We have you by the gadgets
Hitting your OS below the belt
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Our opinion is our own. It **DOES NOT IN ANY WAY** represent the view of our employers.
whoami - Toby
whoami - Mickey
Agenda

• Who we are
• What are Gadgets
  o A little bit of history
  o Why this matters
  o How to develop gadgets
  o Gadget security model
• What's wrong with them
• Attack Surface
• Problems found
• Demos
• What do you do about it?
Thank you:
Itzik Kotler, FX, Ian Amit, Jayson Street, SophSec, Wim Remes, Aviv Raff, Gal Diskin
#include <full_list.h>
What are Gadgets

• Little applications that run on your Windows desktop
• For instance:
A little bit of history

• Windows XP - Concept first introduced as "Active Desktop"
  o Allowed you to put updating content on your desktop.

• Vista - Sidebar introduced, first mention of "gadgets"
  o Gadgets ran in the sidebar "container" couldn't be placed randomly on the desktop

• Windows 7 - significant changes
  o Improvements in management:
  o Gadgets now can be anywhere on the desktop
  o All gadgets run in a single process
  o Addition of the enterprise security features
  o Also - New stuff to help in development
Why this still matters

• Gadget use is in decline
• But! This style of app development is taking off
  o Container-based apps for smartphones that allow you to do all your dev in HTML, XML, Javascript, etc…
Windows Vista Sidebar
Windows 7 Gadgets
Creating Gadgets

- Just a zip file
Creating Gadgets

- Usually just a web app
  - html
  - css
  - javascript
  - gadget specific manifest file

- Can also be WPF or Silverlight
Gadget Security Model

MSFT provides a detailed explanation (see references)

• Code signing is possible but not required
• Prompt for install similar to standard applications:
Gadget Security Model

• Most similar to HTA - HTML Applications
• Basically run in "Local Machine Zone" with some differences:
  o Can instantiate any installed ActiveX object
  o UAC
    ▪ Runs as standard user even if the user is part of the admin group
    ▪ Can't raise UAC prompts BUT! apps launched by a gadget can
• Parental Controls apply
Gadget Security Model

• Some enterprise controls available
  o Turn off Windows Sidebar.
  o This policy allows administrators to completely disable the Windows Sidebar.
  o Disable unpacking and installation of gadgets that are not digitally signed.
    ▪ Only affects gadgets that are downloaded and installed by double-clicking on the gadget package. All previously installed gadgets, as well as those installed manually, will still function.
  o Turn off user-installed gadgets.
  o Override the "Get more gadgets online" link.
Attack Surface

- Attacking with gadgets
- Attacking gadgets
Attacking with gadgets

• Delivery:
  o Install this gadget? Sure!

• Sidebar gadgets aren't perceived as being dangerous software or even software at all
Attacking *with* gadgets

- So I installed your gadget, so what?
- I can't do much, just this:
  - Execute code
    - Game over
- Also:
  - Open URLs
  - Create files with arbitrary content
  - Read files
  - Make your computer speak
Attacking **with** gadgets

- Demo time
Attacking Gadgets

- Gadgets are code. Therefore gadgets are vulnerable

- Step 1 - Search for gadgets
- Step 2 - Analyze
- Step 3 - ...
- Step 4 - Profit (and share the findings)
Attacking Gadgets

• LOTS of malware claiming to be gadgets
• Minimal use of SSL
• Lots of ad server connections (no ads displayed)
  o And domain parking sites
• A couple primary producers, shared code between gadgets
  o If you find something in one, it's probably in the others
Attacking Gadgets

• Poor security practices, easy targets
  o Multiple ways to inject code
  o Default Permissions is "full"

• Traffic sniffing

• Easy to spot
  o (x64)
Attacking Gadgets – Traffic Sniffing

• SSL is haaaaaard
• All downloaded gadgets pulled most of their content w/o SSL
• Including updated gadget code in some cases
Attacking Gadgets - MitM

• There are not many gadgets out there, capturing their requests is simple. (AirPwn)
• Using a custom simple proxy to automate injection.
• Demo
Attacking Gadgets – Code Injection

• Any web scripting language
  o Or powershell
• Demo
What to do about it?

- Code is code
  - Remember not to take candy from strangers
- Write applications properly
- Microsoft’s solution
Microsoft Solution

• Security Advisory 2719662
  • “Microsoft is aware of vulnerabilities in insecure Gadgets affecting the Windows Sidebar on supported versions of Windows Vista and Windows 7”

• Fix It Solution
  • Engineering solution that removes the attack vector.

• Moving away from the Windows Sidebar and towards the Windows Store.
  • Deprecated the Windows Gadget Gallery
  • Updated developer documentation
Prior Work

Standing on the shoulders of giants

• CVEs
  o CVE 2007-3032
  o CVE 2007-3033
  o CVE 2007-3891

• Presentations
  o The Inherent Insecurity of Widgets and Gadgets - Aviv Raff, Ian Amit
  o Jinx - Malware 2.0 - Itzik Kotler, Jonathan Rom
References

• Gadget Security Model

• Writing Secure Gadgets
Please complete the Speaker Feedback Surveys.