**[MS-DOM2TR]:**

**Internet Explorer Document Object Model (DOM) Level 2 Traversal and Range Standards Support Document**

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**Revision Summary**

| Date | Revision History | Revision Class | Comments |
| --- | --- | --- | --- |
| 9/8/2010 | 0.1 | New | Released new document. |
| 2/10/2011 | 1.0 | Minor | Clarified the meaning of the technical content. |
| 2/22/2012 | 3.0 | Major | Significantly changed the technical content. |
| 7/25/2012 | 3.1 | Minor | Clarified the meaning of the technical content. |
| 6/26/2013 | 4.0 | Major | Significantly changed the technical content. |
| 3/31/2014 | 4.0 | None | No changes to the meaning, language, or formatting of the technical content. |
| 1/22/2015 | 5.0 | Major | Updated for new product version. |
| 7/7/2015 | 5.1 | Minor | Clarified the meaning of the technical content. |
| 11/2/2015 | 5.1 | None | No changes to the meaning, language, or formatting of the technical content. |
| 3/22/2016 | 5.1 | None | No changes to the meaning, language, or formatting of the technical content. |
| 11/2/2016 | 5.1 | None | No changes to the meaning, language, or formatting of the technical content. |
| 3/14/2017 | 5.1 | None | No changes to the meaning, language, or formatting of the technical content. |
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Table of Contents

[1 Introduction 4](#_Toc522770124)

[1.1 Glossary 4](#_Toc522770125)

[1.2 References 4](#_Toc522770126)

[1.2.1 Normative References 4](#_Toc522770127)

[1.2.2 Informative References 4](#_Toc522770128)

[1.3 Microsoft Implementations 4](#_Toc522770129)

[1.4 Standards Support Requirements 5](#_Toc522770130)

[1.5 Notation 5](#_Toc522770131)

[2 Standards Support Statements 7](#_Toc522770132)

[2.1 Normative Variations 7](#_Toc522770133)

[2.1.1 [DOM Level 2 - Traversal Range] Section 1.2, Formal Interface Definition 7](#_Toc522770134)

[2.1.2 [DOM Level 2 - Traversal Range] Section 2.6, Deleting Content with a Range 8](#_Toc522770135)

[2.1.3 [DOM Level 2 - Traversal Range] Section 2.12, Range modification under document mutation 8](#_Toc522770136)

[2.2 Clarifications 9](#_Toc522770137)

[2.3 Extensions 9](#_Toc522770138)

[2.3.1 [DOM Level 2 - Traversal Range] Section 2.13, Formal Description of the Range Interface 9](#_Toc522770139)

[2.4 Error Handling 9](#_Toc522770140)

[2.5 Security 9](#_Toc522770141)

[3 Change Tracking 10](#_Toc522770142)

[4 Index 11](#_Toc522770143)

# Introduction

This document describes the level of support provided by Microsoft web browsers for the *Document Object Model (DOM) Level 2 Traversal and Range Specification* [[DOM Level 2 - Traversal Range]](https://go.microsoft.com/fwlink/?LinkId=182712) Version 1.0, W3C Recommendation 13 November 2000.

The [DOM Level 2 - Traversal Range] specification may contain guidance for authors of webpages and browser users, in addition to user agents (browser applications). Statements found in this document apply only to normative requirements in the specification targeted to user agents, not those targeted to authors.

## Glossary

**MAY, SHOULD, MUST, SHOULD NOT, MUST NOT:** These terms (in all caps) are used as defined in [[RFC2119]](https://go.microsoft.com/fwlink/?LinkId=90317). All statements of optional behavior use either MAY, SHOULD, or SHOULD NOT.

## 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](https://go.microsoft.com/fwlink/?linkid=850906).

### 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.

[DOM Level 2 - Traversal Range] World Wide Web Consortium, "Document Object Model (DOM) Level 2 Traversal and Range Specification Version 1.0", W3C Recommendation 13 November 2000, [http://www.w3.org/TR/DOM-Level-2-Traversal-Range/](https://go.microsoft.com/fwlink/?LinkId=182712)

[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](https://go.microsoft.com/fwlink/?LinkId=90317)

### Informative References

None.

## Microsoft Implementations

The following Microsoft web browser versions implement some portion of the [[DOM Level 2 - Traversal Range]](https://go.microsoft.com/fwlink/?LinkId=182712) specification:

* 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 to another in support of the standard. The following table lists the document modes in each browser version that support the specification.

| Browser Version | Document Modes Supported |
| --- | --- |
| Internet Explorer 9 | IE9 Mode |
| Internet Explorer 10 | IE9 Mode  IE10 Mode |
| Internet Explorer 11 | IE9 Mode  IE10 Mode  IE11 Mode |
| Internet Explorer 11 for Windows 10 | 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)*

## Standards Support Requirements

To conform to [[DOM Level 2 - Traversal Range]](https://go.microsoft.com/fwlink/?LinkId=182712), a user agent must implement all required portions of the specification. Any optional portions that have been implemented must also be implemented as described by the specification. Normative language is usually used to define both required and optional portions. (For more information, see [[RFC2119]](https://go.microsoft.com/fwlink/?LinkId=90317).)

The following table lists the sections of [DOM Level 2 - Traversal Range] and whether they are considered normative or informative.

| Sections | **Normative/Informative** |
| --- | --- |
| 1 | Normative |
| 2 | Normative |

## Notation

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

| Notation | Explanation |
| --- | --- |
| 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]](https://go.microsoft.com/fwlink/?LinkId=90317).) 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](#Section_76568a368cd3492aa1b48fa4d747778e).

# Standards Support Statements

This section contains all variations, clarifications, and extensions for the Microsoft implementation of [[DOM Level 2 - Traversal Range]](https://go.microsoft.com/fwlink/?LinkId=182712).

* Section [2.1](#Section_7d8558d4e9304f3eaec89a71164fbcb2) describes normative variations from the MUST requirements of the specification.
* Section [2.2](#Section_6613620967bc45868c4b3e9ca1750542) describes clarifications of the MAY and SHOULD requirements.
* Section [2.3](#Section_74c802805bac4cf1ab2316a41511ff05) describes extensions to the requirements
* Section [2.4](#Section_9924e40ec6284d67b2bc122aeb63e693) considers error handling aspects of the implementation.
* Section [2.5](#Section_9b8df15996344007990039b495629749) considers security aspects of the implementation.

## Normative Variations

The following subsections describe normative variations from the MUST requirements of [[DOM Level 2 - Traversal Range]](https://go.microsoft.com/fwlink/?LinkId=182712).

### [DOM Level 2 - Traversal Range] Section 1.2, Formal Interface Definition

V0001:

The specification states:

1. filter of type NodeFilter, readonly
2. The NodeFilter used to screen nodes.

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

The **filter** property returns a function pointer to the **NodeFilter** callback.

V0002:

The specification states:

1. acceptNode
2. Test whether a specified node is visible in the logical view of a TreeWalker or NodeIterator. This function will be called by the implementation of TreeWalker and NodeIterator; it is not normally called directly from user code. (Though you could do so if you wanted to use the same filter to guide your own application logic.)
3. Parameters
4. n of type Node
5. The node to check to see if it passes the filter or not.
6. Return Value
7. short a constant to determine whether the node is accepted, rejected, or skipped, as defined above.
8. No Exceptions

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

The **acceptNode** method can return a hexadecimal string of the form "0x1", which indicates FILTER\_ACCEPT behavior. However, in this case, the string is not converted into the FILTER\_ACCEPT constant value.

V0007:

The specification states:

1. createNodeIterator
2. Create a new NodeIterator over the subtree rooted at the specified node. Parameters
3. root of type Node
4. The node which will be iterated together with its children. The iterator is initially positioned just before this node. The whatToShow flags and the filter, if any, are not considered when setting this position. The root must not be null.
5. whatToShow of type unsigned long
6. This flag specifies which node types may appear in the logical view of the tree presented by the iterator. See the description of NodeFilter for the set of possible SHOW\_ values.
7. These flags can be combined using OR.
8. filter of type NodeFilter
9. The NodeFilter to be used with this TreeWalker, or null to indicate no filter.
10. entityReferenceExpansion of type boolean
11. The value of this flag determines whether entity reference nodes are expanded.
12. Return Value
13. NodeIterator The newly created NodeIterator.
14. Exceptions
15. DOMException NOT\_SUPPORTED\_ERR: Raised if the specified root is null.

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

The **NodeIterator** returned by the **createNodeIterator** method has the **whatToShow** property value set as -1 instead of the expected value of 0xFFFFFFFF.

### [DOM Level 2 - Traversal Range] Section 2.6, Deleting Content with a Range

V0011:

The specification states:

1. Note that if deletion of a Range leaves adjacent Text nodes, they are not
2. automatically merged, and empty Text nodes are not automatically removed. Two Text
3. nodes should be joined only if each is the container of one of the boundary-points
4. of a Range whose contents are deleted. To merge adjacent Text nodes, or remove
5. empty text nodes, the normalize() method on the Node interface should be used.

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

If a Range corresponds to a complete text node and **deleteContents()** is called, the empty text node is removed from the tree.

### [DOM Level 2 - Traversal Range] Section 2.12, Range modification under document mutation

V0004:

The specification states:

1. There are two general principles which apply to Ranges under document mutation: The first is that all Ranges in a document will remain valid after any mutation operation and the second is that, as much as possible, all Ranges will select the same portion of the document after any mutation operation.

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

If the boundary points are positioned on the end points of a text node, and if methods such as **replaceWholeText** or **appendData** are used to modify the text node, the boundary points after the operation are incorrect. This error occurs because Windows Internet Explorer cannot distinguish between the first position within a text node and the beginning offset of the text node within its parent.

## Clarifications

There are no clarifications of the MAY and SHOULD requirements of [[DOM Level 2 - Traversal Range]](https://go.microsoft.com/fwlink/?LinkId=182712).

## Extensions

The following subsections describe extensions to the requirements of [[DOM Level 2 - Traversal Range]](https://go.microsoft.com/fwlink/?LinkId=182712).

### [DOM Level 2 - Traversal Range] Section 2.13, Formal Description of the Range Interface

E0001:

The specification describes the **Range** interface.

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

The **createContextualFragment()** method has been added to the **Range** interface. The **createContextualFragment()** method parses a string of HTML into a **DocumentFragment** using the starting node of a DOM Range as the parsing context.

## Error Handling

There are no additional error handling considerations.

## Security

There are no additional security considerations.

# Change Tracking

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

# Index

C

[Change tracking](#section_b62e92437d4d48cfb9d9d1fa3e82ab83) 10

D

[Deleting Content with a Range](#section_ebba09bdecbc483a80dd9f89979c32b7) 8

F

[Formal Description of the Range Interface](#section_52886a3344b94d87902de94f07470c37) 9

[Formal Interface Definition](#section_4d9cbfbe39e94fb08ce0f5faa9847f2e) 7

G

[Glossary](#section_46ba8b4c533544ef93a2089a1037c881) 4

I

[Informative references](#section_2462b5f78e9646a780aa9c5bd8bee3d0) 4

[Introduction](#section_a2272335f65a486f97577e9e0f435284) 4

N

[Normative references](#section_8a8b1cfe940649308d4f5f90eacdce83) 4

R

[Range modification under document mutation](#section_9691bff6df134173a6f900f2f552c092) 8

References

[informative](#section_2462b5f78e9646a780aa9c5bd8bee3d0) 4

[normative](#section_8a8b1cfe940649308d4f5f90eacdce83) 4

T

[Tracking changes](#section_b62e92437d4d48cfb9d9d1fa3e82ab83) 10