

## [MS-WEBSTG]:

# Internet Explorer Web Storage Standards Support Document

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## Revision Summary

Date	Revision History	Revision Class	Comments
3/31/2014	1.0	New	Released new document.
1/22/2015	2.0	Major	Updated for new product version.
7/7/2015	2.1	Minor	Clarified the meaning of the technical content.
11/2/2015	2.1	None	No changes to the meaning, language, or formatting of the technical content.
3/22/2016	2.1	None	No changes to the meaning, language, or formatting of the technical content.
7/19/2016	2.2	Minor	Clarified the meaning of the technical content.
11/2/2016	2.2	None	No changes to the meaning, language, or formatting of the technical content.

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# 1 Introduction

This document provides a statement of standards support. It is intended for use in conjunction with the Microsoft technical specifications, publicly available standards specifications, network programming art, and Microsoft distributed systems concepts. It assumes that the reader is either familiar with the aforementioned material or has immediate access to it.

A Standards Support document does not require the use of Microsoft programming tools or programming environments in order to implement the standard. Developers who have access to Microsoft programming tools and environments are free to take advantage of them.

This document describes the level of support provided by Microsoft web browsers for the Web Storage specification [\[W3C-WEBSTG\]](#), published 30 July 2013.

## 1.1 Glossary

**MAY, SHOULD, MUST, SHOULD NOT, MUST NOT:** These terms (in all caps) are used as defined in [\[RFC2119\]](#). All statements of optional behavior use either MAY, SHOULD, or SHOULD NOT.

## 1.2 References

Links to a document in the Microsoft Open Specifications library point to the correct section in the most recently published version of the referenced document. However, because individual documents in the library are not updated at the same time, the section numbers in the documents may not match. You can confirm the correct section numbering by checking the [Errata](#).

### 1.2.1 Normative References

We conduct frequent surveys of the normative references to assure their continued availability. If you have any issue with finding a normative reference, please contact [dochelp@microsoft.com](mailto:dochelp@microsoft.com). We will assist you in finding the relevant information.

[RFC2119] Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels", BCP 14, RFC 2119, March 1997, <http://www.rfc-editor.org/rfc/rfc2119.txt>

[W3C-WEBSTG] W3C, "Web Storage", <http://www.w3.org/TR/2013/REC-webstorage-20130730/>

### 1.2.2 Informative References

None.

## 1.3 Microsoft Implementations

The following Microsoft web browser versions implement some portion of the Web Storage specification [\[W3C-WEBSTG\]](#):

- Windows Internet Explorer 8
- Windows Internet Explorer 9
- Windows Internet Explorer 10
- Internet Explorer 11
- Internet Explorer 11 for Windows 10
- Microsoft Edge

Each browser version may implement multiple document rendering modes. The modes vary from one another in support of the standard. The following table lists the document modes in each browser version that support the Web Storage specification [W3C-WEBSTG].

Browser Version	Document Modes Supported
Internet Explorer 8	IE8 Mode
Internet Explorer 9	IE8 Mode IE9 Mode
Internet Explorer 10	IE8 Mode IE9 Mode IE10 Mode
Internet Explorer 11	IE8 Mode IE9 Mode IE10 Mode IE11 Mode
Internet Explorer 11 for Windows 10	IE8 Mode IE9 Mode IE10 Mode IE11 Mode
Microsoft Edge	EdgeHTML Mode

For each variation presented in this document there is a list of the document modes and browser versions that exhibit the behavior described by the variation. All combinations of modes and versions that are not listed conform to the specification. For example, the following list for a variation indicates that the variation exists in three document modes in all browser versions that support these modes:

*IE9 Mode, IE10 Mode, and IE11 Mode (All Versions)*

#### 1.4 Standards Support Requirements

To conform to [\[W3C-WEBSTG\]](#) a user agent must implement all required portions of the specification. Any extensions that have been implemented must be implemented as described in section 2.1. Normative language is usually used to define both required portions and extensions. (For more information, see [\[RFC2119\]](#).)

Sections	Normative/Informative
1-3	Informative
4-6	Normative
7	Informative

#### 1.5 Notation

The following notations are used in this document to differentiate between notes of clarification, variation from the specification, and extension points.

<b>Notation</b>	<b>Explanation</b>
C####	Identifies a clarification of ambiguity in the target specification. This includes imprecise statements, omitted information, discrepancies, and errata. This does not include data formatting clarifications.
V####	Identifies an intended point of variability in the target specification such as the use of MAY, SHOULD, or RECOMMENDED. (See [RFC2119].) This does not include extensibility points.
E####	Identifies extensibility points (such as optional implementation-specific data) in the target specification, which can impair interoperability.

For document mode and browser version notation, see section [1.3](#).

## 2 Standards Support Statements

This section contains all variations, clarifications, and extensions for the Microsoft implementation of [\[W3C-WEBSTG\]](#).

- Section [2.1](#) describes normative variations from the MUST requirements of the specification.
- Section [2.2](#) describes clarifications of the MAY and SHOULD requirements.
- Section [2.3](#) describes extensions to the requirements.
- Section [2.4](#) considers error handling aspects of the implementation.
- Section [2.5](#) considers security aspects of the implementation.

### 2.1 Normative Variations

The following subsections describe normative variations from the MUST requirements of [\[W3C-WEBSTG\]](#).

#### 2.1.1 [WEBSTG] Section 4.1, The Storage interface

V0001:

The specification states:

```
If it couldn't set the new value, the method must throw an QuotaExceededError exception.
(Setting could fail if, e.g., the user has disabled storage for the site, or if the quota has
been exceeded.
```

*IE8 Mode (All Versions)*

An **Error** object is thrown with **number** set to -2147024882 rather than to **QuotaExceededError**.

#### 2.1.2 [WEBSTG] Section 4.2, The sessionStorage attribute

V0002:

The specification states:

```
Each top-level browsing context has a unique set of session storage areas, one for each
origin.
```

*IE8 Mode (All Versions)*

http and https are treated as the same scheme for origin checks. Port is not considered.

V0003:

The specification states:

```
When a new top-level browsing context is created by cloning an existing browsing context, the
new browsing context must start with the same session storage areas as the original, but the
two sets must from that point on be considered separate, not affecting each other in any way.
```

*IE8 Mode, IE9 Mode, IE10 Mode, IE11 Mode, and EdgeHTML Mode (All Versions)*

Duplicating a tab does not copy the storage.

### **2.1.3 [WEBSTG] Section 4.3, The localStorage attribute**

V0004:

The specification states:

```
User agents must have a set of local storage areas, one for each origin.
```

*IE8 Mode (All Versions)*

http and https are treated as the same scheme for origin checks. Port is not considered.

V0005:

The specification states:

```
If the Document's origin is not a scheme/host/port tuple, then throw a SecurityError exception and abort these steps.
```

*IE8 Mode, IE9 Mode, IE10 Mode, and IE11 Mode (All Versions)*

If the origin is not supported, then **localStorage** and **sessionStorage** objects do not appear in the DOM. Origins without a host are not supported; for example, `file://`.

V0006:

The specification states:

```
Whenever the properties of a localStorage attribute's Storage object are to be examined, returned, set, or deleted, whether as part of a direct property access, when checking for the presence of a property, during property enumeration, when determining the number of properties present, or as part of the execution of any of the methods or attributes defined on the Storage interface, the user agent must first obtain the storage mutex.
```

*IE8 Mode, IE9 Mode, IE10 Mode, and IE11 Mode (All Versions)*

The storage mutex is not supported. This means access to **localStorage** is not synchronized.

### **2.1.4 [WEBSTG] Section 4.4, The storage event**

V0008:

The specification states:

```
Otherwise, if the event is being fired due to an invocation of the clear() method, the event must have its key, oldValue, and newValue attributes initialized to null.
```

```
In addition, the event must have its url attribute initialized to the address of the document whose Storage object was affected; and its storageArea attribute initialized to the Storage object from the Window object of the target Document that represents the same kind of Storage area as was affected (i.e. session or local).
```



### *IE8 Mode (All Versions)*

The **key**, **oldvalue**, **newValue**, and **storageArea** attributes are not supported.

## **2.1.5 [WEBSTG] Section 4.5, Threads**

V0009:

The specification states:

```
Because of the use of the storage mutex, multiple browsing contexts will be able to access the local storage areas simultaneously in such a manner that scripts cannot detect any concurrent script execution.
```

### *IE8 Mode, IE9 Mode, IE10 Mode, IE11 Mode, and EdgeHTML Mode (All Versions)*

The storage mutex is not supported.

## **2.2 Clarifications**

The following subsections describe clarifications of the MAY and SHOULD requirements of [\[W3C-WEBSTG\]](#).

### **2.2.1 [WEBSTG] Section 5, Disk space**

C0001:

The specification states:

```
A mostly arbitrary limit of five megabytes per origin is recommended.
```

### *IE8 Mode, IE9 Mode, IE10 Mode, IE11 Mode, and EdgeHTML Mode (All Versions)*

Storage for approximately five million characters is supported, including key name and value strings.

C0002:

The specification states:

```
User agents should guard against sites storing data under the origins other affiliated sites, e.g. storing up to the limit in a1.example.com, a2.example.com, a3.example.com, etc, circumventing the main example.com storage limit.
```

### *IE8 Mode and IE9 Mode (All Versions)*

Total storage is limited to 100MB.

### *IE10 Mode (All Versions)*

There is no protection for this situation.

### *IE11 Mode and EdgeHTML Mode (All Versions)*

There is a total storage limit of 100MB, and a limit of 20MB per top level domain name.

## 2.3 Extensions

The following subsections describe extensions to the requirements of [\[W3C-WEBSTG\]](#).

### 2.3.1 [WEBSTG] Section 4.1, The Storage interface

E0001:

The specification states

#### 4.1 The Storage interface

```
IDLinterface Storage {
  readonly attribute unsigned long length;
  DOMString? key(unsigned long index);
  getter DOMString getItem(DOMString key);
  setter creator void setItem(DOMString key, DOMString value);
  deleter void removeItem(DOMString key);
  void clear();
};
```

*IE8 Mode, IE9 Mode, IE10 Mode, IE11 Mode, and EdgeHTML Mode (All Versions)*

The **Storage** interface has a **remainingSpace** attribute (<http://msdn.microsoft.com/en-us/library/ie/cc197016>):

```
Storage implements MSStorageExtensions;
[NoInterfaceObject]
interface MSStorageExtensions
{
  readonly attribute unsigned long remainingSpace;
};
```

### 2.3.2 [WEBSTG] Section 4.4.1, Event definition

E0002:

The specification includes the following Event definition:

```
IDL[Constructor(DOMString type, optional StorageEventInit eventInitDict)]
interface StorageEvent : Event {
  readonly attribute DOMString key;
  readonly attribute DOMString? oldValue;
  readonly attribute DOMString? newValue;
  readonly attribute DOMString url;
  readonly attribute Storage? storageArea;
};

dictionary StorageEventInit : EventInit {
  DOMString key;
  DOMString? oldValue;
  DOMString? newValue;
  DOMString url;
  Storage? storageArea;
};
```

*IE8 Mode, IE9 Mode, IE10 Mode, IE11 Mode, and EdgeHTML Mode (All Versions)*

Event constructors from [DOMCORE] are not supported. Instead, the **initStorageEvent** method is supported.

## **2.4 Error Handling**

There are no additional error handling considerations.

## **2.5 Security**

There are no additional security considerations.

### **3 Change Tracking**

No table of changes is available. The document is either new or has had no changes since its last release.

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