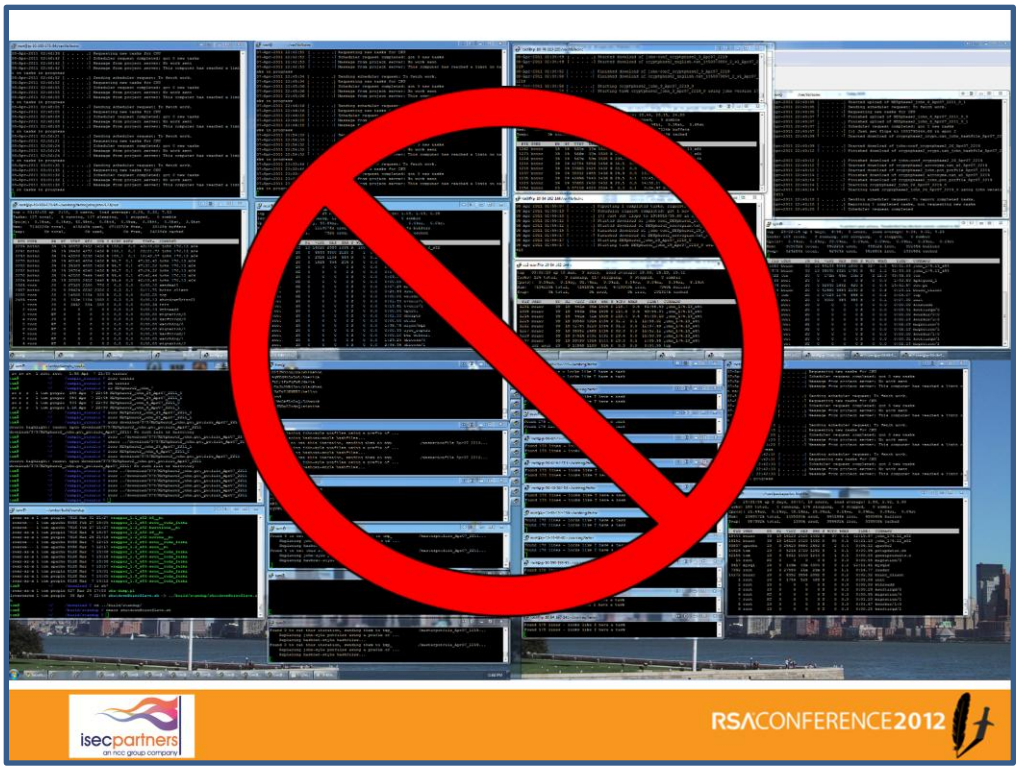
Cloud & Control

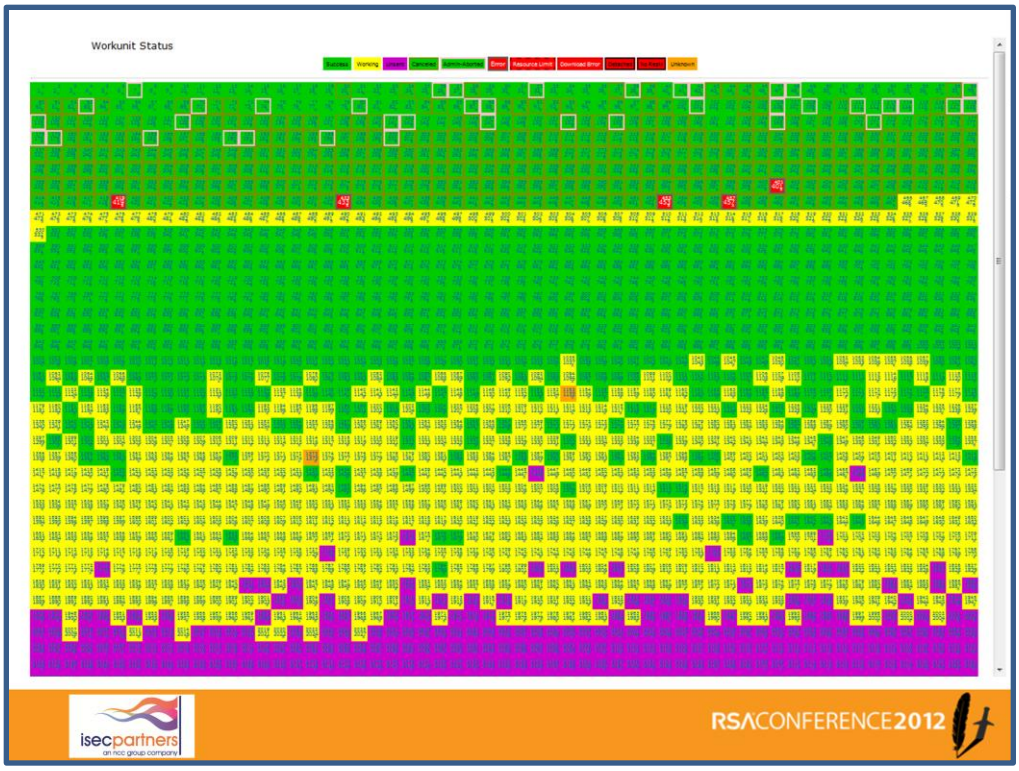
Any Program on 2000 or 2 Machines

Session ID: HT2-203

Session Classification: General Interest

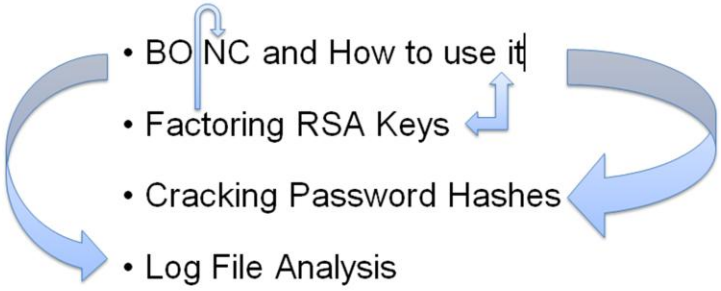
RSA CONFERENCE 2012


isecpartners
an ncc group company
RSACONFERENCE2012



Custom BOINC Dashboard I wrote (on github)

- BOINC and How to use it
- Factoring RSA Keys
- Cracking Password Hashes
- Log File Analysis

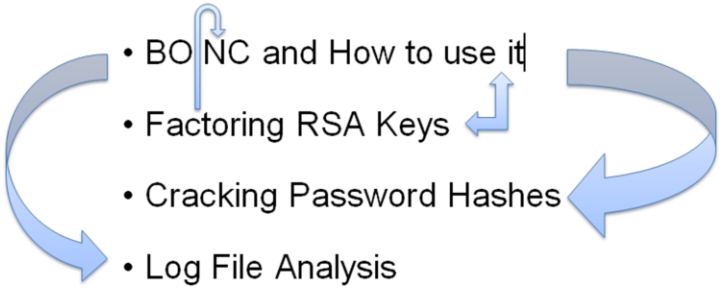


You have interesting problems!

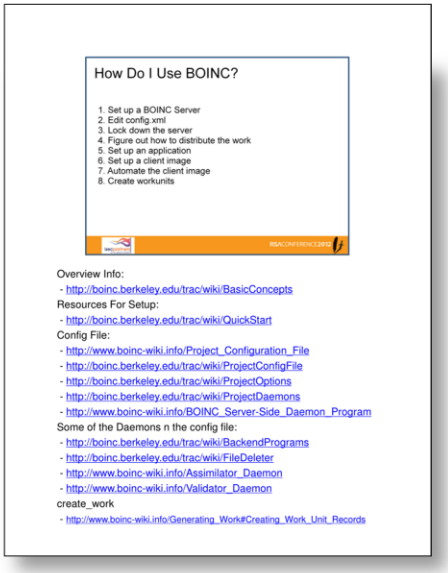
- Fuzzing
- Document Analysis
- SMT Solving

Would BOINC Help?

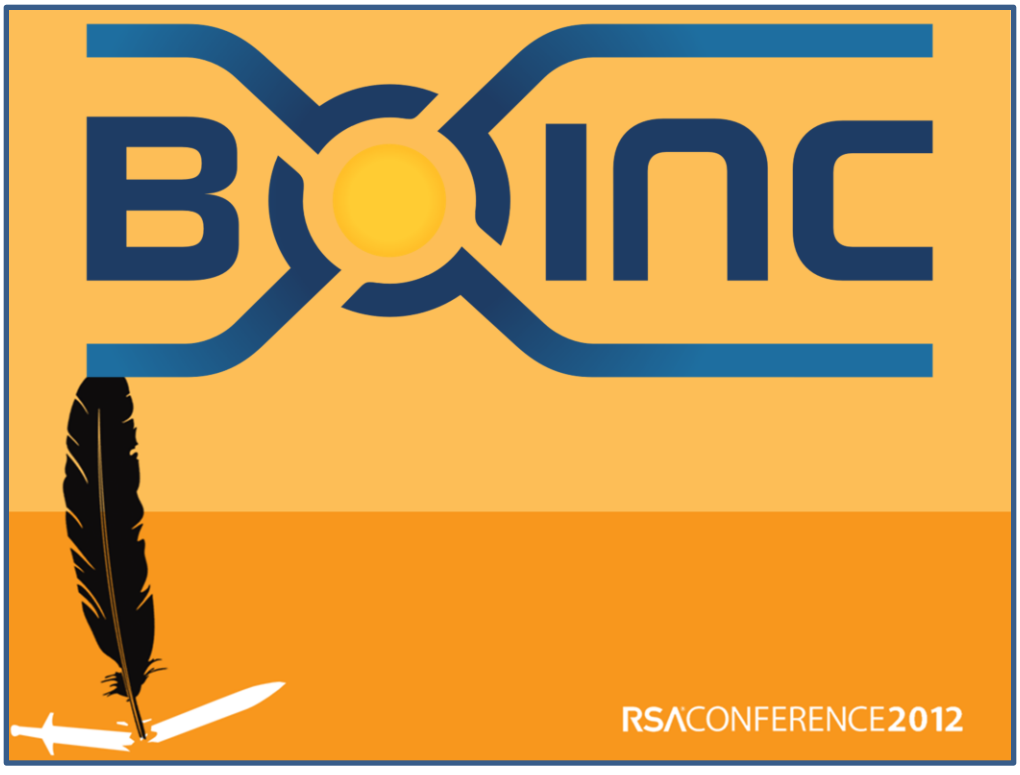
How would you fit your problem into BOINC?

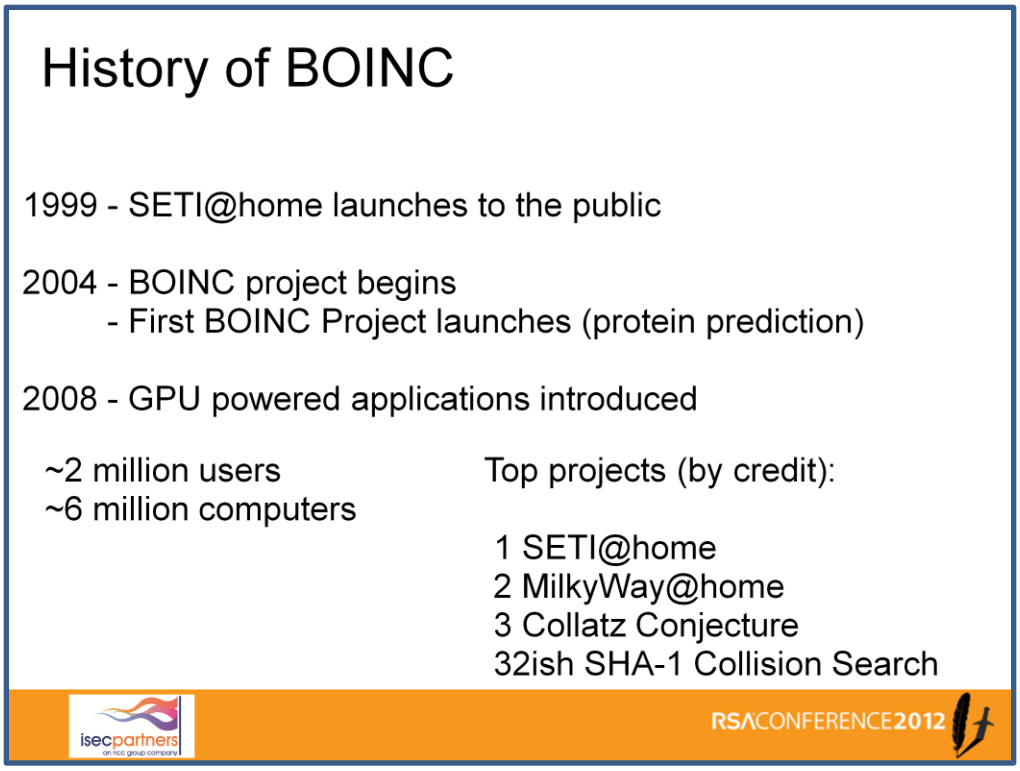


Materials!



- Slides w/ references
- Sample Templates
- Scripts


BOINC
RSACONFERENCE2012



SHA-1 Collision Search

- http://www.isgtw.org/?pid=1000711

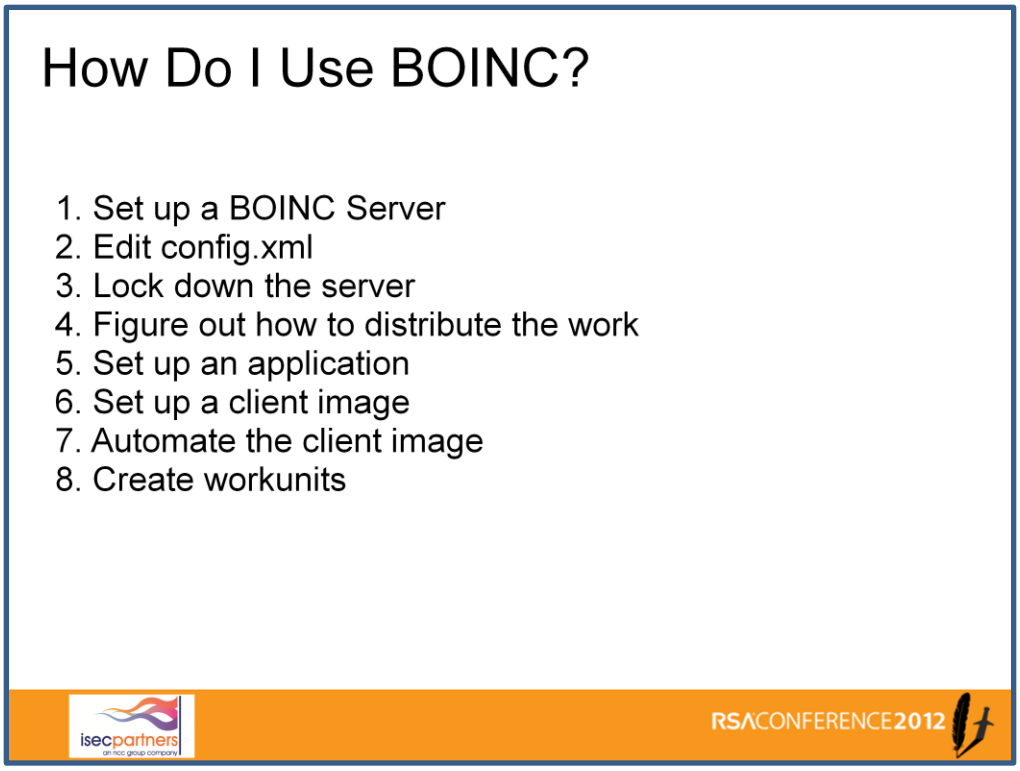
Why would I use it?

Handles
- network problems
- client errors
- server/client reboots
- file integrity

Supports
- running time limits
- multiple platforms
- untrustable clients
- GPUs and odd applications
- credit/reputation & teams
- assimilation/validation

Platforms BOINC Runs on

- http://boinc.berkeley.edu/trac/wiki/BoincPlatforms



Overview Info:

- http://boinc.berkeley.edu/trac/wiki/BasicConcepts

Resources For Setup:

- http://boinc.berkeley.edu/trac/wiki/QuickStart

Config File:

- http://www.boinc-wiki.info/Project_Configuration_File
- http://boinc.berkeley.edu/trac/wiki/ProjectConfigFile
- http://boinc.berkeley.edu/trac/wiki/ProjectOptions
- http://boinc.berkeley.edu/trac/wiki/ProjectDaemons
- http://www.boinc-wiki.info/BOINC_Server-Side_Daemon_Program

Some of the Daemons n the config file:

- http://boinc.berkeley.edu/trac/wiki/BackendPrograms
- http://boinc.berkeley.edu/trac/wiki/FileDeleter
- http://www.boinc-wiki.info/Assimilator_Daemon
- http://www.boinc-wiki.info/Validator_Daemon

create_work

- http://www.boinc-wiki.info/Generating_Work#Creating_Work_Unit_Records

Is it hard?

1. Set up a BOINC Server - Easy
2. Edit config.xml - Easy
3. Lock down the server - Should be easy
4. Figure out how to distribute the work - Could be tricky
5. Set up an application - Trial and Error
6. Set up a client image - Easy
7. Automate the client image - Easy
8. Create workunits - Potentially annoying

who's got two thumbs and isn't responsible for you getting owned?

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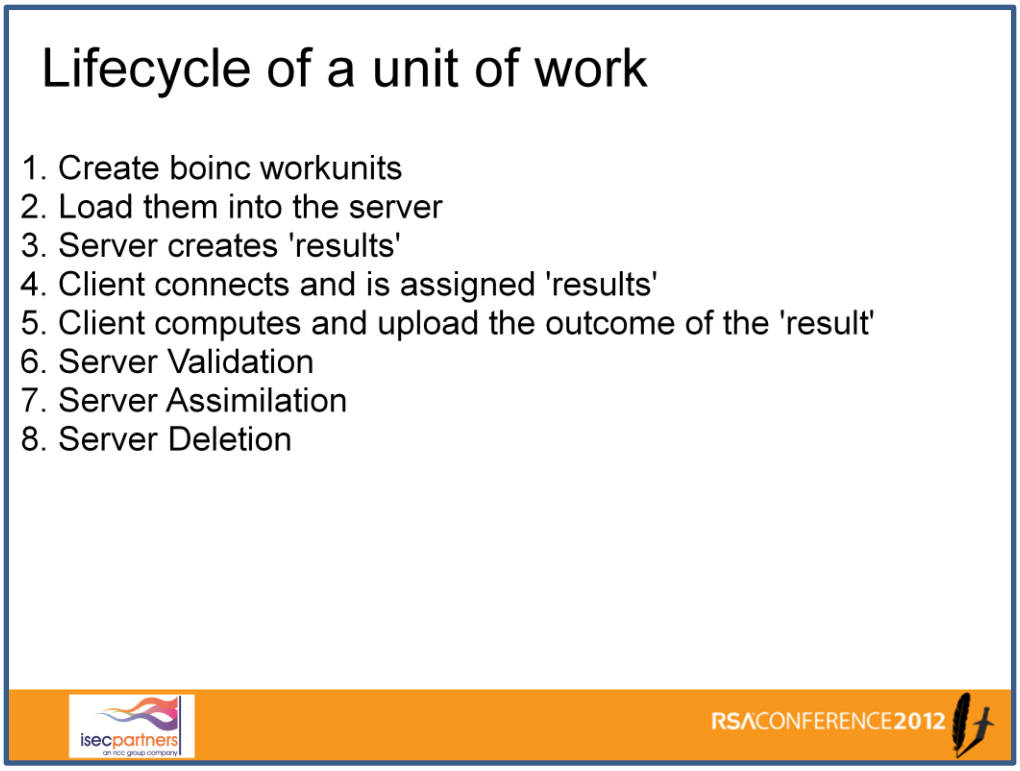
Threat Model Doc

- http://boinc.berkeley.edu/trac/wiki/SecurityIssues

In a large-scale volunteer project, BOINC strongly recommends proper code signing practices.

- http://boinc.berkeley.edu/trac/wiki/CodeSigning



More Explanations

- http://boinc.berkeley.edu/trac/wiki/JobReplication
- http://www.boinc-wiki.info/Result
- http://www.boinc-wiki.info/Redundancy_and_Errors

Tables in the DB

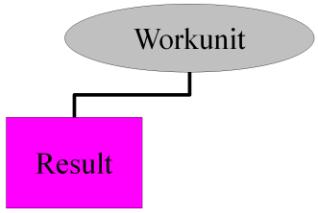
- http://www.boinc-wiki.info/Work_Unit_Record
- http://www.boinc-wiki.info/Result_Record

Work Distribution

- http://boinc.berkeley.edu/trac/wiki/WorkDistribution
- http://www.boinc-wiki.info/Work_Distribution

Lifecycle of a unit of work

1. Create boinc workunits
2. Load them into the server
3. Server creates 'results'
4. Client connects and is assigned 'results'
5. Client computes and upload the outcome of the 'result'
6. Server Validation
7. Server Assimilation
8. Server Deletion



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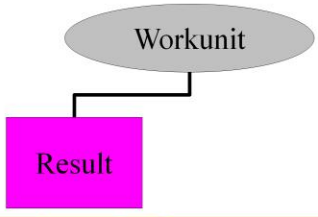

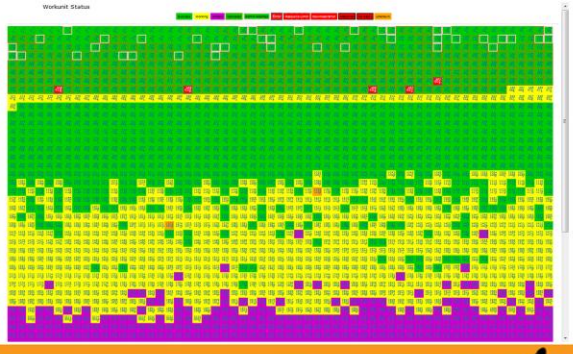

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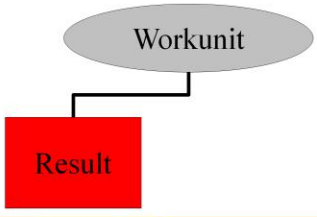

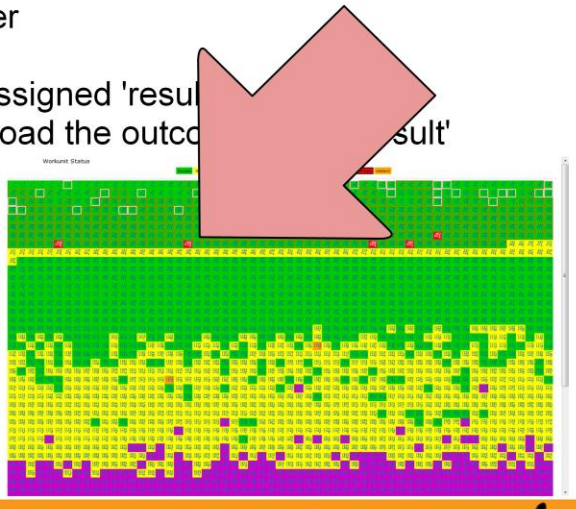

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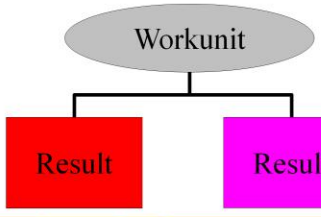

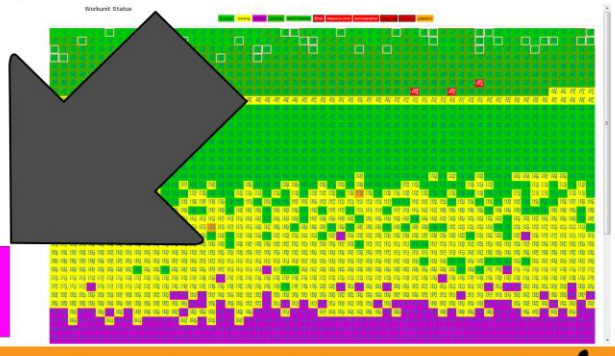

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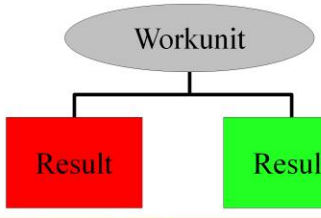
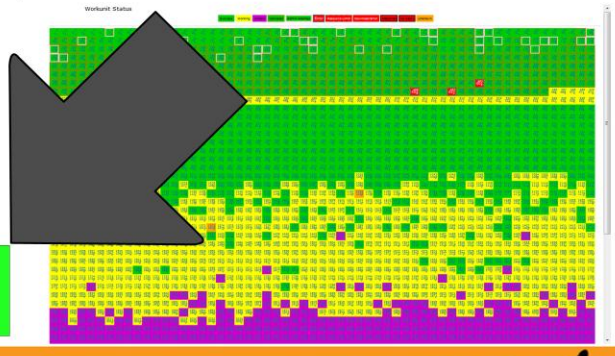
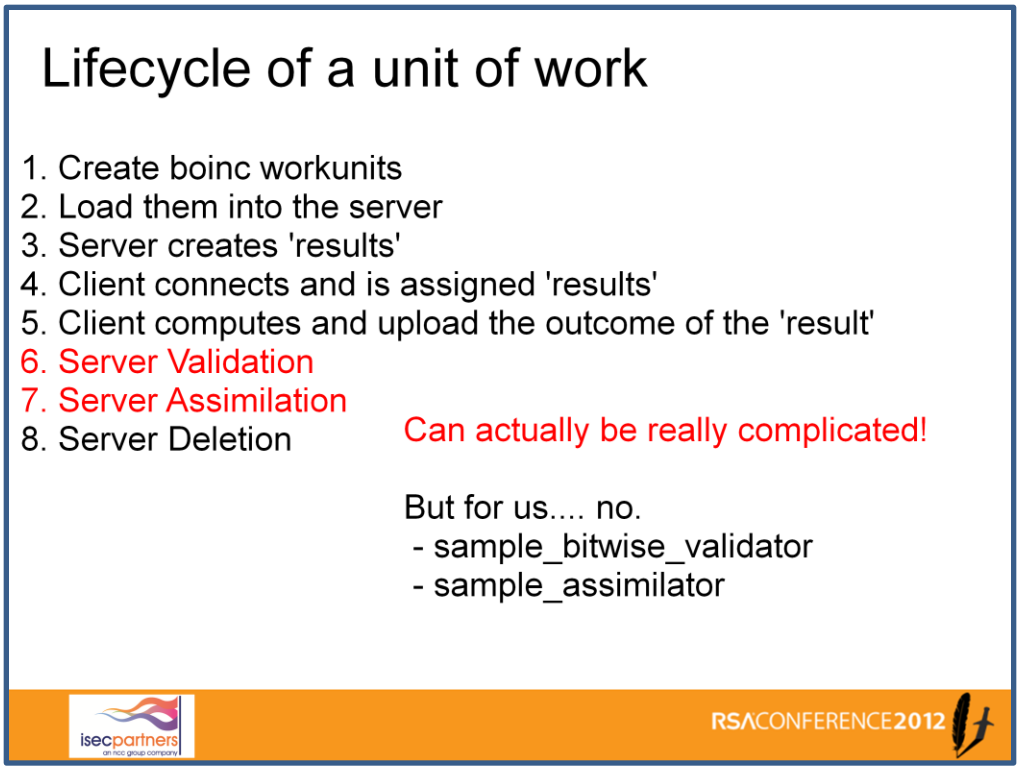






Validator Info:

- http://boinc.berkeley.edu/trac/wiki/ValidationSummary
- http://boinc.berkeley.edu/trac/wiki/ValidationIntro
- http://www.boinc-wiki.info/Validator_Daemon
- http://www.boinc-wiki.info/Result_Validation

Writing Your Own Validator:

- http://boinc.berkeley.edu/trac/wiki/ValidationSimple

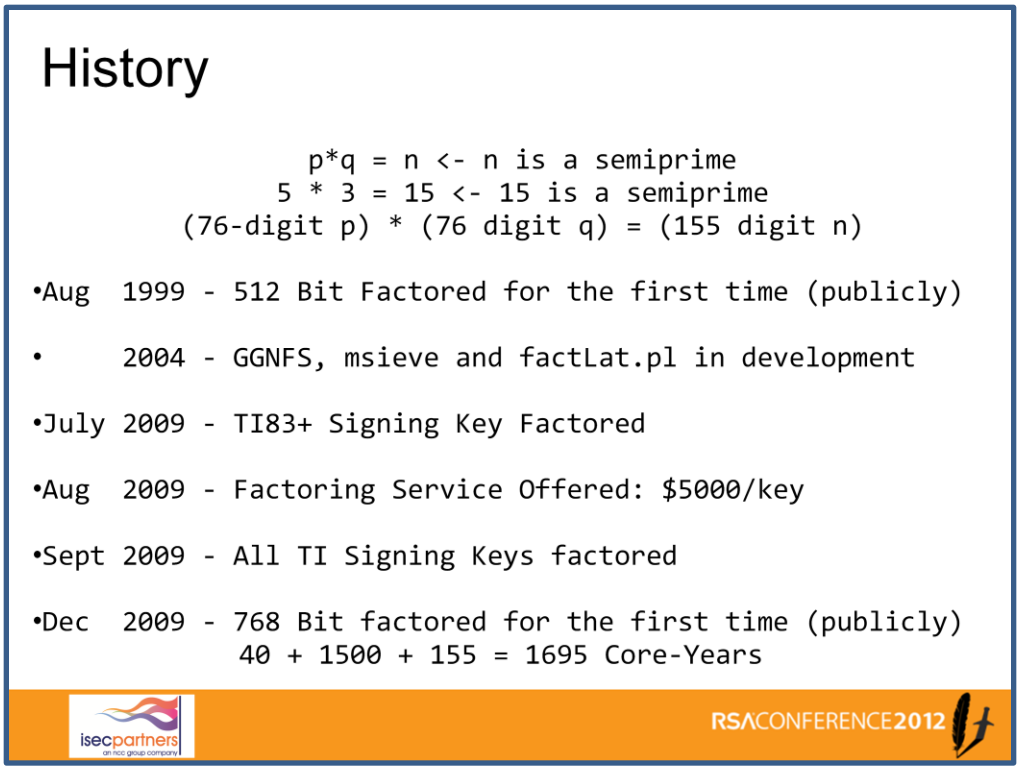
Assimilator Info

- http://boinc.berkeley.edu/trac/wiki/AssimilateIntro
- http://www.boinc-wiki.info/Result_Assimilation
- http://www.boinc-wiki.info/Assimilator_Daemon

Deletion Info

- http://www.boinc-wiki.info/Server-Side_File_Deletion
- http://www.boinc-wiki.info/Database_Purging_Utility


512 Bit RSA Key Factoring
TI-89
TEXAS INSTRUMENTS
RSACONFERENCE2012



http://forum.disk.net/security-services/10-factoring-rsa-512-service.html#post25

http://en.wikipedia.org/wiki/Texas_Instruments_signing_key_controversy

http://www.eff.org/press/archives/2009/10/13

Factoring a 768-bit semiprime took nonpublic tools. For discussion, see:

- http://www.mersenneforum.org/showthread.php?t=12958
- http://mersenneforum.org/showthread.php?t=15754

How Do I Factor

1. Trial Division?
   - Is it divisible by 2? 3? 5? 7? 11? 13?

2. Pollard Rho

3. ECM

4. General Number Field Sieve

How Do I Factor - GNFS

1. Polynomial Selection
2. Sieving
3. Combine

How Do I Factor - GNFS

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1.f(x) & g(x) of degree d, e
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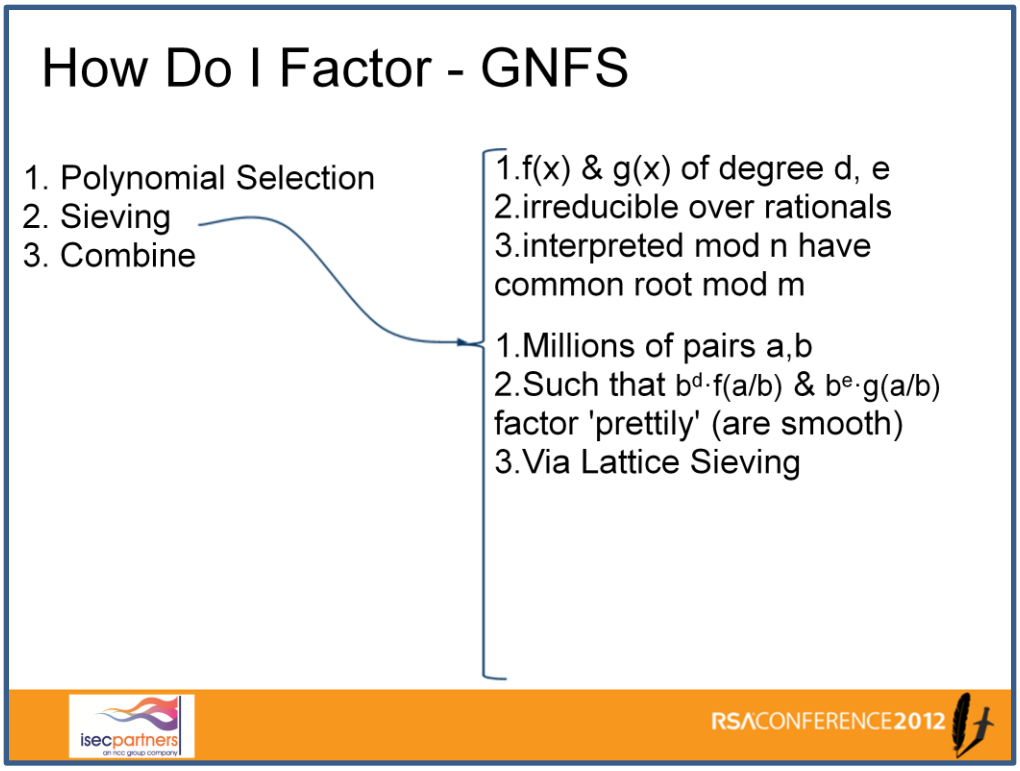

Some more on this:

http://mersenneforum.org/showthread.php?t=15796

How Do I Factor - GNFS

1. Polynomial Selection
2. Sieving
3. Combine

1. f(x) & g(x) of degree d, e
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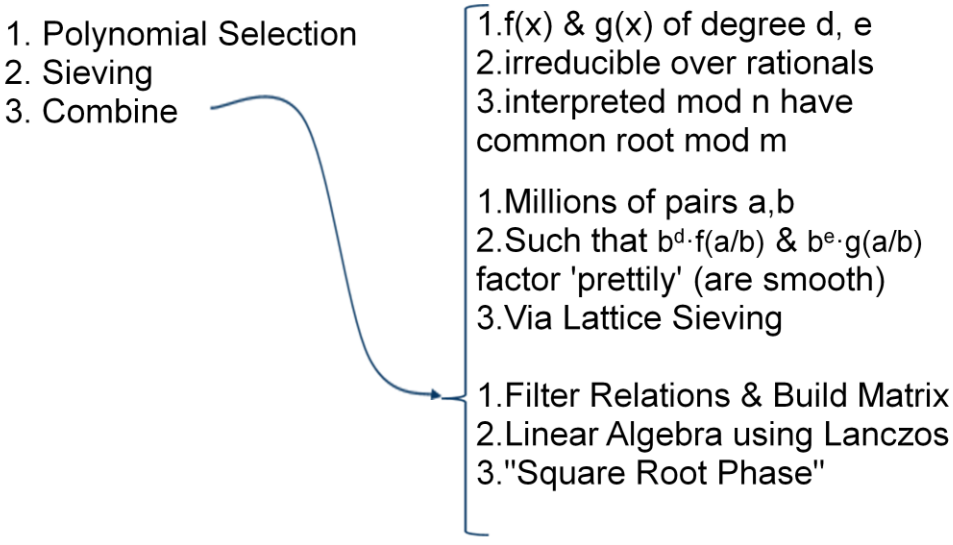
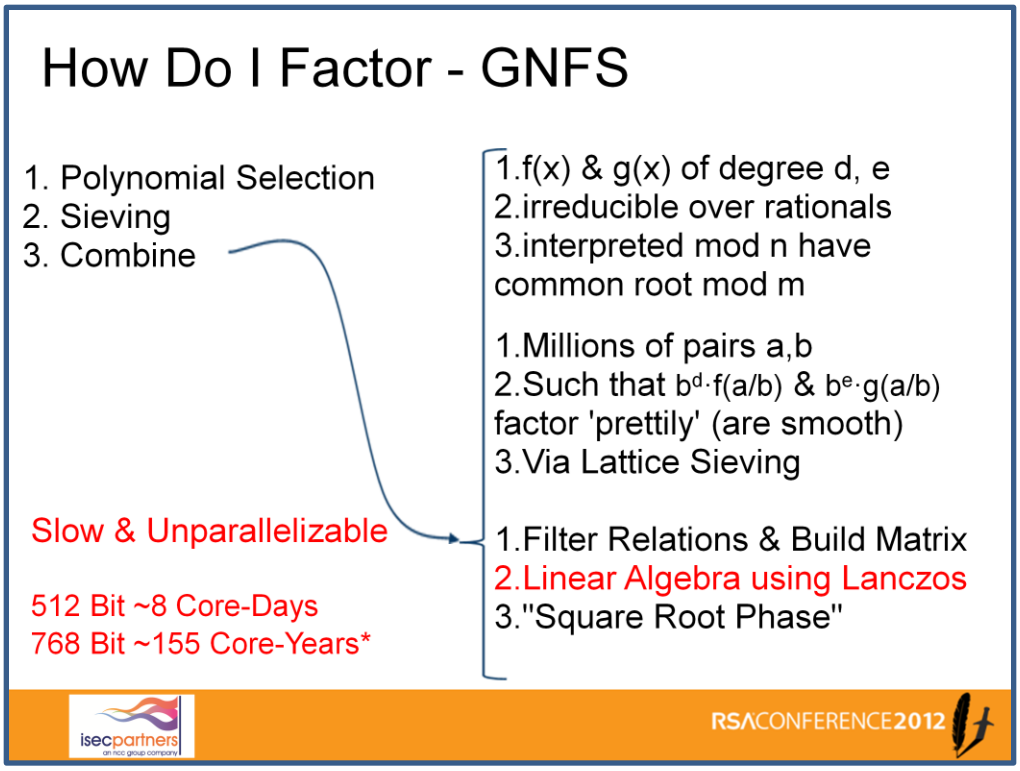
1. Millions of pairs a,b
2. Such that $b^d \cdot f(a/b)$ & $b^e \cdot g(a/b)$ factor 'prettily' (are smooth)
3. Via Lattice Sieving

How Do I Factor - GNFS



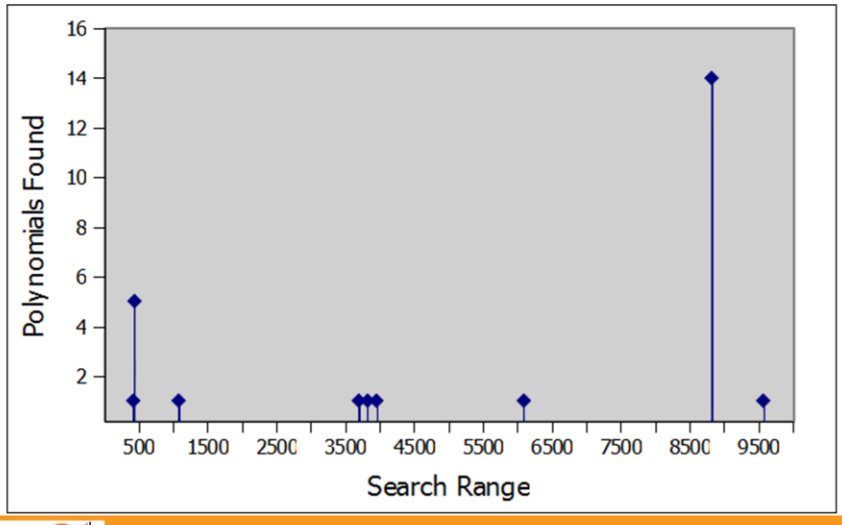


Why is it unparrellizable?
http://www.mersenneforum.org/showthread.php?t=15361

* is because the 768 bit semiprime used Block Weildmann as opposed to msieve's block lanczos algorithm.
http://www.mersenneforum.org/showthread.php?t=12958

How Do I Factor

1.Polynomial Selection



msieve by jasonp

Beautiful C Code
All Factoring Algorithms
- Trial Division
- Phollard Rho
- ECM
- GNFS

Actively Developed & Maintained
Active Support Channel
Active Community

Polynomial Selection

1.f(x) & g(x) of degree d, e
2.irreducible over rationals
3.interpreted mod n have common root mod m

Sieving

1.Millions of pairs a,b
2.Such that $b^d \cdot f(a/b)$ & $b^e \cdot g(a/b)$ factor 'prettily' (are smooth)
3.Via Lattice Sieving

Combine

1.Filter Relations & Build Matrix
2.Linear Algebra using Lanczos
3."Square Root Phase"

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jasonp?

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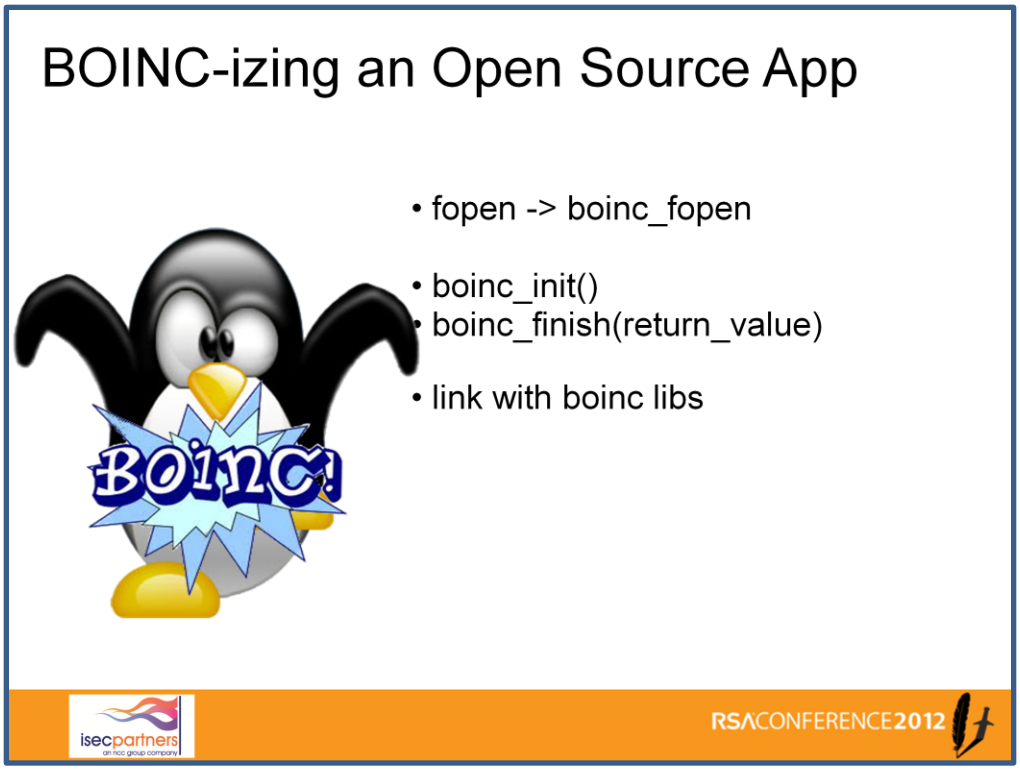
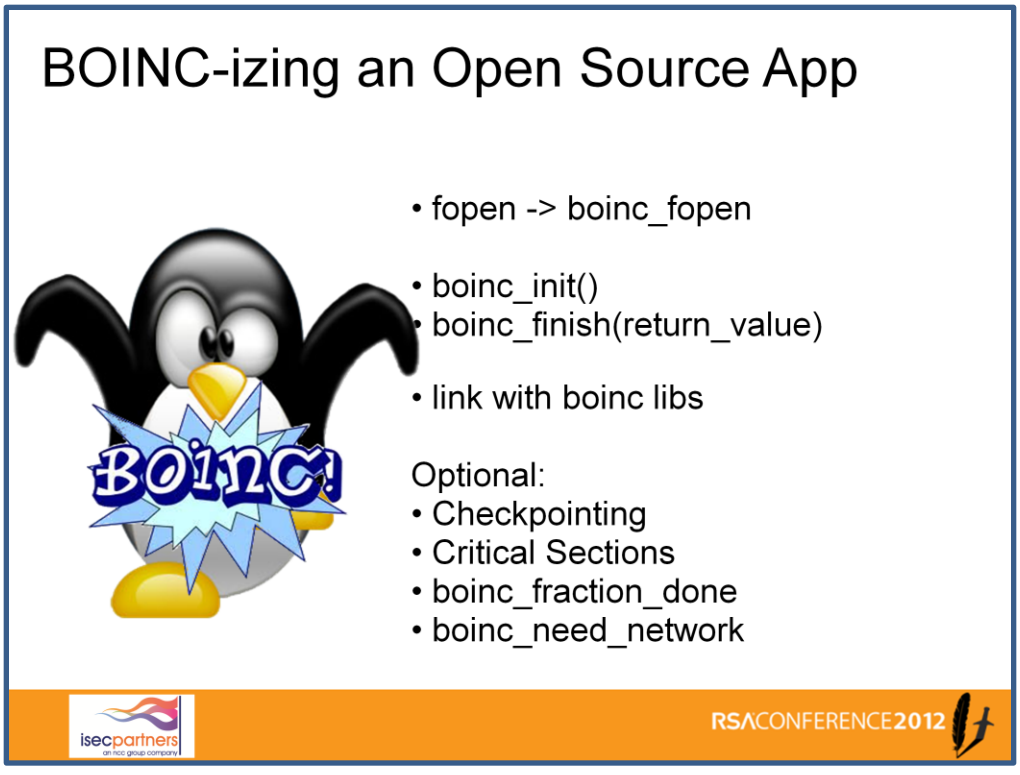


boinc_init

- http://boinc.berkeley.edu/trac/wiki/OptionsApi



Writing your own application ground-up for BOINC is outside the scope of this talk, as is porting an application 'fully' to BOINC to take advantage of all its options. But you can start here:

http://www.boinc-wiki.info/BOINC_Development#Introduction_to_Developing_a_BOINC_Application

Rewiring msieve into a BOINC Application

```
@@ -2852,7 +2891,33 @@
+#ifdef HAVE_BOINC
 int main(int argc, char **argv)
+{
+ int newArgc, ret;
+ char** newArgv;
+ myboincstart(&newArgc, &newArgv, argv[0]);
+ ret = sieve_main(newArgc, newArgv);
+ boinc_finish(ret);
+ return ret;
+}
+
+
+int sieve_main(int argc, char **argv)
+#else
+int main(int argc, char **argv)
+#endif
 {
```

Rewiring msieve into a BOINC Application

```
void myboincstart(int* argc, char *** argv, char* name)
{
    char in[500], out[500];
    boinc_init();
    boinc_resolve_filename("input_data", in, 500);
    boinc_resolve_filename("output_data", out, 500);

    *argc = 0;
    argv = new char*[7];
    argv[(*argc)++] = name;
    argv[(*argc)++] = "-i";
    argv[(*argc)++] = in;
    argv[(*argc)++] = "-nf";
    argv[(*argc)++] = out;
    argv[(*argc)++] = "-np";
    argv[(*argc)++] = "\0";
}
```

BOINC-izing an Open Source App

- fopen -> boinc_fopen
- boinc_init()
- boinc_finish(return_value)
- link with boinc libs

BOINC-izing an Open Source App

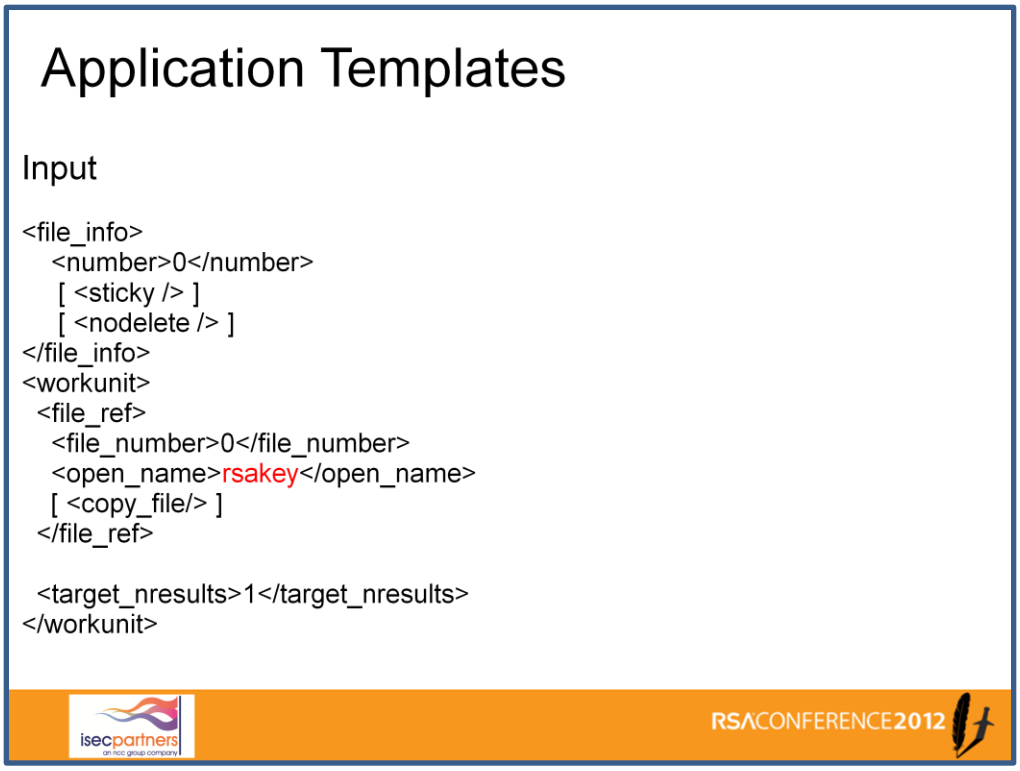
- fopen -> boinc_fopen

- boinc_init()
- boinc_finish(return_value)

- boinc_resolve_filename

```
fopen("logfile", "w")

boinc_resolve_filename("logfile", buffer);
boinc_fopen(buffer, "w")
// buffer -> workunit12345_0_1
```

- link with boinc libs



Info

- http://boinc.berkeley.edu/trac/wiki/BoincFiles
- http://boinc.berkeley.edu/trac/wiki/BasicApi#filenames
- http://boinc.berkeley.edu/trac/wiki/JobSubmission
- http://www.boinc-wiki.info/Files_and_File_References

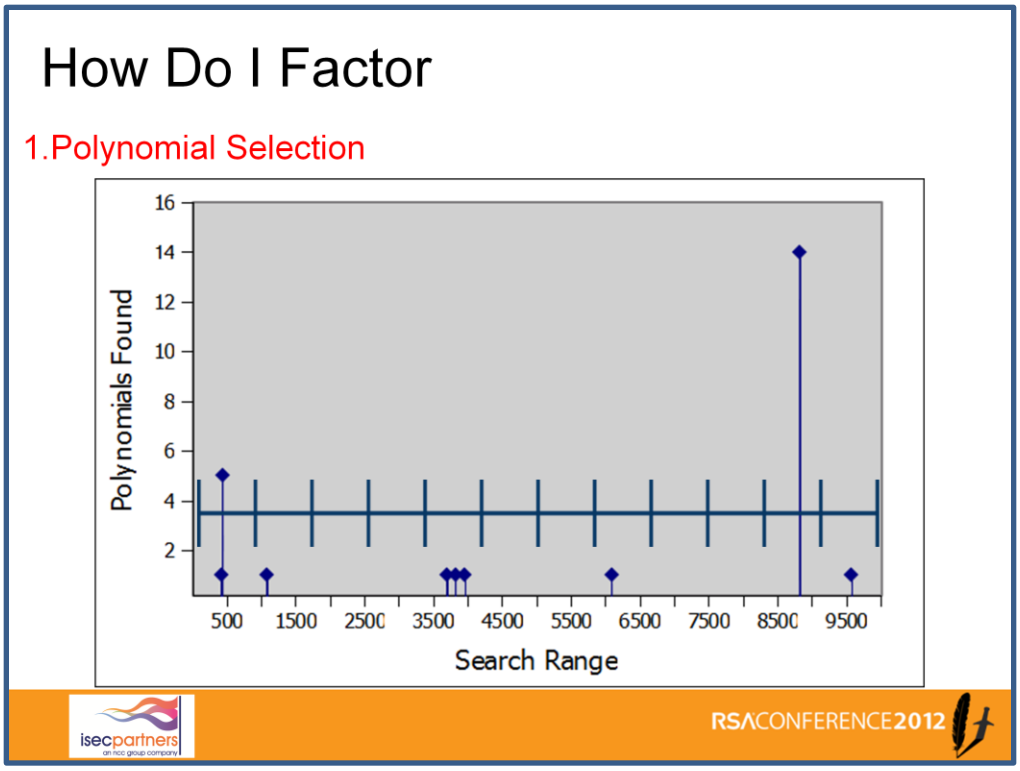
Application Templates

Input

```
<file_info>
   <number>0</number>
    [ <sticky /> ]
    [ <nodelete /> ]
</file_info>
<workunit>
  <file_ref>
    <file_number>0</file_number>
    <open_name>rsakey</open_name>
    [ <copy_file/> ]
  </file_ref>

  <target_nresults>1</target_nresults>
</workunit>
```

Output

```
<file_info>
  <name><OUTFILE_0/></name>
  <generated_locally/>
  <upload_when_present/>
  <url><UPLOAD_URL/></url>
</file_info>
<result>
 <file_ref>
  <file_name><OUTFILE_0/>
            </file_name>
 <open_name>logfile</open_name>
 [ <copy_file>0|1</copy_file> ]
 [ <optional>0|1</optional> ]
 </file_ref>
</result>
```

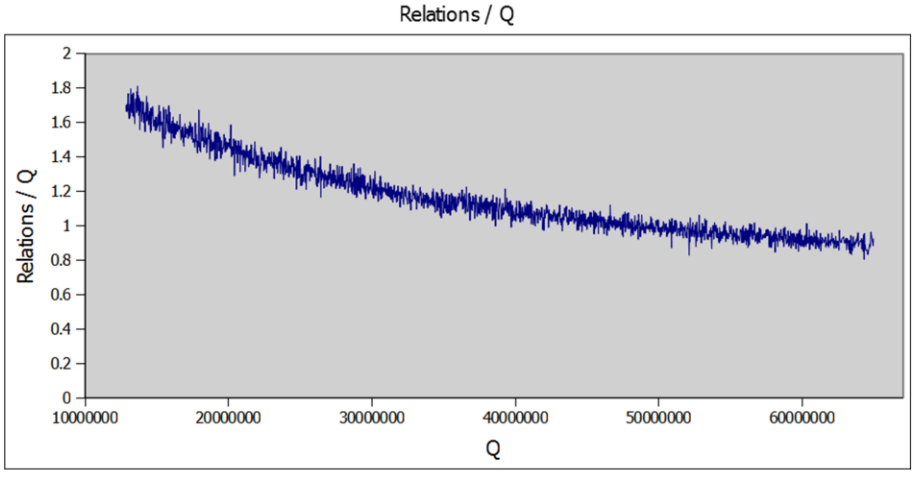


Msieve does have the ability to do GPU polynomial selection – but it's not important to get that running. It's probably more cost effective to do the CPU polynomial selection. Logic says problems should run much faster on the GPU, but instruction set-level optimizing and algorithms don't necessarily translate well to the GPU – it's not magic pixie dust.

See http://mersenneforum.org/showthread.php?t=15725

How Do I Factor

1. Polynomial Selection
2. Sieving

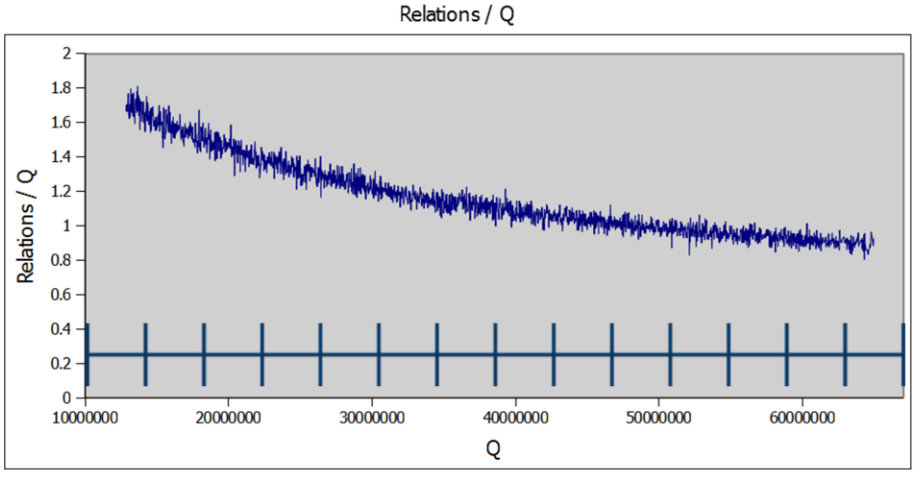


Sieving with GGNFS in BOINC

```
+#ifdef HAVE_BOINC
+int boincstart(int argc_init, char **argv) {
+  boinc_init();
+  boinc_resolve_filename("input_data", path_in, sizeof(path_in) );
+  boinc_resolve_filename("output_data", path_out,sizeof(path_out));
+  argv[argc_init++]="-R";
+  argv[argc_init++]="-a";
+  argv[argc_init++]="-o";
+  argv[argc_init++]=path_out;
+  argv[argc_init++]=path_in;
+  return argc_init;
+}
int main(int argc, char **argv) {
+       int app_argc, retcode;
+       char* app_argv[ARGVCOUNT];
+       app_argv[0] = argv[0];
+       app_argc= boincstart(1,app_argv);
+       retcode= main_lasieve(app_argc,app_argv);
+       boinc_finish(retcode);
+       return retcode;
+}
+int main_lasieve(int argc, char **argv)
+#else
+int main(int argc, char **argv)
+#endif
```

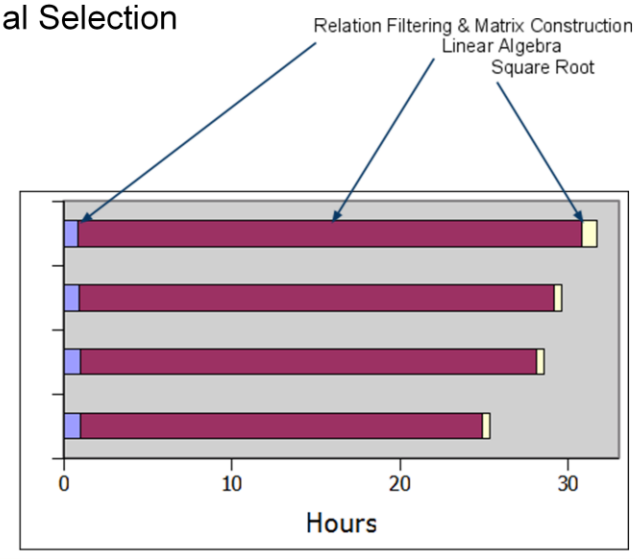
How Do I Factor

1. Polynomial Selection
2. Sieving



How Do I Factor

1. Polynomial Selection
2. Sieving
3. Combine

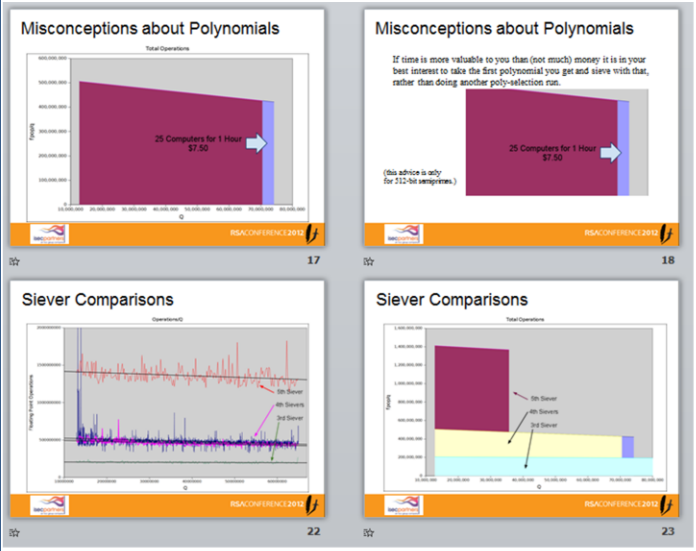


The payoff

```
$ wget -q https://www.eff.org/files/syrian-facebook-attack.pem
$ openssl x509 -noout -modulus -in syrian-facebook-attack.pem
Modulus=D5997DCA6577FCD964FE316987BDED93BA4D9644844629CF26CDA9CC
        EED253AD2EE646EE1CF8AC95D18FA014A2EC29672009BD684F79579A
        AA8D7E73E797F6B3
$ python
>>> n = int('D5997DCA6577FCD964FE316987BDED93BA4D9644844629CF26C
             DA9CCEED253AD2EE646EE1CF8AC95D18FA014A2EC29672009BD
             684F79579AAA8D7E73E797F6B3', 16)
>>> n
111871175171822184890047853438937107834419894175266549329387466 5
   9182160987488338442802072394008666085971431614387661703466578
   380319053521569571009086355123L
>>> p = 10431832711621412355078235716253440775473942492929486918
        608964371166209731389 9
>>> q = 10724019284472797831715458754067770262540924005825331696
        4568310846932737705177
>>> n - (p * q)
0L
```


https://www.eff.org/deeplinks/2011/05/syrian-man-middle-against-facebook

Factoring Details



Moved to their own slide deck for time/relevance

Available on github.

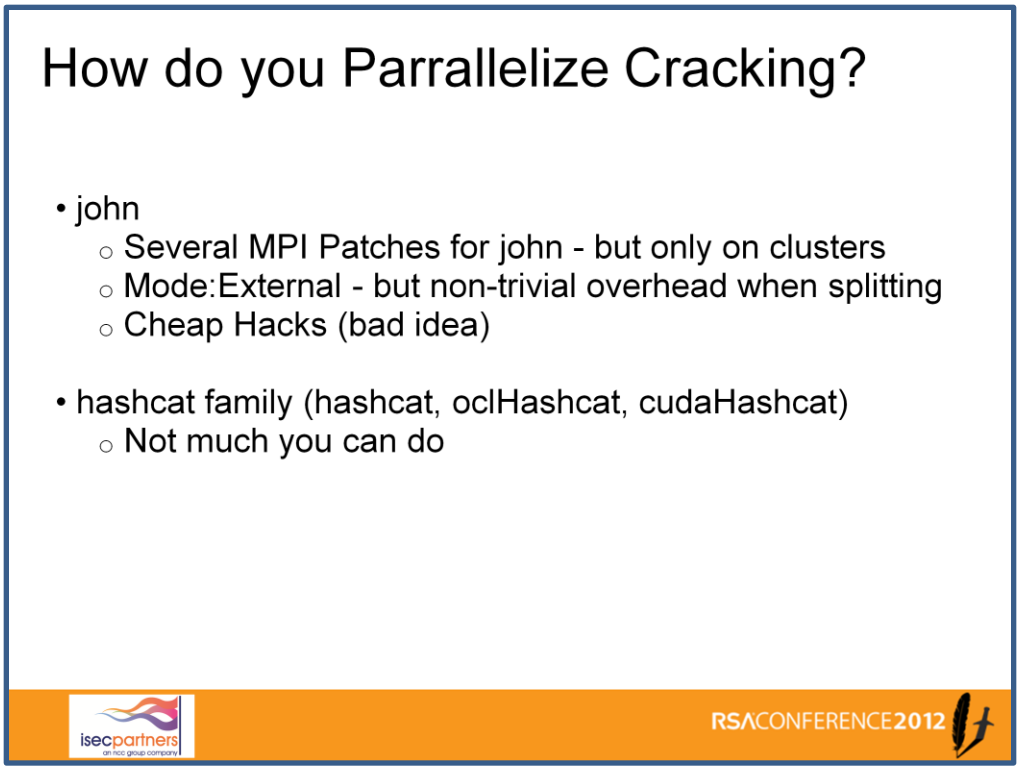
So Far

- BOINC
  - Why and How
  - Applications - Open source ⇨ BOINC Application
- Factoring RSA

Next

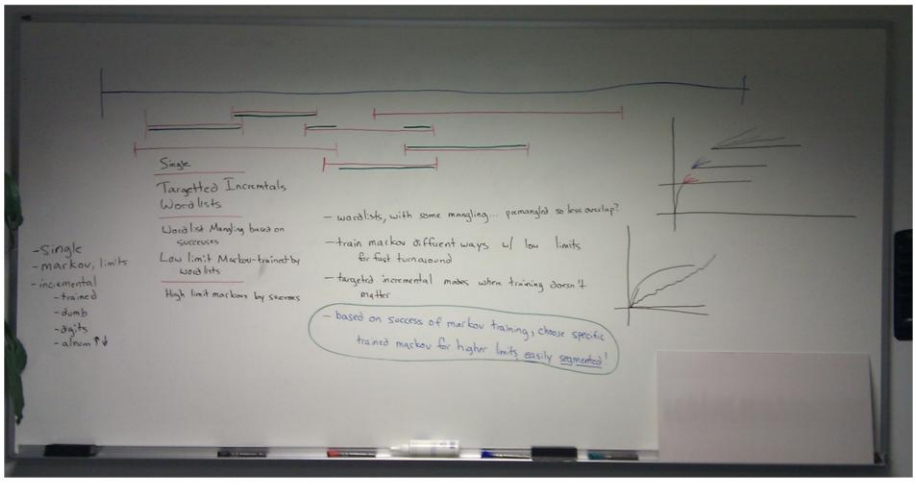
- BOINC
  - Close Source Applications
  - GPU Applications
- Hands-off Cracking Passwords
- Log File Analysis

Cracking



- http://openwall.info/wiki/john/parallelization

Enter the Magic

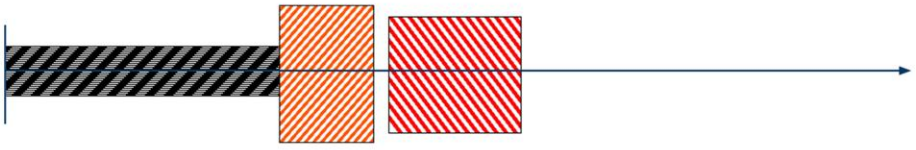


All Possible Passwords

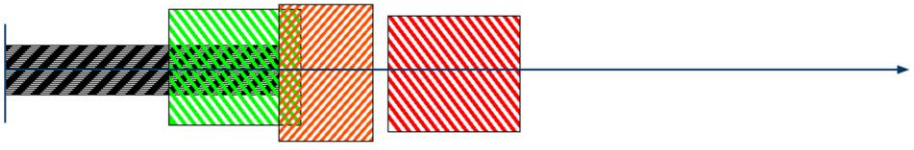
Brute Force

Wordlist

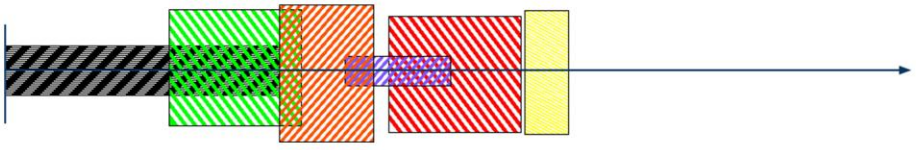
Two Wordlists!



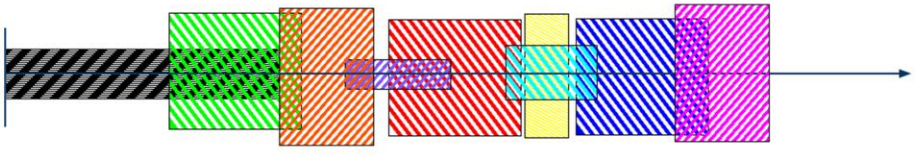
Let me try this…



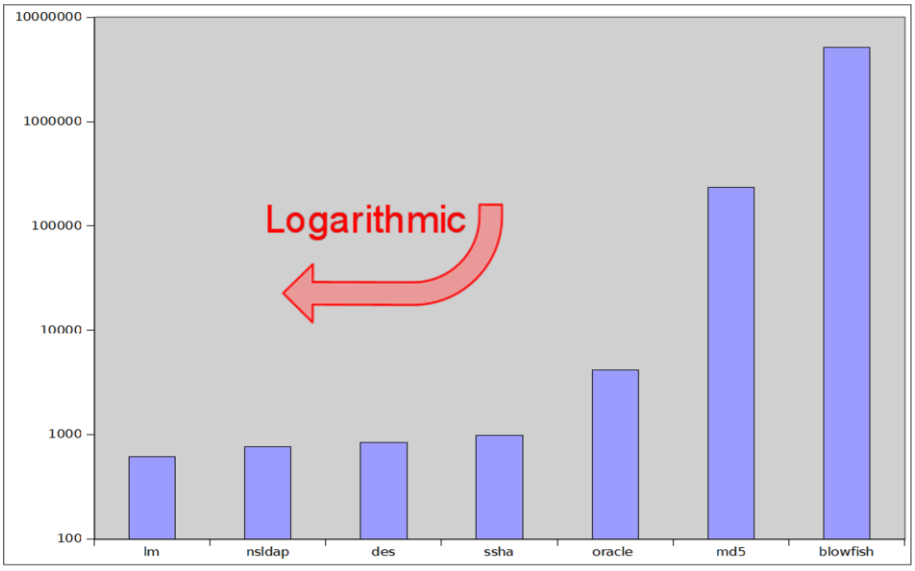
Foreign Wordlists!



Kitchen Sink.



Not all hashes are created equal

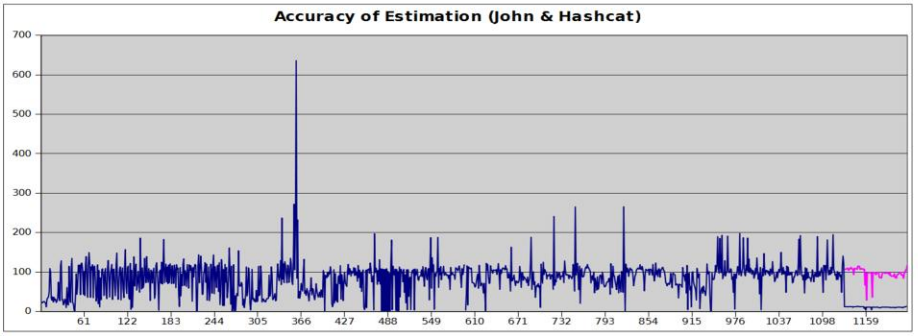


My Approach

Phase 1: --single
Phase 2: 1 hour incremental

My Approach

Phase 1: --single
Phase 2: 1 hour incremental



The purple is a constant-adjusted factor. I was off initially, but just multiplied it all, and it comes out nicely.

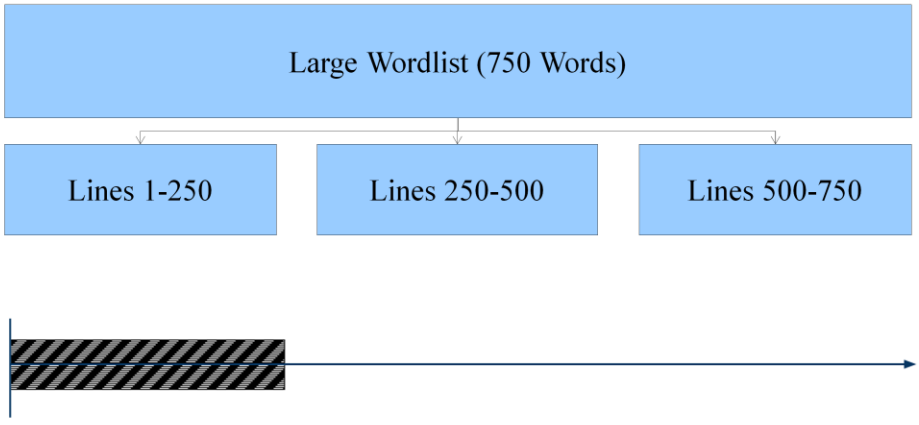
My Approach

Phase 1: --single
Phase 2: 1 hour incremental

Large Wordlist

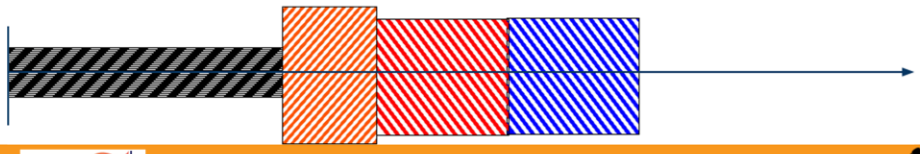
My Approach

Phase 1: --single
Phase 2: 1 hour incremental



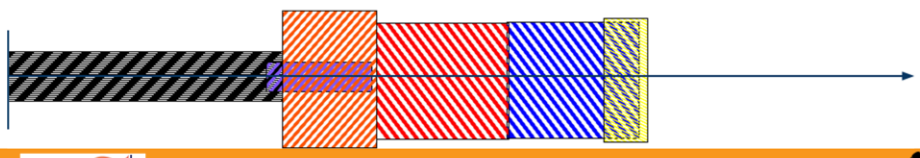
My Approach

Phase 1: --single
Phase 2: 1 hour incremental
Wordlists



My Approach

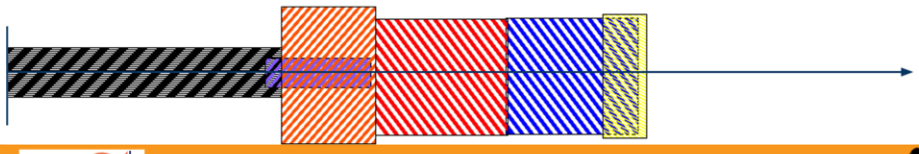
Phase 1: --single
Phase 2: 1 hour incremental
Wordlists
Phase 3: Wordlist Rules
High-Probability Markov Words



My Approach

Phase 1: --single
Phase 2: 1 hour incremental
Wordlists
Phase 3: Wordlist Rules
High-Probability Markov Words

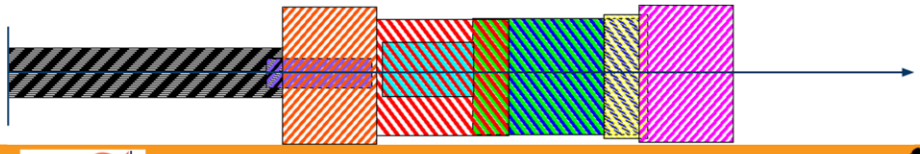
Very carefully pruned wordlists.



All wordlists, including the markov lists, were de-duped against each other, and the generated-mangling rules were also de-duped from the original lists.

My Approach

Phase 1: --single
Phase 2: 1 hour incremental
Wordlists
Phase 3: Wordlist Rules
High-Probability Markov Words
Phase 4: Phase 3 Markovs + Rules
Low-Probability Markov Words
Phase 5: Phase 4 Markovs + Rules

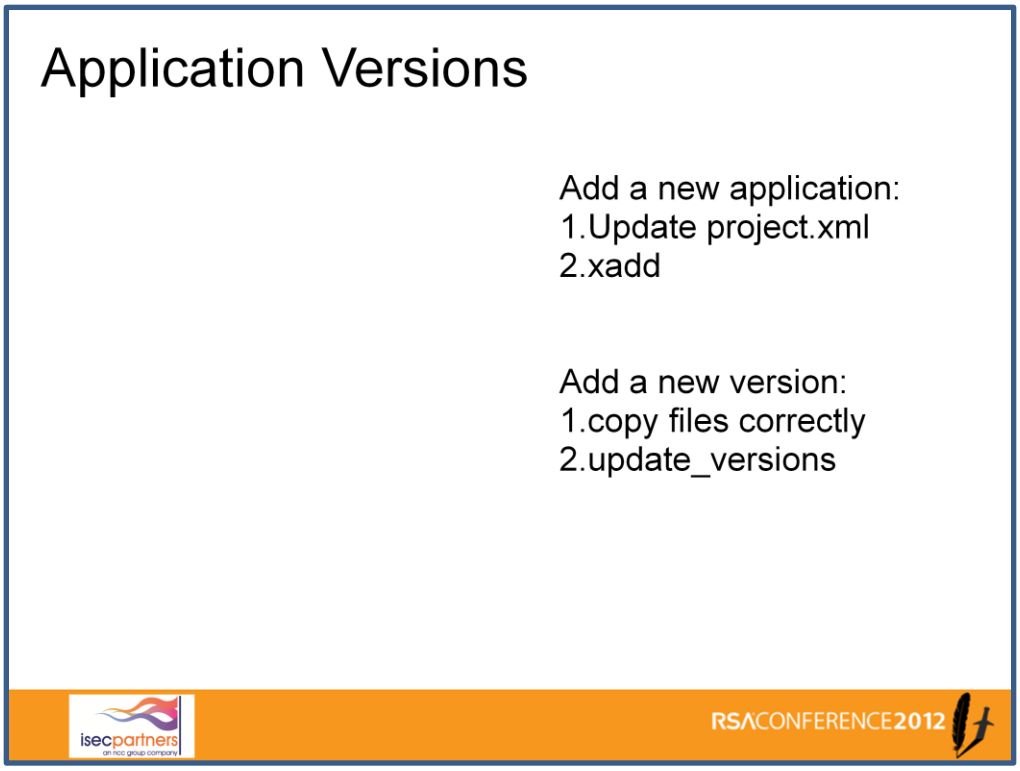


* not actually john the ripper's logo, but a google image result for it, that I think looks awesome

Rewiring John into a BOINC App

```
+int main(int argc, char **argv) {
+       int status = boinc_init();
+       boinc_resolve_filename("john.conf", confFile, sizeof(confFile) );
+       boinc_resolve_filename("passwordlist", passlist, sizeof(passlist) );
+
+       int i, newArgc = 2, hasWordlist = 0;
+       for(i=1; i < argc; i++) {
+            newArgc++;
+            hasWordlist = strstr(argv[i], "<<WORDLIST>>") ? i : hasWordlist; }
+       if(hasWordlist) {
+           boinc_resolve_filename("wordlist", wordlistName, 512 );
+           snprintf(wordlistParameter, 612, "--wordlist=%s", wordlistName); }
+
+       newArgv[i=0] = argv[0];
+       for (i++; i<argc; i++) newArgv[i] = i == hasWordlist ?
+                                           wordlistParameter : argv[i];
+       newArgv[i] = passlist;
+       int ret = john_main(newArgc, newArgv);
+       boinc_finish(ret);
+       return ret;
+}
+int john_main(int argc, char **argv)
+#else
int main(int argc, char **argv)
+#endif
```

*heavily abbreviated and trimmed



Info
- Project.xml http://www.boinc-wiki.info/Project_XML_Document
- http://boinc.berkeley.edu/trac/wiki/XaddTool
- http://boinc.berkeley.edu/trac/wiki/AppVersion
- http://boinc.berkeley.edu/trac/wiki/AppVersionNew
- http://boinc.berkeley.edu/trac/wiki/UpdateVersions
- http://www.boinc-wiki.info/Applications_and_Application_Versions

Lots of links off this article
- http://www.boinc-wiki.info/Adding_Application_Versions

Application Versions

```
apps/
  name/
    name_version.minor_platform[.ext]
```

Add a new application:
1.Update project.xml
2.xadd

Add a new version:
1.copy files correctly
2.update_versions

Application Versions

```
apps/
  name/
    name_version.minor_platform[.ext]

  msieve/
    msieve_148.1_linux
```

Add a new application:
1.Update project.xml
2.xadd

Add a new version:
1.copy files correctly
2.update_versions

Application Versions

```
apps/
 name/
  name_version.minor_platform[.ext]

 msieve/
  msieve_148.1_linux


 newapp/
  newapp_1.0_linux/
   newapp_1.0_linux
   resourcefile.dat
   somethingelse.db
```

Add a new application:
1.Update project.xml
2.xadd

Add a new version:
1.copy files correctly
2.update_versions

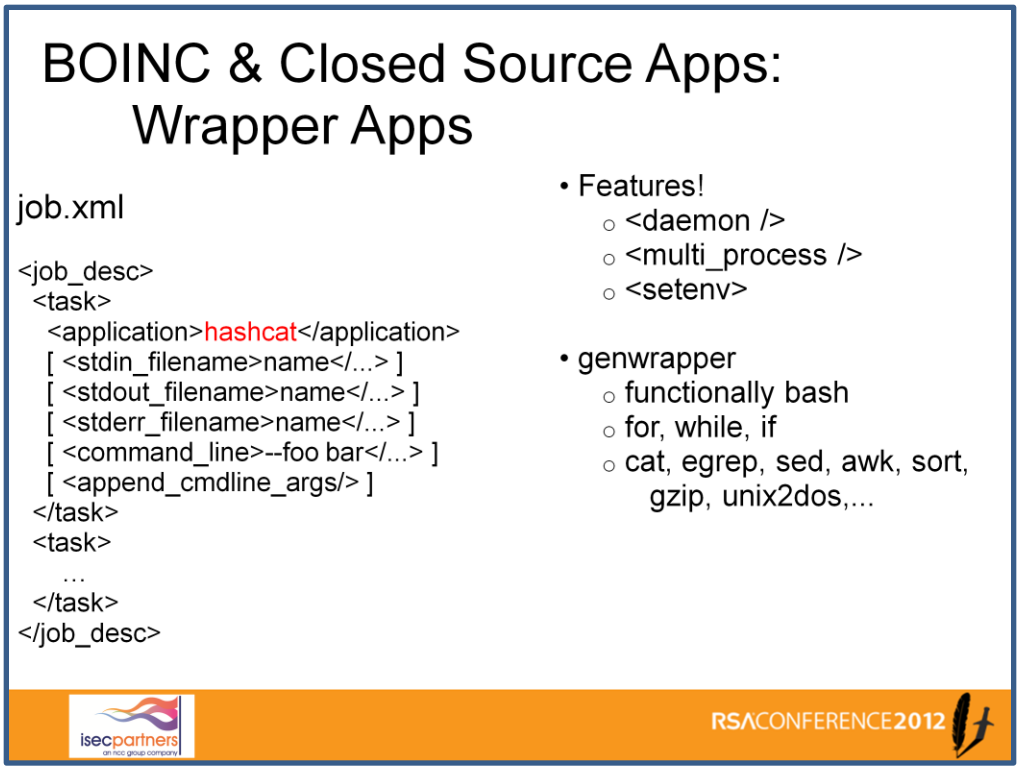
Application Versions

```
apps/
 name/
  name_version.minor_platform[.ext]

 msieve/
  msieve_148.1_linux


 newapp/
  newapp_1.0_linux/
   newapp_1.0_linux
   resourcefile.dat
   somethingelse.db
  newa          ux/
   su      r/
    s    ff.db
```

Add a new application:
1.Update project.xml
2.xadd

Add a new version:
1.copy files correctly
2.update_versions

Hashcat
hashcat, oclhashcat, oclhashcat+, oclhashcat-lite



Info
- http://boinc.berkeley.edu/trac/wiki/WrapperApp

GenWrapper
- http://genwrapper.sourceforge.net/
- http://sourceforge.net/apps/trac/genwrapper/wiki/manual

Files are immutable, so if you create job.xml – you can never have another job.xml! But the file must be accessible as "job.xml"! Annoying!

So we use the logical=physical trick:
http://boinc.berkeley.edu/trac/wiki/UpdateVersions#extrainfo

I recommend the format:
job.xml=job.xml-1.0-appname
See sample-server/README

App Plans & GPU Stuff

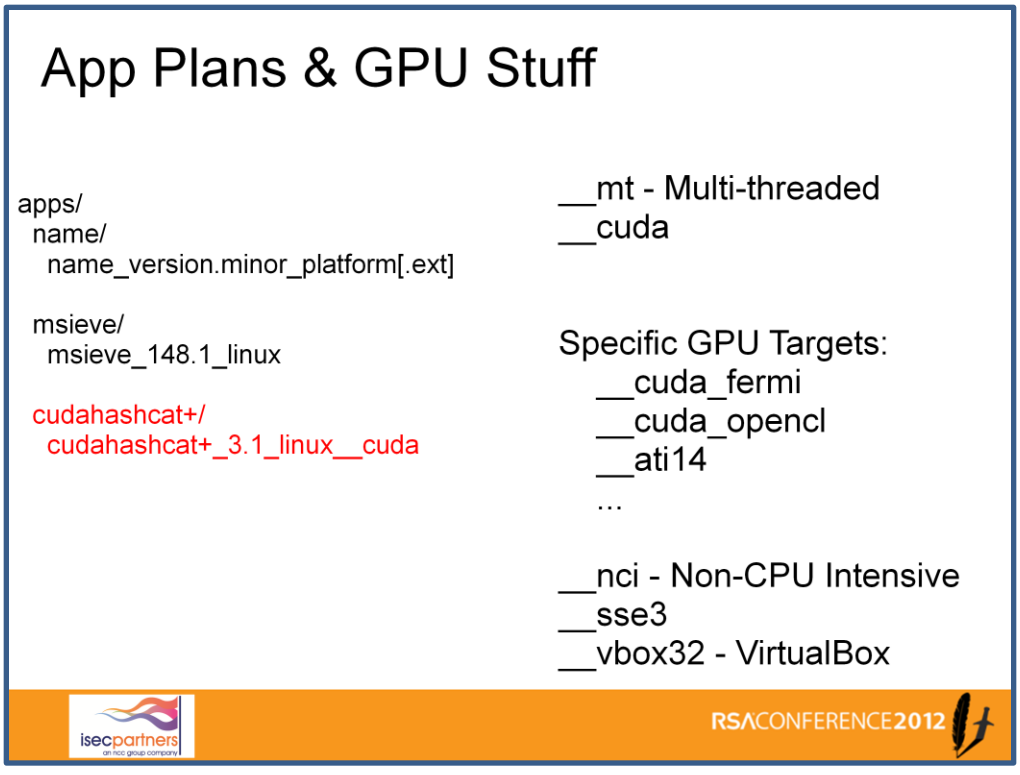
```
apps/
  name/
    name_version.minor_platform[.ext]

  msieve/
    msieve_148.1_linux
```

App Plans & GPU Stuff

apps/
  name/
    name_version.minor_platform[.ext]

  msieve/
    msieve_148.1_linux

  cudahashcat+/
    cudahashcat+_3.1_linux__cuda

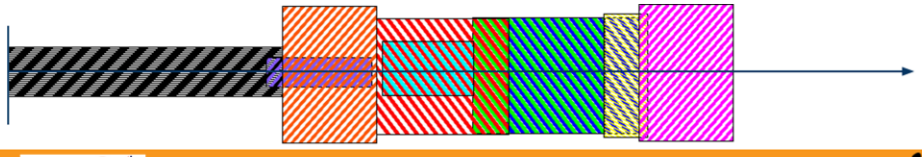


App Plans

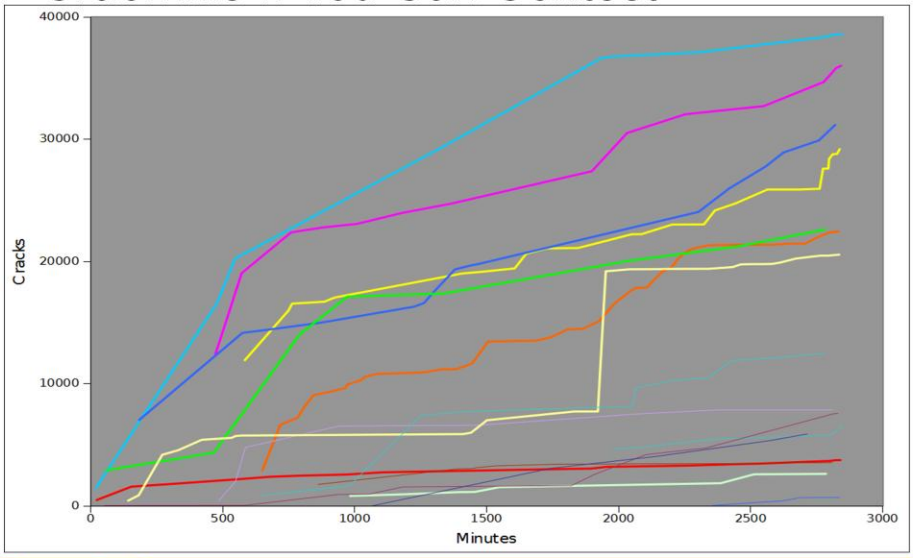
- http://boinc.berkeley.edu/trac/wiki/AppPlan
- GPU: http://boinc.berkeley.edu/trac/wiki/AppCoprocessor
- GPU: http://boinc.berkeley.edu/trac/wiki/GPUApp
- CUDA: http://boinc.berkeley.edu/trac/wiki/CudaApps
- MPI: http://boinc.berkeley.edu/trac/wiki/MpiApps
- http://boinc.berkeley.edu/trac/wiki/AppMultiThread
- Vbox: http://boinc.berkeley.edu/trac/wiki/VirtualBox
- NCI: http://boinc.berkeley.edu/trac/wiki/NonCpuIntensive

My Approach

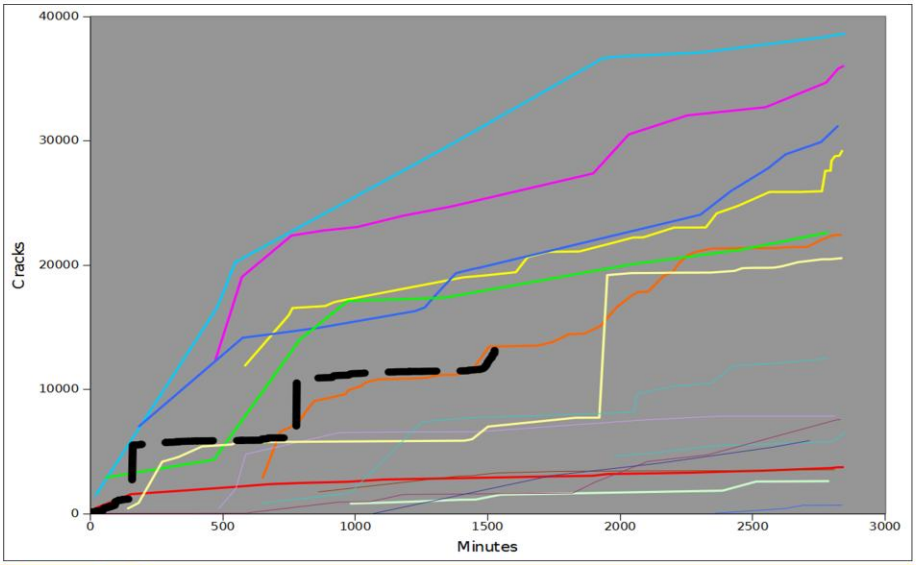
Phase 1: --single
Phase 2: 1 hour incremental
Wordlists
Phase 3: Wordlist Rules
High-Probability Markov Words
Phase 4: Phase 3 Markovs + Rules
Low-Probability Markov Words
Phase 5: Phase 4 Markovs + Rules



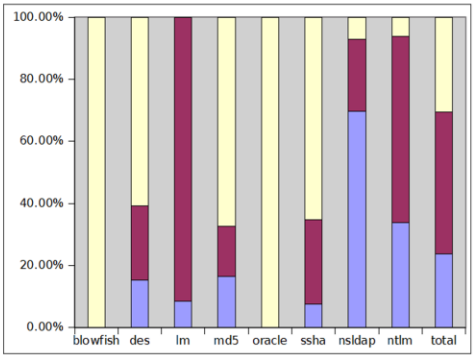
Benchmarking: 2010 Defcon Korelogic Crack Me If You Can Contest

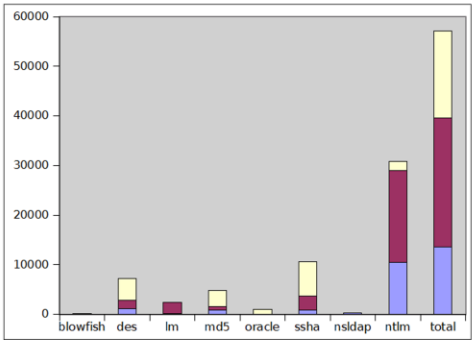


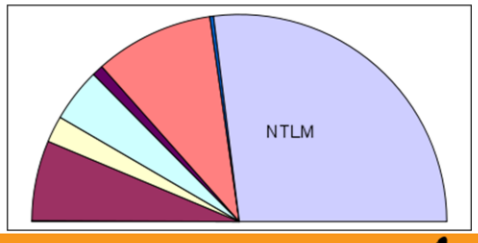
Abject Failure.



Failure by Hash Type







Lessons Learned

- Iterative Cracking

  new pattern -> maskprocessor -> rules -> cracks
  /\ \/
  new plains <- random rules <- new dic
- Automatic mangle rules creation
- Observations from cracked passwords

- Cracked password lists
- Actually Crack LM

Log File Analysis

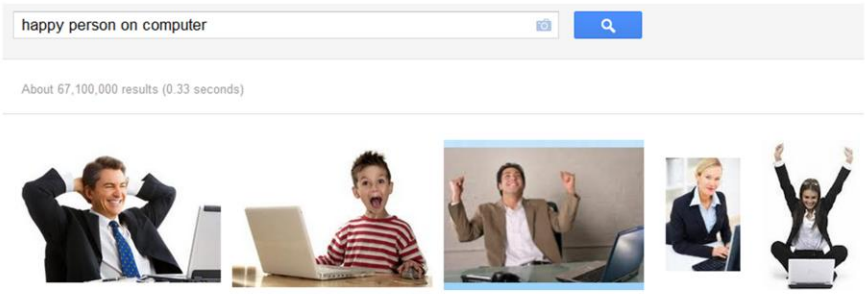
RSA CONFERENCE 2012

Assumptions

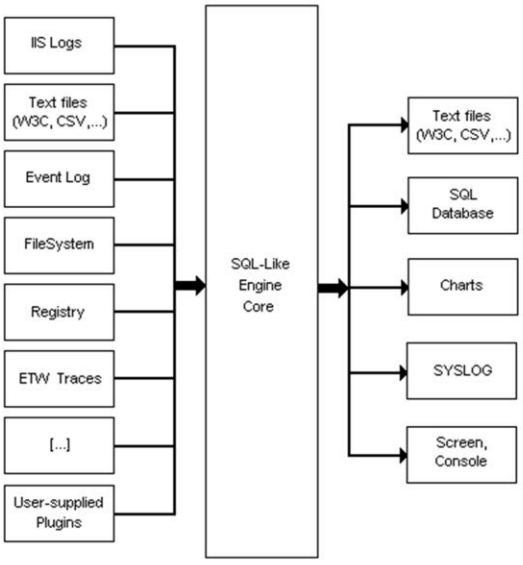
- Produce or collect a lot of data.
- Intelligent and curious people

Solution: Let them play with it

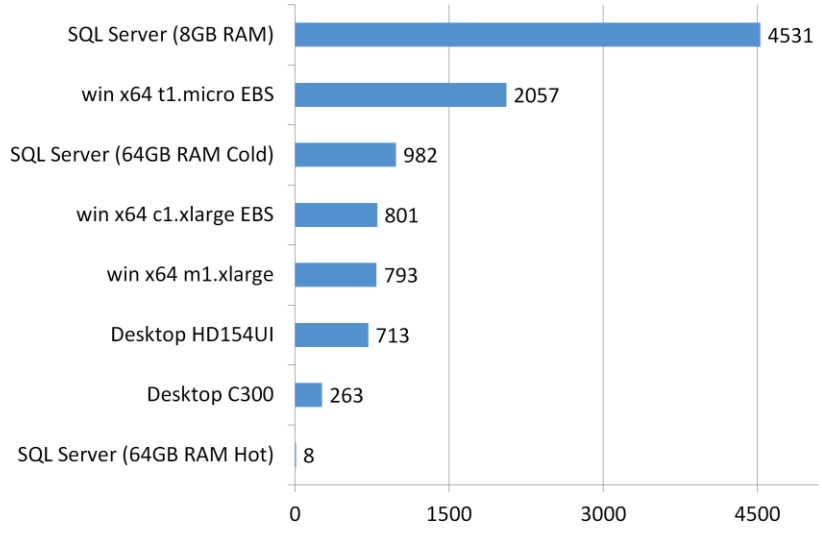
- Produce or collect a lot of data.
- Intelligent and curious people



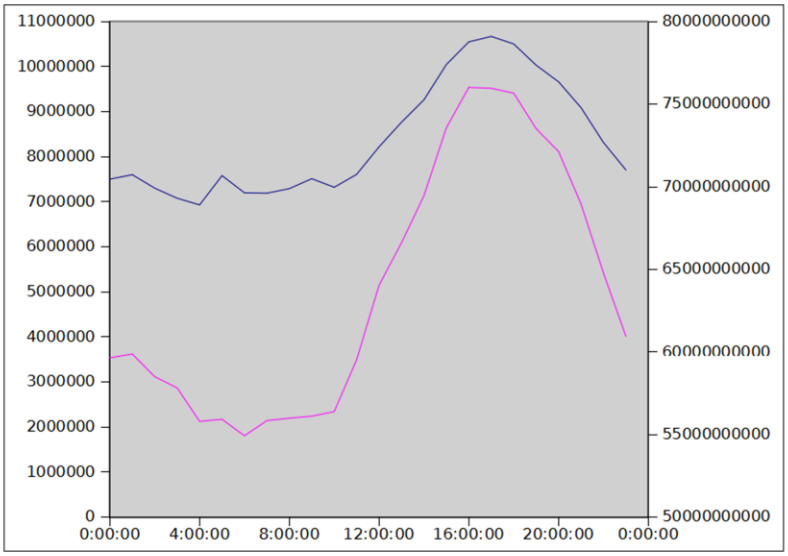
Enter Microsoft LogParser…



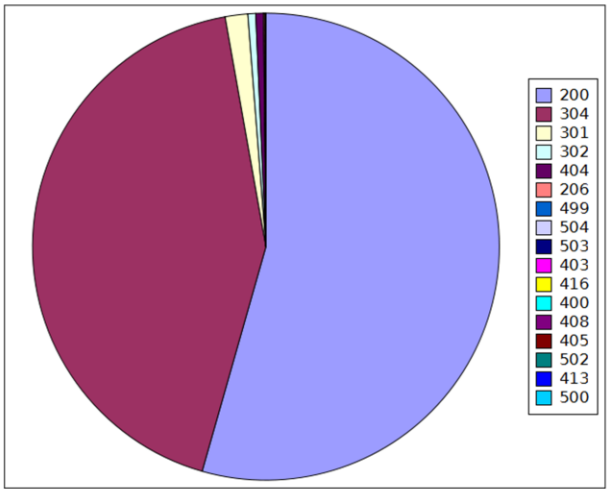
Are You Sure? Why BOINC?



What you get: Standard Stuff



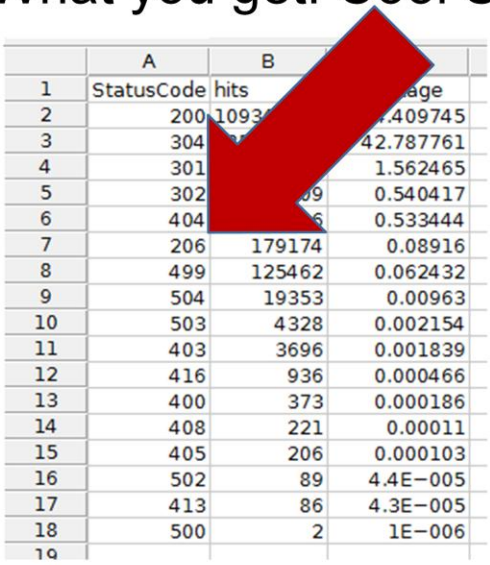
What you get: Standard Stuff



What you get: Cool Stuff

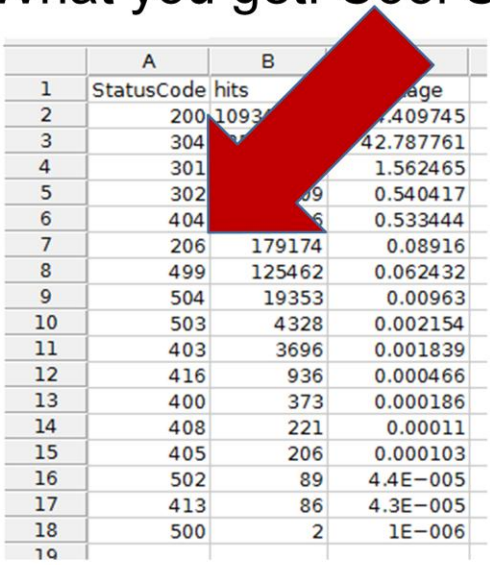
	A	B	C
1	StatusCode	hits	Percentage
2	200	109340431	54.409745
3	304	85985190	42.787761
4	301	3139890	1.562465
5	302	1086009	0.540417
6	404	1071996	0.533444
7	206	179174	0.08916
8	499	125462	0.062432
9	504	19353	0.00963
10	503	4328	0.002154
11	403	3696	0.001839
12	416	936	0.000466
13	400	373	0.000186
14	408	221	0.00011
15	405	206	0.000103
16	502	89	4.4E−005
17	413	86	4.3E−005
18	500	2	1E−006
19			

What you get: Cool Stuff



	A	B	
1	StatusCode	hits	age
2	200	1093	.409745
3	304		42.787761
4	301		1.562465
5	302	09	0.540417
6	404	6	0.533444
7	206	179174	0.08916
8	499	125462	0.062432
9	504	19353	0.00963
10	503	4328	0.002154
11	403	3696	0.001839
12	416	936	0.000466
13	400	373	0.000186
14	408	221	0.00011
15	405	206	0.000103
16	502	89	4.4E−005
17	413	86	4.3E−005
18	500	2	1E−006
19			

What you get: Cool Stuff

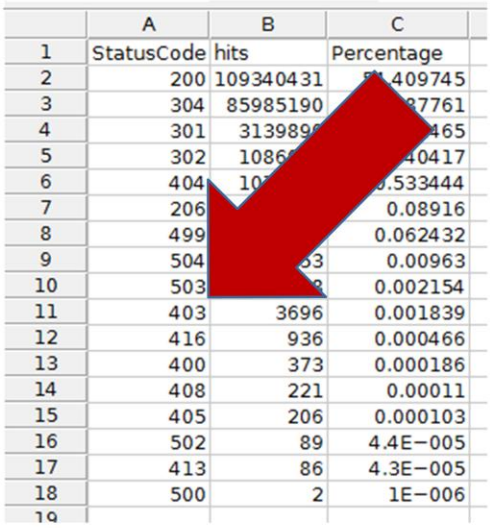


	A	B	
1	StatusCode	hits	age
2	200	1093	.409745
3	304		42.787761
4	301		1.562465
5	302	09	0.540417
6	404	6	0.533444
7	206	179174	0.08916
8	499	125462	0.062432
9	504	19353	0.00963
10	503	4328	0.002154
11	403	3696	0.001839
12	416	936	0.000466
13	400	373	0.000186
14	408	221	0.00011
15	405	206	0.000103
16	502	89	4.4E−005
17	413	86	4.3E−005
18	500	2	1E−006
19			

206 Partial Content

The server is delivering only part of the resource due to a range header sent by the client. The range header is used by tools like wget to enable resuming of interrupted downloads, or split a download into multiple simultaneous streams.

What you get: Cool Stuff

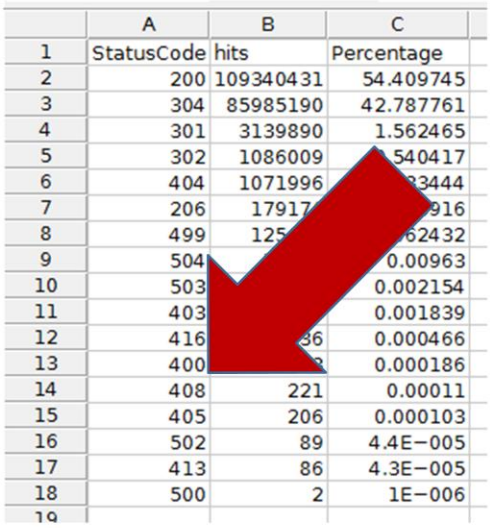


	A	B	C
1	StatusCode	hits	Percentage
2	200	109340431	[illegible]409745
3	304	85985190	[illegible]87761
4	301	313989[illegible]	[illegible]465
5	302	1086[illegible]	[illegible]40417
6	404	10[illegible]	[illegible].533444
7	206	[illegible]	0.08916
8	499	[illegible]	0.062432
9	504	[illegible]53	0.00963
10	503	[illegible]3	0.002154
11	403	3696	0.001839
12	416	936	0.000466
13	400	373	0.000186
14	408	221	0.00011
15	405	206	0.000103
16	502	89	4.4E−005
17	413	86	4.3E−005
18	500	2	1E−006
19			

403 Forbidden

The request was a legal request, but the server is refusing to respond to it. Unlike a *401 Unauthorized* response, authenticating will make no difference.

What you get: Cool Stuff



	A	B	C
1	StatusCode	hits	Percentage
2	200	109340431	54.409745
3	304	85985190	42.787761
4	301	3139890	1.562465
5	302	1086009	.540417
6	404	1071996	3444
7	206	17917	916
8	499	125	62432
9	504		0.00963
10	503		0.002154
11	403		0.001839
12	416	36	0.000466
13	400	3	0.000186
14	408	221	0.00011
15	405	206	0.000103
16	502	89	4.4E−005
17	413	86	4.3E−005
18	500	2	1E−006
19			

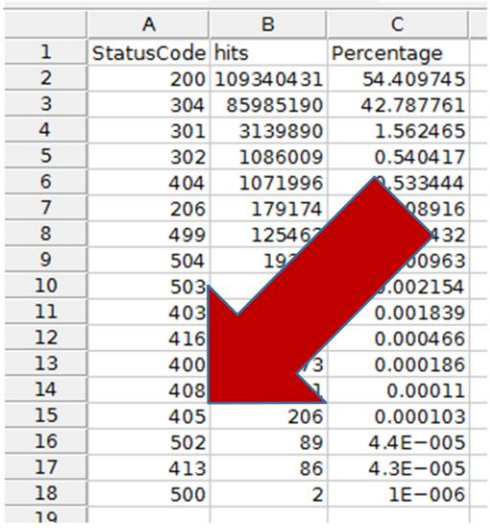
408 Request Timeout

The server timed out waiting for the request. According to W3 HTTP specifications: "The client did not produce a request within the time that the server was prepared to wait. The client MAY repeat the request without modifications at any later time."

What you get: Cool Stuff

	A	B	C
1	StatusCode	hits	Percentage
2	200	109340431	54.409745
3	304	85985190	42.787761
4	301	3139890	1.562465
5	302	1086009	0.540417
6	404	1071996	0.533444
7	206	179174	08916
8	499	125462	432
9	504	19	00963
10	503		0.002154
11	403		0.001839
12	416		0.000466
13	400	73	0.000186
14	408	1	0.00011
15	405	206	0.000103
16	502	89	4.4E−005
17	413	86	4.3E−005
18	500	2	1E−006
19			

What you get: Cool Stuff



	A	B	C
1	StatusCode	hits	Percentage
2	200	109340431	54.409745
3	304	85985190	42.787761
4	301	3139890	1.562465
5	302	1086009	0.540417
6	404	1071996	0.533444
7	206	179174	08916
8	499	125462	432
9	504	19	00963
10	503		0.002154
11	403		0.001839
12	416		0.000466
13	400	73	0.000186
14	408	1	0.00011
15	405	206	0.000103
16	502	89	4.4E−005
17	413	86	4.3E−005
18	500	2	1E−006
19			

405 Method Not Allowed

A request was made of a resource using a request method not supported by that resource; for example, using GET on a form which requires data to be presented via POST, or using PUT on a read-only resource.

Let's look at those 405s…

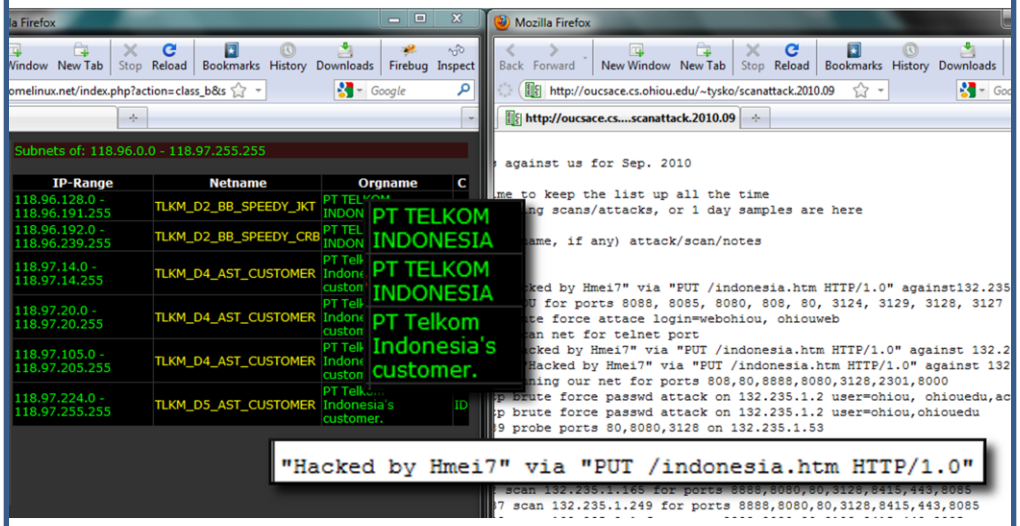
RemoteHost	DateTime	Request	St	Byte	User-Agent
118.96.132.212	6/13/11 18:49	PUT /showthread.php?t=3028	200	26679	Mozilla/4.0 (compatible; MSIE 7.0; Windows NT 5.1; Trident/4.0; InfoPath.2)
118.96.132.212	6/14/11 1:18	PUT /indonesia.htm HTTP/1.1	405	533	Mozilla/4.0 (compatible; MSIE 7.0; Windows NT 5.1; Trident/4.0; InfoPath.2)
118.96.132.212	6/19/11 5:53	PUT /indonesia.htm HTTP/1.1	405	533	Mozilla/4.0 (compatible; MSIE 7.0; Windows NT 5.1; Trident/4.0; InfoPath.2)
118.96.132.212	7/28/11 4:26	PUT /indonesia.htm HTTP/1.0	405	533	Mozilla/4.0 (compatible; MSIE 7.0; Windows NT 5.1; Trident/4.0; InfoPath.2)
118.96.132.212	9/5/11 14:55	PUT /indonesia.htm HTTP/1.0	405	533	Mozilla/4.0 (compatible; MSIE 7.0; Windows NT 5.1; Trident/4.0; InfoPath.2)
118.96.132.212	10/4/11 2:39	PUT /indonesia.htm HTTP/1.0	405	533	Mozilla/4.0 (compatible; MSIE 7.0; Windows NT 5.1; Trident/4.0; InfoPath.2)
118.96.133.139	6/30/11 20:59	PUT /indonesia.htm HTTP/1.1	405	533	Mozilla/4.0 (compatible; MSIE 7.0; Windows NT 5.1; Trident/4.0; InfoPath.2)
118.96.133.139	7/17/11 18:35	PUT /showthread.php?t=4403	200	62963	Mozilla/4.0 (compatible; MSIE 7.0; Windows NT 5.1; Trident/4.0; InfoPath.2)
118.96.133.139	7/29/11 8:18	PUT /indonesia.htm HTTP/1.0	405	533	Mozilla/4.0 (compatible; MSIE 7.0; Windows NT 5.1; Trident/4.0; InfoPath.2)
118.96.133.139	8/18/11 5:15	PUT /forumdisplay.php?f=66/i	200	164048	Mozilla/4.0 (compatible; MSIE 7.0; Windows NT 5.1; Trident/4.0; InfoPath.2)
118.96.133.63	6/11/11 3:10	PUT /indonesia.htm HTTP/1.1	405	533	Mozilla/4.0 (compatible; MSIE 7.0; Windows NT 5.1; Trident/4.0; InfoPath.2)
118.96.133.63	6/14/11 23:18	PUT /showthread.php?t=1088	200	18086	Mozilla/4.0 (compatible; MSIE 7.0; Windows NT 5.1; Trident/4.0; InfoPath.2)
118.96.133.63	6/30/11 3:25	PUT /indonesia.htm HTTP/1.1	405	533	Mozilla/4.0 (compatible; MSIE 7.0; Windows NT 5.1; Trident/4.0; InfoPath.2)
118.96.133.63	6/30/11 3:25	PUT /indonesia.htm HTTP/1.1	405	533	Mozilla/4.0 (compatible; MSIE 7.0; Windows NT 5.1; Trident/4.0; InfoPath.2)
118.96.133.63	8/11/11 14:48	PUT /indonesia.htm HTTP/1.0	405	533	Mozilla/4.0 (compatible; MSIE 7.0; Windows NT 5.1; Trident/4.0; InfoPath.2)
118.96.133.63	9/16/11 14:42	PUT /indonesia.htm HTTP/1.1	405	533	Mozilla/4.0 (compatible; MSIE 7.0; Windows NT 5.1; Trident/4.0; InfoPath.2)
118.96.133.63	10/8/11 1:21	PUT /indonesia.htm HTTP/1.1	405	533	Mozilla/4.0 (compatible; MSIE 7.0; Windows NT 5.1; Trident/4.0; InfoPath.2)
118.96.133.83	8/19/11 16:37	PUT /indonesia.htm HTTP/1.0	405	533	Mozilla/4.0 (compatible; MSIE 7.0; Windows NT 5.1; Trident/4.0; InfoPath.2)
118.96.133.83	9/2/11 14:26	PUT /indonesia.htm HTTP/1.0	405	533	Mozilla/4.0 (compatible; MSIE 7.0; Windows NT 5.1; Trident/4.0; InfoPath.2)
118.96.133.90	6/14/11 17:18	PUT /indonesia.htm HTTP/1.1	405	533	Mozilla/4.0 (compatible; MSIE 7.0; Windows NT 5.1; Trident/4.0; InfoPath.2)
118.96.133.90	7/9/11 9:20	PUT /indonesia.htm HTTP/1.1	405	533	Mozilla/4.0 (compatible; MSIE 7.0; Windows NT 5.1; Trident/4.0; InfoPath.2)
118.96.133.90	9/17/11 8:12	PUT /indonesia.htm HTTP/1.1	405	533	Mozilla/4.0 (compatible; MSIE 7.0; Windows NT 5.1; Trident/4.0; InfoPath.2)
124.82.33.83	9/16/11 10:52	PUT /indonesia.htm HTTP/1.1	405	533	Mozilla/4.0 (compatible; MSIE 7.0; Windows NT 5.1; Trident/4.0; .NET4.0C; .NET4.0E; .NET CLR 2.0.5
180.241.133.53	8/20/11 2:03	PUT /indonesia.txt HTTP/1.1	405	533	Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.1; .NET CLR 1.1.4322; .NET CLR 2.0.50727; .NET4.0

Let's look at those 405s…

RemoteHost	DateTime	Request	St	Byte	User-Agent
118.96.132.212	6/13/11 18:49	PUT /showthread.php?t=3028	200	26679	Mozilla/4.0 (compatible; MSIE 7.0; Windows NT 5.1; Trident/4.0; InfoPath.2)
118.96.132.212	6/14/11 1:18	PUT /indonesia.htm HTTP/1.1	405	533	Mozilla/4.0 (compatible; MSIE 7.0; Windows NT 5.1; Trident/4.0; InfoPath.2)
118.96.132.212			405	533	Mozilla/4.0 (compatible; MSIE 7.0; Windows NT 5.1; Trident/4.0; InfoPath.2)
118.96.132.212			405	533	Mozilla/4.0 (compatible; MSIE 7.0; Windows NT 5.1; Trident/4.0; InfoPath.2)
118.96.132.212			405	533	Mozilla/4.0 (compatible; MSIE 7.0; Windows NT 5.1; Trident/4.0; InfoPath.2)
118.96.132.212			405	533	Mozilla/4.0 (compatible; MSIE 7.0; Windows NT 5.1; Trident/4.0; InfoPath.2)
118.96.133.139	6		405	533	Mozilla/4.0 (compatible; MSIE 7.0; Windows NT 5.1; Trident/4.0; InfoPath.2)
118.96.133.139	7		200	62963	Mozilla/4.0 (compatible; MSIE 7.0; Windows NT 5.1; Trident/4.0; InfoPath.2)
118.96.133.139			405	533	Mozilla/4.0 (compatible; MSIE 7.0; Windows NT 5.1; Trident/4.0; InfoPath.2)
118.96.133.139			200	164048	Mozilla/4.0 (compatible; MSIE 7.0; Windows NT 5.1; Trident/4.0; InfoPath.2)
118.96.133.63			405	533	Mozilla/4.0 (compatible; MSIE 7.0; Windows NT 5.1; Trident/4.0; InfoPath.2)
118.96.133.63	6		200	18086	Mozilla/4.0 (compatible; MSIE 7.0; Windows NT 5.1; Trident/4.0; InfoPath.2)
118.96.133.63			405	533	Mozilla/4.0 (compatible; MSIE 7.0; Windows NT 5.1; Trident/4.0; InfoPath.2)
118.96.133.63			405	533	Mozilla/4.0 (compatible; MSIE 7.0; Windows NT 5.1; Trident/4.0; InfoPath.2)
118.96.133.63	8		405	533	Mozilla/4.0 (compatible; MSIE 7.0; Windows NT 5.1; Trident/4.0; InfoPath.2)
118.96.133.63	9		405	533	Mozilla/4.0 (compatible; MSIE 7.0; Windows NT 5.1; Trident/4.0; InfoPath.2)
118.96.133.63			405	533	Mozilla/4.0 (compatible; MSIE 7.0; Windows NT 5.1; Trident/4.0; InfoPath.2)
118.96.133.83	8		405	533	Mozilla/4.0 (compatible; MSIE 7.0; Windows NT 5.1; Trident/4.0; InfoPath.2)
118.96.133.83			405	533	Mozilla/4.0 (compatible; MSIE 7.0; Windows NT 5.1; Trident/4.0; InfoPath.2)
118.96.133.90	6		405	533	Mozilla/4.0 (compatible; MSIE 7.0; Windows NT 5.1; Trident/4.0; InfoPath.2)
118.96.133.90	7/9/11 9:20	PUT /indonesia.htm HTTP/1.1	405	533	Mozilla/4.0 (compatible; MSIE 7.0; Windows NT 5.1; Trident/4.0; InfoPath.2)
118.96.133.90	9/17/11 8:12	PUT /indonesia.htm HTTP/1.1	405	533	Mozilla/4.0 (compatible; MSIE 7.0; Windows NT 5.1; Trident/4.0; InfoPath.2)
124.82.33.83	9/16/11 10:52	PUT /indonesia.htm HTTP/1.1	405	533	Mozilla/4.0 (compatible; MSIE 7.0; Windows NT 5.1; Trident/4.0; .NET4.0C; .NET4.0E; .NET CLR 2.0.5
180.241.133.53	8/20/11 2:03	PUT /indonesia.txt HTTP/1.1	405	533	Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.1; .NET CLR 1.1.4322; .NET CLR 2.0.50727; .NET4.0

118.96.132.212
118.96.133.139 6
118.96.133.139 7
118.96.133.139
118.96.133.139
118.96.133.63
118.96.133.63 6

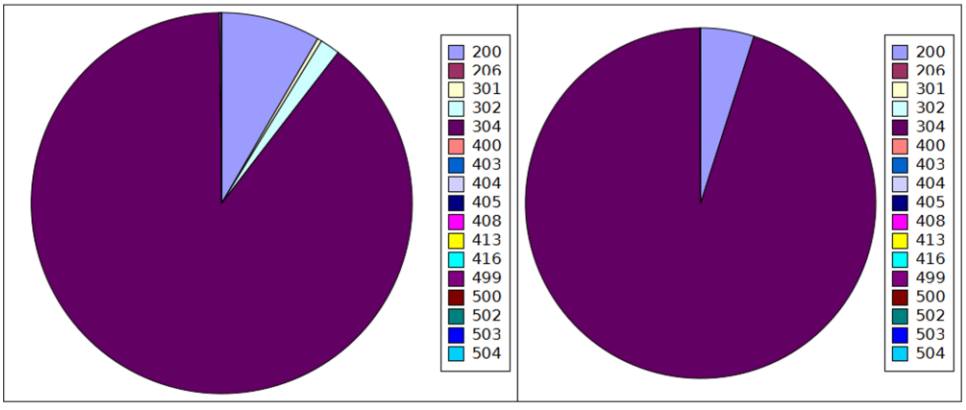
Let's look at those 405s…



What you get: Cool Stuff

Status Code	Average	StDev
200	84.06655	29.836096
206	0.352751	3.98607
301	0.246852	2.972122
302	0.117694	1.299405
304	10.886761	24.349427
400	0.000357	0.155511
403	0.000959	0.092487
404	3.746868	18.036991
405	0.001214	0.322419
408	0.001991	0.406084
413	3E−006	0.001439
416	0.001405	0.285774
499	0.521032	6.503026
500	0	1.5E−005
502	0.000151	0.110485
503	0.008067	0.658489
504	0.046797	1.823632

What you get: Cool Stuff

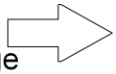


Wrap Things Up

RSACONFERENCE2012

Back to BOINC

1. Set up a BOINC Server
2. Edit config.xml
3. Lock down the server
4. Set up a client image
5. Set up an application
6. Automate the client image
7. ???
8. Profit!



1. Patch source
   or
1. Write job.xml
2. Write input & output templates
3. update_versions
4. Create test workunits
5. Test
6. Repeat 1-6 as needed

Alternatives to BOINC

Password Cracking Only
- Browser Based using Javascript / AJAX / Web Workers
- Durandal http://durandal-project.org/
- Rick Redman of Korelogic's tool

General Architecture
- Amazon Elastic Beanstalk (Java-only)
- Amazon SQS (Write your own wrapper and uploader)
- Bash Scripts/tentakel/multixterm/cssh
- Write your own?
  Will that take more or less than time than configuring BOINC?
  I think more.

Questions?

Big Ups To:
- Brian Holyfield & Joe Hemler
- jasonp

Thanks:
- iSEC Partners
- Gotham Digital Science
- MersenneForum & jasonp

Tom Ritter

http://www.isecpartners.com/
https://github.com/tomrittervg/cloud-and-control