

# [MS-HNDS-Diff]:

## Host Name Data Structure Extension

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## Revision Summary

Date	Revision History	Revision Class	Comments
10/24/2008	0.1	<u>New</u>	Version 0.1 release
12/5/2008	0.2	Minor	Clarified the meaning of the technical content.
1/16/2009	0.2.1	Editorial	Changed language and formatting in the technical content.
2/27/2009	0.2.2	Editorial	Changed language and formatting in the technical content.
4/10/2009	0.2.3	Editorial	Changed language and formatting in the technical content.
5/22/2009	0.2.4	Editorial	Changed language and formatting in the technical content.
7/2/2009	0.2.5	Editorial	Changed language and formatting in the technical content.
8/14/2009	0.2.6	Editorial	Changed language and formatting in the technical content.
9/25/2009	1.0	Major	Updated and revised the technical content.
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12/18/2009	1.0.2	Editorial	Changed language and formatting in the technical content.
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4/23/2010	1.1.2	Editorial	Changed language and formatting in the technical content.
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7/16/2010	1.1.3	None	No changes to the meaning, language, or formatting of the technical content.
8/27/2010	1.1.3	None	No changes to the meaning, language, or formatting of the technical content.
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3/25/2011	1.1.3	None	No changes to the meaning, language, or formatting of the technical content.
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Date	Revision History	Revision Class	Comments
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6/30/2015	5.0	Major	Significantly changed the technical content.
10/16/2015	5.0	<del>No</del> ChangeNone	No changes to the meaning, language, or formatting of the technical content.

# Table of 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	7
1.7	Vendor-Extensible Fields	7
<b>2</b>	<b>Structures</b>	<b>8</b>
2.1	Extended Host Name	8
<b>3</b>	<b>Structure Examples</b>	<b>9</b>
<b>4</b>	<b>Security Considerations</b>	<b>10</b>
<b>5</b>	<b>Appendix A: Product Behavior</b>	<b>11</b>
<b>6</b>	<b>Change Tracking</b>	<b>12</b>
<b>7</b>	<b>Index</b>	<b>13</b>

# 1 Introduction

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

Sections 1.7 and 2 of this specification are normative ~~and can contain the terms MAY, SHOULD, MUST, MUST NOT, and SHOULD NOT as defined in [RFC2119].~~ All other sections and examples in this specification are informative.

## 1.1 Glossary

~~The~~This document uses the following terms ~~are specific to this document:~~

**ASCII:** The American Standard Code for Information Interchange (ASCII) is an 8-bit character-encoding scheme based on the English alphabet. ASCII codes represent text in computers, communications equipment, and other devices that work with text. ASCII refers to a single 8-bit ASCII character or an array of 8-bit ASCII characters with the high bit of each character set to zero.

**Augmented Backus-Naur Form (ABNF):** A modified version of Backus-Naur Form (BNF), commonly used by Internet specifications. ABNF notation balances compactness and simplicity with reasonable representational power. ABNF differs from standard BNF in its definitions and uses of naming rules, repetition, alternatives, order-independence, and value ranges. For more information, see [RFC5234].

**client:** A computer on which the remote procedure call (RPC) client is executing.

**Domain Name System (DNS):** A hierarchical, distributed database that contains mappings of domain names (1) to various types of data, such as IP addresses. DNS enables the location of computers and services by user-friendly names, and it also enables the discovery of other information stored in the database.

**host name:** The name of a physical server, as described in [RFC952].

~~**syntax:** See attribute syntax.~~

**UTF-8:** A byte-oriented standard for encoding Unicode characters, defined in the Unicode standard. Unless specified otherwise, this term refers to the UTF-8 encoding form specified in [UNICODE5.0.0/2007] section 3.9.

**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.

[RFC1123] Braden, R., "Requirements for Internet Hosts - Application and Support", 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>

[RFC952] Harrenstien, K., Stahl, M., and Feinler, E., "DOD Internet Host Table Specification", RFC 952, October 1985, <http://www.ietf.org/rfc/rfc952.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-NBTE] Microsoft Corporation, "NetBIOS over TCP (NBT) 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., McCann, J., and Stevens, W., "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 entire extended host name **MUST** be at most 255 bytes long.

An implementation **MAY**<1> disallow a string where a substring constructed from the 'name' rule does not contain at least one non-DIGIT character.



### 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~~might 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~~needs to 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.

~~Note: Some of the information in this section is subject to change because it applies to a preliminary product version, and thus may differ from the final version of the software when released. All behavior notes that pertain to the preliminary product version contain specific references to it as an aid to the reader.~~

- Windows NT operating system
- 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
- Windows 8 operating system
- Windows Server 2012 operating system
- Windows 8.1 operating system
- Windows Server 2012 R2 operating system
- Windows 10 operating system
- Windows Server 2016 ~~Technical Preview~~ 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.

<1> Section 2.1: Windows NT, Windows 2000, Windows XP, Windows Server 2003, Windows Vista, Windows Server 2008, Windows 7, and Windows Server 2008 R2 operating system follow this behavior.

## 6 Change Tracking

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

## **7 Index**

### **A**

Applicability 6

### **C**

Change tracking 12

### **D**

Details - extended host name 8

### **E**

Example 9

Examples 9

Extended host name 8

### **F**

Fields - vendor-extensible 7

### **G**

Glossary 5

### **H**

Host names - extended 8

### **I**

Implementer - security considerations 10

Informative references 6

Introduction 5

### **L**

Localization 7

### **N**

Normative references 5

### **O**

Overview (synopsis) 6

### **P**

Product behavior 11

### **R**

References 5

    informative 6

    normative 5

Relationship to protocols and other structures 6

### **S**

Security 10  
Security - implementer considerations 10  
Structures - extended host name 8

## **T**

Tracking changes 12

## **V**

Vendor-extensible fields 7  
Versioning 7