Network Working Group
INTERNET–DRAFT

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Handling QOS (Quality of service) in the Directory (OSI-DS 15)

Status of this Memo

This document describes a mechanism for specifying the Quality of Service for DSA Operations and Data in the Internet Pilot Directory Service [Kil90].

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 have been a lot of problems with the variable quality of data and service over the directory. These attributes are proposed for use in the overall pilot (not implementation specific). In order that these attributes may be useful, it will be necessary to ensure that they are used throughout the pilot. For this reason, this specification is being made into a protocol standard. The usage of these attributes will be registered in the Cosine and Internet X.500 Sechema [BK91]. The QOS definitions can be used in the following ways:

1. By a user as additional information
2. By a system manager to determine what course of action to take following operational problems
3. By a DSA, as a heuristic to improve distributed operation (DSA choice)
4. By a DUA, perhaps to hide experimental stuff, or to indicate the quality of data/service to the user

Parameters are given encoded values to facilitate automatic processing, and string values as it is recognised that useful subtleties of service can be indicated which are useful to the end user (e.g., as to which aspects of the data can be trusted)

2 DSA Controls

The following attributes should be mandatory in the entry in the DIT which represents each pilot DSA. When information in the DIT is of high quality, it should be stored in DSAs of an appropriate service level.

```
DSAQuality ATTRIBUTE
        WITH ATTRIBUTE-SYNTAX DSAQualitySyntax
        SINGLE VALUE
```

```
DSAQualitySyntax ::= SEQUENCE {
        serviceQuality ENUMERATED {
                defunct(0), -- not present
                experimental (1), -- unlikely to be present
                best-effort (2),  -- no guaranteed support
                pilot-service (3), -- aim for  >90% availability
                full-service (4) -- expect >95% availability -- },
        description PrintableString OPTIONAL }
```

3 DIT Controls

The following attributes are defined, and should be present in every non-leaf entry in the DIT. If it is not present, the value of the attributes in the parent entry are assumed.

```
QualityLabelledData OBJECT-CLASS
        SUBCLASS OF top
        MUST CONTAIN {SingleLevelQuality}
        MAY CONTAIN {SubtreeMinimumQuality,
                SubtreeMaximumQuality}

SingleLevelQuality ATTRIBUTE
        WITH ATTRIBUTE-SYNTAX DataQualitySyntax
        SINGLE VALUE


-- Note that Subtree quality excludes the entries at the first level
-- It summarises the quality attributes at the levels below

SubtreeMaximumQuality ATTRIBUTE
        WITH ATTRIBUTE-SYNTAX DataQualitySyntax
        SINGLE VALUE
                -- Defaults to SingleLevelQuality

SubtreeMinimumQuality ATTRIBUTE
```

```
        WITH ATTRIBUTE-SYNTAX DataQualitySyntax
        SINGLE VALUE
                -- Defaults to SingleLevelQuality

DataQualitySyntax ::= SEQUENCE {
        namespace-completeness Completeness,
        defaultAttributeQuality AttributeQuality,
        attributeQuality SET OF SEQUENCE {
                        AttributeType,
                        AttributeQuality },
        description PrintableString OPTIONAL }


Completeness ::= ENUMERATED {
                none(1),
                sample(2),  -- small number present at random
                selected(3), -- partial coverage with most significant
                                -- values present
                substantial(4), -- >80% coverage
                full(5) -- all values present
                },


AttributeQuality ::= SEQUENCE {
                        maintenance-level ENUMERATED {
experimental(1),
-- may be very misleading
mixed(2),
-- some data will be good
good(3),
-- most data is accurate
accurate(4)
-- systematically maintained
-- guarantted correct }
                        attribute-completeness DEFAULT full }
```

The SingleLevelQuality attribute refers to the entries one level below. Where there are further levels, the other two attributes give an indication of the spectrum of quality of data in the lower levels.

The quality of the data indicates both its coverage (of the entries named), and the quality of attributes within the entries.

Note: It might be appropriate to measure data quality on the basis of object classes at the level below. Comments are solicited about this increase in complexity.

References

[BK91] P. Barker and S.E. Kille. The COSINE and Internet X.500 schema, March 1991. Internet Draft: draft-ietf-osids-cosinex500-02.txt.

[Kil90] S.E. Kille. Building and internet directory using X.500, November 1990. Internet Draft: draft-ietf-osix500-directories-01.txt.

4 Security Considerations

Security considerations are not discussed in this INTERNET–DRAFT .

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