



**We have you by the gadgets**

Hitting your OS below the belt

## Legal Notice

Our opinion is our own. It **DOES NOT IN ANY WAY** represent the view of our employers.

whoami - Toby

whoami - Mickey

# Agenda

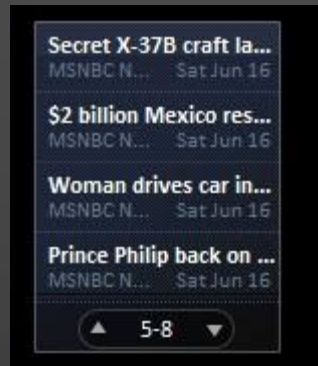
- Who we are
- What are Gadgets
  - A little bit of history
  - Why this matters
  - How to develop gadgets
  - Gadget security model
- What's wrong with them
- Attack Surface
- Problems found
- Demos
- What do you do about it?

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"
  - Allowed you to put updating content on your desktop.
- Vista - Sidebar introduced, first mention of "gadgets"
  - Gadgets ran in the sidebar "container" couldn't be placed randomly on the desktop
- Windows 7 - significant changes
  - Improvements in management:
  - Gadgets now can be anywhere on the desktop
  - All gadgets run in a single process
  - Addition of the enterprise security features
  - 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
  - Container-based apps for smartphones that allow you to do all your dev in HTML, XML, Javascript, etc...

# Windows Vista Sidebar



1

2

1 Gadgets

2 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

Name	Type
 css	File folder
 Images	File folder
 js	File folder
 about.html	HTML Document
 flyout.html	HTML Document
 gadget.html	HTML Document
 gadget.xml	XML Document
 nyanCat.gif	GIF image
 NyanCat.mp3	MP3 Format Sound
 settings.html	HTML Document

# 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:
  - Can instantiate any installed ActiveX object
  - 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
  - Turn off Windows Sidebar.
  - This policy allows administrators to completely disable the Windows Sidebar.
  - 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.
  - Turn off user-installed gadgets.
  - Override the "Get more gadgets online" link.



# Attack Surface

- Attacking with gadgets
- Attacking gadgets

# Attacking with gadgets

- Delivery:



- 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)
  - And domain parking sites
- A couple primary producers, shared code between gadgets
  - If you find something in one, it's probably in the others

# Attacking Gadgets

- Poor security practices, easy targets
  - Multiple ways to inject code
  - Default Permissions is "full"
- Traffic sniffing
- Easy to spot
  - (x64)



# Attacking Gadgets – Traffic Sniffing

- SSL is haaaaard
- 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
  - 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
  - CVE 2007-3032
  - CVE 2007-3033
  - CVE 2007-3891
- Presentations
  - The Inherent Insecurity of Widgets and Gadgets - Aviv Raff, Ian Amit
  - Jinx - Malware 2.0 - Itzik Kotler, Jonathan Rom

# References

- Gadget Security Model
  - <http://msdn.microsoft.com/en-us/library/ff486358.aspx>
- Writing Secure Gadgets
  - <http://msdn.microsoft.com/en-us/library/bb498012.aspx>

Please complete the  
Speaker Feedback Surveys.