Binary JSON (BSON)

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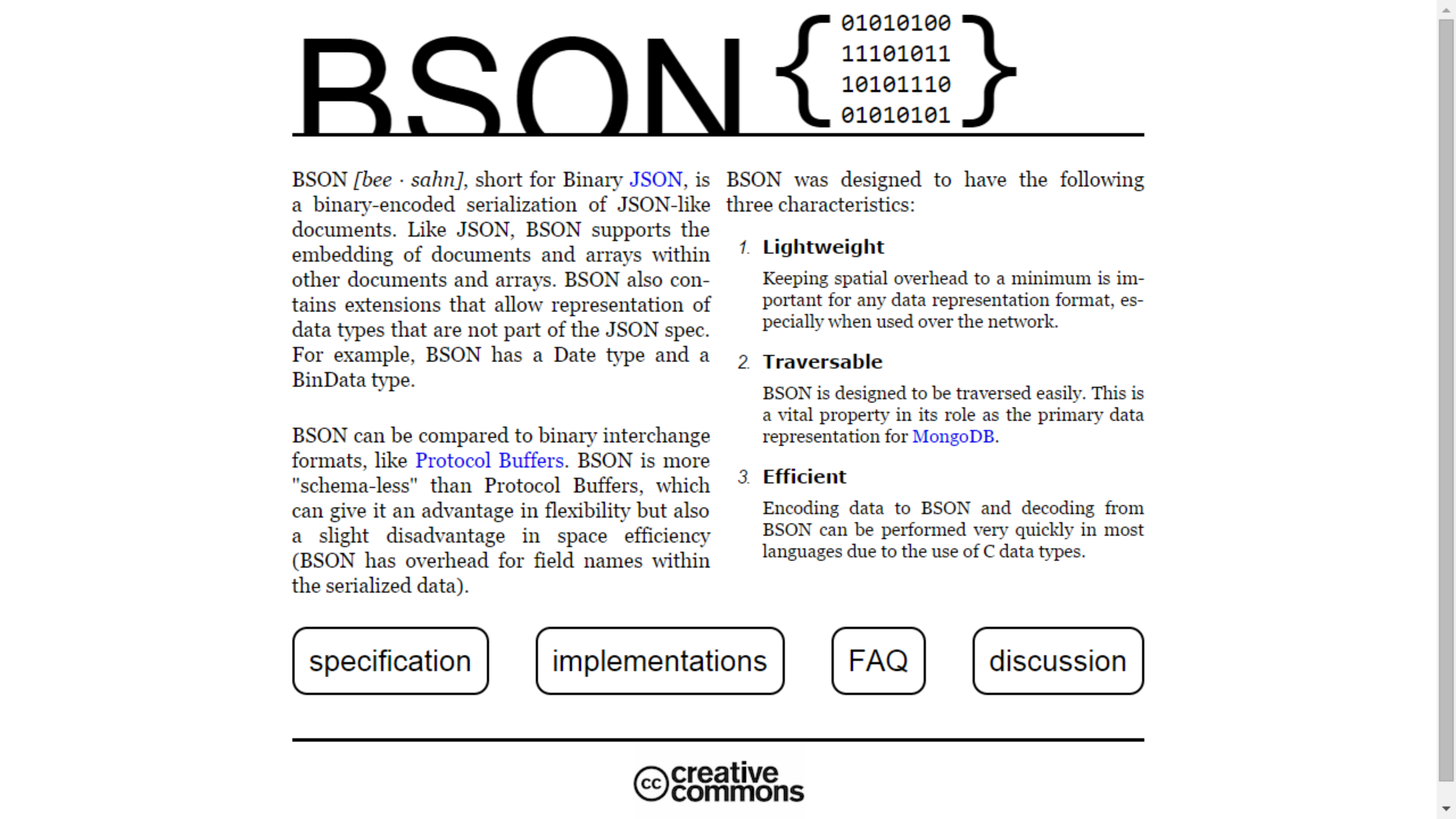
Binary encoded serialization of JSON-like documents

It is intended to be efficient in both storage space and scan speed

Binary JSON (BSON)



BSON

```
01010100
11101011
10101110
01010101
```

BSON *[bee · sahn]*, short for Binary JSON, is a binary-encoded serialization of JSON-like documents. Like JSON, BSON supports the embedding of documents and arrays within other documents and arrays. BSON also contains extensions that allow representation of data types that are not part of the JSON spec. For example, BSON has a Date type and a BinData type.

BSON can be compared to binary interchange formats, like Protocol Buffers. BSON is more "schema-less" than Protocol Buffers, which can give it an advantage in flexibility but also a slight disadvantage in space efficiency (BSON has overhead for field names within the serialized data).

BSON was designed to have the following three characteristics:

1. **Lightweight**

   Keeping spatial overhead to a minimum is important for any data representation format, especially when used over the network.

2. **Traversable**

   BSON is designed to be traversed easily. This is a vital property in its role as the primary data representation for MongoDB.

3. **Efficient**

   Encoding data to BSON and decoding from BSON can be performed very quickly in most languages due to the use of C data types.

> “BSON is a binary format in which zero or more key/value pairs are stored as a single entity. We call this entity a document.”

BSON Specification: http://bsonspec.org/

Binary JSON (BSON)

- Binary-Encoded Serialization
- Embedding Documents & Arrays
- Additional Extensions (Date/Bin)
- Lightweight
- Traversable
- Efficient

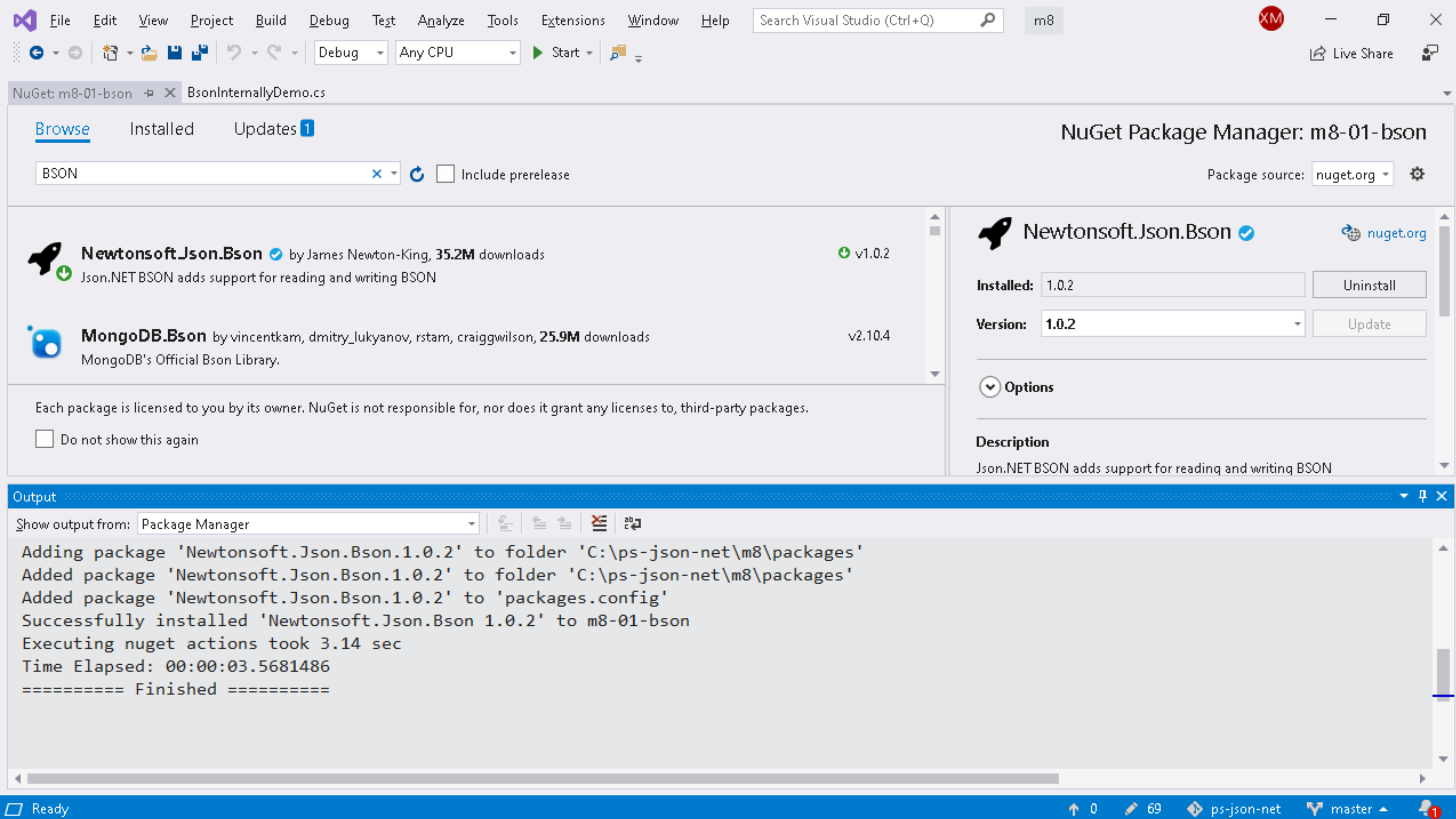
{"hello": "world"}

```
\x16\x00\x00\x00                    // total document size
\x02                                // 0x02 = type String
hello\x00                           // field name
\x06\x00\x00\x00world\x00           // field value
\x00                                // 0x00 = type EOO ('end of object')
```

Json.NET Supports BSON

BsonReader

BsonWriter



NuGet Package Manager: m8-01-bson

BSON

☐ Include prerelease

Package source: nuget.org

Newtonsoft.Json.Bson by James Newton-King, **35.2M** downloads v1.0.2
Json.NET BSON adds support for reading and writing BSON

MongoDB.Bson by vincentkam, dmitry_lukyanov, rstam, craiggwilson, **25.9M** downloads v2.10.4
MongoDB's Official Bson Library.

Each package is licensed to you by its owner. NuGet is not responsible for, nor does it grant any licenses to, third-party packages.

☐ Do not show this again

Newtonsoft.Json.Bson

nuget.org

Installed: 1.0.2

Version: 1.0.2

Description

Json.NET BSON adds support for reading and writing BSON

Output

Show output from: Package Manager

```
Adding package 'Newtonsoft.Json.Bson.1.0.2' to folder 'C:\ps-json-net\m8\packages'
Added package 'Newtonsoft.Json.Bson.1.0.2' to folder 'C:\ps-json-net\m8\packages'
Added package 'Newtonsoft.Json.Bson.1.0.2' to 'packages.config'
Successfully installed 'Newtonsoft.Json.Bson 1.0.2' to m8-01-bson
Executing nuget actions took 3.14 sec
Time Elapsed: 00:00:03.5681486
========== Finished ==========
```

Demo

Binary JSON (BSON)

Takeaway

Binary JSON

- Just like JSON but binary

Additional types

Efficient

Json.NET supports BSON

- BsonReader and BsonWriter
- Newtonsoft.Json.Bson