The Journey, So Far: Trends, Graphs and Statistics

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Agenda

- The ‘First’ IBM PC Virus
- Statistics, 80’s
- Statistics, 90’s
- Statistics, 00’s
- Malware Myth-busting
- Putting it all Together
- Conclusions
- Questions
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Brain

- The very first malware written for the IBM PC [and clones] used ‘stealth’ to hide its presence[1]:

- Here is a short extract from the description of Brain from F-Secure explaining how the stealth function it used works:

  “The Brain virus tries to hide from detection by hooking into INT 13. When an attempt is made to read an infected boot sector, Brain will just show you the original boot sector instead. This means that if you look at the boot sector using DEBUG or any similar program, everything will look normal, if the virus is active in memory. This means the virus is the first "stealth" virus as well.”

Virus Growth - Running Total
(80s by year: actual)
Virus Growth (Actual)
(80s by year: actual)
Quote:

“Viruses are an 'Urban Myth', just like the alligators said to inhabit the sewers of New York.”

Peter Norton 1988
Virus Growth - Running Total
(90s by year: actual and predicted)
Virus Growth (Actual)  
(90s by year: actual and predicted)
Virus Payload Animations

DISK DESTROYER: A SOUVENIR OF MALTA

I have just DESTROYED the FAT on your Disk !!
However, I have a copy in RAM, and I'm giving you a last chance
to restore your precious data.
WARNING: IF YOU RESET NOW, ALL YOUR DATA WILL BE LOST - FOREVER !!
Your Data depends on a game of JACKPOT

CASINO DE MALTE JACKPOT

CREDITs: 3

$!!! = Your Disk
??!! = My Phone No.

ANY KEY TO PLAY
Virus Growth - Running Total
(00s by year: actual and predicted)
Virus Growth (Actual)
(00s by year: actual and predicted)
Other Virus Screenshots
Microsoft Customer

this is the latest version of security update, the "February 2003, Cumulative Patch" update which eliminates all known security vulnerabilities affecting MS Internet Explorer, MS Outlook and MS Outlook Express as well as three newly discovered vulnerabilities. Install now to maintain the security of your computer from these vulnerabilities, the most serious of which could allow an malicious user to run code on your system. This update includes the functionality of all previously released patches.

<table>
<thead>
<tr>
<th>System requirements</th>
<th>Windows 95/98/Me/2000/NT/XP</th>
</tr>
</thead>
<tbody>
<tr>
<td>This update applies to</td>
<td>MS Internet Explorer, version 4.01 and later</td>
</tr>
<tr>
<td></td>
<td>MS Outlook, version 8.00 and later</td>
</tr>
<tr>
<td></td>
<td>MS Outlook Express, version 4.01 and later</td>
</tr>
<tr>
<td>Recommendation</td>
<td>Customers should install the patch at the earliest opportunity.</td>
</tr>
<tr>
<td>How to install</td>
<td>Run attached file. Choose Yes on displayed dialog box.</td>
</tr>
<tr>
<td>How to use</td>
<td>You don't need to do anything after installing this item.</td>
</tr>
</tbody>
</table>

Microsoft Product Support Services and Knowledge Base articles can be found on the Microsoft Technical Support web site. For security-related information about Microsoft products, please visit the Microsoft Security Adviser web site, or Contact Us.
Malware Myth-busting

- Concept [aka ‘Prank’] was the first macro virus
- Malware extortion started with GPCode
- Apple malware appeared after IBM PC DOS malware
- Mainframes can’t be infected
- *NIX worms appeared after Wintel worms
Concept [aka ‘Prank’] was the first macro virus

Word DMV Code

The following is the macro code used to create the Word DMV. If you received this file as a Word formatted document, you can also use the Macro command in Word’s Tools menu to examine the source.

REM This demonstrates an application-specific document virus
REM generated by an automatic macro in Microsoft Word for
REM Windows 6.0. Code is executed each time a document is closed.
REM This macro is only a demonstration, and does not perform any
REM destructive actions.

REM The purpose of this code is to reveal a significant security
REM risk in software that supports macro languages with
REM auto-loading capabilities. Current virus detection tools are
REM not presently capable of detecting this type of virus, and
REM most users are blissfully unaware that threats can come from
REM documents.

REM Paste this code in the macro window of a Word document
REM template. Save the macro as AutoClose. Enter some random
REM text in the main word processing window and save the document.
REM Now copy the file, naming the new file VIRUS.DOC. Open
REM VIRUS.DOC in Word. It will appear as a normal document, but
REM when you close the document, the virus will execute.

REM Message boxes display progress as the code is executed.
REM Code is commented.

REM Joel McNamara, December 17, 1994
REM -----------------------------

Sub MAIN
   title$ = "Document Macro Virus"
   MsgBox "Counting global macros.", title$, 16
REM check how many macros are globally available.
Malware extortion started with GPCode
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Apple malware appeared after IBM PC DOS malware

Elk Cloner:
The program with a personality

It will get on all your disks
It will infiltrate your chips
Yes it's Cloner!

It will stick to you like glue
It will modify ram too
Send in the Cloner!
Mainframes can’t be infected
*NIX worms appeared after Wintel worms
Putting it all Together – The Big Picture
Virus Growth
- Running Total
(by year: actual and predicted)
Virus Growth (Actual)
(by year: actual and predicted)

Year


Number of new Viruses

0 20000 40000 60000 80000 100000 120000 140000

Known
Predicted

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Viruses in the wild 1995-2005

Source: Virus Bulletin
The Changing Face of the Threat

- It was easy when everything was a virus...
  - File infectors
  - Boot infectors
  - Multipartile (File/Boot)
  - Macro
  - Script

- Now viruses are just one category of Malware...
  - Viruses
  - Worms
  - Trojans
  - Backdoors
  - Bots, Zombies
  - Adware
  - Spyware
  - Blended Threats
  - Applications, Security/Hacking Tools
  - Key loggers
  - Rootkits
Conclusions

- 1986 until early nineties they were the almost exclusive domain of the DOS COM, EXE file infectors and boot viruses. They became more complex and stealthy as the years passed. We also saw viruses that would attack or disable anti-virus defences.

- 1995-2000 Macro viruses were King, slowly spreading at first, as people exchanged infected .doc/.xls files via floppy, CD or e-mail. Later examples would be able to propagate via e-mail by reading the Outlook or Windows address book, but only after a recipient had opened the infected attachment.

- 2000-2003 saw Script viruses steal the crown from Macro viruses, and we also started to see 32 bit PE files becoming dominant; multi-component malware started to appear. A large proportion of malware started to use vulnerabilities in both the OS and applications.

- 2004 to the start of 2005, the mass-mailing worms were the Kings; resulting in many overloaded mail servers and worn-out anti-virus researchers and corporate security staff.

- 2005-2007 and the new Kings, were BOTs, Trojans and Spyware. Phishing grew from almost nowhere to one of the biggest security risks, aside from malware.
Conclusions –The Future

- So, what does the future hold?
- I believe that we are at a tipping point, and as such there are two immediate ways things can go:
  - The security industry can use the current effective stalemate and lack of serious new malware development, to take the upper hand and take control of the problem, rather than being controlled by it, as they have been almost since the start of the malware problem. This will mean that new pro-active techniques need to be found, created, or dusted-off and updated. It will also require more consolidation and merging of security technologies than we’ve seen to date.

The malware authors take the fight back to the security industry by creating new malware or related security threats that use new techniques that side-step or defeat one of more layers of security defences. This scenario is unfortunately more likely to occur now than at any time in the past, due to the financial backing of organised criminal gangs who have staked more than money on this new digital crime-wave; their reputations are also on the line.

The problem is, it is not clear just how much time there is for the security industry to act; and act they must, or the bad guys and girls will, which will lock us in to another struggle which may well last several years or as long as a decade.
Questions?
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