

Encryption for Lawyers: Its Time Is Here

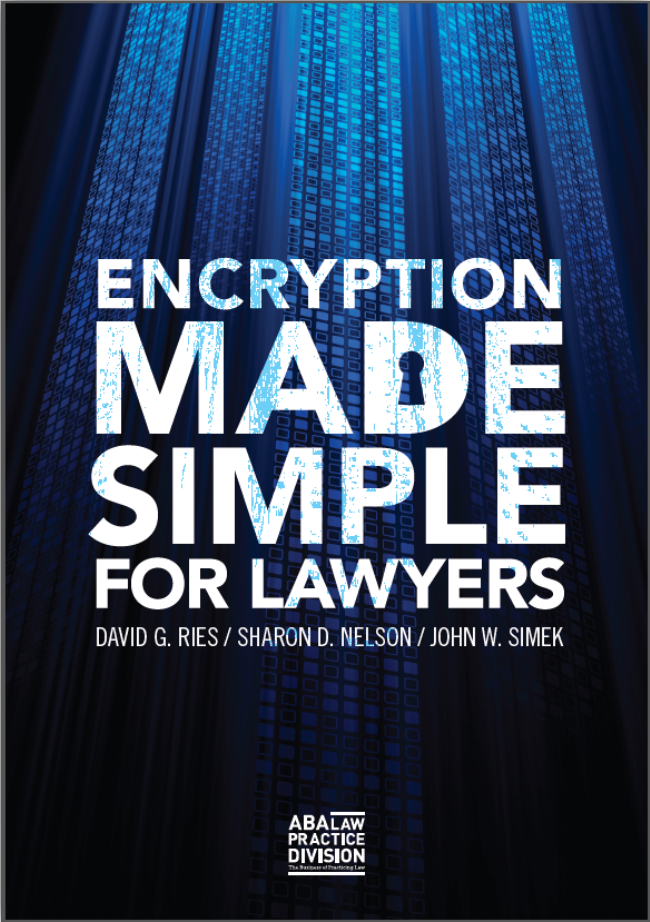


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Attorneys Avoid Encryption



Encryption





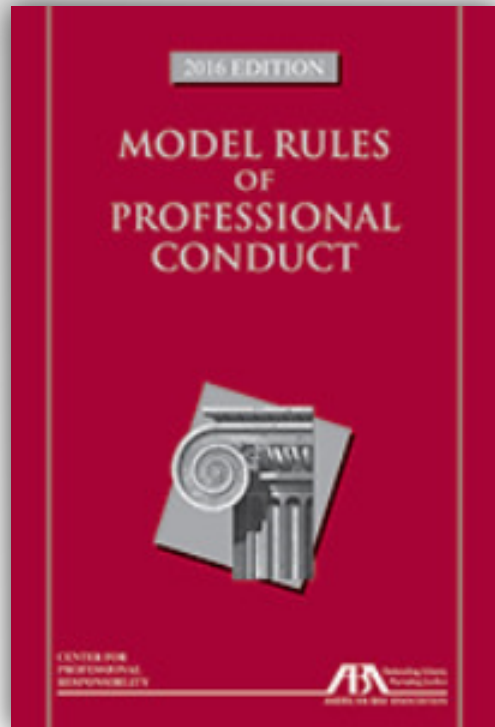
Attorneys Avoid Encryption

- **Encryption is too difficult.**
- **Encryption is too expensive.**
- **“I don’t need encryption!”**





Duty to Safeguard



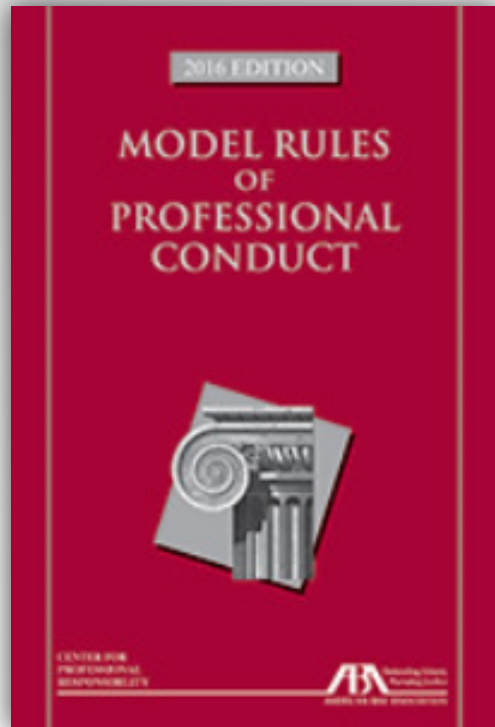
Ethics Rules

Common Law

Contracts

Laws & Regulations

Duty to Safeguard



Rule 1.1 Competence

Rule 1.6 Confidentiality

Rule 1.4 Communication

**Rules 5.1, Supervision
5.2, 5.3**



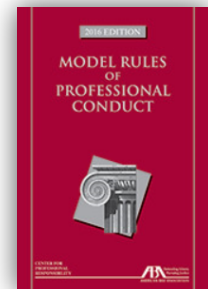
Aug. 2012 Amendments

Model Rule 1.1 Competence
Amendment to Comment [8]

Maintaining Competence

“...a lawyer should keep abreast of changes in the law and its practice, **including the benefits and risks associated with relevant technology...**”

Adopted by 26 states as of Jan 2017





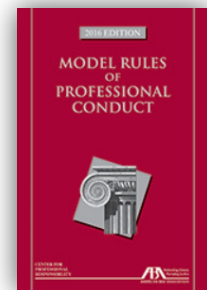
Aug. 2012 Amendments

Model Rule 1.6

Confidentiality of Information

Addition to rule

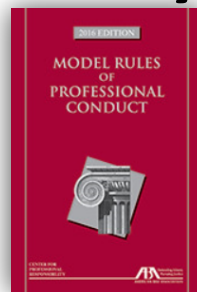
“(c) A lawyer shall make reasonable efforts to prevent the unintended disclosure of, or unauthorized access to, information relating to the representation of a client.”





Reasonable Safeguards (Rule 1.6, Comment [18]):

- 1. the sensitivity of the information**
- 2. the likelihood of disclosure if additional safeguards are not employed**
- 3. the cost of employing additional safeguards**
- 4. the difficulty of implementing the safeguards**
- 5. adverse effect on the lawyer's ability to represent clients**



Risk-Based

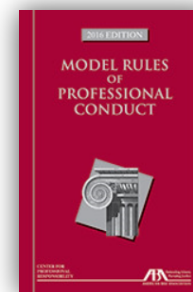


Electronic Communications

Model Rule 1.6

Comment [19]

“When transmitting a communication that includes information relating to the representation of a client, the lawyer must take reasonable precautions to prevent the information from coming into the hands of unintended recipients. ...”





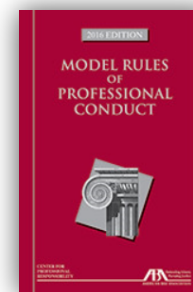
Electronic Communications

Model Rule 1.6

Comment [19]

“...does not require that the lawyer use **special security measures** if the method of communication affords a reasonable expectation of privacy. Special circumstances, however, may warrant special precautions....”

if
“reasonable expectation of privacy”





Ethics Opinions - Encryption

New Jersey Opinion 701 (2006)

California Formal Opinion No. 2010-179

Pennsylvania Formal Opinion 2011-200

Texas Opinion No. 648 (2015)





Is Encryption Ethically Required?

“The potential for unauthorized receipt of electronic data has caused some experts to revisit the topic and issue [ethics] opinions suggesting that in some circumstances, encryption or other safeguards for certain email communications may be required.”
ABA, *Eye on Ethics* (July 2015)

YOURABA
e-news for members

[Home](#) > [Publications](#) > [YourABA](#) > [2015](#) > [July 2015](#) > [Encryption conniption](#)

Encryption conniption

July 2015 | [Eye on Ethics](#)

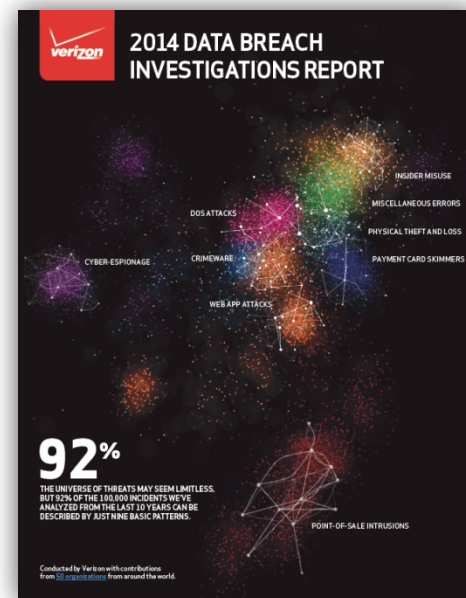
by
Peter Geraghty, director, ETHICSearch; and, Susan Michmerhuizen, ETHICSearch counsel, ABA
Center for Professional Responsibility



Lost and Stolen Devices:

“Considering the high frequency of lost assets, encryption is as close to a **no-brainer solution** as it gets for this incident pattern. Sure, the asset is still missing, but at least it will save a lot of worry, embarrassment, and potential lawsuits by simply being able to say the information within it was protected.”

“Competent and Reasonable Efforts”





Why Attorneys Need Encryption

Up to 70% of data breaches involve laptops & portable media.

About 10% of laptops are stolen during their useful lives.

1.4 million smartphones were lost during 2013.

3.1 million smartphones were stolen during 2013.





Why Attorneys Need Encryption

8/11 Baltimore law firm

(external hard drive – backup – left on light rail)

8/14 Law firm with GA operations center

(external hard drive – backup - stolen from employee's trunk)

1/15 San Francisco attorney

(laptop stolen)

4/15 San Diego law firm

(laptop stolen on trolley)





Why Attorneys Need Encryption

2007: 18 laptops were stolen from the offices of a law firm in Orlando.

- Protected by encryption
- SANS Institute:

“(laptop stolen, but the data was protected) shouldn’t be newsworthy...”

 **Encryption protects data!**





Why Attorneys Need Encryption

Electronic communications can be intercepted.

Wired and wireless network traffic can be intercepted.

Cyberspace is a dangerous place!





Why Attorneys Need Encryption

Unencrypted Email = “A Postcard”

"The common metaphor for Internet e-mail is postcards: Anyone – letter carriers, mail sorters, nosy delivery truck drivers - who can touch the postcard can read what's on the back."

Bruce Schneier 1995

**“Reasonable Expectation
of Privacy?”**





Why Attorneys Need Encryption

Unencrypted Email = “A Postcard”

Email – A Postcard Written in Pencil

Larry Rogers 2001

SEI - Carnegie Mellon University

**“Reasonable Expectation
of Privacy?”**





Why Attorneys Need Encryption

Unencrypted Email = “A Postcard”

“Emails that are encrypted as they’re routed from sender to receiver are like sealed envelopes, and less vulnerable to snooping—whether by bad actors or through government surveillance—than postcards.”

Google Official Blog June 2014

“Reasonable Expectation
of Privacy?”





Why Attorneys Need Encryption

Unencrypted Email = “A Postcard”

"Security experts say email is a lot more like a postcard than a letter inside an envelope, and almost anyone can read it while the note is in transit."

New York Times July 2014

**“Reasonable Expectation
of Privacy?”**





Why Attorneys Need Encryption



USA TODAY Search

NEWS SPORTS LIFE MONEY **TECH** TRAVEL OPINION 34° CROSSWORDS ELECTIONS 2016 INVESTIGATIONS VIDEO STOCKS MORE

I got hacked mid-air while writing an Apple-FBI story

Steven Petrow, Special for USA TODAY 11:03 p.m. EST February 24, 2016

f 18784



USA TODAY Search

NEWS SPORTS LIFE MONEY **TECH** TRAVEL OPINION 33° CROSSWORDS ELECTIONS 2016 INVESTIGATIONS VIDEO STOCKS MORE

Using public Wi-Fi is like posting on a Times Square billboard

Elizabeth Weise, USATODAY 7:30 p.m. EST February 25, 2016

f 688



BRIAN BARRETT SECURITY 03.30.16 7:00 AM

THE APPLE-FBI BATTLE IS OVER, BUT THE NEW CRYPTO WARS HAVE JUST BEGUN



JEWEL BAMAD/AFP/GETTY IMAGES

APPLE'S STANDOFF WITH the FBI unfolded over the course of several weeks, but ended in a matter of days. That's how long it took the FBI to find a way into a San Bernardino shooter's iPhone and successfully exploit it without Apple's help. So while that particular case appears to be over, the encryption war is not. If anything, it is more urgent than ever.

WIRED



Bottom Line – Ethical Duties

Encryption is increasingly required in areas like banking and health care, by the FTC, and by new state data protection laws.

As these requirements continue to increase, it will become more and more difficult for attorneys to justify avoidance of encryption.

It has now reached the point where all attorneys should generally understand encryption, have it available for use when appropriate, and make informed decisions about when encryption should be used and when it is acceptable to avoid it.

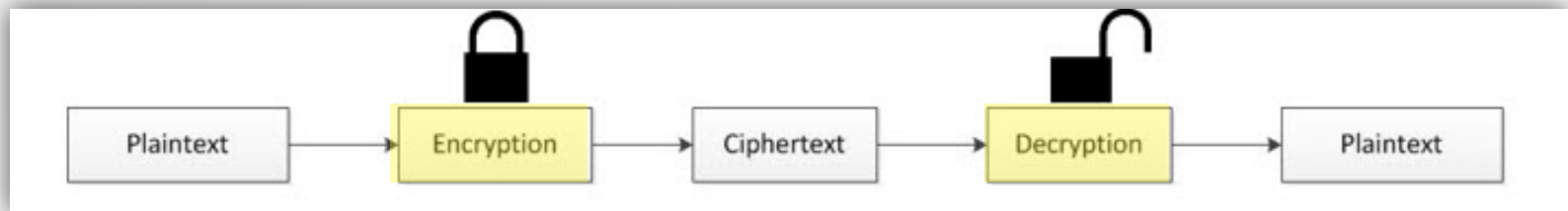


Encryption

= An electronic process to protect data

= Transforms readable data into unreadable data

Requires a key to make data readable again





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Encryption Key



**Example
AES-256 Key**

+30NbBBMy7+1BumpfmN8QPHrwQr36/vBvaFLgQM561Q=

Encryption Key



-----BEGIN PGP PRIVATE KEY BLOCK-----

Version: BCPG C# v1.6.1.0

lQOsBFiOnHgBCACwAhCyBG5X52lIbklKpeN21wEa3kR+eLvqRkdjD1oL1o4kmy3hh
Zz1l/DH7RcZX+efCP3RfEvi7Mu3a9KIEq0D0KxLQbhaWvVDzJyUCR8kRepFDKtj
pj1G/049DJGM4AYHqhmTPSnwRnPBtv5Ci2k9cWgZSnH/4NnkAGYudsftReoxOsUt
pfYTyMeoGBg2DkNG4yZ6uG86v5k641lgH9qABajjFfXoe2aMwbYPMWQdAhJlCZfH
U2q05GJt/2zThnky/D//savhrshpNxr1ddEa1QwgGSR/EDPkflv1b4yWH05DbRST
dR9B136kh+2YMDtqal75hhU/H9Q6WmhBAIIXABEBAAH/
AwMCoZz7ekYu0YZXUod

EoYlOwJmlu/ZLx2GSFtZO2RNYvblG+O3ZeKukG1xbSvzBS0Z5OjQOYnD+X5arvNM
DmpyilKpb5DuaN1osxPOkunqQ6cJIOWdROvUQkgLCD7Y7jfu4/coeK+HZuoIHSq
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MK

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8gXinRihRNjM2JsqWkBEoaulInO5+Y01g7KTo93N1F+pNrPNzRko8gAPWlOzJMd
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CmN8RLgShJzCGhu2E08hgU2kZZtY1g3Vygnttkn4Vtr6wReh5SvymIzirWAMB1G
LvaFZWAYAPLICtCZQU3pL8mjFTFAxskS1CcRLURokLM=
=9Ry2

-----END PGP PRIVATE KEY BLOCK-----

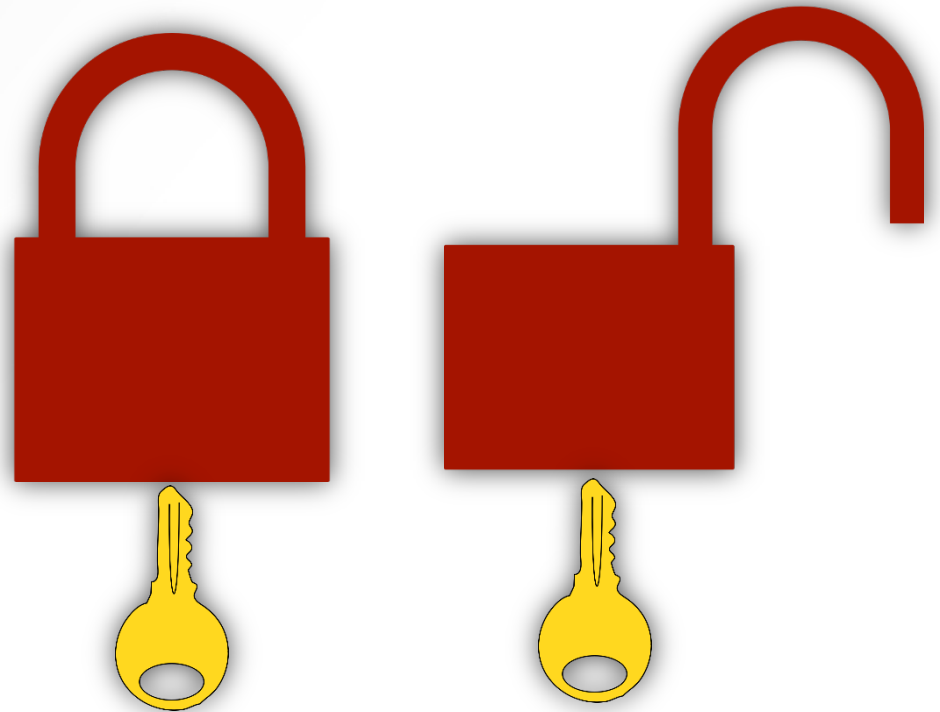


A Simplified Overview

Encryption Program

Algorithm

Key





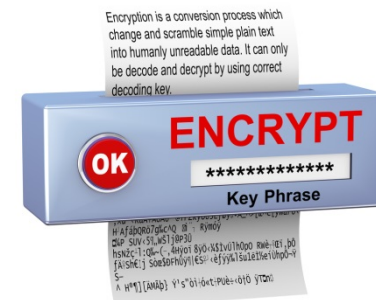
Protect

Data at Rest

- Servers, Desktops, Laptops, Tablets, Portable Media, Smartphones, etc.

Data in Motion

- Wired Networks, Wireless Networks, Internet, Cell Networks, etc.

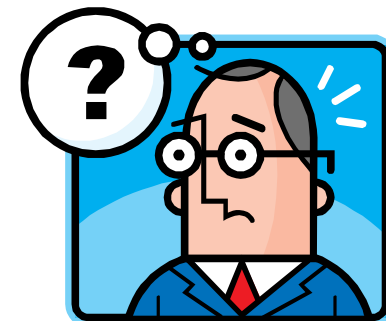




Is Encryption Too Difficult?

Attorneys will often need assistance in setting up encryption.

There are now many easy to use options for encryption (particularly after setup).





Protect Decryption Key!

Generally requires password/passphrase to access key.

**Use a strong password/phrase
- 14 characters or more.**

**Use a password manager
for multiple encryption
instances.**

New NIST recommendations.





Passphrases

Iluvmy2005BMW!

IlvmXy2005B3MW!

Stronger: Break dictionary words with random letters, numbers, or symbols.

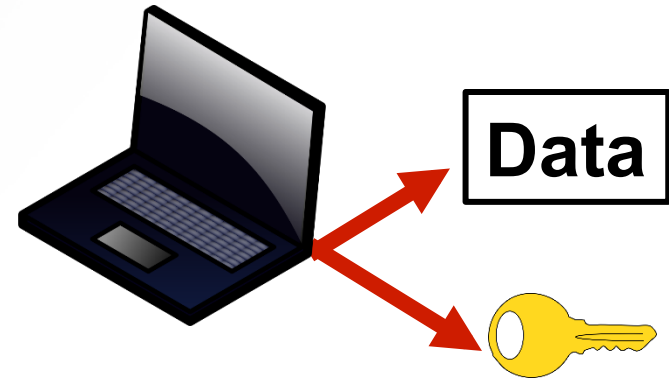


Safeguards

Backup Data

Backup Recovery Key

Enterprise Management



Smartphones and Tablets

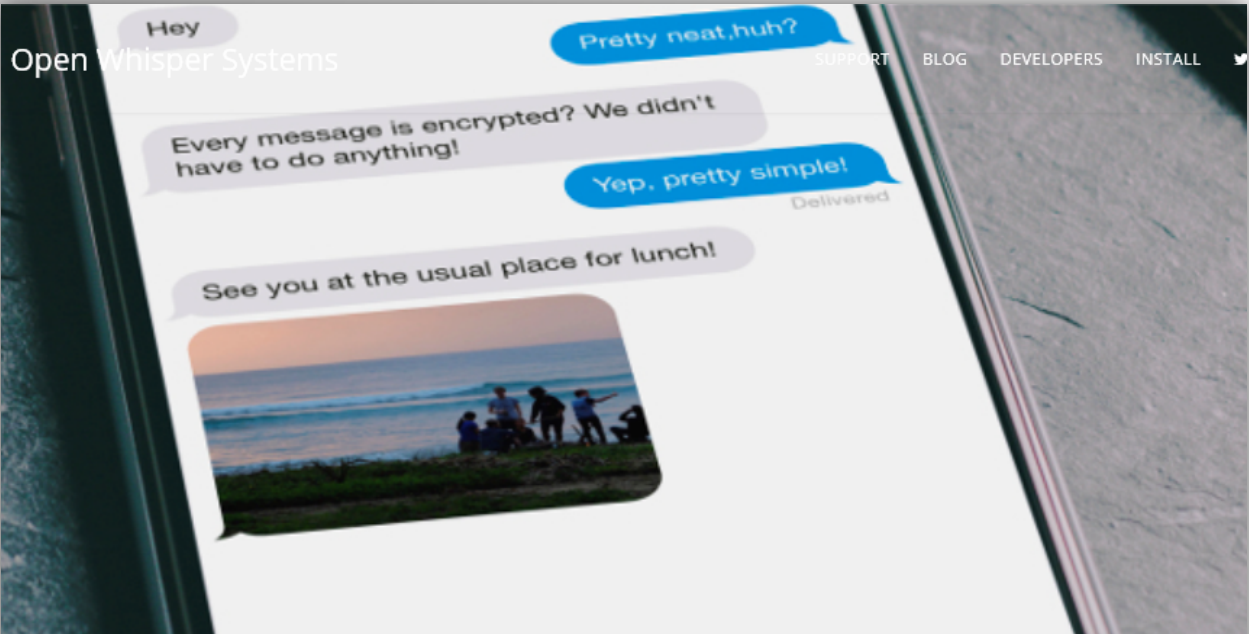
iPhones and iPads

Android

BlackBerry

- 1. Follow manufacturer's instructions.**
- 2. Use strong PIN or passcode.**
- 3. Enable encryption.**
- 4. Enable wipe after X failed log-on attempts.**
- 5. Set auto timeout.**





Open Whisper Systems

Private Messaging

Private Calling

PRIVACY THAT FITS IN YOUR POCKET



“ Use anything by Open Whisper Systems.
— **Edward Snowden**, Whistleblower and privacy advocate



“ Signal is the most scalable encryption tool we have. It is free and peer reviewed. I encourage people to use it everyday.
— **Laura Poitras**, Oscar winning filmmaker and journalist



“ I am regularly impressed with the thought and care put into both the security and the usability of this app. It's my first choice for an encrypted conversation.
— **Bruce Schneier**, internationally renowned security technologist



“ After reading the code, I literally discovered a line of drool running down my face. It's really nice.
— **Matt Green**, Cryptographer, Johns Hopkins University



WhatsApp


WHATSAPP WEB FEATURES DOWNLOAD SECURITY FAQ EN

Simple. Secure.
Reliable messaging.

With WhatsApp, you'll get fast, simple, secure messaging and calling for free*, available on phones all over the world.

*Data charges may apply. Contact your provider for details.

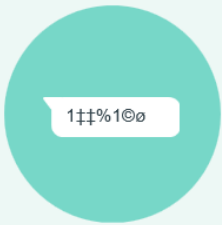
- Android
- iPhone
- Mac or Windows PC
- Windows Phone



WHATSAPP VOICE AND VIDEO CALLS

Speak Freely

With voice calls, you can talk to your friends and family for free*, even if they're in another country. And with free* video calls, you can have face-to-face conversations for when voice or text just isn't enough. WhatsApp voice and video calls use your phone's Internet connection, instead of your cell plan's voice minutes, so you don't have to worry about expensive calling charges.



END-TO-END ENCRYPTION

WhatsApp

Private Messaging

Private Calling



Silent Circle is a secure communications company offering mobile devices, software applications, and communication management services to the enterprise.

[WATCH VIDEO >](#)

DEVICES



Blackphone 2 

The award-winning Blackphone 2 with enhanced security features and now more affordable at \$599

[LEARN MORE >](#)

[BUY BLACKPHONE >](#)

SOFTWARE



The Silent Phone App provides encrypted communications on any Android™ or iOS™ device

[LEARN MORE >](#)

[BUY SILENT PHONE APP >](#)

ENTERPRISE SERVICES



Management, administration and compliance tools simplify the set up and maintenance of your devices and software

[LEARN MORE >](#)

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Silent Circle

Voice, Video, Conference Calling, File Transfer, Messaging



Laptops and Desktops

Full Disk Encryption

Limited Encryption

– Partition, Folder or File



Hardware Full Disk Encryption

- Automatically encrypts entire disk
- Decrypted access when an authorized user logs in
- Examples:
 - Seagate Momentus (SED)
 - Samsung SSD
 - Hitachi Self-Encrypting Drive



Operating System Encryption

Microsoft Windows

- Bitlocker
(business versions: Vista, 7, 8, 10)
- ~~[Encrypted File System (EFS)]~~
- Device Encryption
(8.1, 10 with specific tech specs)



BitLocker Drive Encryption

Apple OS X

- FileVault
- FileVault 2





Encryption Software

Full Disk & Limited

Examples:

- Check Point
- Dell Data Protection
- McAfee Endpoint
- Sophos
- Symantec (PGP and Endpoint)
- WinMagic
- ~~TrueCrypt (open source)~~



Encrypted Portable Media



CMS Secure Vault



SanDisk



**Kingston
DataTraveller**



Aegis Secure Key



BitLocker Drive Encryption

Bitlocker to Go



Seagate Go-Flex



Proceed With Caution!



iCloud



More Secure (Examples)



boxcryptor



Dell
Data Protection
Cloud Edition



Sookasa



Business
Enterprise



HP Voltage
security

CITRIX
ShareFile

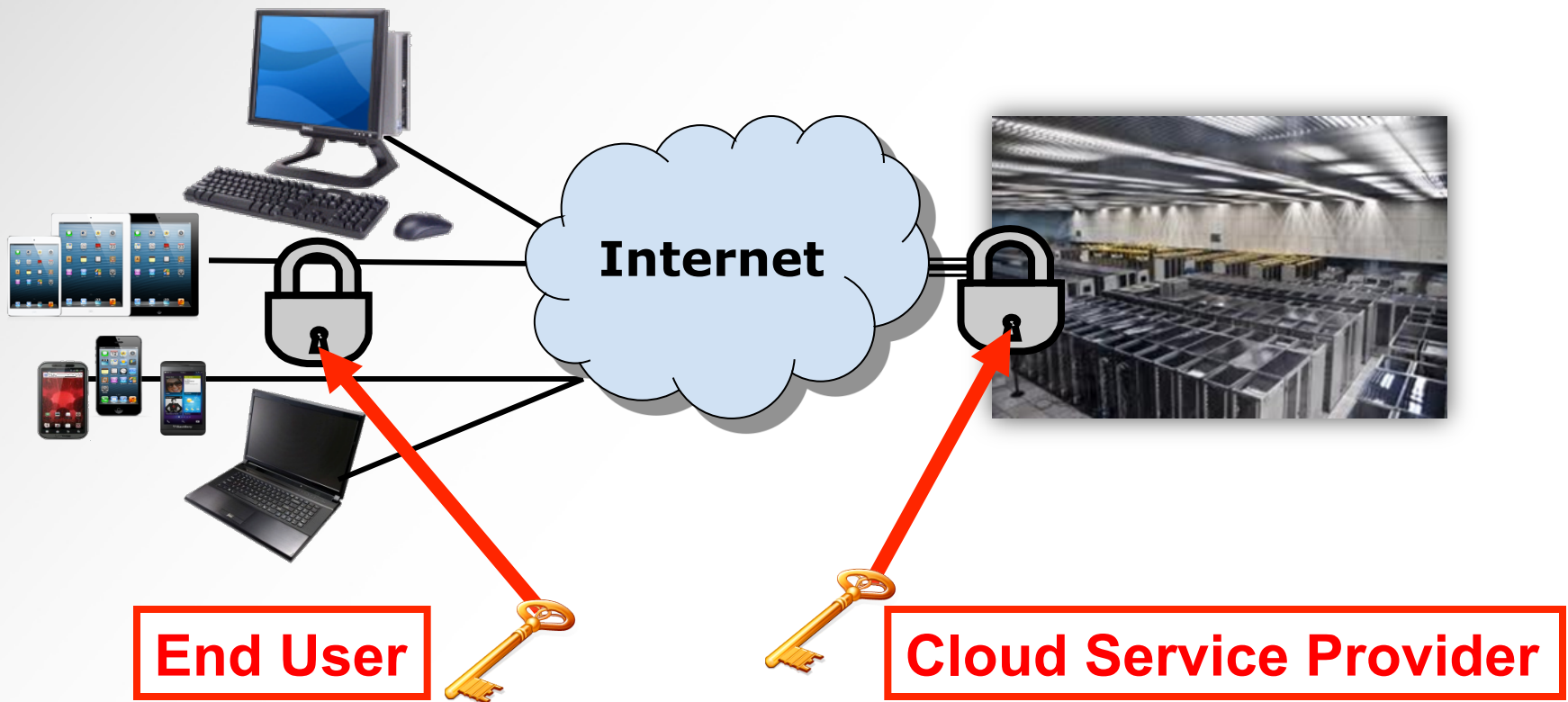
Accellion 

zixcorp.

BISCOM The Leader in Enterprise Document Delivery

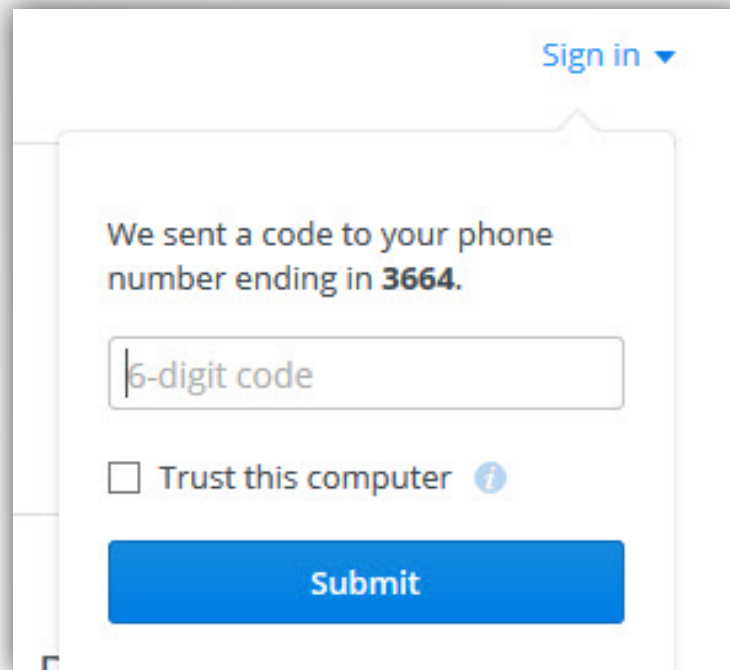
Cloud Encryption

Who has the key?





Dropbox - MFA



Sign in ▾

We sent a code to your phone number ending in **3664**.

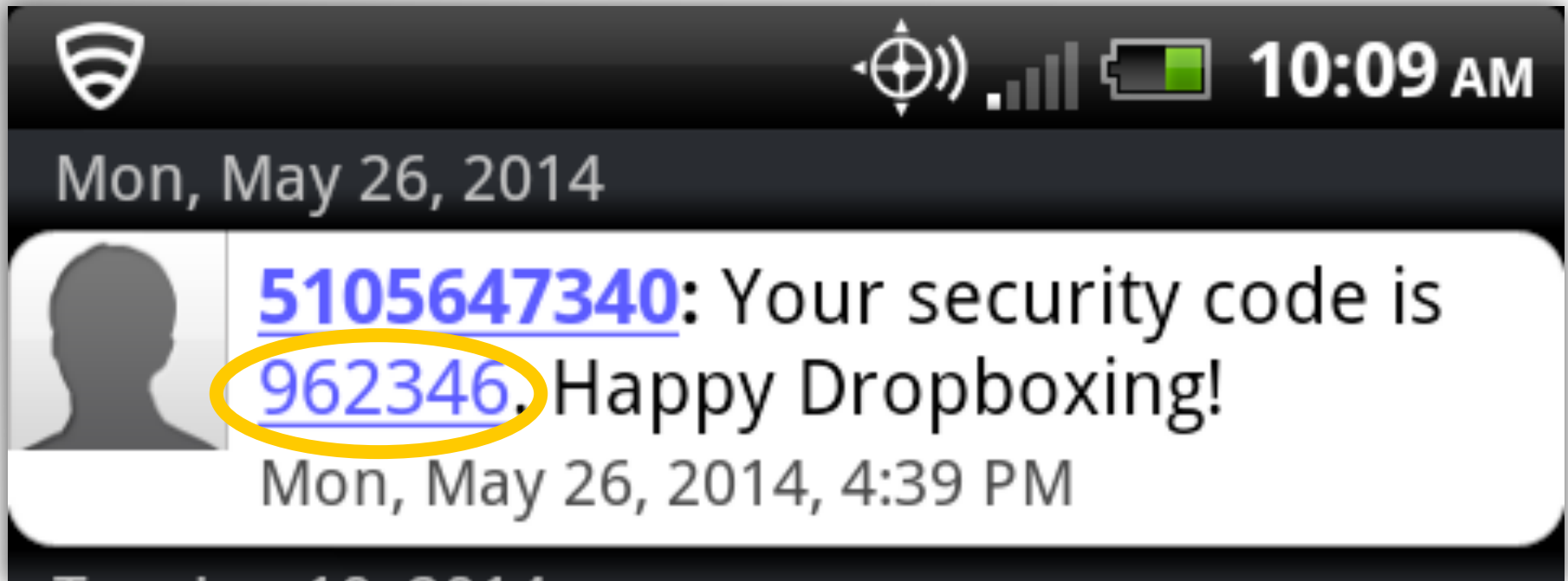
Trust this computer ⓘ

Submit

Dropbox Security Code
Codes sent by text to phones.



Dropbox - MFA

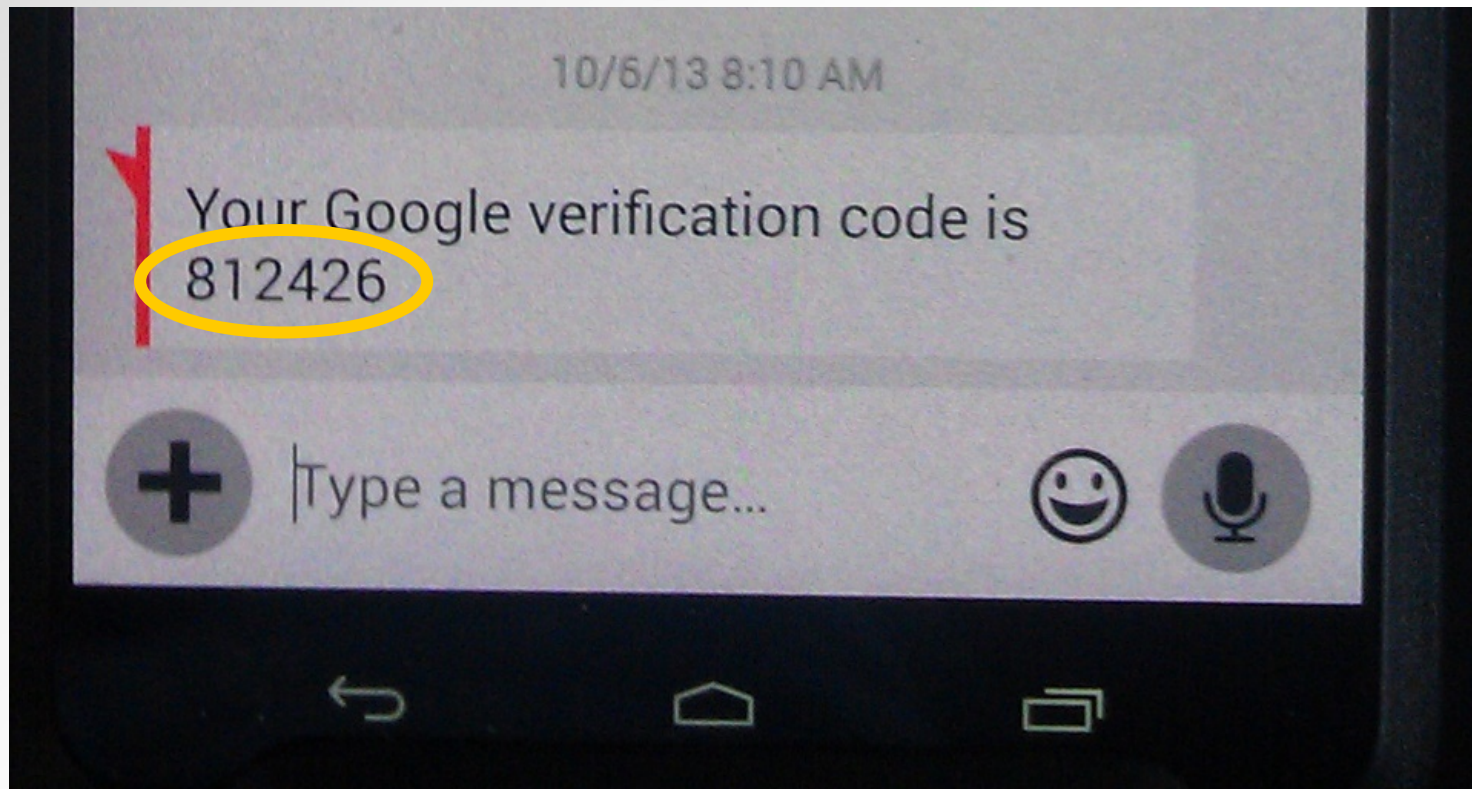


Dropbox Security Code

Codes sent by text to phones.

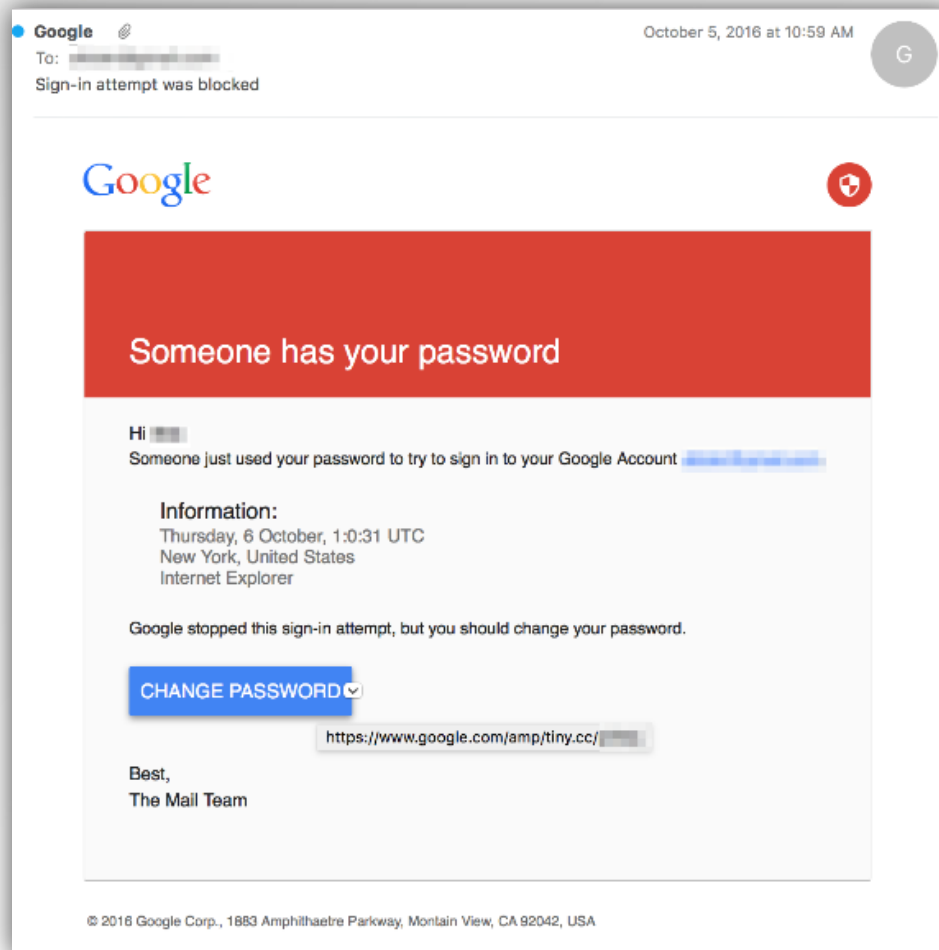


Google - MFA



Google Verification Code
Codes sent by text to phones.

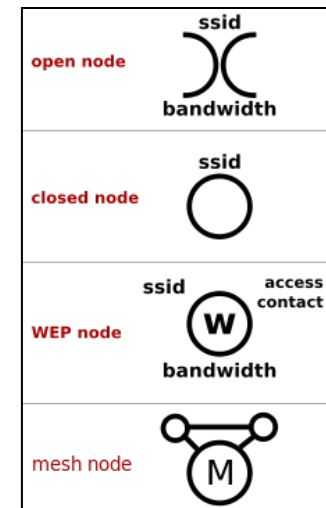
Podesta Phishing



Wireless Networks

- ~~[Wired Equivalent Privacy (WEP)]~~ – weak!
- ~~Wi-Fi Protected Access (WPA)~~ – cracked !
- Wi-Fi Protected Access, second generation (WPA2)

- Sniffer programs
- War driving
- Pineapple
- Evil twin



Source: Wikipedia.org

Wireless Networks



“Let’s Be Careful Out There!”



Risky if open (no need for username and password)

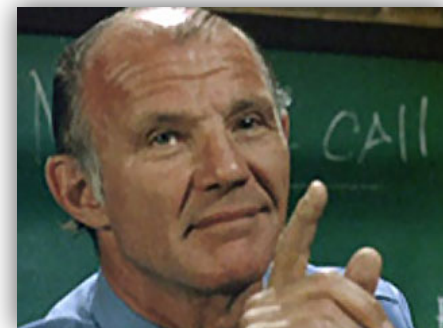
Be sure you have a secure connection (https: or VPN)

Be sure you have a properly configured firewall

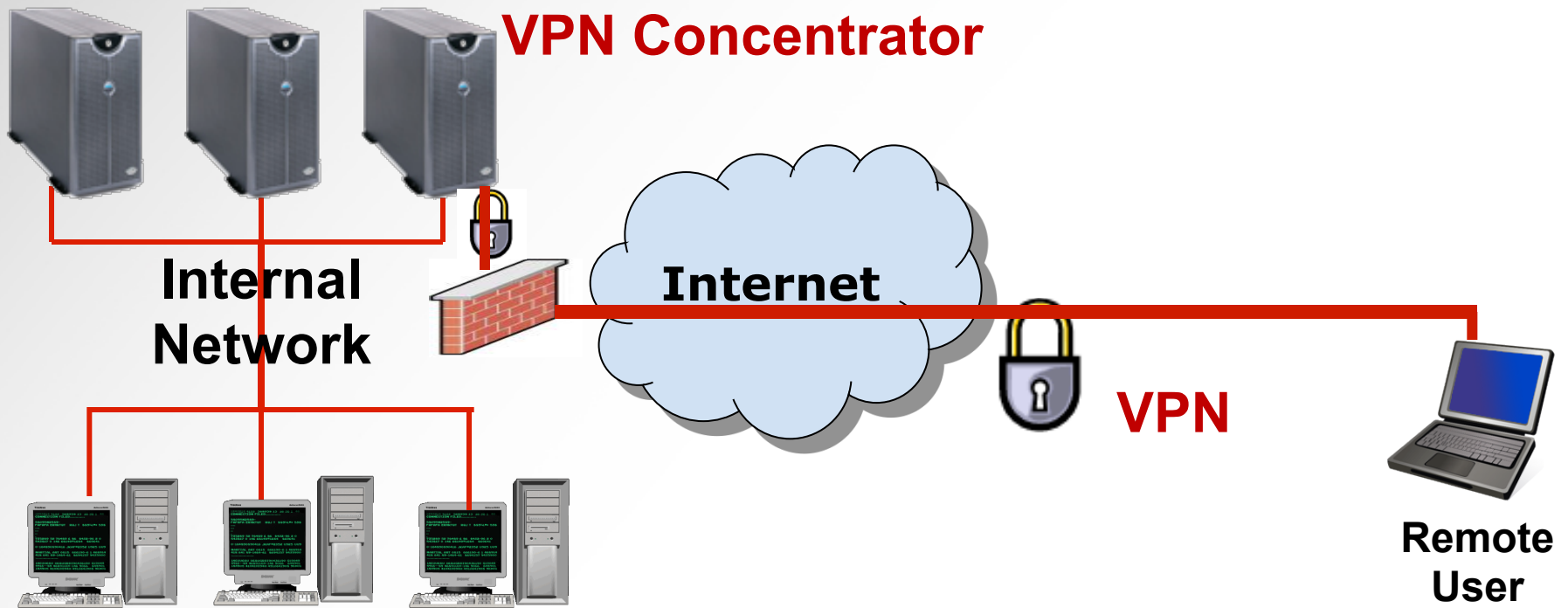
Warnings from security professionals / US-CERT

Sgt. Phillip Freemason Esterhouse

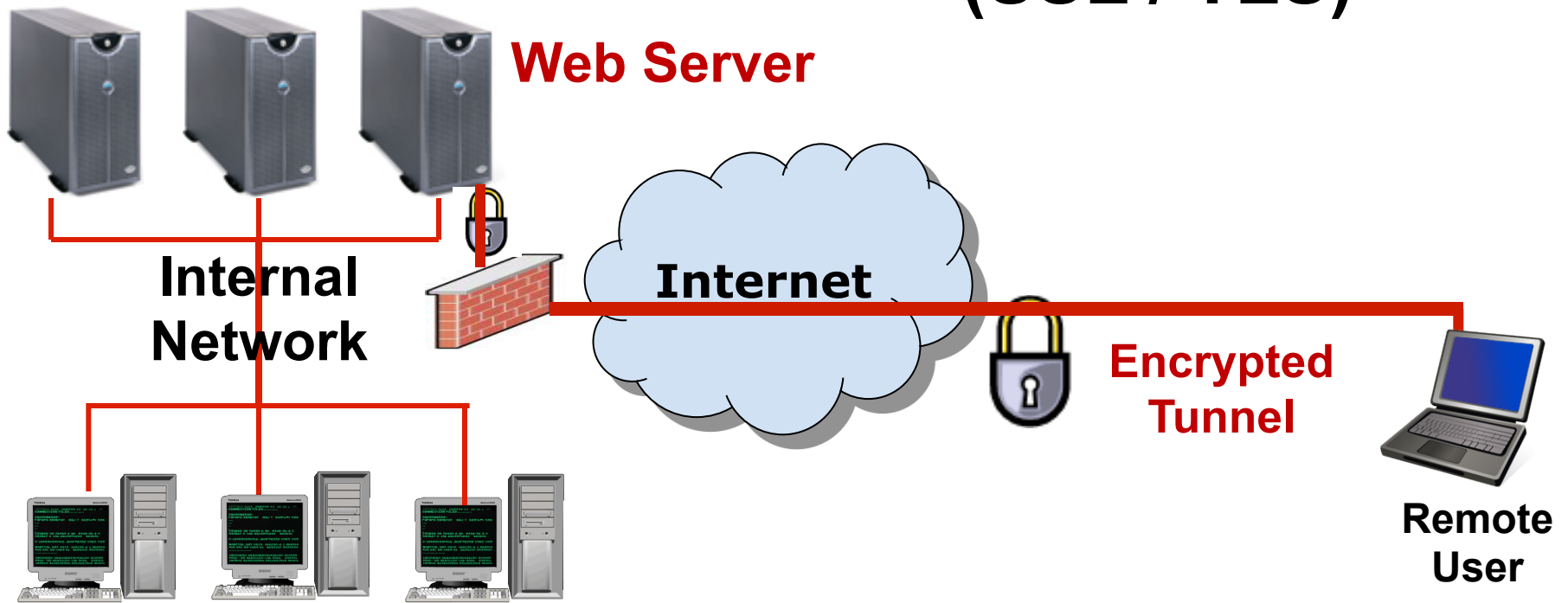
Hill Street Blues



Virtual Private Network



Secure Connection (https:) (SSL / TLS)

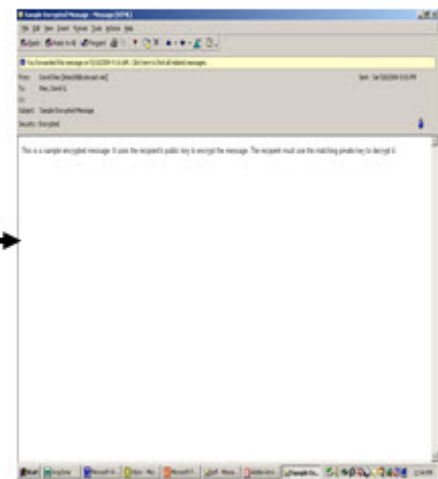


https:

Email Encryption

Sender

Recipient



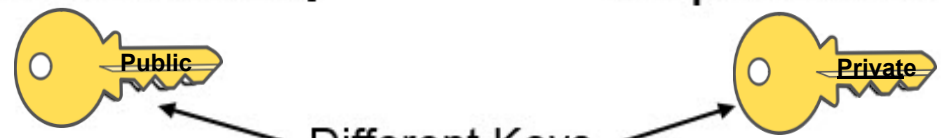
Readable Plaintext

Unreadable Ciphertext

Readable Plaintext

Recipient's Public Key

Recipient's Private Key



Different Keys

PKI



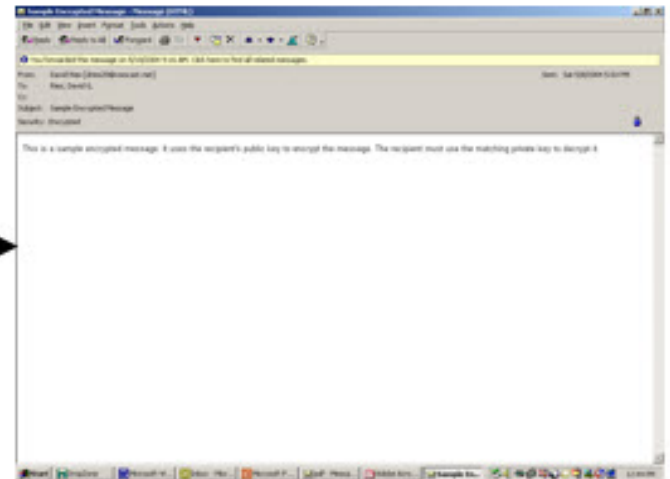
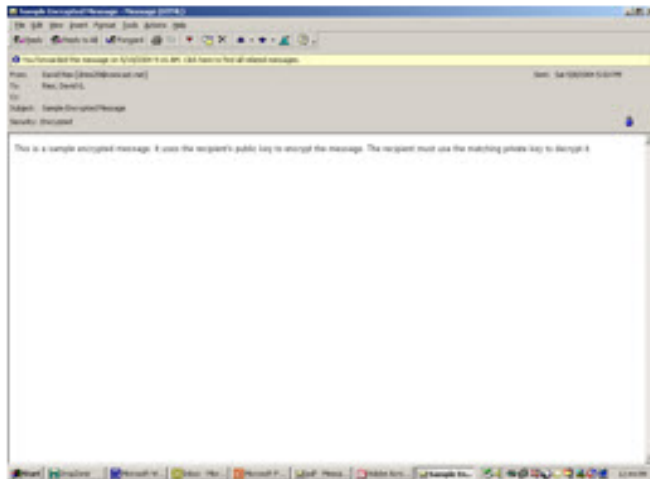
Sample Encrypted Message.EML

Received: from mail.thorpreed.com ([12.147.198.18]) by thorpreed.com with Microsoft
SMTPSVC(5.0.2195.6713); Sat, 8 May 2004 17:03:20 -0400
MIME-Version: 1.0
Content-Type: application/x-pkcs7-mime;

0E0 *tHt+
000 €0€00 1,0)0,0y00 00á00100000U0
00VeriSign, Inc.100000U0000VeriSign Trust Network1F0D00U000=www.verisign.com/repository/RPA
Incorp. By Ref.,LIAB.LTD(c)981H0F00U000?VeriSign Class 1 CA Individual Subscriber-Persona Not
Validated000"l|R0^s-000Y0:Á0
0 *tHt+
0000 00€9=Ÿ|0
0Ø`\$è0‡
TK0Ö00NÉú«L2IU/ñ"0ŸGÁ...€0t?*/€æ€0s‡0(δ\$úT°ú2\$*OrHECa|CEÁDdKVÓÖqG\$,6É|0δ°Á`FN0CWK0SÁ;ú
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áÑ×0øÖÉó)ÁÁ&&y"0æ0T0,p»U30o02#,ú¯á?ÚP0ai-Ó¥·x²Bgé»00s`EÁ=v0ÉTÓ°ç%0δ0N0
vwµ0*%:"yñ±ÉÉÚñC0:>ŸW*ó+h0V0@E·b,|06Áh%|Æ|_BFÜ00*Se=;r...QA0p\$×Z1»K|·U00=ÉáZ?‡ðh
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‡á o%)%Éòh&ÓWX0W¶|
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Ajik'áÇ0¿ ŸBEFAI
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=pD 0|—%\$0M~·¥ziáß^4Z0#viwGñ%...cCEÉ00yJÉ\$YIÓ0Ú0é"ŸP»CE0\0n0,0)000600úáµæ9·
WJ00DF",_Qd70sÉÑè01yno"xS0\$0>0j*ŠŸ"l+@É°0áBPÁf-0dmláúm°%4É0Ú"0...Ÿm000%L%::5úÉ¯,pQjKó;0
B†G¿"0NH00°8h0000u0D'ŸŸah0ÓÁ0rR½pIAX-dBá|TÁ:(-e|0YjtZ 9tYh|íá
Á-Ÿ-Ézc>NW0,CE57áÁ(µ0Ugr0*Ó["0B00Áx000f>|0080á‡'™Q"0G°èQæÉ%Ð02\$+X'y,y|DÐ\$Á,3°oyz?#PGN
U0a{‡0~m|4|0',Ú0d.p00q9-0P00y

WJ00DF",_Qd70sÉÑè01yno"xS0\$0>0j*ŠŸ"l+@É°0áBPÁf-0dmláúm°%4É0Ú"0...Ÿm000%L%::5úÉ¯,pQjKó;0
B†G¿"0NH00°8h0000u0D'ŸŸah0ÓÁ0rR½pIAX-dBá|TÁ:(-e|0YjtZ 9tYh|íá
Á-Ÿ-Ézc>NW0,CE57áÁ(µ0Ugr0*Ó["0B00Áx000f>|0080á‡'™Q"0G°èQæÉ%Ð02\$+X'y,y|DÐ\$Á,3°oyz?#PGN
U0a{‡0~m|4|0',Ú0d.p00q9-0P00y

Digitally Signed Email



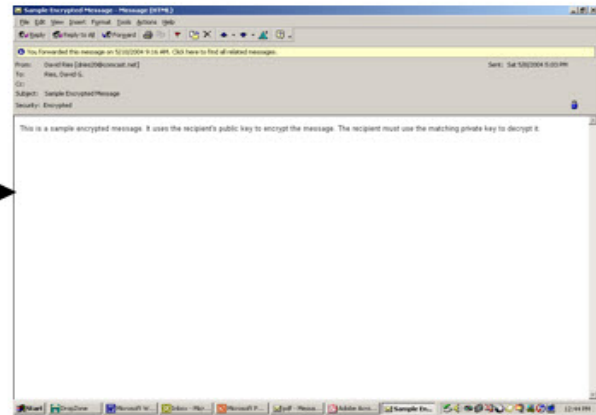
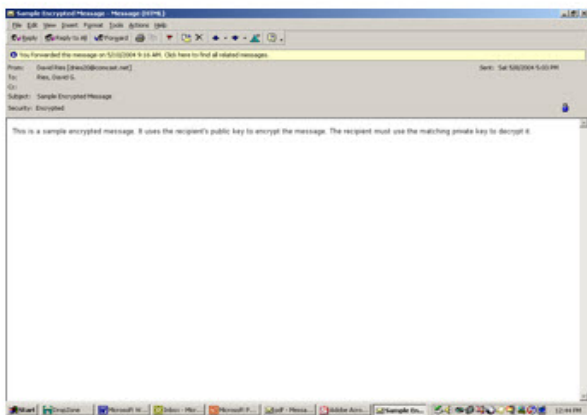
1. Sender Signs With Private Key
2. Hash

Recipient Verifies Authenticity + Integrity with Sender's Public Key



Different Keys

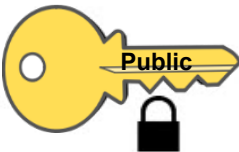
Signed and Encrypted Email



1. Sender Signs with Sender's Private Key



2. Sender Encrypts with Recipient's Public Key



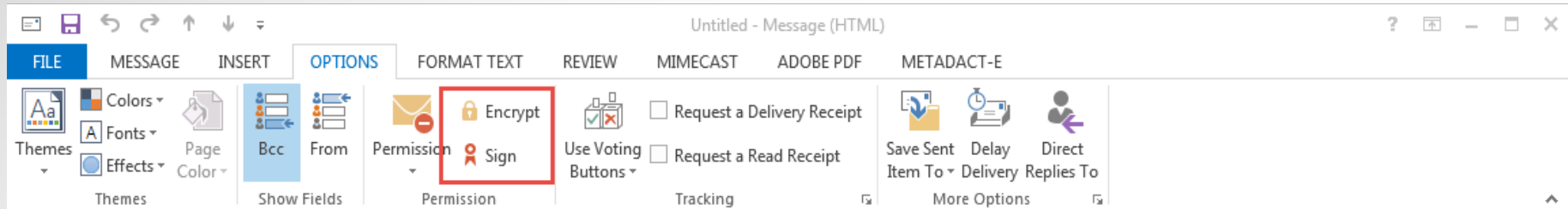
1. Recipient Verifies Authenticity + Integrity with Sender's Public Key



2. Decrypts With Recipient's Private Key



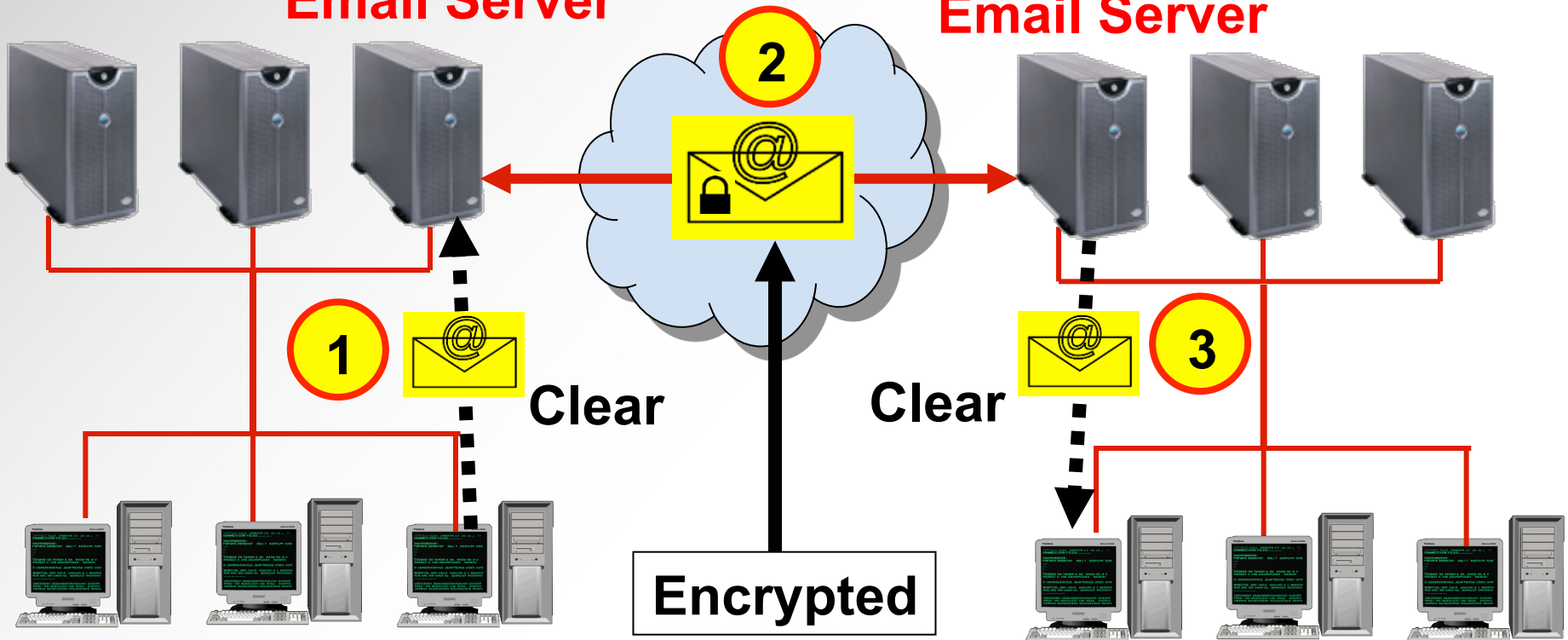
Outlook - After Certificate Installed



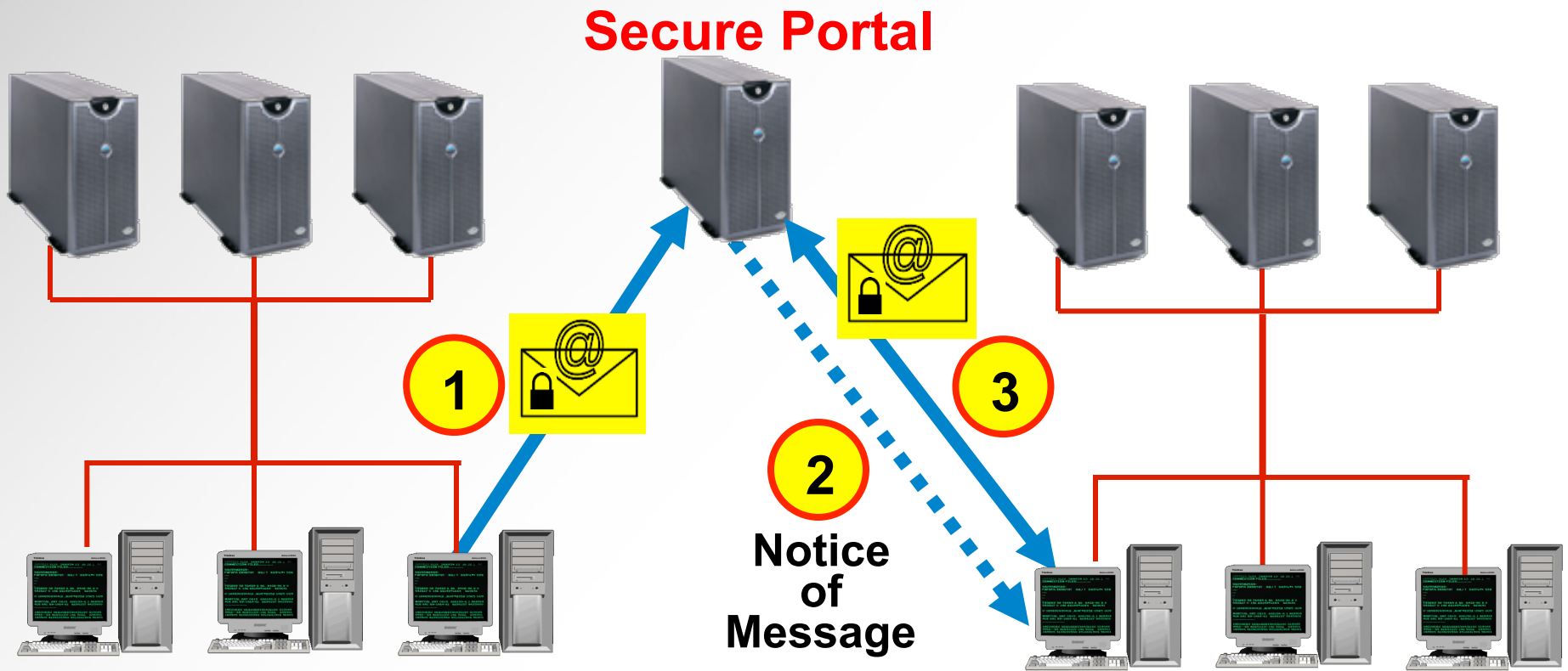
Gateway to Gateway (TLS)

Email Server

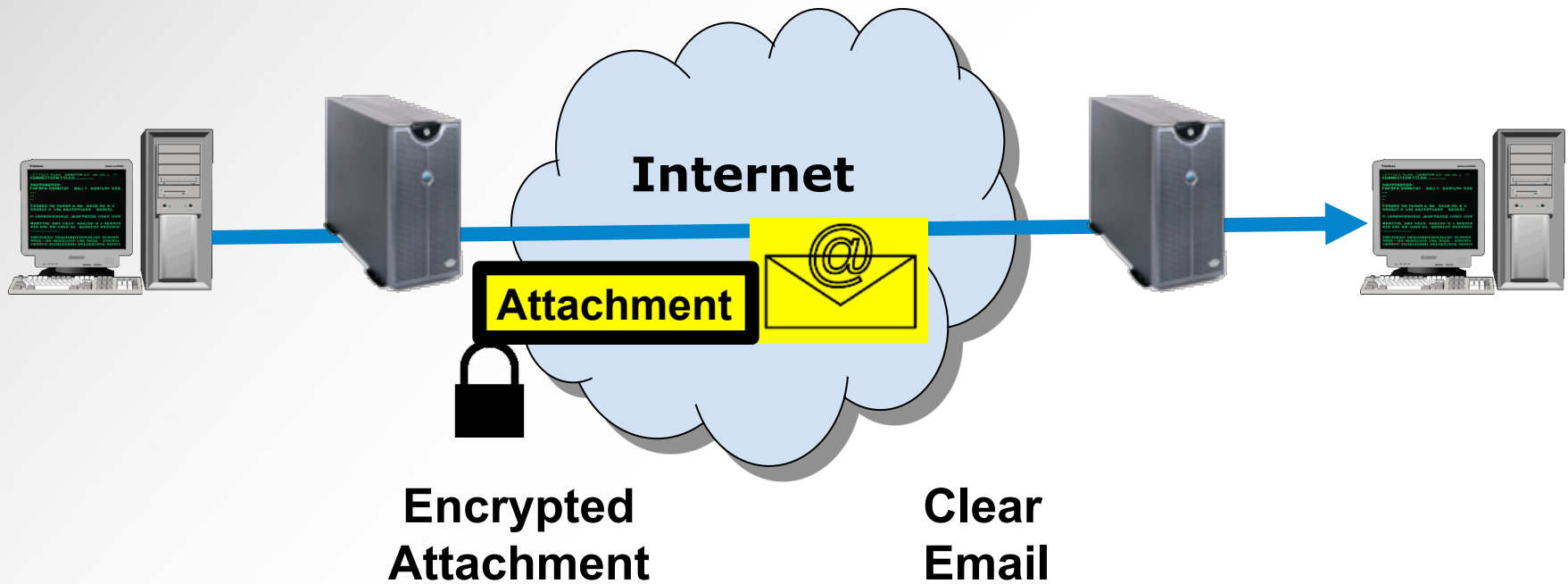
Email Server



Secure Portal (Pull)



Secure Attachment (Push)





Secure Email (Examples)

AppRiver

DataMotion

Google Apps (GAME)

HP SecureMail (Voltage)

Mimecast

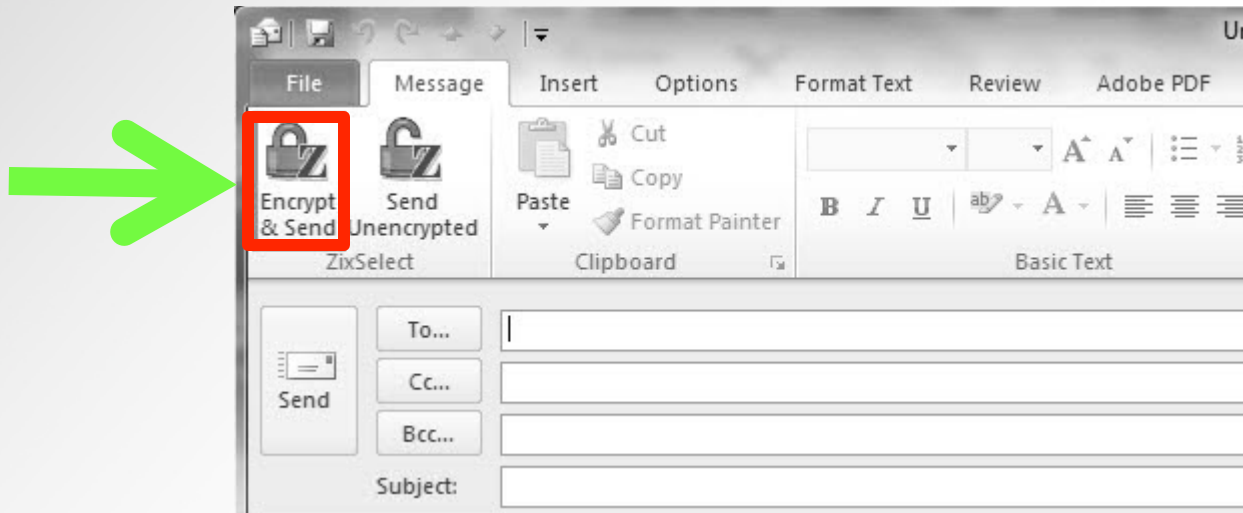
Office 365

Proton Mail

ZixCorp



ZixCorp



This message was secured by ZixCorp®.
To reach ZixCorp, go to: <http://www.zixcorp.com/info/zixmail>

.....
This message was secured by ZixCorp®.

Encryption of Documents

Microsoft Office



Encrypt Document

Increase the security of the document by adding encryption.

Adobe Acrobat

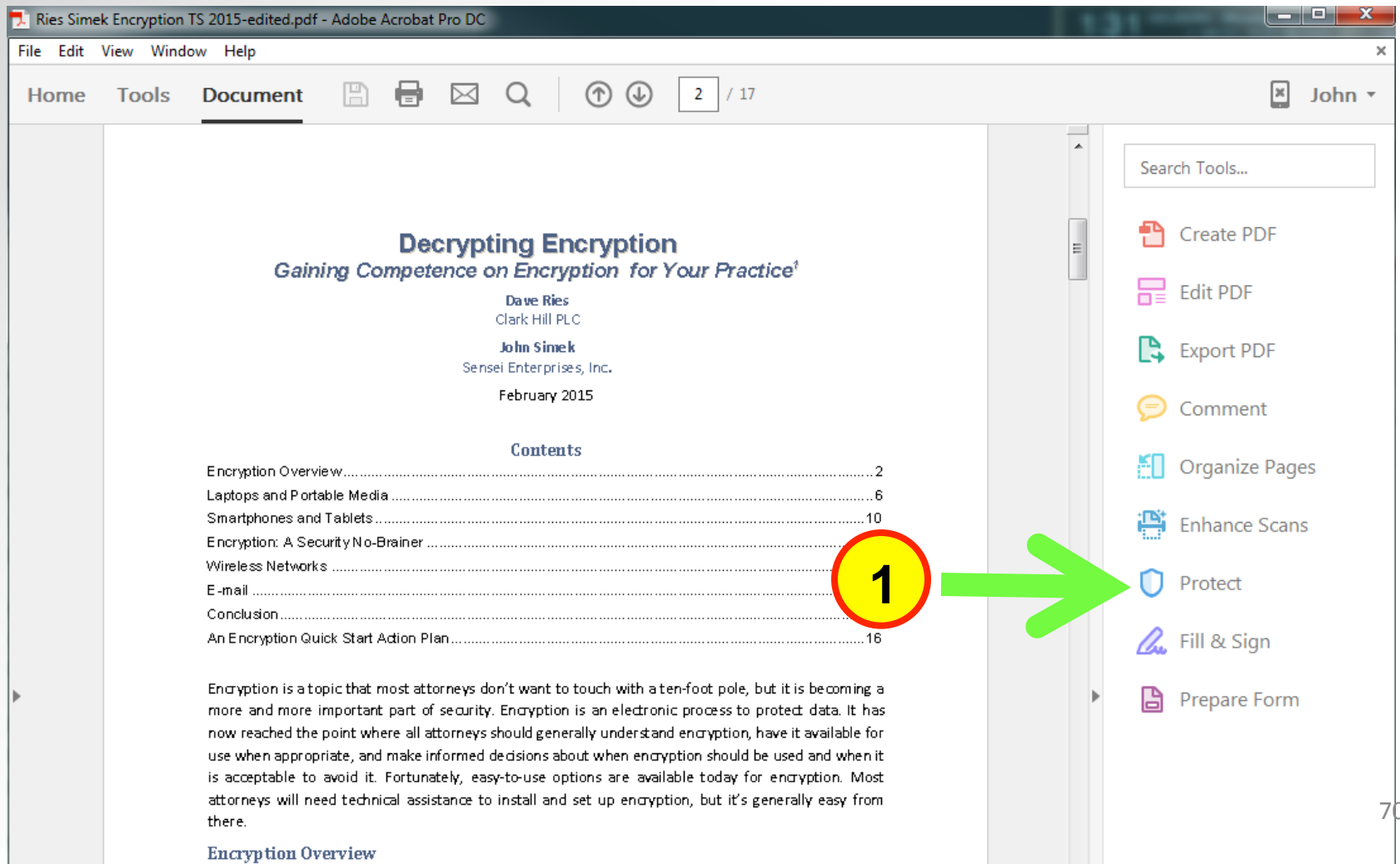


WinZip



Limited Protection!

Adobe Acrobat



The screenshot displays the Adobe Acrobat Pro DC interface. The main window shows a PDF document titled "Ries Simek Encryption TS 2015-edited.pdf". The document content includes a title "Decrypting Encryption" with the subtitle "Gaining Competence on Encryption for Your Practice", authors "Dave Ries" and "John Simek", and a table of contents. A red circle with the number "1" is placed over the "Protect" tool icon in the right-hand Tools panel, with a green arrow pointing to it.

File Edit View Window Help

Home Tools Document 2 / 17 John

Search Tools...

- Create PDF
- Edit PDF
- Export PDF
- Comment
- Organize Pages
- Enhance Scans
- Protect**
- Fill & Sign
- Prepare Form

Decrypting Encryption

Gaining Competence on Encryption for Your Practice¹

Dave Ries
Clark Hill PLC

John Simek
Sensei Enterprises, Inc.

February 2015

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| E-mail | |
| Conclusion..... | |
| An Encryption Quick Start Action Plan..... | 16 |

Encryption is a topic that most attorneys don't want to touch with a ten-foot pole, but it is becoming a more and more important part of security. Encryption is an electronic process to protect data. It has now reached the point where all attorneys should generally understand encryption, have it available for use when appropriate, and make informed decisions about when encryption should be used and when it is acceptable to avoid it. Fortunately, easy-to-use options are available today for encryption. Most attorneys will need technical assistance to install and set up encryption, but it's generally easy from there.

Encryption Overview

Adobe Acrobat

The screenshot shows the Adobe Acrobat Pro DC interface. The title bar reads "Ries Simek Encryption TS 2015-edited.pdf - Adobe Acrobat Pro DC". The menu bar includes "File", "Edit", "View", "Window", and "Help". The toolbar shows "Home", "Tools", and "Document" tabs, along with icons for save, print, email, search, and navigation. The "Protect" panel is active, showing "Restrict Editing", "Encrypt", and "More Options" buttons. A green arrow labeled "2" points to the "Encrypt" button. A second green arrow labeled "3" points to the "Encrypt with Password..." option in the dropdown menu. The document content includes a "Decrypt" section with the subtitle "Gaining Competence..." and a "Contents" table of contents.

| Contents | |
|---|----|
| Encryption Overview | 2 |
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| Wireless Networks | 12 |
| E-mail | 12 |
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Adobe Acrobat

Password Security - Settings

4 → Document Open
 Require a password to open the document

Document Open Password: ← **6**

5 → No password will be required to open this document.

Permissions

Restrict editing and printing of the document. A password will be required in order to change these permission settings.

Printing Allowed: High Resolution

Changes Allowed: Any except extracting pages

Enable copying of text, images, and other content

Enable text access for screen reader devices for the visually impaired

Change Permissions Password: Not Rated

Options

5 → Compatibility: Acrobat 7.0 and later Encryption Level: 128-bit AES

Encrypt all document contents

Encrypt all document contents except metadata (Acrobat 6 and later compatible)

Encrypt only file attachments (Acrobat 7 and later compatible)

All contents of the document will be encrypted and search engines will not be able to access the document's metadata.

7 →



Questions



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