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JSON Patch  
draft-pbryan-json-patch-02

## Abstract

JSON Patch defines the media type "application/json-patch", a JSON document structure for expressing a sequence of partial modifications to a JSON document.

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## **1. Introduction**

[JavaScript Object Notation \(JSON\)](#) [RFC4627] is a common format for the exchange and storage of structured data. [HTTP PATCH](#) [RFC5789] extends [HTTP](#) [RFC2616] with a method to perform partial modifications to resources.

The JSON Patch media type "application/json-patch" is a JSON document structure for expressing a sequence of partial modifications to a JSON document, suitable for use with the HTTP PATCH method.

## **2. Conventions**

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in [RFC 2119](#) [RFC2119].

## **3. Document Structure**

A JSON Patch document contains a JSON array of objects. Each object contains an operation to apply to the target JSON document.

A sample JSON Patch document:

```
[
  { "remove": "/a/b/c" },
  { "add": "/a/b/c", "value": "foo" },
  { "replace": "/a/b/c", "value": "bar" }
]
```

Evaluation of a JSON Patch document begins with a target JSON document to modify. Operations are applied sequentially in the order they appear in the array. Each operation in the sequence is applied to the target document. The resulting modified document becomes the target for the next operation. The process repeats until all operations are successfully applied.

## **4. Operations**

The operation to perform is expressed in the name of a member in the operation object, with that member's value holding a string containing the [\[JSON Pointer\]](#), which references the value to modify. It is an error condition if an operation object contains more than one operation member.

### **4.1. add**

The "add" operation adds a new value into an object or array. The value to be added is specified in the operation object's "value" member.

If adding to an object, it is an error condition if the member to be added in the object already exists.

If adding to an array, all elements at or above the specified index are shifted one position to the right. It is an error condition if the specified index is greater than the number of elements in the existing array.

### **4.2. remove**

The "remove" operation removes a value from an object or array.

If removing an element from an array, all elements above the specified index are shifted one position to the left.

It is an error condition if the value to be removed does not exist.

### **4.3. replace**

The "replace" operation replaces an existing value with a new value. This operation is equivalent to expressing a "remove" operation for a value, followed immediately by an "add" operation for the same value. The value to be replaced is specified in the operation object's "value" member.

It is an error condition if the value to be replaced does not exist.

## **5. Error Handling**

In the event of an error condition, evaluation of the JSON Patch document terminates and modification of the target document fails to complete.

## **6. Acknowledgements**

The structure of a JSON Patch document was informed by the [XML Patch document \[RFC5261\]](#) specification.

## **7. IANA Considerations**

The Internet media type for a JSON Patch document is application/json-patch.

**Type name:** application

**Subtype name:** json-patch

**Required parameters:** none

**Optional parameters:** none

**Encoding considerations:**

Per [JSON \[RFC4627\]](#): 8bit if UTF-8; binary if UTF-16 or UTF-32.

**Security considerations:**

See Security Considerations in section 8.

**Interoperability considerations:** N/A

**Published specification:**

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**Applications that use this media type:**

HTTP clients and servers.

**Additional information:** N/A

\*.json-patch

\*TEXT

**Person & email address to contact for further information:**

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**Intended usage:** COMMON

**Restrictions on usage:** none

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## 8. Security Considerations

This specification has the same security considerations as [JSON \[RFC4627\]](#) and [JSON Pointer \[JSON Pointer\]](#).

## 9. References

### 9.1. Normative References

[RFC2119]	<a href="#">Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels", BCP 14, RFC 2119, March 1997.</a>
[RFC4627]	<a href="#">Crockford, D., "The application/json Media Type for JavaScript Object Notation (JSON)", RFC 4627, July 2006.</a>
[JSON Pointer]	<a href="#">Bryan, P. and K. Zyp, "JSON Pointer", October 2011.</a>

### 9.2. Informative References

[RFC2616]	<a href="#">Fielding, R., Gettys, J., Mogul, J., Frystyk, H., Masinter, L., Leach, P. and T. Berners-Lee, "Hypertext Transfer Protocol -- HTTP/1.1", RFC 2616, June 1999.</a>
[RFC5261]	<a href="#">Urpalainen, J., "An Extensible Markup Language (XML) Patch Operations Framework Utilizing XML Path Language (XPath) Selectors", RFC 5261, September 2008.</a>
[RFC5789]	<a href="#">Dusseault, L. and J. Snell, "PATCH Method for HTTP", RFC 5789, March 2010.</a>

## Appendix A. Examples

### Appendix A.1. Adding an Object Member

An example target JSON document:

```
{
  "foo": "bar"
}
```

A JSON Patch document:

```
[
  { "add": "/baz", "value": "qux" }
]
```

The resulting JSON document:

```
{
  "baz": "qux",
  "foo": "bar"
}
```

## [Appendix A.2. Adding an Array Element](#)

An example target JSON document:

```
{
  "foo": [ "bar", "baz" ]
}
```

A JSON Patch document:

```
[
  { "add": "/foo/1", "value": "qux" }
]
```

The resulting JSON document:

```
{
  "foo": [ "bar", "qux", "baz" ]
}
```

## [Appendix A.3. Removing an Object Member](#)

An example target JSON document:

```
{
  "baz": "qux",
  "foo": "bar"
}
```

A JSON Patch document:

```
[
  { "remove": "/baz" }
]
```

The resulting JSON document:

```
{
  "foo": "bar"
}
```

## [Appendix A.4. Removing an Array Element](#)

An example target JSON document:

```
{
  "foo": [ "bar", "qux", "baz" ]
}
```

A JSON Patch document:

```
[
  { "remove": "/foo/1" }
]
```

The resulting JSON document:

```
{
  "foo": ["bar", "baz"]
}
```

### Appendix A.5. Replacing a Value

An example target JSON document:

```
{
  "baz": "qux",
  "foo": "bar"
}
```

A JSON Patch document:

```
[
  { "replace": "/baz", "value": "boo" }
]
```

The resulting JSON document:

```
{
  "baz": "boo",
  "foo": "bar"
}
```

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