[MS-ES2017-INTL]:

Microsoft Edge ECMAScript 2017 Internationalization API Specification (ECMA-402, 4th Edition, June 2017) Standards Support Document

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Revision Summary

Date	Revision History	Revision Class	Comments
12/5/2017	1.0	New	Released new document.
2/22/2018	1.0	None	No changes to the meaning, language, or formatting of the technical content.
3/23/2018	1.0	None	No changes to the meaning, language, or formatting of the technical content.
8/28/2018	1.0	None	No changes to the meaning, language, or formatting of the technical content.

Table of Contents

1   Introduction

This document describes the level of support provided by Microsoft web browsers for the *ECMAScript 2017® Internationalization API Specification* [ECMA-402/4], published June 2017. The [ECMA-402/4] specification defines the application programming interface for ECMAScript objects that support programs that need to adapt to the linguistic and cultural conventions used by different human languages and countries.

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. We will assist you in finding the relevant information.

[ECMA-402/4] Ecma International, "ECMAScript® 2017 Internationalization API Specification", Standard ECMA-402 4th Edition / June 2017, http://www.ecma-international.org/ecma-402/4.0/index.html

[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

1.2.2   Informative References

None.

1.3   Microsoft Implementations

The following Microsoft web browser versions implement some portion of the [ECMA-402/4] specification:

▪   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 supported by each browser version.

Browser Version	Document Modes Supported
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:

Quirks Mode, IE7 Mode, and IE8 Mode (All Versions)

1.4 Standards Support Requirements

To conform to [ECMA-402/4], 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].)

The following table lists the sections of [ECMA-402/4] and whether they are considered normative or informative.

Sections	Normative/Informative
1-5	Informative
6	Normative
7	Informative
8-17	Normative
Annex A, Annex B, Annex C	Informative

1.5 Notation

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

Notation	Explanation
C####	This 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####	This 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####	Because the use of extensibility points (such as optional implementation-specific data) can impair interoperability, this profile identifies such points in the target specification.

For document mode and browser version notation, see also section 1.3.

2 Standards Support Statements

This section contains all variations, clarifications, and extensions for the Microsoft implementation of [ECMA-402/4].

- 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 [ECMA-402/4].

2.1.1 [ECMA-402/4] Section 6.4.1 IsValidTimeZoneName (timeZone)

V0122: The only timeZone supported is UTC

The specification states:

```
6.4.1 IsValidTimeZoneName (timeZone)

The IsValidTimeZoneName abstract operation verifies that the timeZone argument (which
must be a String value) represents a valid Zone or Link name of the IANA Time Zone
Database.

The abstract operation returns true if timeZone, converted to upper case as described in
6.1, is equal to one of the Zone or Link names of the IANA Time Zone Database, converted
to upper case as described in 6.1. It returns false otherwise.
```

EdgeHTML Mode

The only timeZone supported is UTC. If no timeZone is provided, UTC is assumed.

2.1.2 [ECMA-402/4] Section 11.1.2 InitializeNumberFormat (numberFormat, locales, options)

V0120: CurrencyCode CLF is not supported.

The specification states:

```
11.1.2 InitializeNumberFormat ( numberFormat, locales, options )

    The abstract operation InitializeNumberFormat accepts the arguments numberFormat
    (which must be an object), locales, and options. It initializes numberFormat as a
    NumberFormat object.

    The following steps are taken:
        ...
```

16. Let c be ? GetOption(options, "currency", "string", undefined, undefined).
17. If c is not undefined, then

    a. If the result of IsWellFormedCurrencyCode(c) is false, throw a RangeError exception.
18. If style is "currency" and c is undefined, throw a TypeError exception.
19. If style is "currency", then
    a. Let c be the result of converting c to upper case as specified in 6.1.
    b. Set numberFormat.[[Currency]] to c.
    c. Let cDigits be CurrencyDigits(c).
20. Let cd be ? GetOption(options, "currencyDisplay", "string", « "code", "symbol", "name" », "symbol").
21. If style is "currency", set numberFormat.[[CurrencyDisplay]] to cd.
22. If style is "currency", then
    a. Let mnfdDefault be cDigits.
23. Else,
    a. Let mnfdDefault be 0.
24. Perform ? SetNumberFormatDigitOptions(numberFormat, options, mnfdDefault).
25. If numberFormat.[[MaximumFractionDigits]] is undefined, then
    a. If style is "currency", then
        i. Set numberFormat.[[MaximumFractionDigits]] to max(numberFormat.[[MinimumFractionDigits]], cDigits).
    b. Else if style is "percent", then
        i. Set numberFormat.[[MaximumFractionDigits]] to max(numberFormat.[[MinimumFractionDigits]], 0).
    c. Else,
        i. Set numberFormat.[[MaximumFractionDigits]] to max(numberFromat.[[MinimumFractionDigits]], 3).
26. Let g be ? GetOption(options, "useGrouping", "boolean", undefined, true).
27. Set numberFormat.[[UseGrouping]] to g.
28. Let dataLocaleData be Get(localeData, dataLocale).
29. Let patterns be Get(dataLocaleData, "patterns").
30. Assert: patterns is an object (see 11.3.3).
31. Let stylePatterns be Get(patterns, s).
32. Set numberFormat.[[PositivePattern]] to Get(stylePatterns, "positivePattern").
33. Set numberFormat.[[NegativePattern]] to Get(stylePatterns, "negativePattern").
34. Set numberFormat.[[BoundFormat]] to undefined.
35. Set numberFormat.[[InitializedNumberFormat]] to true.
36. Return numberFormat.

EdgeHTML Mode

CurrencyCode CLF is not supported.

2.1.3 [ECMA-402/4] Section 11.1.4 Number Format Functions

V0121: Numbers are not formatted correctly for locale th-u-nu-arab

The specification states:

```
11.1.4 Number Format Functions

    A Number format function is an anonymous built-in function.

    When a Number format function is called with optional argument value, the following
    steps are taken:

        1. Let nf be the this value.
        2. Assert: Type(nf) is Object and nf.[[InitializedNumberFormat]] is true.
        3. If value is not provided, let value be undefined.
        4. Let x be ? ToNumber(value).
        5. Return FormatNumber(nf, x).
```

EdgeHTML Mode

Numbers are not formatted correctly for locale th-u-nu-arab.

2.1.4 [ECMA-402/4] Section 12.1.5 DateTime Format Functions

V0123: Old dates are not formatted correctly

The specification states:

```
12.1.5 DateTime Format Functions

    A DateTime format function is an anonymous built-in function.

    When a DateTime format function is called with optional argument date, the following
    steps are taken:

        1. Let dtf be the this value.
        2. Assert: Type(dtf) is Object and dtf.[[InitializedDateTimeFormat]] is true.
        3. If date is not provided or is undefined, then
            a. Let x be Call(%Date now%, undefined).
        4. Else,
            a. Let x be ? ToNumber(date).
        5. Return FormatDateTime(dtf, x).
```

EdgeHTML Mode

Old dates are not formatted correctly; for example, June 1 BC.

2.2 Clarifications

There are no clarifications of the MAY and SHOULD requirements of [ECMA-402/4].

2.3 Extensions

There are no extensions to the requirements of [ECMA-402/4].

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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