

# [MS-HNDS]: Host Name Data Structure Extension

---

## Intellectual Property Rights Notice for Open Specifications Documentation

- **Technical Documentation.** Microsoft publishes Open Specifications documentation for protocols, file formats, languages, standards as well as overviews of the interaction among each of these technologies.
- **Copyrights.** This documentation is covered by Microsoft copyrights. Regardless of any other terms that are contained in the terms of use for the Microsoft website that hosts this documentation, you may make copies of it in order to develop implementations of the technologies described in the Open Specifications and may distribute portions of it in your implementations using these technologies or your documentation as necessary to properly document the implementation. You may also distribute in your implementation, with or without modification, any schema, IDL's, or code samples that are included in the documentation. This permission also applies to any documents that are referenced in the Open Specifications.
- **No Trade Secrets.** Microsoft does not claim any trade secret rights in this documentation.
- **Patents.** Microsoft has patents that may cover your implementations of the technologies described in the Open Specifications. Neither this notice nor Microsoft's delivery of the documentation grants any licenses under those or any other Microsoft patents. However, a given Open Specification may be covered by Microsoft [Open Specification Promise](#) or the [Community Promise](#). If you would prefer a written license, or if the technologies described in the Open Specifications are not covered by the Open Specifications Promise or Community Promise, as applicable, patent licenses are available by contacting [iplg@microsoft.com](mailto:iplg@microsoft.com).
- **Trademarks.** The names of companies and products contained in this documentation may be covered by trademarks or similar intellectual property rights. This notice does not grant any licenses under those rights.
- **Fictitious Names.** The example companies, organizations, products, domain names, e-mail addresses, logos, people, places, and events depicted in this documentation are fictitious. No association with any real company, organization, product, domain name, email address, logo, person, place, or event is intended or should be inferred.

**Reservation of Rights.** All other rights are reserved, and this notice does not grant any rights other than specifically described above, whether by implication, estoppel, or otherwise.

**Tools.** The Open Specifications do not require the use of Microsoft programming tools or programming environments in order for you to develop an implementation. If you have access to Microsoft programming tools and environments you are free to take advantage of them. Certain Open Specifications are intended for use in conjunction with publicly available standard specifications and network programming art, and assumes that the reader either is familiar with the aforementioned material or has immediate access to it.

## Revision Summary

Date	Revision History	Revision Class	Comments
10/24/2008	0.1		Initial Availability.
12/05/2008	0.2	Minor	Updated the technical content.
01/16/2009	0.2.1	Editorial	Revised and edited the technical content.
02/27/2009	0.2.2	Editorial	Revised and edited the technical content.
04/10/2009	0.2.3	Editorial	Revised and edited the technical content.
05/22/2009	0.2.4	Editorial	Revised and edited the technical content.
07/02/2009	0.2.5	Editorial	Revised and edited the technical content.
08/14/2009	0.2.6	Editorial	Revised and edited the technical content.
09/25/2009	1.0	Major	Updated and revised the technical content.
11/06/2009	1.0.1	Editorial	Revised and edited the technical content.
12/18/2009	1.0.2	Editorial	Revised and edited the technical content.
01/29/2010	1.1	Minor	Updated the technical content.
03/12/2010	1.1.1	Editorial	Revised and edited the technical content.
04/23/2010	1.1.2	Editorial	Revised and edited the technical content.
06/04/2010	1.1.3	Editorial	Revised and edited the technical content.
07/16/2010	1.1.3	No change	No changes to the meaning, language, or formatting of the technical content.
08/27/2010	1.1.3	No change	No changes to the meaning, language, or formatting of the technical content.
10/08/2010	1.1.3	No change	No changes to the meaning, language, or formatting of the technical content.
11/19/2010	1.1.3	No change	No changes to the meaning, language, or formatting of the technical content.
01/07/2011	1.1.3	No change	No changes to the meaning, language, or formatting of the technical content.
02/11/2011	1.1.3	No change	No changes to the meaning, language, or formatting of the technical content.
03/25/2011	1.1.3	No change	No changes to the meaning, language, or formatting of the technical content.
05/06/2011	1.1.3	No change	No changes to the meaning, language, or formatting of

<b>Date</b>	<b>Revision History</b>	<b>Revision Class</b>	<b>Comments</b>
			the technical content.
06/17/2011	1.2	Minor	Clarified the meaning of the technical content.

# Contents

<b>1</b>	<b>Introduction .....</b>	<b>5</b>
1.1	Glossary .....	5
1.2	References.....	5
1.2.1	Normative References.....	5
1.2.2	Informative References .....	6
1.3	Overview .....	6
1.4	Relationship to Protocols and Other Structures .....	6
1.5	Applicability Statement.....	6
1.6	Versioning and Localization .....	6
1.7	Vendor-Extensible Fields.....	6
<b>2</b>	<b>Structures .....</b>	<b>7</b>
2.1	Extended Host Name.....	7
<b>3</b>	<b>Structure Examples .....</b>	<b>8</b>
<b>4</b>	<b>Security Considerations.....</b>	<b>9</b>
<b>5</b>	<b>Appendix A: Product Behavior .....</b>	<b>10</b>
<b>6</b>	<b>Change Tracking.....</b>	<b>11</b>
<b>7</b>	<b>Index .....</b>	<b>13</b>

# 1 Introduction

This document specifies the extension to the allowable **host names** that may be assigned to a computer.

## 1.1 Glossary

The following terms are defined in [\[MS-GLOS\]](#):

**Augmented Backus-Naur Form (ABNF)**

**ASCII**

**client**

**Domain Name System (DNS)**

**syntax**

**Unicode**

**UTF-8**

The following terms are specific to this document:

**host name:** A string assigned to a computer in order to identify itself and to differentiate itself from other hosts on the network.

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

## 1.2 References

References to Microsoft Open Specification documents do not include a publishing year because links are to the latest version of the documents, which are updated frequently. References to other documents include a publishing year when one is available.

### 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. Please check the archive site, <http://msdn2.microsoft.com/en-us/library/E4BD6494-06AD-4aed-9823-445E921C9624>, as an additional source.

[RFC952] Harrenstien, K., Stahl, M., and Feinler, E., "DoD Internet Host Table Specification", RFC 952, October 1985, <http://www.ietf.org/rfc/rfc952.txt>

[RFC1123] Braden, R., "Requirements for Internet Hosts - Application and Support", STD 3, RFC 1123, October 1989, <http://www.ietf.org/rfc/rfc1123.txt>

[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>

[RFC3629] Yergeau, F., "UTF-8, A Transformation Format of ISO 10646", STD 63, RFC 3629, November 2003, <http://www.ietf.org/rfc/rfc3629.txt>

[RFC5234] Crocker, D., Ed., and Overell, P., "Augmented BNF for Syntax Specifications: ABNF", STD 68, RFC 5234, January 2008, <http://www.rfc-editor.org/rfc/rfc5234.txt>

## 1.2.2 Informative References

[ICANN] Internet Corporation for Assigned Names and Numbers, "DNS Stability: The Effect of New Generic Top Level Domains on the Internet Domain Name System", February 2008, <http://www.icann.org/en/topics/dns-stability-draft-paper-06feb08.pdf>

[MS-GLOS] Microsoft Corporation, "[Windows Protocols Master Glossary](#)".

[MS-NBTE] Microsoft Corporation, "[NetBIOS over TCP \(NetBT\) Extensions](#)".

[RFC1034] Mockapetris, P., "Domain Names - Concepts and Facilities", STD 13, RFC 1034, November 1987, <http://www.ietf.org/rfc/rfc1034.txt>

[RFC1035] Mockapetris, P., "Domain Names - Implementation and Specification", STD 13, RFC 1035, November 1987, <http://www.ietf.org/rfc/rfc1035.txt>

[RFC2181] Elz, R., and Bush, R., "Clarifications to the DNS Specification", RFC 2181, July 1997, <http://www.ietf.org/rfc/rfc2181.txt>

[RFC3493] Gilligan, R., Thomson, S., Bound, J., et al., "Basic Socket Interface Extensions for IPv6", RFC 3493, February 2003, <http://www.ietf.org/rfc/rfc3493.txt>

## 1.3 Overview

A host name is a string assigned to a computer in order to identify itself and to differentiate itself from other hosts on the network. The **syntax** for a host name was first defined in [\[RFC952\]](#) and was subsequently updated in [\[RFC1123\]](#) section 2.1.

This document extends that syntax to allow underscores and non-**ASCII** characters.

## 1.4 Relationship to Protocols and Other Structures

Various protocols use host names in their own protocols and it is the responsibility of those protocols to state whether they use the standard host name syntax, or this extended syntax.

One protocol worth noting is the DNS protocol [\[RFC1034\]](#) [\[RFC1035\]](#) [\[RFC2181\]](#), which does not depend on host names in any way. The DNS protocol uses **DNS** names which allow binary labels (and hence inherently supports host names as well as names that would not be legal host names).

**Note** This document does not apply to NetBIOS names, which are instead discussed in [\[MS-NBTE\]](#).

## 1.5 Applicability Statement

A computer is typically configured with a host name which is used to uniquely identify that computer. That is, hosts can identify one another through the host names.

## 1.6 Versioning and Localization

There is no versioning or localization support in this structure.

## 1.7 Vendor-Extensible Fields

The host name structure does not contain any vendor-extensible fields.

## 2 Structures

### 2.1 Extended Host Name

The extended host name syntax is a **UTF-8** [\[RFC3629\]](#) string specified by the following **ABNF** [\[RFC5234\]](#):

```
hname = name *("." name)
name = 1*63let-dig-hyp-und
let-dig-hyp-und = ALPHA / DIGIT / UTF8-2 / UTF8-3 / UTF8-4 / "-" / "_"
```

where UTF8-2, UTF8-3, and UTF8-4 are as specified in [\[RFC3629\]](#) section 4. In addition, the following two constraints also apply:

- Each substring constructed from the 'name' rule in the above ABNF MUST contain at least one non-DIGIT character.
- The entire extended host name MUST be at most 255 bytes long.

### 3 Structure Examples

The following strings are all examples of extended host names:

```
"my_computer.contoso.com"  
"my_computer"  
"_123"  
"0x123"  
"_"  
"-._.-._.-"
```



## 4 Security Considerations

Because the string "0x123" is a valid extended host name, there may be security issues depending on how **client** software interprets such strings. For example, as discussed in [\[ICANN\]](#), the `inet_addr()` method of the classic sockets Application Programming Interface (API) will interpret these strings as string representations of an IP address, and as discussed in [\[RFC3493\]](#) section 6.1, the `getaddrinfo()` method of the sockets API will perform a simple conversion of strings accepted by `inet_addr()`, instead of trying to resolve the name using any type of name resolution service. This could redirect the client software to an address other than an address registered for that host name. As such, great care should be taken before using an extended host name that could be interpreted as a hexadecimal number.

## 5 Appendix A: Product Behavior

The information in this specification is applicable to the following Microsoft products or supplemental software. References to product versions include released service packs:

- Microsoft Windows NT® operating system
- Microsoft Windows® 2000 operating system
- Windows® XP operating system
- Windows Server® 2003 operating system
- Windows Vista® operating system
- Windows Server® 2008 operating system
- Windows® 7 operating system
- Windows Server® 2008 R2 operating system

Exceptions, if any, are noted below. If a service pack or Quick Fix Engineering (QFE) number appears with the product version, behavior changed in that service pack or QFE. The new behavior also applies to subsequent service packs of the product unless otherwise specified. If a product edition appears with the product version, behavior is different in that product edition.

Unless otherwise specified, any statement of optional behavior in this specification that is prescribed using the terms SHOULD or SHOULD NOT implies product behavior in accordance with the SHOULD or SHOULD NOT prescription. Unless otherwise specified, the term MAY implies that the product does not follow the prescription.

## 6 Change Tracking

This section identifies changes that were made to the [MS-HNDS] protocol document between the May 2011 and June 2011 releases. Changes are classified as New, Major, Minor, Editorial, or No change.

The revision class **New** means that a new document is being released.

The revision class **Major** means that the technical content in the document was significantly revised. Major changes affect protocol interoperability or implementation. Examples of major changes are:

- A document revision that incorporates changes to interoperability requirements or functionality.
- An extensive rewrite, addition, or deletion of major portions of content.
- The removal of a document from the documentation set.
- Changes made for template compliance.

The revision class **Minor** means that the meaning of the technical content was clarified. Minor changes do not affect protocol interoperability or implementation. Examples of minor changes are updates to clarify ambiguity at the sentence, paragraph, or table level.

The revision class **Editorial** means that the language and formatting in the technical content was changed. Editorial changes apply to grammatical, formatting, and style issues.

The revision class **No change** means that no new technical or language changes were introduced. The technical content of the document is identical to the last released version, but minor editorial and formatting changes, as well as updates to the header and footer information, and to the revision summary, may have been made.

Major and minor changes can be described further using the following change types:

- New content added.
- Content updated.
- Content removed.
- New product behavior note added.
- Product behavior note updated.
- Product behavior note removed.
- New protocol syntax added.
- Protocol syntax updated.
- Protocol syntax removed.
- New content added due to protocol revision.
- Content updated due to protocol revision.
- Content removed due to protocol revision.
- New protocol syntax added due to protocol revision.

- Protocol syntax updated due to protocol revision.
- Protocol syntax removed due to protocol revision.
- New content added for template compliance.
- Content updated for template compliance.
- Content removed for template compliance.
- Obsolete document removed.

Editorial changes are always classified with the change type **Editorially updated**.

Some important terms used in the change type descriptions are defined as follows:

- **Protocol syntax** refers to data elements (such as packets, structures, enumerations, and methods) as well as interfaces.
- **Protocol revision** refers to changes made to a protocol that affect the bits that are sent over the wire.

The changes made to this document are listed in the following table. For more information, please contact [protocol@microsoft.com](mailto:protocol@microsoft.com).

Section	Tracking number (if applicable) and description	Major change (Y or N)	Change type
<a href="#">1.2 References</a>	Added explanatory statement regarding the removal of the publishing year from Microsoft Open Specification document references.	N	Content updated.

## 7 Index

### A

[Applicability](#) 6

### C

[Change tracking](#) 11

### E

[Examples - structures](#) 8

[Extended host name - structures](#) 7

### F

[Fields - vendor-extensible](#) 6

### G

[Glossary](#) 5

### I

[Informative references](#) 6

[Introduction](#) 5

### L

[Localization](#) 6

### N

[Normative references](#) 5

### O

[Overview \(synopsis\)](#) 6

### P

[Product behavior](#) 10

### R

References

[informative](#) 6

[normative](#) 5

[Relationship to protocols and other structures](#) 6

### S

[Security](#) 9

Structures

[examples](#) 8

[extended host name](#) 7

### T

[Tracking changes](#) 11

### V

[Vendor-extensible fields](#) 6

[Versioning](#) 6