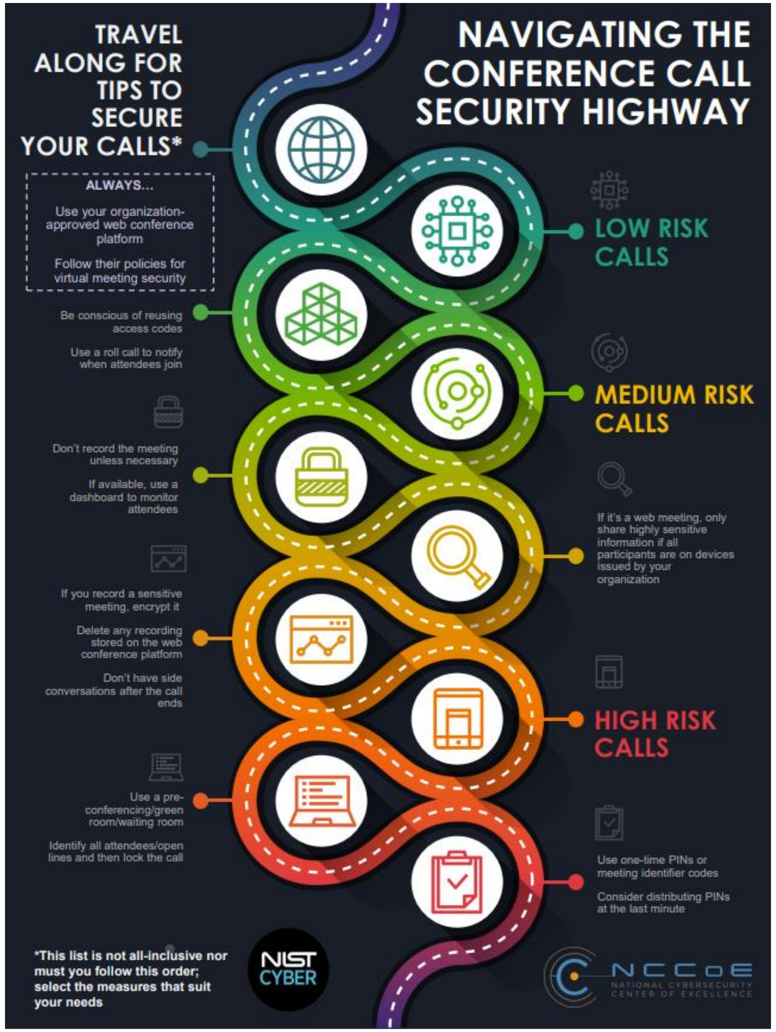
Additional Resources

- NIST SP 800-46 Revision 2, Guide to Enterprise Telework, Remote Access, and Bring Your Own Device (BYOD) Security
- NIST SP 800-77 Revision 1 (Draft), Guide to IPsec VPNs
- NIST SP 800-52 Revision 2, Guidelines for the Selection, Configuration, and Use of Transport Layer Security (TLS) Implementations
- NIST SP 800-111, Guide to Storage Encryption Technologies for End User Devices
- NIST SP 800-124 Revision 1, Guidelines for Managing the Security of Mobile Devices in the Enterprise
- NIST SP 800-40 Revision 3, Guide to Enterprise Patch Management Technologies
- NIST SP 1800-4, Mobile Device Security: Cloud and Hybrid Builds
- NIST SP 1800-21 (Draft), Mobile Device Security: Corporate-Owned Personally-Enabled (COPE)

Security & Privacy

Virtual Meeting Security

- First Rule: use common sense
- Follow your organization’s rules
- Consider what security is necessary
  - Not all calls are created equal
- Low
  - Know who’s on the call
- Medium
  - Basic security steps go a long way
- High
  - Use extra precautions



NAVIGATING THE CONFERENCE CALL SECURITY HIGHWAY

TRAVEL ALONG FOR TIPS TO SECURE YOUR CALLS*

ALWAYS...

Use your organization-approved web conference platform

Follow their policies for virtual meeting security

LOW RISK CALLS

Be conscious of reusing access codes

Use a roll call to notify when attendees join

Don't record the meeting unless necessary

If available, use a dashboard to monitor attendees

MEDIUM RISK CALLS

If it's a web meeting, only share highly sensitive information if all participants are on devices issued by your organization

If you record a sensitive meeting, encrypt it

Delete any recording stored on the web conference platform

Don't have side conversations after the call ends

HIGH RISK CALLS

Use a pre-conferencing/green room/waiting room

Identify all attendees/open lines and then lock the call

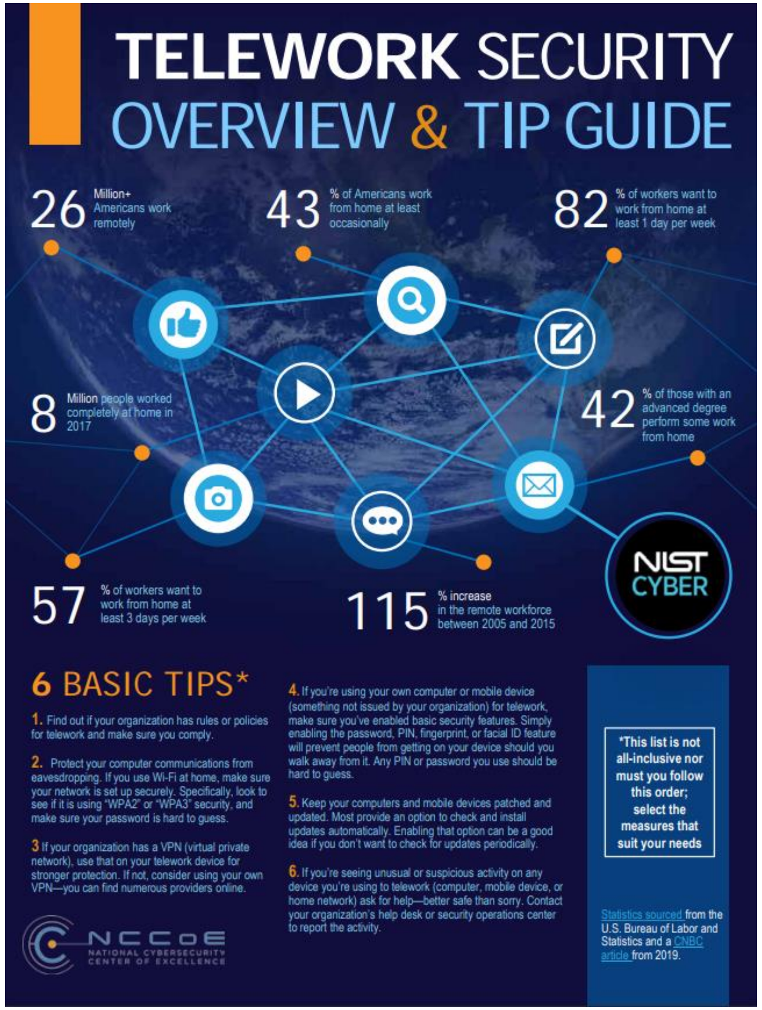
Use one-time PINs or meeting identifier codes

Consider distributing PINs at the last minute

*This list is not all-inclusive nor must you follow this order; select the measures that suit your needs

Telework Security Basics

- First Rule: use common sense
- Follow your organization’s rules
- Use a VPN
- Secure your devices
- Basic hygiene, basic security – still essential
- Watch for unusual activity



TELEWORK SECURITY OVERVIEW & TIP GUIDE

26 Million+ Americans work remotely

43 % of Americans work from home at least occasionally

82 % of workers want to work from home at least 1 day per week

8 Million people worked completely at home in 2017

42 % of those with an advanced degree perform some work from home

57 % of workers want to work from home at least 3 days per week

115 % increase in the remote workforce between 2005 and 2015

6 BASIC TIPS*

1. Find out if your organization has rules or policies for telework and make sure you comply.

2. Protect your computer communications from eavesdropping. If you use Wi-Fi at home, make sure your network is set up securely. Specifically, look to see if it is using "WPA2" or "WPA3" security, and make sure your password is hard to guess.

3 If your organization has a VPN (virtual private network), use that on your telework device for stronger protection. If not, consider using your own VPN—you can find numerous providers online.

4. If you're using your own computer or mobile device (something not issued by your organization) for telework, make sure you've enabled basic security features. Simply enabling the password, PIN, fingerprint, or facial ID feature will prevent people from getting on your device should you walk away from it. Any PIN or password you use should be hard to guess.

5. Keep your computers and mobile devices patched and updated. Most provide an option to check and install updates automatically. Enabling that option can be a good idea if you don't want to check for updates periodically.

6. If you're seeing unusual or suspicious activity on any device you're using to telework (computer, mobile device, or home network) ask for help—better safe than sorry. Contact your organization's help desk or security operations center to report the activity.

*This list is not all-inclusive nor must you follow this order; select the measures that suit your needs

Statistics sourced from the U.S. Bureau of Labor and Statistics and a CNBC article from 2019.

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Additional Resources

Blogs

- https://www.nist.gov/blogs/cybersecurity-insights/preventing-eavesdropping-and-protecting-privacy-virtual-meetings

- https://www.nist.gov/blogs/cybersecurity-insights/telework-security-basics