

Oklahoma Science, Technology, Engineering, and Mathematics (STEM) Mentorship Program



- The Oklahoma STEM Mentorship Program is an educational outreach connecting networking professionals from OU, OneNet, and other institutions with students in the technology field.
- It is part of an NSF grant to enhance Oklahoma's educational and research capability through network improvements.

- **The goal:**

IDENTIFY, DEVELOP and RECRUIT Talent

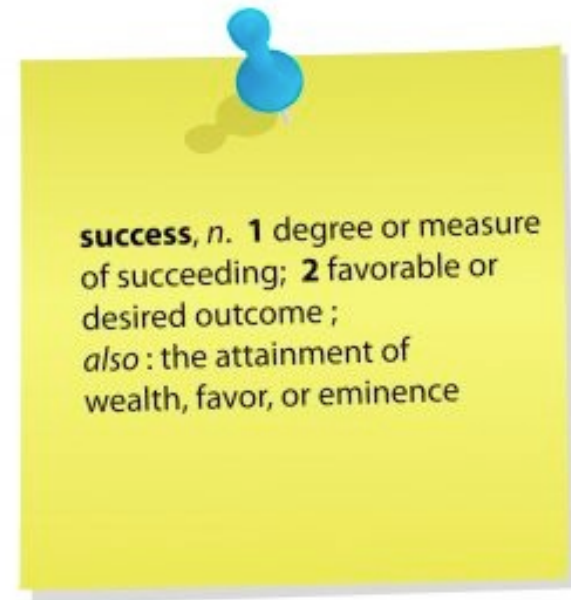
- Activities include:
 - Presentations to students throughout OK
 - Job shadowing opportunities (on-site & virtual)

- On-Site
 - Schedule a time with us to see what we do!
- Virtual
 - e-mail us at network@ou.edu (OU IT Network Team)
 - Facebook: [oknetworkmentor@groups.facebook.com](https://www.facebook.com/groups/oknetworkmentor/)



- Jobs at OU
 - <http://jobs.ou.edu>
- Jobs at OneNet
 - <http://www.okhighered.org/job-opportunities/>

- What do I do in the IT field?
- Lessons learned for getting this job.
- Recommendations for keeping the job.
- Being successful in this field.



(But not this time...)



**[Cyber Security]
Things that keep
Me awake at night...**

The Users...



<http://www.oscer.ou.edu/ostemmp.php>

The Users...



<http://www.oscer.ou.edu/ostemmp.php>

The Users...



Too intimidated
to ask questions

Only has a computer because a grandchild gave it to him

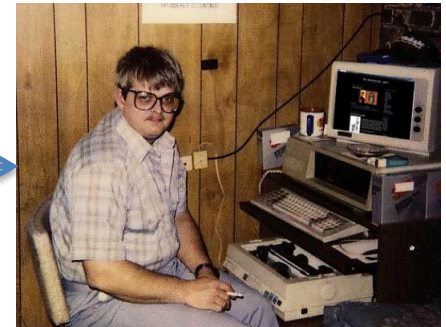
Assumes all e-mails are legitimate

Typically a member of several botnets

The Users...



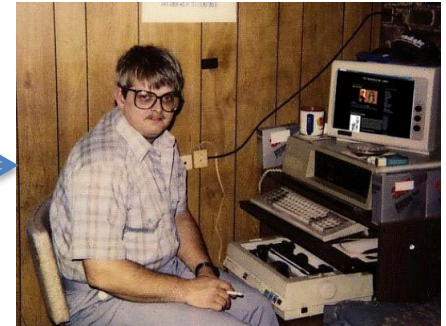
Too intimidated
to ask questions



The Users...



Extremes



Fluent in at least three languages, including Klingon, Gallifreyan, and the binary language of moisture vaporators.

Devorkian keyboard layout.

Member of a local Cyber Security club.

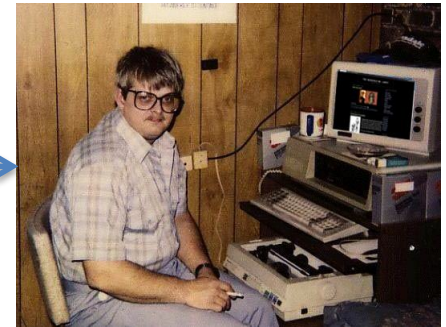
Calls Help Desks to let them know what is wrong.

<http://www.oscer.ou.edu/ostemmp.php>

The Users...



Too intimidated
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Calls Help Desks
to let them know
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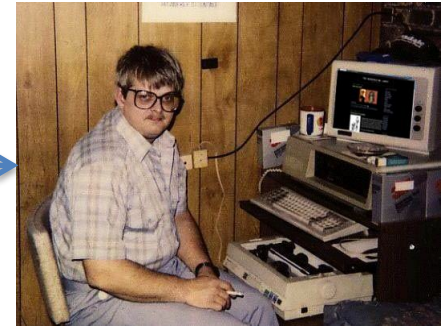
The Users...



Too intimidated
to ask questions



The rest of us...



Calls Help Desks
to let them know
what is wrong

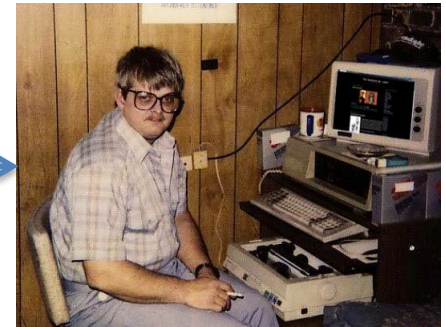
The Users...



Too intimidated
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The rest of us...



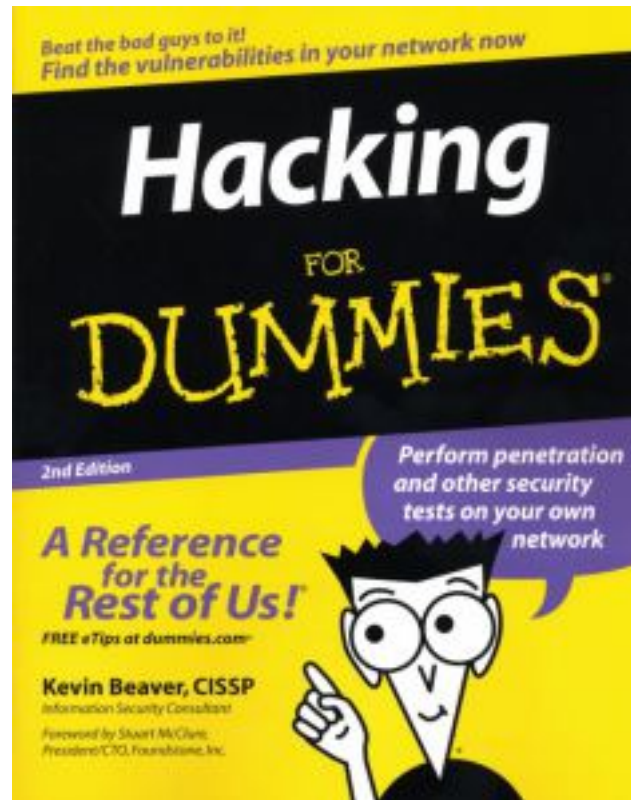
Calls Help Desks
to let them know
what is wrong

AKA:

“ID10T”

“Loose nut between keyboard and chair”

User education is important!!!



User education is important!!!



stay safe online

Remember the 5 SMART rules when using the internet and mobile phones.

- S SAFE:** Keep safe by being careful not to give out personal information – such as your full name, email address, phone number, home address, photos or school name – to people you are chatting with online.
- M MEET:** Meeting someone you have only been in touch with online can be dangerous. Only do so with your parents' or carers' permission and even then only when they can be present.
- A ACCEPTING:** Accepting emails, IM messages, or opening files, pictures or texts from people you don't know or trust can lead to problems – they may contain viruses or nasty messages!
- R RELIABLE:** Information you find on the internet may not be true, or someone online may be lying about who they are. Make sure you check information before you believe it.
- T TELL:** Tell your parent, carer or a trusted adult if someone or something makes you feel uncomfortable or worried, or if you or someone you know is being bullied online.

Find out more at Childnet's website ...

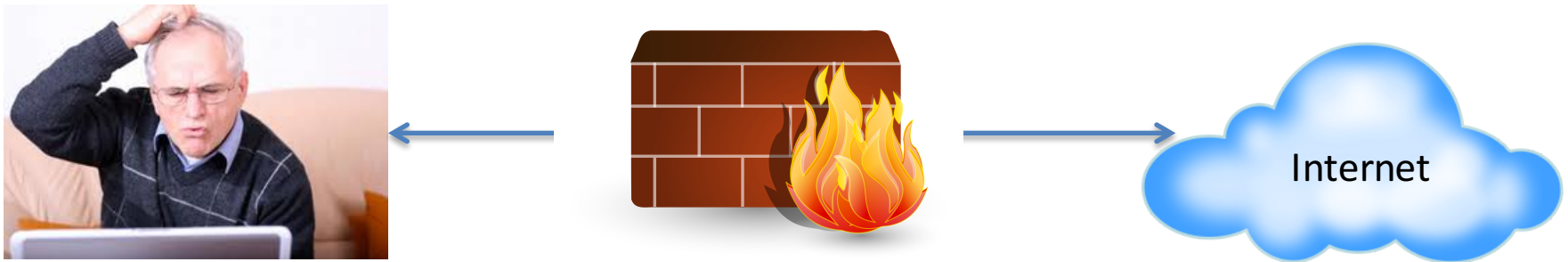
<http://www.oscer.ou.edu/ostemmp.php>

“Expectation” vs. “Reality”



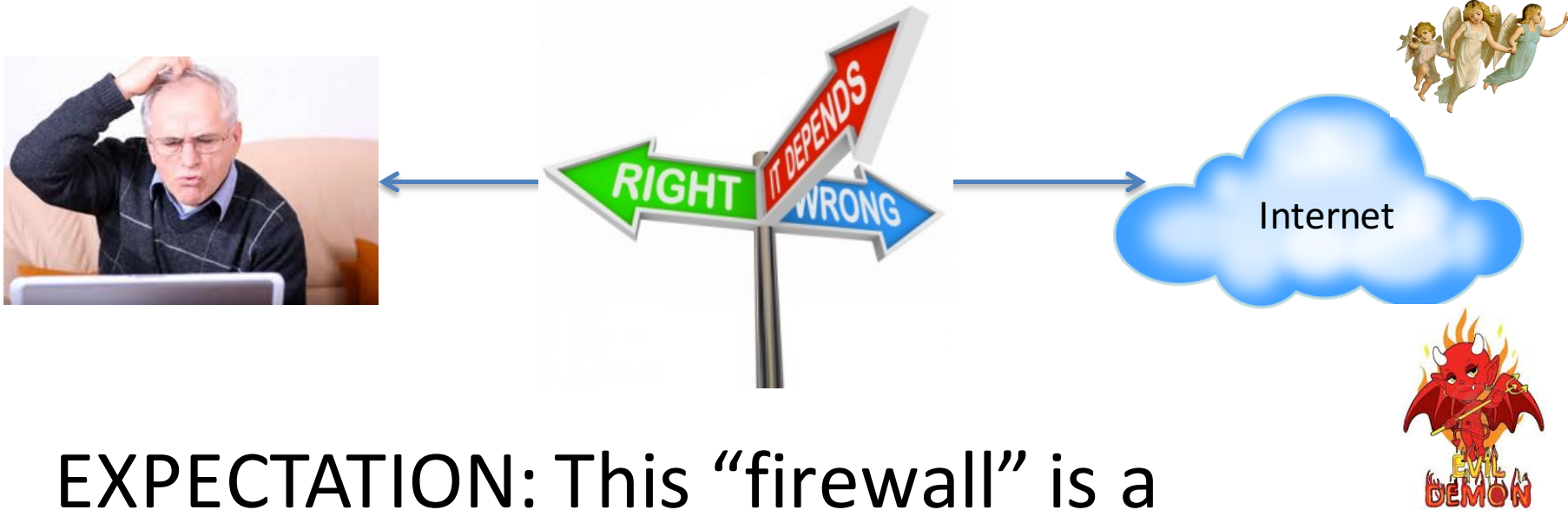
Example: The “firewall” ...

The “Firewall”... (or: “User Expectations”)



Users assume that there is a “firewall”
between them and the Internet.

The “Firewall”... (or: “User Expectations”)



EXPECTATION: This “firewall” is a “morality filter” that separates the “good” from the “bad”.

The “Firewall”... (or: “User Expectations”)



REALITY: IT knows that firewalls are just a “screen door”.

“Expectation” vs. “Reality”



Firewall is just one example...

IT is watching everything that I do...

Wireless is available everywhere for free...

My antivirus software can clean up anything...

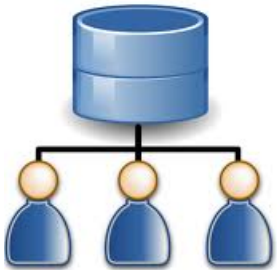
What works at home should work in the corporation...

Governance and “Big Data”



Governance and “Big Data”

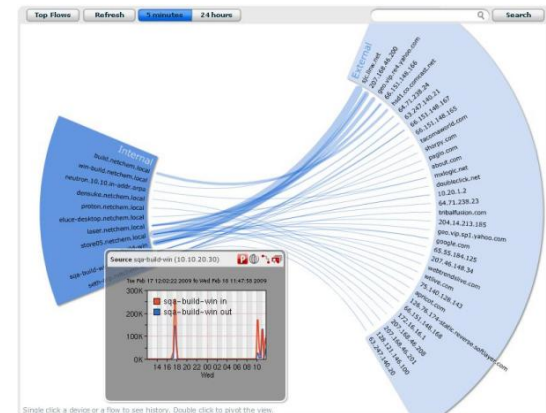
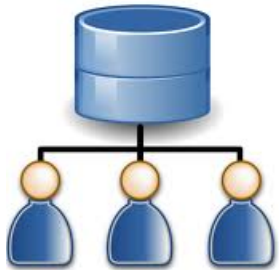
Active Directory



<http://www.oscer.ou.edu/ostemmp.php>

Governance and “Big Data”

Active Directory

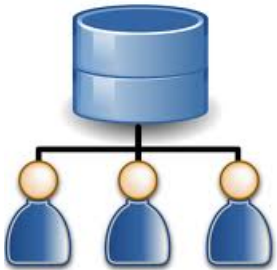


NetFlow Data

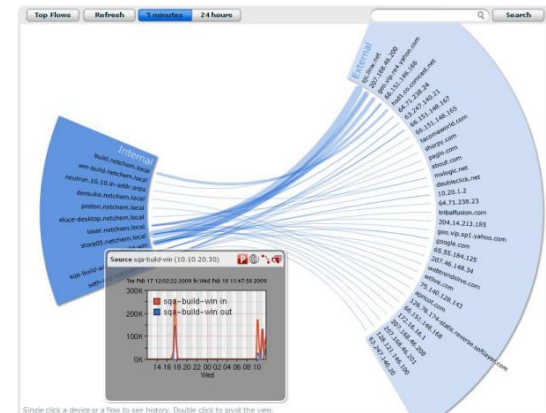
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Governance and “Big Data”

Active Directory



MAC Address
Database

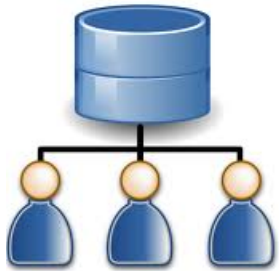


NetFlow Data

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Governance and “Big Data”

Active Directory

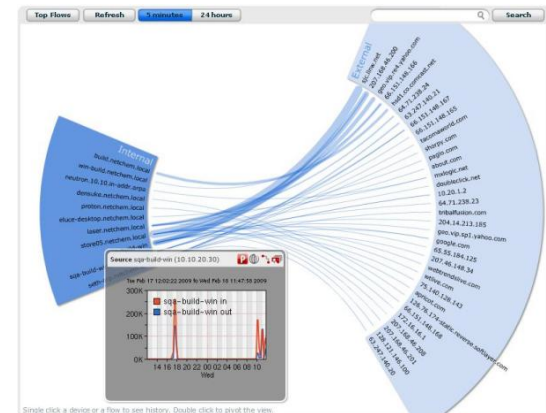


MAC Address Database



Time	Severity	Message
2010-10-20 10:00:00	INFO	Microsoft Windows [Version 6.0.6002.18005] Copyright (c) 2009 Microsoft Corporation. All rights reserved.
2010-10-20 10:00:01	INFO	C:\Windows\system32\cmd.exe /c dir
2010-10-20 10:00:02	INFO	Volume in drive C: has volume label "C:" and capacity 298.45 GB. File system is NTFS.
2010-10-20 10:00:03	INFO	Directory of C:\Windows\system32
2010-10-20 10:00:04	INFO	<DIR> .
2010-10-20 10:00:05	INFO	<DIR> ..
2010-10-20 10:00:06	INFO	<DIR> ac
2010-10-20 10:00:07	INFO	<DIR> ad
2010-10-20 10:00:08	INFO	<DIR> adms
2010-10-20 10:00:09	INFO	<DIR> adsi
2010-10-20 10:00:10	INFO	<DIR> adsiutil
2010-10-20 10:00:11	INFO	<DIR> adsiutilapi
2010-10-20 10:00:12	INFO	<DIR> adsiutilapiapi
2010-10-20 10:00:13	INFO	<DIR> adsiutilapiapiapi
2010-10-20 10:00:14	INFO	<DIR> adsiutilapiapiapiapi
2010-10-20 10:00:15	INFO	<DIR> adsiutilapiapiapiapiapi
2010-10-20 10:00:16	INFO	<DIR> adsiutilapiapiapiapiapiapi
2010-10-20 10:00:17	INFO	<DIR> adsiutilapiapiapiapiapiapiapi
2010-10-20 10:00:18	INFO	<DIR> adsiutilapiapiapiapiapiapiapiapi
2010-10-20 10:00:19	INFO	<DIR> adsiutilapiapiapiapiapiapiapiapiapi
2010-10-20 10:00:20	INFO	<DIR> adsiutilapiapiapiapiapiapiapiapiapiapi
2010-10-20 10:00:21	INFO	<DIR> adsiutilapiapiapiapiapiapiapiapiapiapiapi
2010-10-20 10:00:22	INFO	<DIR> adsiutilapiapiapiapiapiapiapiapiapiapiapiapi
2010-10-20 10:00:23	INFO	<DIR> adsiutilapiapiapiapiapiapiapiapiapiapiapiapiapi
2010-10-20 10:00:24	INFO	<DIR> adsiutilapiapiapiapiapiapiapiapiapiapiapiapiapiapi
2010-10-20 10:00:25	INFO	<DIR> adsiutilapiapiapiapiapiapiapiapiapiapiapiapiapiapiapi
2010-10-20 10:00:26	INFO	<DIR> adsiutilapiapiapiapiapiapiapiapiapiapiapiapiapiapiapiapi
2010-10-20 10:00:27	INFO	<DIR> adsiutilapiapiapiapiapiapiapiapiapiapiapiapiapiapiapiapiapi
2010-10-20 10:00:28	INFO	<DIR> adsiutilapiapiapiapiapiapiapiapiapiapiapiapiapiapiapiapiapiapi
2010-10-20 10:00:29	INFO	<DIR> adsiutilapiapiapiapiapiapiapiapiapiapiapiapiapiapiapiapiapiapiapi
2010-10-20 10:00:30	INFO	<DIR> adsiutilapi
2010-10-20 10:00:31	INFO	<DIR> adsiutilapi
2010-10-20 10:00:32	INFO	<DIR> adsiutilapi
2010-10-20 10:00:33	INFO	<DIR> adsiutilapi
2010-10-20 10:00:34	INFO	<DIR> adsiutilapi
2010-10-20 10:00:35	INFO	<DIR> adsiutilapi
2010-10-20 10:00:36	INFO	<DIR> adsiutilapi
2010-10-20 10:00:37	INFO	<DIR> adsiutilapi
2010-10-20 10:00:38	INFO	<DIR> adsiutilapi
2010-10-20 10:00:39	INFO	<DIR> adsiutilapi
2010-10-20 10:00:40	INFO	<DIR> adsiutilapi
2010-10-20 10:00:41	INFO	<DIR> adsiutilapi
2010-10-20 10:00:42	INFO	<DIR> adsiutilapi
2010-10-20 10:00:43	INFO	<DIR> adsiutilapi
2010-10-20 10:00:44	INFO	<DIR> adsiutilapi
2010-10-20 10:00:45	INFO	<DIR> adsiutilapi
2010-10-20 10:00:46	INFO	<DIR> adsiutilapi
2010-10-20 10:00:47	INFO	<DIR> adsiutilapi
2010-10-20 10:00:48	INFO	<DIR> adsiutilapi
2010-10-20 10:00:49	INFO	<DIR> adsiutilapi
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2010-10-20 10:00:52	INFO	<DIR> adsiutilapi
2010-10-20 10:00:53	INFO	<DIR> adsiutilapi
2010-10-20 10:00:54	INFO	<DIR> adsiutilapi
2010-10-20 10:00:55	INFO	<DIR> adsiutilapi
2010-10-20 10:00:56	INFO	<DIR> adsiutilapi
2010-10-20 10:00:57	INFO	<DIR> adsiutilapi
2010-10-20 10:00:58	INFO	<DIR> adsiutilapi
2010-10-20 10:00:59	INFO	<DIR> adsiutilapi
2010-10-20 10:01:00	INFO	<DIR> adsiutilapi

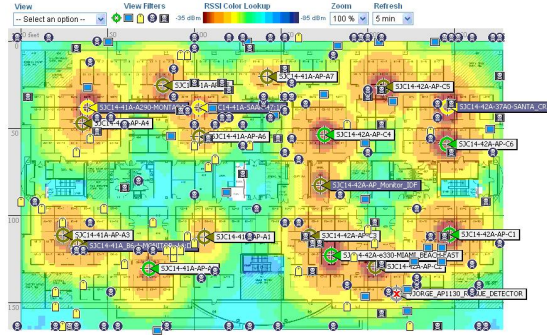
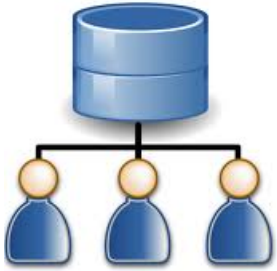
Syslog Data



NetFlow Data

Governance and “Big Data”

Active Directory

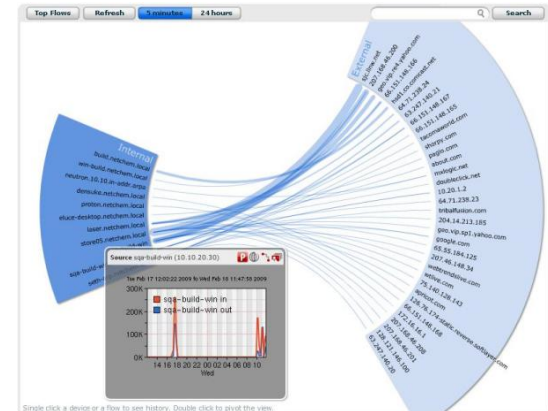


Wireless Location



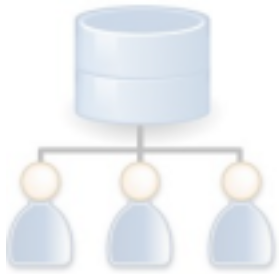
MAC Address Database

Syslog Data



NetFlow Data

Governance and “Big Data”

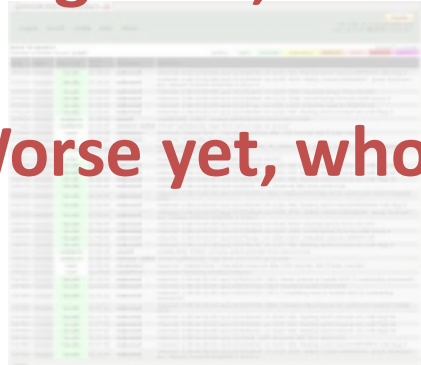


Independently, these are “benign”.



Tie them together, and you may create privacy concerns!

Worse yet, who watches the watchmen?



Next Generation Networking

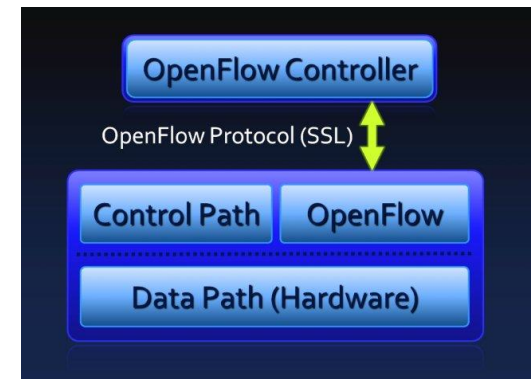


<http://www.oscer.ou.edu/ostemmp.php>

Next Generation Networking



Next Generation Networking



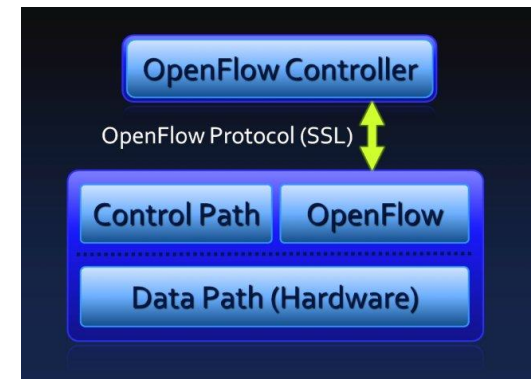
SDN

Next Generation Networking



Cloud Computing

<http://www.oscer.ou.edu/ostemmp.php>



SDN

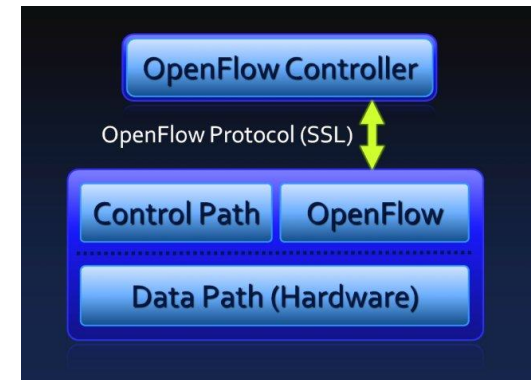
Next Generation Networking



Circuit-Based Networking



Cloud Computing



SDN

Next Generation Networking



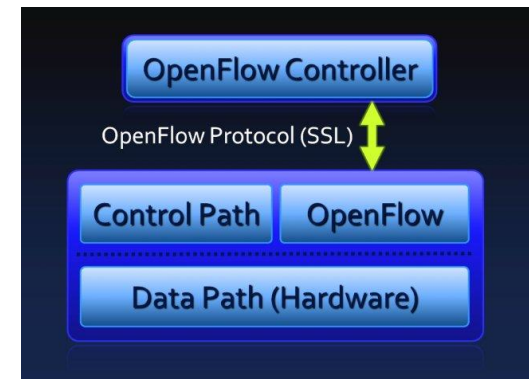
Circuit-Based Networking

B.Y.O.D.

(Bring Your Own Device)

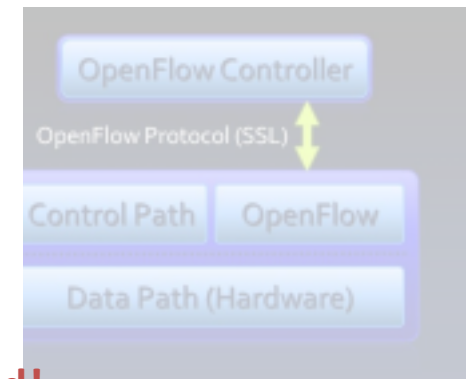


Cloud Computing



SDN

Next Generation Networking



Security Policies have yet to be developed!

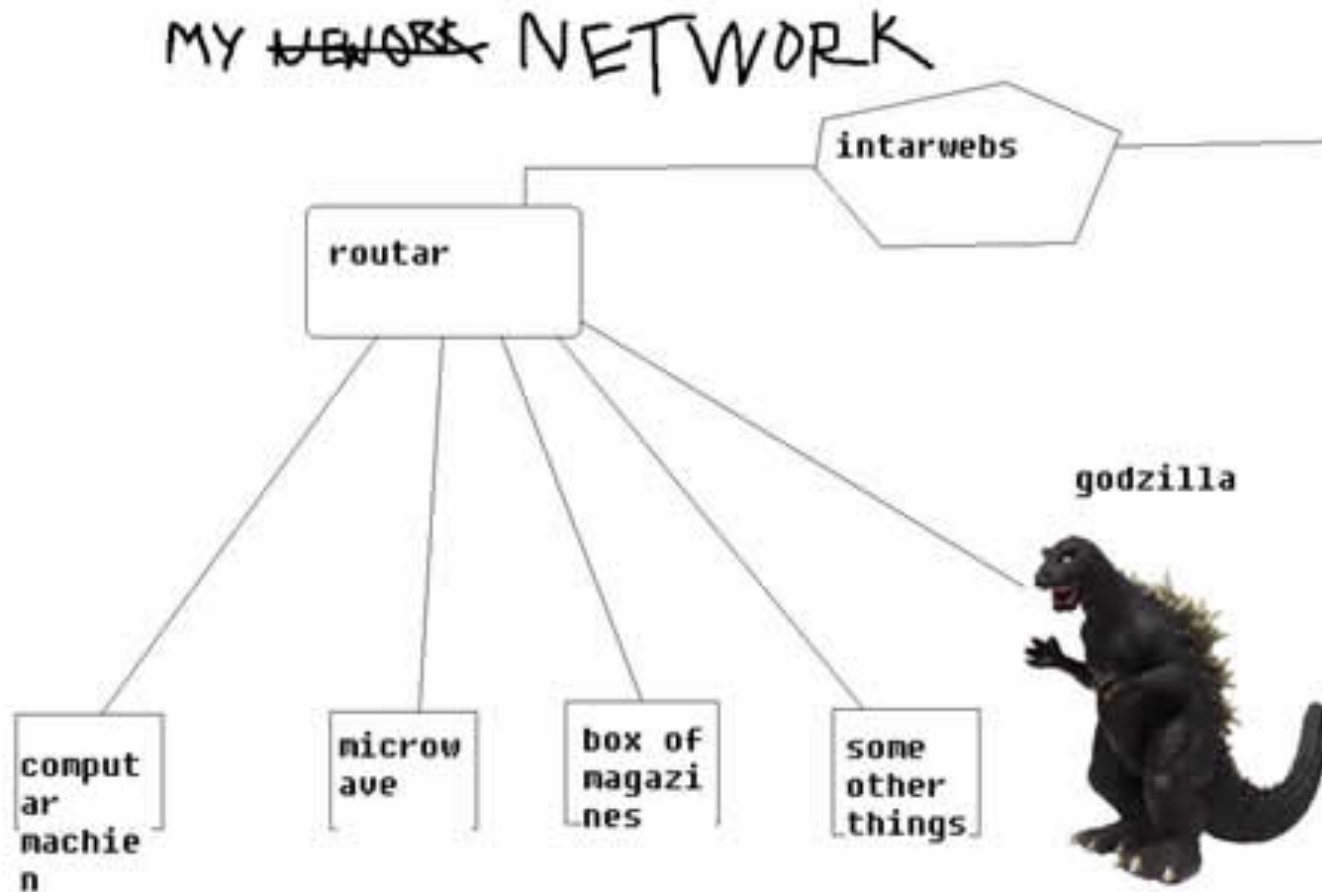
Number 1...

Internet of “things” ...



<http://www.oscer.ou.edu/ostemmp.php>

Networks used to be simple:



Now everything is network attached:



Number 1...

But what about the “protocols” used?



<http://www.oscer.ou.edu/ostemmp.php>

Number 1...

But what about the “protocols” used?

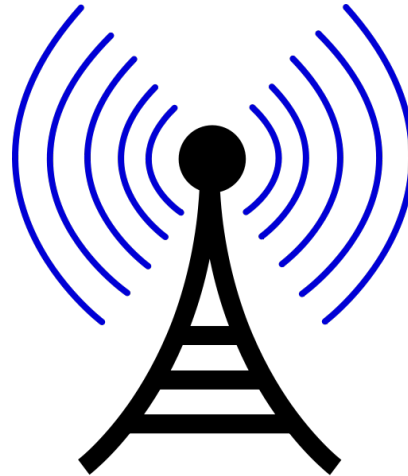


<http://www.oscer.ou.edu/ostemmp.php>



Location

But what about the “protocols” used?



Over-the-air
transmission



Location

<http://www.oscer.ou.edu/ostemmp.php>

But what about the “protocols” used?



Over-the-air
transmission



Tunneling



Location

<http://www.oscer.ou.edu/ostemmp.php>

But what about the “protocols” used?



Over-the-air
transmission



Tunneling



Firewall Traversal



Location

But what about the “protocols” used?



Users assume that the devices that they connect to are both **KNOWN** and **TRUSTWORTHY!**



If you got 'em, ask 'em!

Q&A

Please take a moment to fill out the evaluations...
or NOT! The evaluations are completely optional!

No personal or personally identifiable data is collected.

Data is used by the grant providers to gauge success.

The End (about time too...)

**THANK
YOU**

(and now for Chris Mallow...)