PUSH TECHNOLOGY™

The Smart Choice in a Demanding World™

Is JSON Impacting Your Application Performance?

The beginnings of JSON

When Douglas Crockford proposed the JSON format, he was interested in defining an easy way for web applications and JavaScript-based clients to exchange and interact with data.

Because it's a light(er) weight alternative to XML, JSON was quickly adopted by web developers, and has now become the de-facto standard for data interchange across many use cases.

Why JSON is a success

Several features of JSON have led to its dominance for web-based integration:

- Schema-less data format
- Minimal number of data types
- Human readable
- Easy/faster to parse
- Widely supported in programming languages

JSON is evolving…

JSON is the accepted standard these days for transmitting data to and from web-based applications. It's time for JSON to evolve to meet the demands of today's connected world.

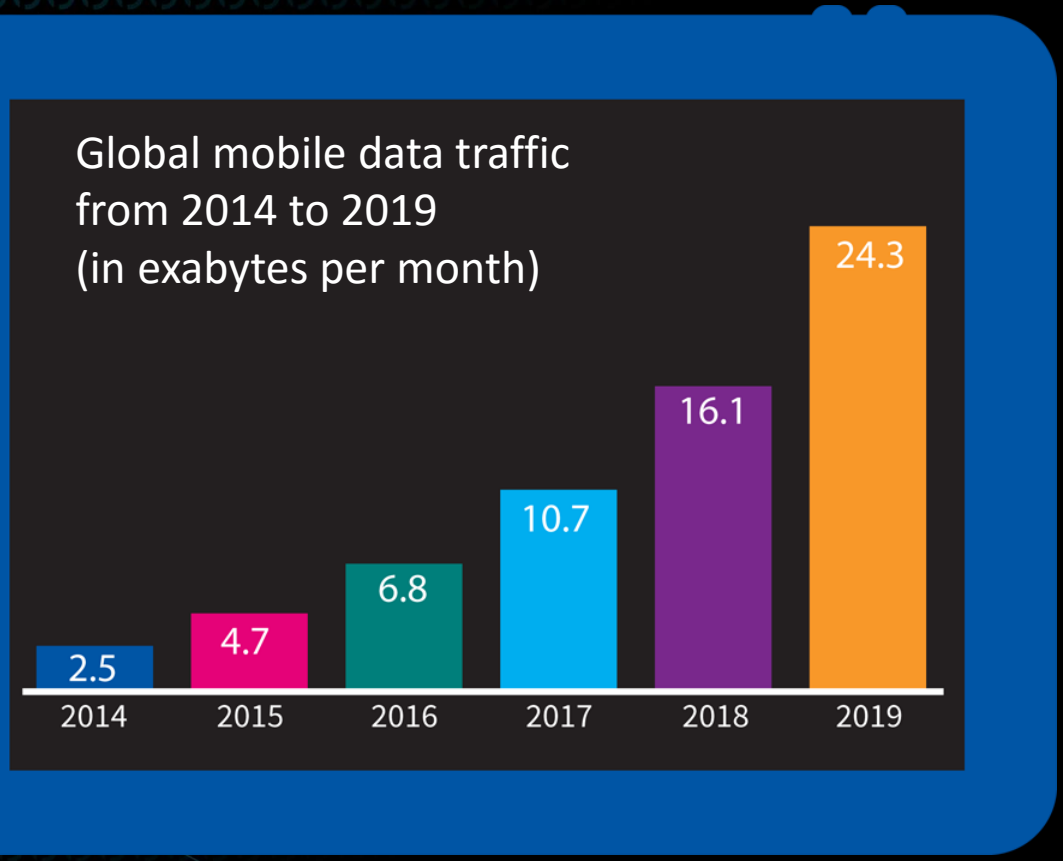
But there are known limitations

1. While better than the heavy-weight markup of XML, the tag structure is still wasteful
2. ASCII-based strings make it simple, but at the expense of efficiency
3. Efficient ways of sending binary data are (as yet) non-standard
4. HTTP compounds these inefficiencies when applications poll repeatedly for updates

The Data Explosion

Applications are consuming and generating more and more data – yet the infrastructure supporting this load isn't growing or scaling at the rate.

Application performance relies on the network, and we need to build apps as efficiently as possible.



Developers are considering how and why every single byte is sent

PUSH TECHNOLOGY

Considerations to Improve JSON

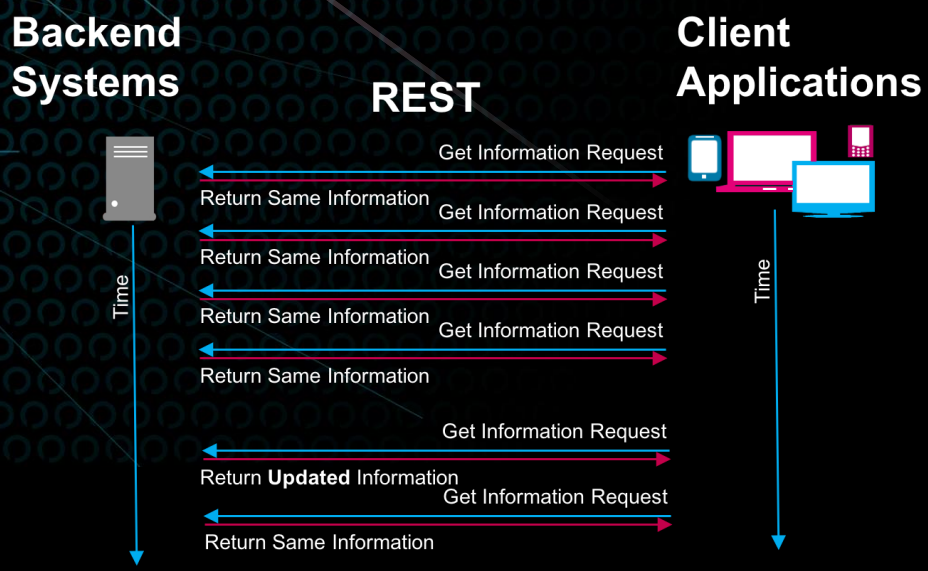
For your next application, consider how to combat the known limitations of JSON to compete over an internet now groaning under the weight of massive amounts of data!

The Future Is Efficient Real-Time Messaging

PUSH TECHNOLOGY

#1 Stop Polling

- The request/response nature of HTTP means that applications and backend systems consume resources for data that isn't changing.
- Request/Response makes long standing demands on infrastructure resources for data that infrequently changes.
- SSL adds notable overhead.



PUSH TECHNOLOGY

#2 Drop the Tags

JSON may generate less overhead than its predecessors, but the tags sent in each message are still sent over, and over again…

JSON

Message 1

```
{
uid : 1234567890,
title : “Something”,
db_key : “some_thing_item”,
modified_date : “13-06-1991”
}
```

Message 2

```
{
uid : 1234567890,
title : “Something else”,
db_key : “some_thing_item”,
modified_date : “13-06-1991”
}
```

#3 Transmit Deltas Only

For many applications, exactly the same JSON data is sent repeatedly or when only part of the message content has changed.

JSON

Message 1

```
{
uid : 1234567890,
title : “Something”,
db_key : “some_thing_item”,
modified_date : “13-06-1991”
}
```

Message 2

```
{
uid : 1234567890,
title : “Something else”,
db_key : “some_thing_item”,
modified_date : “13-06-1991”
}
```

#4 Use Binary Encoding

Binary encoding reduces the data over the wire, optimizing both simple types and raw binary data.

JSON

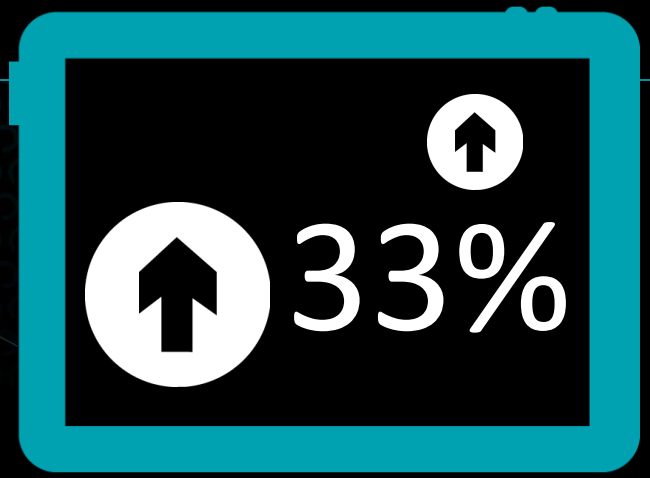
```
{
uid : 1234567890,
title : “Something”,
db_key : “some_thing_item”,
modified_date : “13-06-1991”
}
```

CBOR

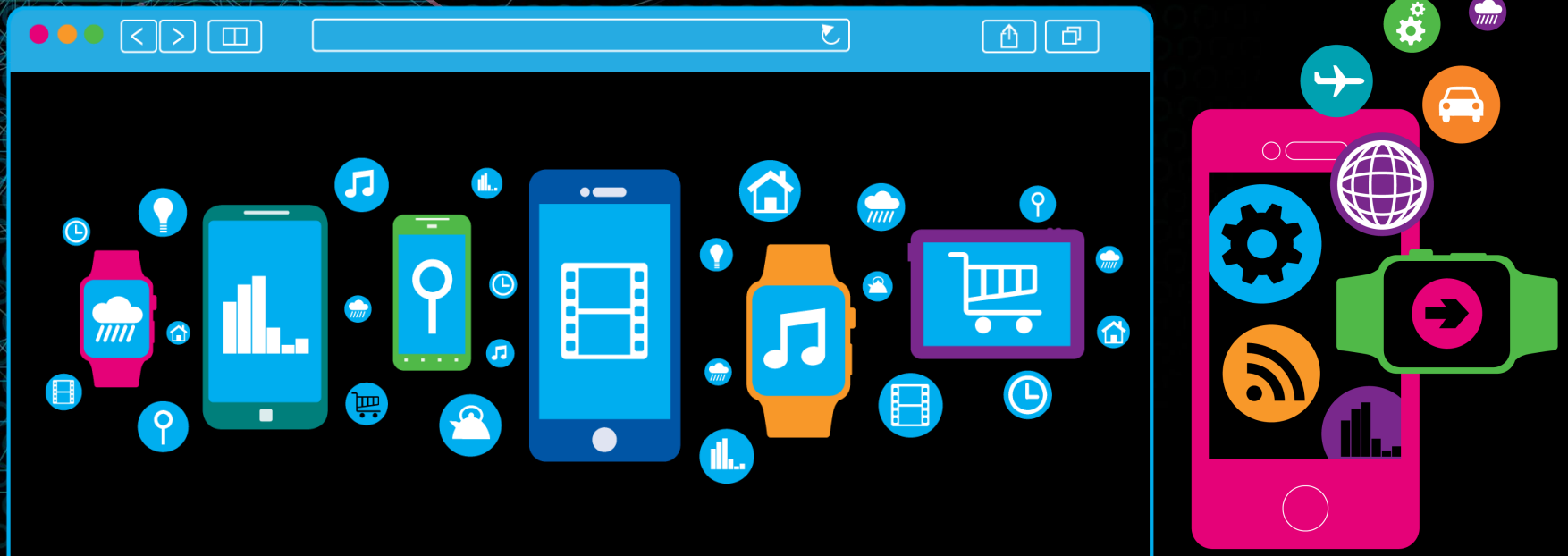
```
a4637569641a499602d2657469746c6569536f6d6574
68696e676664625f6b65796f736f6d655f7468696e675
f6974656d6d6d6f6469666965645f646174656a31332d
30362d31393931
```

JSON encoding with CBOR

- Supports composite data types just like JSON (e.g. Maps).
- Removes unnecessary whitespace, delimiters, etc.
- Binary content in Base64 JSON consume 33% more bytes.



The new standard for integration



Data-efficient real-time messaging takes JSON to the next level. Integration with your application is quick and simple, and no changes are required to backend systems or data structures.

PUSH TECHNOLOGY

Diffusion™ CLOUD

THE PUSH ADVANTAGE

Backend Systems

```
{
  route-id : 54321,
  route : "WAT-WOK-17:18,
  route-details : [
    { station : "waterloo",
              etd : "17:24" } ,
    { station : "clapham",
              etd : "17:35" } ,
    { station : "woking",
              etd : "17:46" } ,
}
```

Client Apps

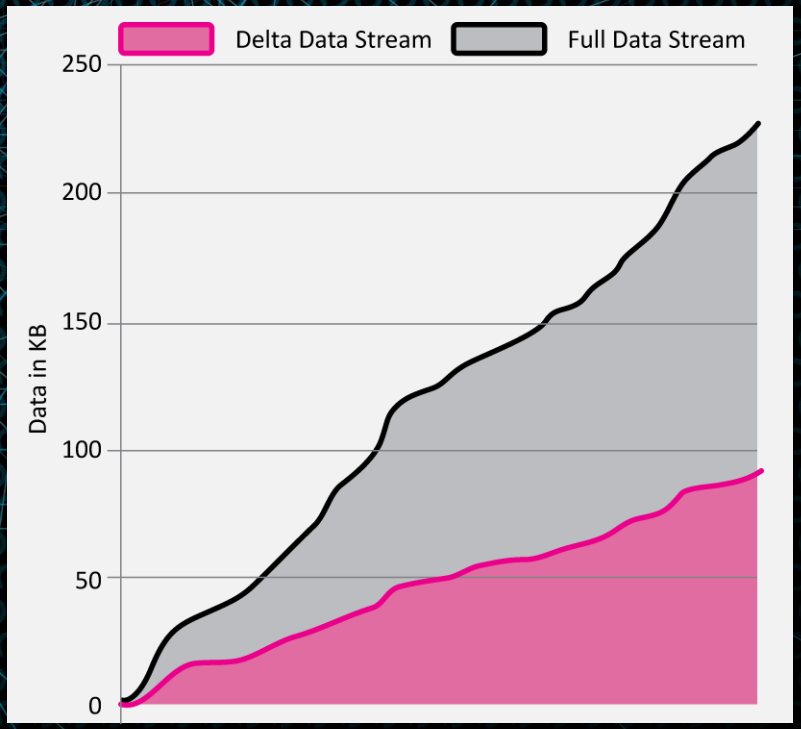
```
{
  route-id : 54321,
  route : "WAT-WOK-17:18,
  route-details : [
    { station : "waterloo",
              etd : "17:24" } ,
    { station : "clapham",
              etd : "17:35" } ,
    { station : "woking",
              etd : "17:46" } ,
}
```

1. **Stop Polling**: Realtime messaging streams data updates as events happen.
2. **Drop Tags**: Efficient realtime messaging removes unnecessary markup from each update.
3. **Transmit Deltas**: Real-time *Delta Streaming* sends only the binary difference between messages.
4. **Binary Encoding**: Converting JSON payload to binary further reduces bandwidth consumption.

PUSH TECHNOLOGY

Diffusion™ CLOUD

THE PUSH ADVANTAGE



- Data efficient real-time messaging can reduce data traffic & cost by 80%!
- Simple SDKs make it quick and easy to get started, with no new technology to learn.
- No changes are required to backend systems or your apps, since JSON objects are preserved.

PUSH TECHNOLOGY

About us

The Diffusion Intelligent Data Platform™ synchronizes, manages, and distributes data among applications, devices, and systems – via web, mobile, and satellite networks.

Diffusion solves the challenges of real-time streaming and messaging, simplifies application development, and extends the functionality of in-place messaging products.

Companies worldwide are using the Diffusion Intelligent Data Platform™ to power their business-critical applications. Leading brands including: OceanGuardian, Argus Media, IHS Markit, ConsorsBank, DAB bank, Lloyds Bank, 888 Holdings, and William Hill are driving revenue growth, customer engagement, and business success.

Get Started Today!

The Diffusion Intelligent Data Platform™

www.pushtechnology.com

Follow us on Twitter 

Subscribe to our blog 

Check out our whitepapers 

PUSH TECHNOLOGY