



Mozilla Firefox – The Networking Dashboard

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What is Networking Dashboard?

- **about:networking**
- The goal for this feature is to provide an in-browser dashboard to monitor network activity, similar to Chrome's <about:net-internals>

How did it all begin?

- Google Summer of Code - Jiten Thakkar
- Valentin's Gosu internship at Mozilla

The project:

Wiki page: <https://wiki.mozilla.org/Necko/Dashboard>

- **Information to Display**
- **Diagnostic Tools**
- **Tracing/Debugging**
- **Progress and Ideas**

Information to display:

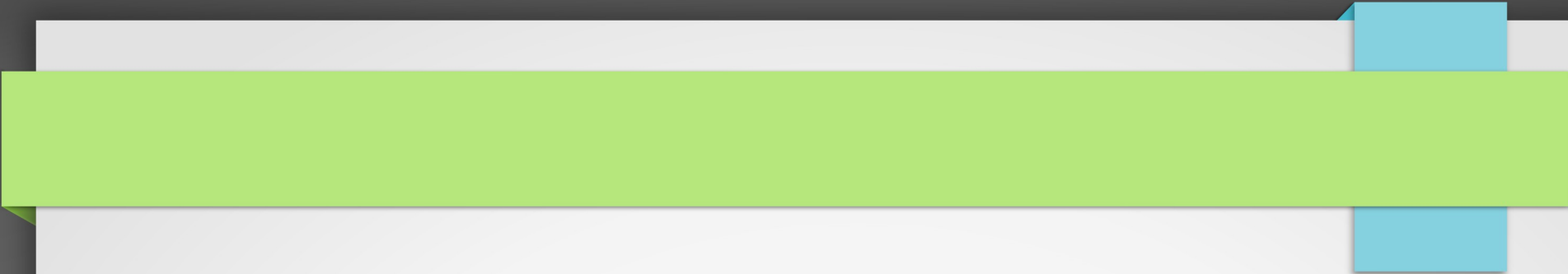
Already implemented by Jiten:

- HTTP(Hostname, Port, SPDY, SSL, Active, Idle)
- WebSocket(Hostname, SSL, Msgs Sent, Msgs Received, Data sent, Data received)
- Sockets(Host, Port, Tcp, Active, Idle)
- DNS(Hostname, Family, Address, Expires)
- Timeline(Total Sent, Total Received)



TODO:

- RTT (Round Trip time)
- Cache status
- Protocol version (1.0 vs 1.1, spdy/2 vs spdy/3 etc..)
- Half open connections
- TTL (Time left before idle expiration for http)



Protocol Version (first days of work at about:networking):

- Add to HttpConnDict dictionary sequence<bool> spdy element
- For every active connection we verify if it is using spdy protocol



Half Open Connections (Bug 888628):

- The Networking Dashboard will be able to display for every host which sockets are half opened and how many there are

During working on Information to display:

- Find error in code: instead of creating an array for active connections and one for idle connections, ReadConnectionEntry was creating an active array two times
- Easy fix: filed as Bug 887566

Diagnostic tools:

- About:networking had none

TODO:

- Can we ping this host? (icmp, tcp, tls levels)
- DNS Lookup
- Failed URL test
- Proxy Settings Test

DNS Lookup Diagnostic Tool:

- Bug 907050 (frontend), 890513 (backend), 912259 (patch over backend)
- Works like a resolver DNS
- Interaction between JavaScript and C++ (functions in idl files)
- Async functions
- New dictionaries
- Frontend: JS + html

Proxy Settings Diagnostic Tool:

- Bug 898237
- Shows your proxy settings (if there are any) for a URL
- Test proxy reachability
- Functions in .idl file
- Async functions
- New dictionaries
- Delete all of my work and this time implement only in JavaScript
- The initial patch was a good one – the implementation help me to improve DNS Lookup Tool
- Frontend: JS + html

Progress and Ideas:

Don't include unnecessary things in network/.../Dashboard:
Bug 910942

- Many of the headers included in Dashboard related files are not needed: forward declare everything we can

Progress and Ideas:

Make the Networking Dashboard thread safe: Bug 904594

- In its current state, about:networking is not thread safe and it can't even be called from the same thread multiple times if the previous call hasn't ended
- New runnable method to which can pass an argument
- Working on stack
- Dynamically allocate all structures and pass a pointer to the runnable method (because on stack, the runnable method would make structures to carry an array and so, this would be bigger than we want)
- Some of the structures should be static

What I've learned?

- Notions about C++
- JavaScript
- Using gdb
- About IDL (Interface Definition Language) files
- Mercurial (distributed revision control tool)
- Working at Mozilla Core code base (search for documentation, files or lines of code)
- Who to ask for help
- How to test our code (making test files and using try-chooser)

Future plans?

- Making xpcshell test files for private browsing
- Working on UI
- Continue contributing to Mozilla Core code base