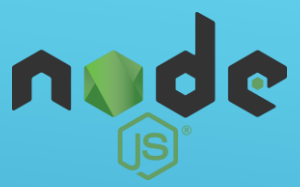




WHAT'S NEW IN NODE.JS CORE

August 10, 2017



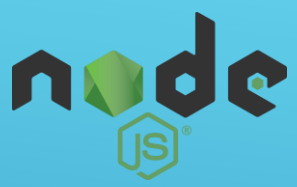
- ▶ What has been added recently?
- ▶ What is being worked on now?

OVERVIEW



- ▶ **Node.js 8.3.0 Current (August 9th, 2017)**
 - ▶ Includes v8 6.0
 - ▶ 8.x will transition to LTS in October 2017
- ▶ Node.js 6.11.2 LTS (Aug 1st, 2017)
 - ▶ Active LTS until April 2018
- ▶ Node.js 9.0.0 (October 2017)
- ▶ Node.js 10.0.0 (April 2018)

FIRST, LET'S TALK ABOUT NODE.JS RELEASES



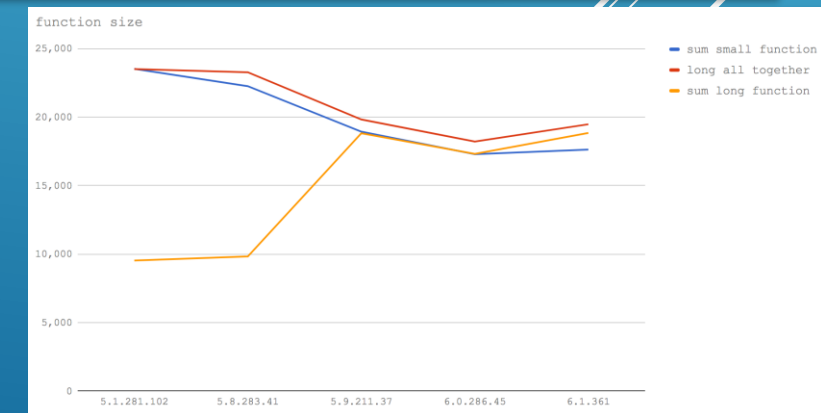
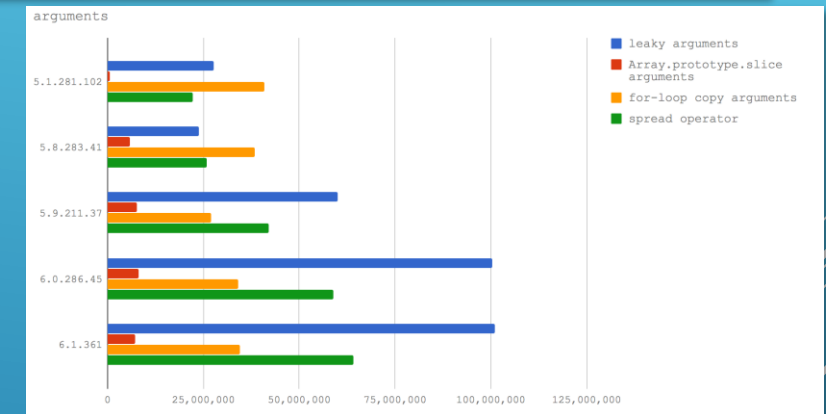
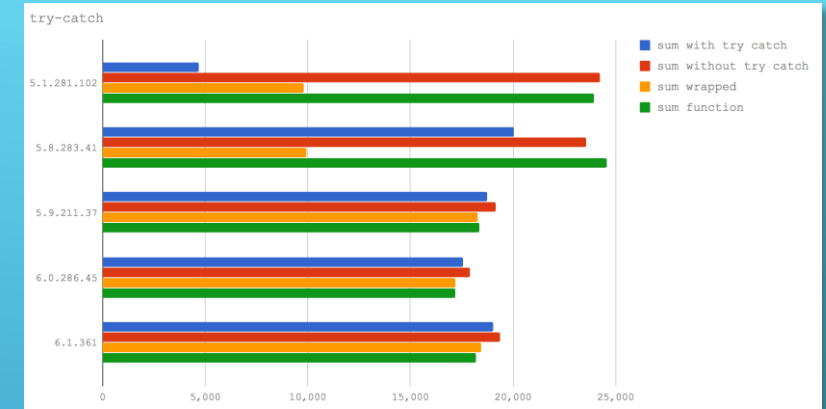
- ▶ New Turbofan & Ignition Toolchain
- ▶ Object rest/spread properties
- ▶ Significant performance improvements for ES6 features

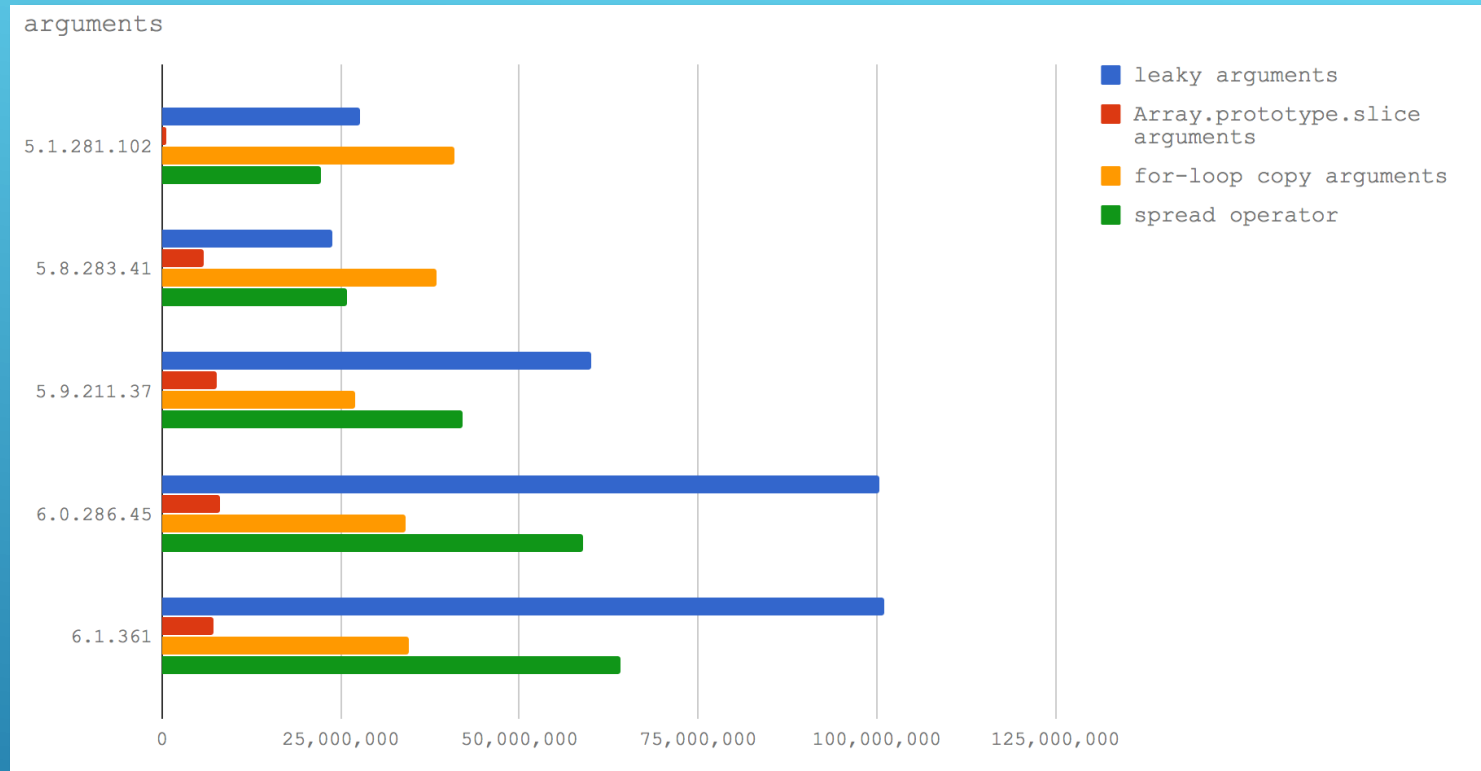
WHAT DOES V8 6.0 BRING?



- ▶ Turbofan and Ignition alter the way v8 internally compiles and optimizes javascript code.
- ▶ The impact can be dramatic.
- ▶ <https://www.nearform.com/blog/node-js-is-getting-a-new-v8-with-turbofan/>

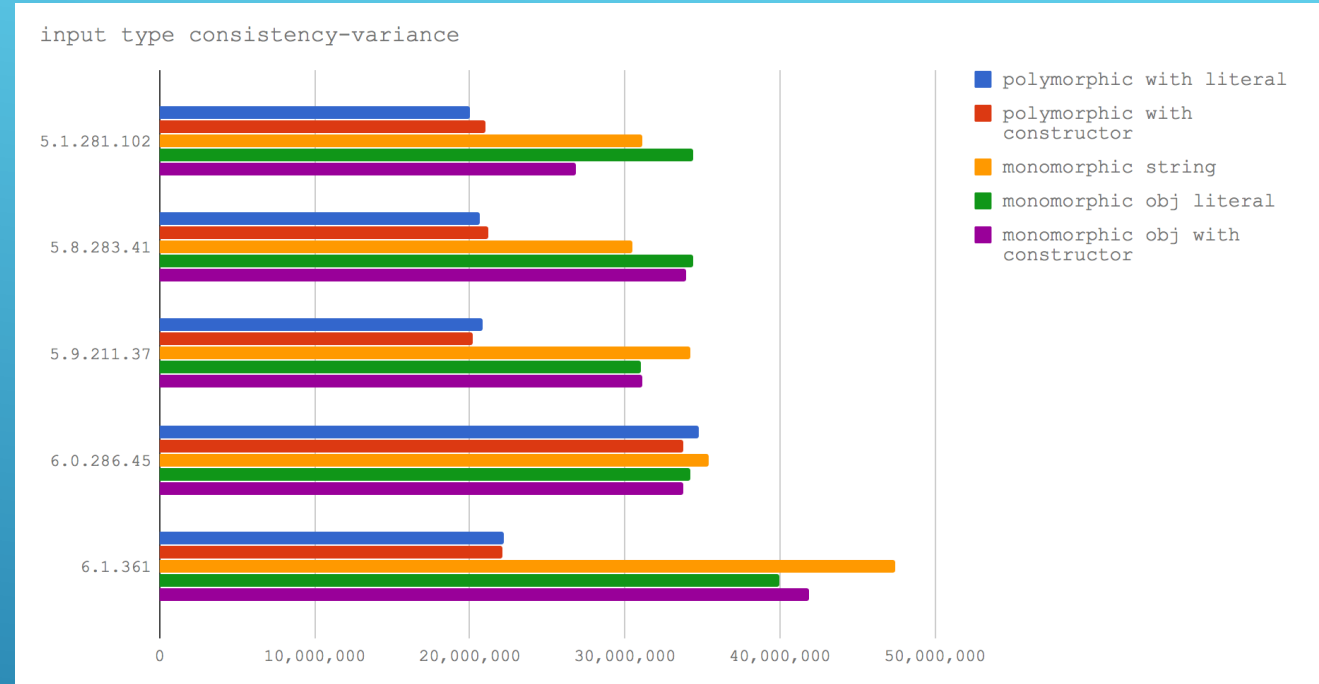
IMPACT OF TURBOFAN+IGNITION





IMPACT OF TURBOFAN+IGNITION

- ▶ Certain preferred code patterns optimized for the old Crankshaft optimizer may no longer be recommended.
- ▶ For instance, it is not uncommon for JavaScript developers to use polymorphic signatures (that is, allowing more than one type of argument to be passed into a function). With turbofan, this is not ideal.



CAUTION! BEST PRACTICES AHEAD!



- ▶ Node.js Stable ABI (N-API)
- ▶ HTTP/2
- ▶ Multiple independent DNS resolvers
- ▶ WHATWG Encoding standard (TextEncoder / TextDecoder)
- ▶ Ongoing async_hooks improvements
- ▶ NODE_OPTIONS environment variable
- ▶ util.promisify()

WHAT ELSE HAS BEEN ADDED RECENTLY



```
void Init(napi_env env, napi_value exports,  
          napi_value module, void* priv) {  
    napi_status status;  
    napi_property_descriptor desc =  
        {"hello", Method, 0, 0, 0, napi_default, 0};  
    status = napi_define_properties(env, exports, 1, &desc);  
}
```

N-API – VM NEUTRAL NATIVE ADDONS



- ▶ N-API is a C API replacement for NaN
- ▶ When completed, a single compiled N-API addon will work across Node.js releases and against v8, Chakra-Core, or potentially other JavaScript engines.

N-API – VM NEUTRAL NATIVE ADDONS



```
const http2 = require('http2');  
  
const server = http2.createServer();  
server.on('stream', (stream, headers) => {  
  stream.respond({'status': 200});  
  stream.end('hello world');  
});  
server.listen(8000)
```

HTTP/2 - SERVER



```
const http2 = require('http2');  
  
const client = http2.connect('http://localhost:8000');  
const req = client.request({':method': 'GET', ':path': '/'});  
req.on('data', handleData);  
req.on('close', () => client.destroy());
```

HTTP/2 - CLIENT



- ▶ Two API layers:
 - ▶ Core – minimal API specifically designed around HTTP/2
 - ▶ Compatibility – designed to be as close as possible to the HTTP/1 API
- ▶ Supports: multiplexing, TLS and plaintext, header compression, push streams, priorities, flow control, client and server, “send file”, and more.
- ▶ Still a work in progress. Initial experimental support expected to ship in Node.js 8.4.0.

HTTP/2



```
// WHATWG Encoding Standard  
const { TextDecoder } = require('util');  
Const decoder = new TextDecoder('utf8');  
Console.log(decoder.decode(someBuffer));
```

```
// WHATWG Console Standard  
console.clear();  
console.count('counter');
```

CLOSING THE API GAP WITH BROWSERS



- ▶ Continuing work on advancing experimental features (N-API, HTTP/2, Encoding, etc)
- ▶ Improved diagnostics
 - ▶ Continuing work on Async-hooks
 - ▶ Improvements to unhandled promise rejections handling
 - ▶ Trace Events
 - ▶ Performance Timing API
 - ▶ node-report ("human-readable diagnostic summary")
 - ▶ Ongoing improvements to the Inspector Protocol
 - ▶ Static error codes are being added to every Node.js error
- ▶ ES6 Modules (Yes, they really are coming)
- ▶ Faster, more frequent v8 Updates?

Most ongoing development has been focused on improving diagnostics, monitoring, testing, performance, standards support and developer ergonomics.

WHAT'S BEING WORKED ON NOW?



- ▶ Node.js Interactive – October 4-6th 2017 Vancouver, BC Canada
- ▶ NodeConf EU – November 5-8th 2017 Kilkenny Ireland
- ▶ Code & Learn – Hands-on workshop on how to become a contributor to Node.js core.

COME JOIN US.