NetWare/IP Domain Name and Information

Status of this Memo

This document specifies an Internet standards track protocol for the Internet community, and requests discussion and suggestions for improvements. Please refer to the current edition of the "Internet Official Protocol Standards" (STD 1) for the standardization state and status of this protocol. Distribution of this memo is unlimited.

Copyright Notice

Copyright (C) The Internet Society (1997). All Rights Reserved.

1.0 Abstract

The Dynamic Host Configuration Protocol (DHCP) [RFC 2131] provides a framework for passing configuration information to hosts on a TCP/IP network. DHCP includes options for specific configuration parameters [RFC 2132]. This document defines options that carry NetWare/IP domain name and NetWare/IP sub-options to DHCP clients.

1.1 Requirements

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "MAY" and "OPTIONAL" in this document are to be interpreted as described in RFC 2119 [RFC 2119].

1.2 Terminology

This document uses the following terms:

- "DHCP client"

A DHCP client is an Internet host using DHCP to obtain configuration parameters such as a network address.
A DHCP server is an Internet host that returns configuration parameters to DHCP clients.

2. The NetWare/IP Domain Name option

This option code is used to convey the NetWare/IP domain name used by the NetWare/IP product. The NetWare/IP Domain in the option is an NVT ASCII [RFC 854] string whose length is inferred from the option ‘len’ field.

The code for this option is 62, and its maximum length is 255.

<table>
<thead>
<tr>
<th>Code</th>
<th>Len</th>
<th>NetWare/IP Domain Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>62</td>
<td>n</td>
<td>c1 c2 c3 ...</td>
</tr>
</tbody>
</table>

The ‘len’ field gives the length of the NetWare/IP Domain Name.

3. The NetWare/IP Information option

The NetWare/IP option code will be used to convey all the NetWare/IP related information except for the NetWare/IP domain name.

The code for this option is 63, and its maximum length is 255. A number of NetWare/IP sub-options will be conveyed using this option code. The ‘len’ field for this option gives the length of the option data, which includes the sub-option code, length and data fields.

Each sub-option contains in sequential order, a one byte sub-option code, a one byte length, and an optional multiple byte value field. The sub-option length gives the length of the value field for the sub-option. The example below illustrates the use of the ‘len’ and sub-option length fields in this option.

One and only one of the following four sub-options must be the first sub-option to be present in option 63 encoding. Each of them is simply a type length pair with length set to zero.

Sub-options:

NWIP_DOES_NOT_EXIST (code 1)

The responding DHCP server does not have any NetWare/IP information configured.
NWIP_EXIST_IN_OPTIONS_AREA (code 2)

All NetWare/IP information is present in the ‘options’ area of the DHCP response packet.

NWIP_EXIST_IN_SNAME_FILE (code 3)

All NetWare/IP information is present in the ‘sname’ and, if necessary, ‘file’ fields of the DHCP response packet. If used, the following DHCP server behavior is required: within the ‘options’ area, option 63 is present with its length field set to 2. The first byte of the value field is set to NWIP_EXIST_IN_SNAME_FILE tag and the second byte is set to zero. Both option 62 and option 63 will be placed in the area covered by the sname and file fields. Option 62 is encoded normally. Option 63 is encoded with its tag, length and value. The value field does not contain any of the first four sub-options described herein.

NWIP_EXIST_BUT_TOO_BIG (code 4)

Neither ‘options’ area nor ‘sname’ field can accommodate the NetWare/IP information.

If either NWIP_EXIST_IN_OPTIONS_AREA or NWIP_EXIST_IN_SNAME_FILE sub-options is set, one or more of the following sub-options may be present.

NSQ_BROADCAST (code 5)

Length is 1 and a value of 1 or 0. If the value is 1, the client SHOULD perform a NetWare Nearest Server Query to find out its nearest NetWare/IP server.

PREFERRED_DSS (code 6)

Length is \((n \times 4)\) and the value is an array of \(n\) IP addresses, each four bytes in length. The maximum number of addresses is 5 and therefore the maximum length value is 20. The list contains the addresses of \(n\) NetWare Domain SAP/RIP Server (DSS).

NEAREST_NWIP_SERVER (code 7)

Length is \((n \times 4)\) and the value is an array of \(n\) IP addresses, each four bytes in length. The maximum number of addresses is 5 and therefore the maximum length value is 20. The list contains the addresses of \(n\) Nearest NetWare/IP servers.
AUTORETRIES (code 8)

Length is 1 and the value is a one byte integer value indicating the number of times a NetWare/IP client should attempt to communicate with a given DSS server at startup.

AUTORETRY_SECS (code 9)

Length is 1 and the value is a one byte integer value indicating the amount of delay in seconds in between each NetWare/IP client attempt to communicate with a given DSS server at startup.

NWIP_1_1 (code 10)

Length is 1 and the value is 1 or 0. If the value is 1, the NetWare/IP client SHOULD support NetWare/IP Version 1.1 compatibility. A NetWare/IP client only needs this compatibility if it will contact a NetWare/IP version 1.1 server.

PRIMARY_DSS (code 11)

Length of 4, and the value is a single IP address. This field identifies the Primary Domain SAP/RIP Service server (DSS) for this NetWare/IP domain. NetWare/IP administration utility uses this value as Primary DSS server when configuring a secondary DSS server.

An example of option 63 encoding is provided below.

<table>
<thead>
<tr>
<th>Code</th>
<th>Len</th>
<th>NetWare/IP General Info</th>
</tr>
</thead>
<tbody>
<tr>
<td>63</td>
<td>11</td>
<td>2</td>
</tr>
</tbody>
</table>

NWIP_EXIST_IN_OPTIONS_AREA (length 0)

<table>
<thead>
<tr>
<th>Code</th>
<th>Len</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

NSQ_BROADCAST_SERVER (length 1)

value is YES

<table>
<thead>
<tr>
<th>Code</th>
<th>Len</th>
<th>NetWare/IP General Info</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>4</td>
<td>IP address</td>
</tr>
</tbody>
</table>

NEAREST_NWIP_SERVER (length 4)

value is IP address of server
4. References


5. Security considerations

DHCP currently provides no authentication or security mechanisms. Potential exposures to attack are discussed in section 7 of the DHCP protocol specification [RFC 2131].

The NetWare/IP options can be used by unauthorized DHCP servers to misconfigure NetWare/IP clients with potentially disruptive information.

6. Authors’ addresses

Ralph Droms
Computer Science Department
323 Dana Engineering
Bucknell University
Lewisburg, PA 17837

Phone: (717) 524-1145
EMail: droms@bucknell.edu

Kester Fong
Information Access Division
Novell Inc.
SJF-8-265
2010 Fortune Dr,
San Jose, CA 95131

Phone: (408)-577-8959
EMail: kfong@novell.com
7. Full Copyright Statement

Copyright (C) The Internet Society (1997). All Rights Reserved.

This document and translations of it may be copied and furnished to others, and derivative works that comment on or otherwise explain it or assist in its implementation may be prepared, copied, published and distributed, in whole or in part, without restriction of any kind, provided that the above copyright notice and this paragraph are included on all such copies and derivative works. However, this document itself may not be modified in any way, such as by removing the copyright notice or references to the Internet Society or other Internet organizations, except as needed for the purpose of developing Internet standards in which case the procedures for copyrights defined in the Internet Standards process must be followed, or as required to translate it into languages other than English.

The limited permissions granted above are perpetual and will not be revoked by the Internet Society or its successors or assigns.

This document and the information contained herein is provided on an "AS IS" basis and THE INTERNET SOCIETY AND THE INTERNET ENGINEERING TASK FORCE DISCLAIMS ALL WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO ANY WARRANTY THAT THE USE OF THE INFORMATION HEREIN WILL NOT INFRINGE ANY RIGHTS OR ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.