

Modeling Worm Spread

- Often well described as *infectious epidemics*
 - Simplest model: homogeneous random contacts

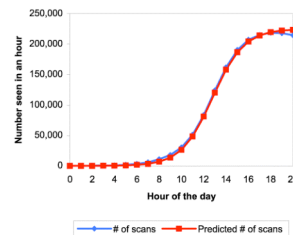
- Classic SI model

- N: population size
- S(t): susceptible hosts at time t
- I(t): infected hosts at time t
- β : contact rate
- $i(t)$: $I(t)/N$, $s(t)$: $S(t)/N$

$$\frac{dI}{dt} = \beta \frac{IS}{N}$$

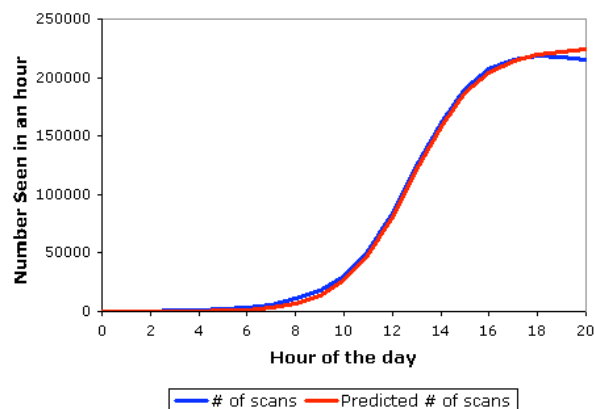
$$\frac{dS}{dt} = -\beta \frac{IS}{N} \Rightarrow \frac{di}{dt} = \beta i(1-i)$$

$$i(t) = \frac{e^{\beta(t-T)}}{1 + e^{\beta(t-T)}}$$



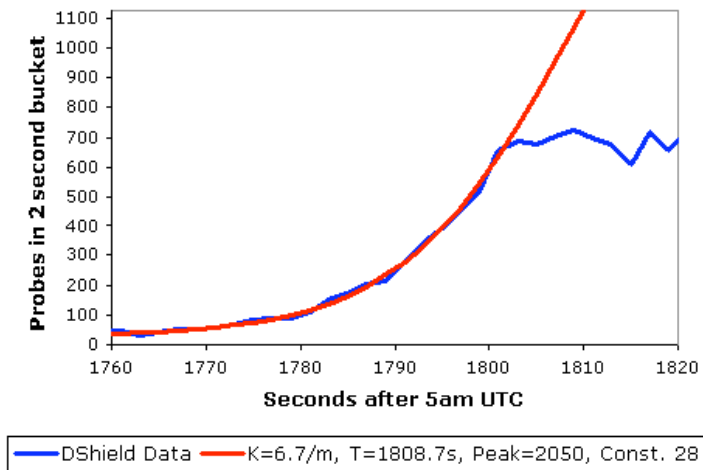
The Usual Logistic Growth

Probes Recorded During Code Red's Reoutbreak

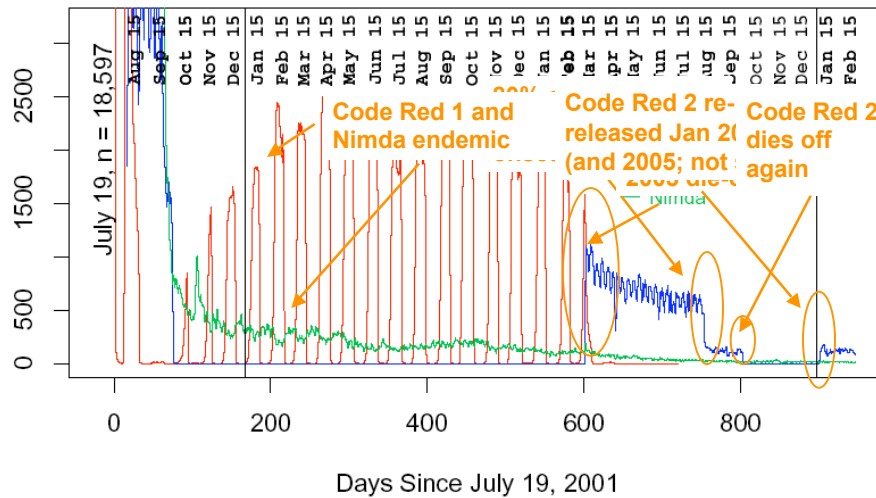


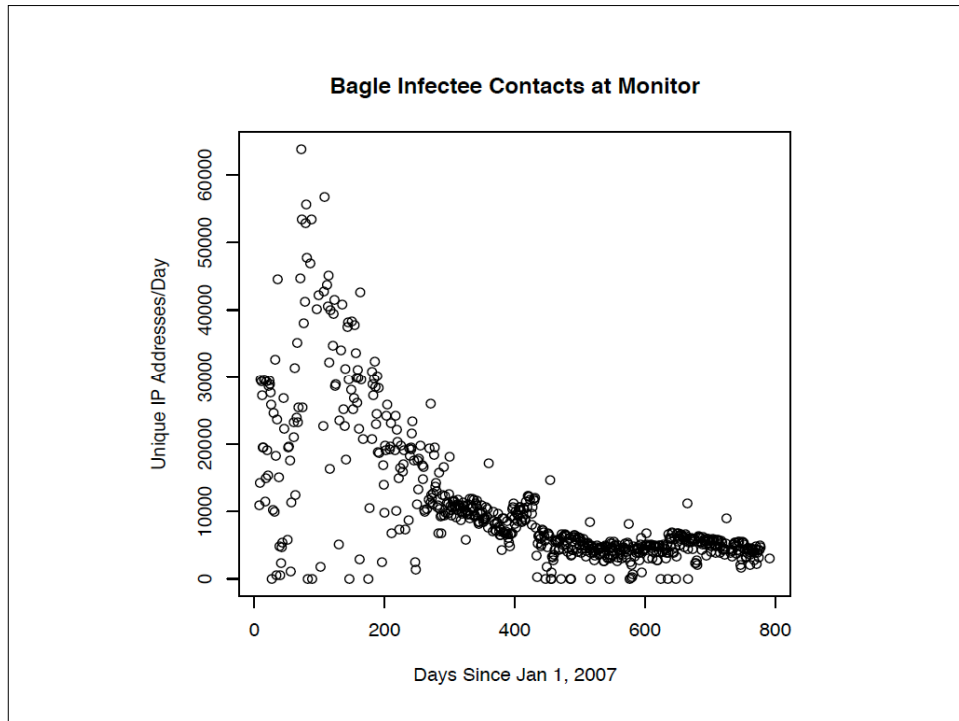
Slammer's *Bandwidth-Limited* Growth

DSShield Probe Data



Distinct Remote Hosts Attacking LBNL









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1 post - 1 author - Last post: Nov 18, 2004

In the mean time we strongly, and I mean strongly! urge all our users to make the following change to [viewtopic.php](#) as a matter of urgency. ...

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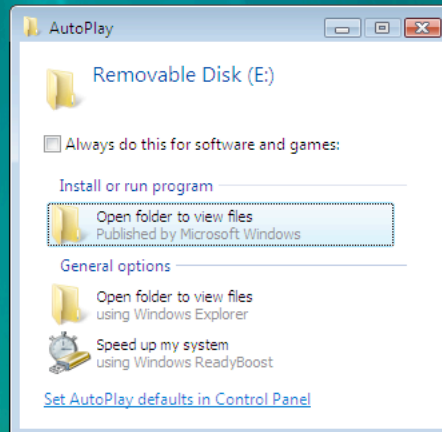
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Written by Kal, Editor/Webmaster www.CurtPalme.com Home Theater Last updated on June 6, 2009 (fixed some minor typo's) ...

www.curtpalme.com/forum/viewtopic.php?t=10457 - [Cached](#) - [Similar](#)



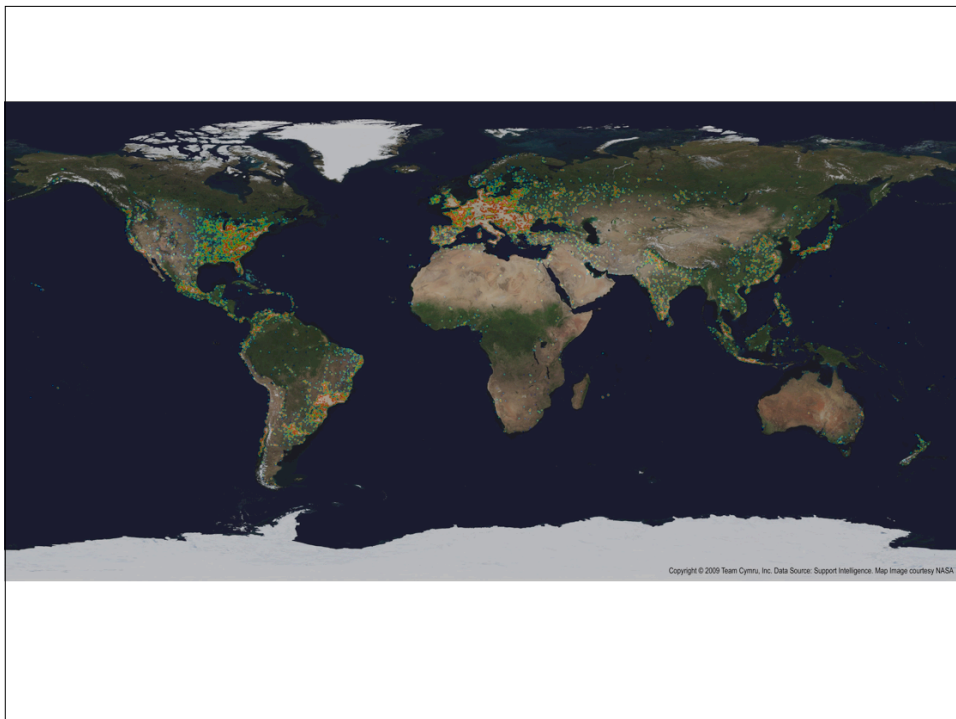
MS puts up \$250K bounty for Conficker author Zombie masterminds wanted undead or alive

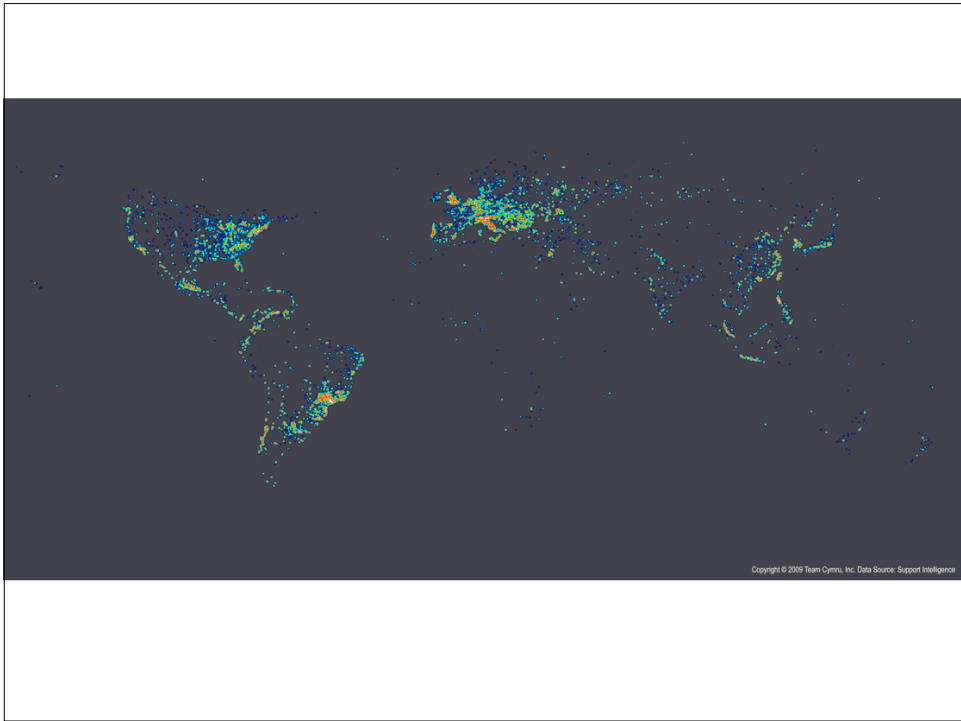
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Microsoft is offering a \$250,000 reward for information that leads to the arrest and conviction of the virus writers behind the infamous Conficker (Downadup) worm.

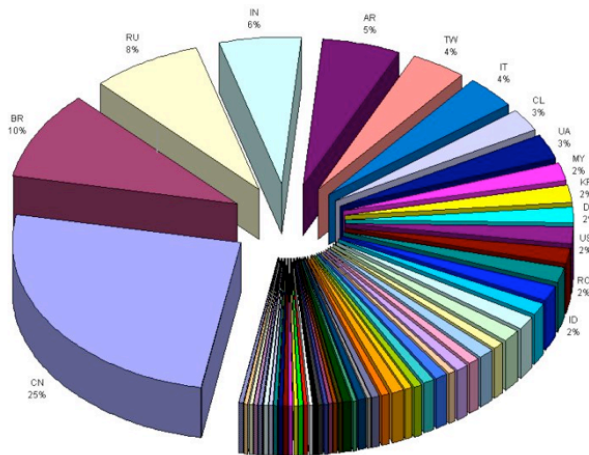




Total IP Addresses: 10,512,451
Total Conficker A IPs: 4,743,658
Total Conficker B IPs: 6,767,602
Total Conficker AB IPs: 1,022,062

OS Breakdown:
WinNT=0, 2000=163395, WinXP=10189556, 2003 Srv=75361, Vista=82495, Win98=44, Win95=32,
WinCE=3, Other=1565

Browser Breakdown:
IE5=26,525, IE6=7,494,466, IE7=2,988,039, FireFox=893, Opera=150, Safari=166, Netscape=12



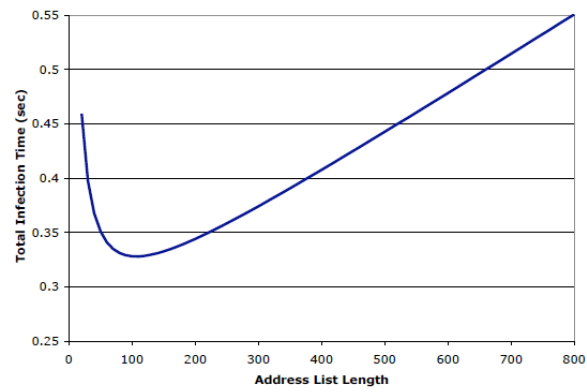


Figure 4: Estimated speed to infect one million hosts assuming constant latency of 103ms, initial node available bandwidth of 750 Mbps, and fixed secondary node bandwidth of 1 Mbps. The worm is assumed to be 404 bytes + 4 bytes per address, and the graph plots total infection time versus the globally fixed secondary address list size.