Network Working Group
INTERNET–DRAFT

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A string encoding of Presentation Address

Status of this Memo

There are a number of environments where a simple string encoding of Presentation Address is desirable. This specification defines such a representation.

This draft document will be submitted to the RFC editor as a protocol specification. Distribution of this memo is unlimited. Please send comments to the author or to the discussion group <osi-ds@CS.UCL.AC.UK>.

1 Introduction

There is a need to represent presentation addresses as strings in a number of different contexts. This Internet Draft defines one possible format.

This Internet Draft was originally published as UCL Resarch Note RN/89/14 [Kil89b]. It was agreed as a unified syntax for the THORN and ISODE projects. It is used throughout ISODE.

Christian Huitema of Inria and Marshall Rose of PSI Inc. gave much useful input to this document.

2 Requirements

The main requirements are:

- Must be able to specify any legal value
- Should be clean in the common case of no selectors
- Needs to deal with selectors in the following encodings:
  - IA5
  - Digits encoded as IA5 (this is the most common syntax in Europe, as it is required by X.400(84) and should receive an optimal encoding)
  - Numeric encoded as integer (US GOSIP). This is mapped onto two octets, with the first octet being the high order byte of the integer.
  - General Hexadecimal
- Should give special encodings for the ad hoc encoding proposed in "An interim approach to use of Network Addresses" [Kil89a].
  - X.25(80) Networks
  - TCP/IP Networks
- Should be extensible for additional forms
- Should provide a compact representation (e.g., for use in a TSEL encoding).

3 Format

The BNF is given in figure 1.

```
<digit> ::= [0-9]
<other> ::= [0-9a-zA-Z+-.]
<domainchar> ::= [0-9a-zA-Z-.]
<hexdigit> ::= [0-9a-fA-F]
<hexoctet> ::= <hexdigit> <hexdigit>
<decimaloctet> ::= <digit> | <digit> <digit>
                           | <digit> <digit> <digit>

<digitstring> ::= <digit> <digitstring>                                    10
                | <digit>
<otherstring> ::= <other> <otherstring>
                | <other>
<domainstring> ::= <domainchar> <otherstring>
                | <domainchar>
<hexstring> ::= <hexoctet> <hexstring> | <hexoctet>

<dotstring> ::= <decimaloctet> "." <dotstring>
                  | <decimaloctet> "." <decimaloctet>
                                                                           20


<dothexstring> ::= <dotstring> | <hexstring>


<presentation-address> ::=
          [[[ <psel> "/" ] <ssel> "/" ] <tsel> "/" ]
          <network-address-list>

<network-address-list> ::= <network-address> "|" <network-address-list>  30
                | <network-address>

<psel> ::= <selector>
<ssel> ::= <selector>
<tsel> ::= <selector>

<selector>  ::= '"' <otherstring> '"'      -- IA5
                                 -- For chars not in this
                                 -- string use hex
          | "#" <digitstring>        -- US GOSIP                          40
          | "'" <hexstring> "'H"     -- Hex
          | ""                       -- Empty but present

<network-address> ::=  "NS" "+" <dothexstring>
                      -- Concrete Binary Representation
                      -- This is the compact encoding
     | <afi> "+" <idi> [ "+" <dsp> ]
                                      -- A user oriented form
         | <idp> "+" <hexstring>
                                      -- ISO 8348 Compatability              50

<idp> ::= <digitstring> -

<dsp>  ::=
     | "d" <digitstring>        -- Abstract Decimal
     | "x" <dothexstring>          -- Abstract Binary
     | "l" <otherstring>          -- IA5: local form only
     | "RFC-1006" "+" <prefix> "+" <ip>
```

```
        [ "+" <port> [ "+" <tset> ]]
      | "X.25(80)" "+" <prefix> "+" <dte>                                    60
        [ "+" <cudf-or-pid> "+" <hexstring> ]
      | "ECMA-117-Binary" "+" <hexstring> "+" <hexstring>
        "+" <hexstring>
      | "ECMA-117-Decimal" "+" <digitstring> "+"
        <digitstring> "+" <digitstring>

<idi> ::= <digitstring>
<afi> ::= "X121" | "DCC" | "TELEX" | "PSTN" | "ISDN"
            | "ICD" | "LOCAL"
                                                                             70
<prefix> ::= <digit> <digit>

<ip> ::= <domainstring>
                  -- dotted decimal form (e.g., 10.0.0.6)
                  -- or domain (e.g., twg.com)
<port> ::= <digitstring>
<tset> ::= <digitstring>

<dte> ::= <digitstring>
<cudf-or-pid> ::= "CUDF" | "PID"                                             80
```

Figure 1: String BNF

Four examples:

```
"256"/NS+a433bb93c1|NS+aa3106

#63/#41/#12/X121+234219200300

'3a'H/TELEX+00728722+X.25(80)+02+00002340555+CUDF+"892796"

TELEX+00728722+RFC-1006+03+10.0.0.6
```

Note that the RFC 1006 encoding permits use of either domain or IP address. The former is primarily for ease of entry. If this domain maps onto multiple IP addresses, then multiple network addresses should be generated. When mapping from an encoded address to string form, the reverse mapping (dotted quad to domain) should not be used.

4 Encoding

Selectors are represented in a manner which can be easily encoded. In the NS notation, the concrete binary form of network address is given. Otherwise, this string notation provides a mechanism for representing the Abstract Syntax of a Network Address. This must be encoded according to Addendum 2 of ISO 8348 [ISO87].

5 Macros

There are often common addresses, for which a cleaner representation is desired. This is achieved by use of Macros. If a `<network-address>` can be parsed as:

```
<otherstring> "=" *( any )
```

Then the leading string is taken as a Macro, which is substituted. This may be applied recursively. When presenting Network Address to humans, the longest available substitution should be used. For example:

Macro	Value
UK.AC	DCC+826+d110000
Leeds	UK.AC=120

Then "Leeds=22" would be expanded to "DCC+826+d11000012022".

6 Standard Macros

No Macros should ever be relied on. However, the following are suggested as standard.

Macro	Value
Int-X25(80)	TELEX+00728722+X25(80)+01+
Janet-X25(80)	TELEX+00728722+X25(80)+02+
Internet-RFC-1006	TELEX+00728722+RFC-1006+03+

7 References

References

[ISO87] Information processing systems - data communications - network services definition: Addendum 2 - network layer addressing, March 1987. ISO TC 97/SC 6.

[Kil89a] S.E. Kille. An interim approach to use of network addresses. Research Note RN/89/13, Department of Computer Science, University College London, February 1989. Internet Draft: DRAFT-UCL-KILLE-NETWORKADDRESSES-00.PS.1.

[Kil89b] S.E. Kille. A string encoding of presentation address. Research Note RN/89/14, Department of Computer Science, University College London, February 1989. Internet Draft: DRAFT-UCL-KILLE-PRESENTATIONADDRESSES-00.PS.1.

8 Security Considerations

Security considerations are not discussed in this INTERNET–DRAFT .

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