ISI-DK

Doc No. 3
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Date: 1993-05-31
Version 1.2

Quality of Service

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1. Introduction

This document defines quality of service for the X.400 pilot by listing relevant parameters used as measure for the service level, classifies MTA's according to values, and describes management procedures for collecting data for measurement of the actual service level in the network.

2. Parameters

The service level is measured according to the following variables (the abbreviations are of Danish words):

PNT Planned unavailability. Measured in hours in a given four week period.

UNT Unplanned unavailability. Measured in hours in a given four week period.

FI Transit delay. The time in minutes an MTA uses to route a message, measured from arrival of last byte until the message has been fully processed. For transit MTA's or gateways it is the transit time excluding transmission time, for other MTA's it is the time from arrival or submission to it is ready for deliverey to UA, respectively to its departure.

OOD Supervised uptime. Measured in hours/week for normal working weeks; weeks with public holidays etc. will possibly have smaller actual OOD. When an MTA is supervised, errors will be corrected and error reports read and acted upon by an operator.

An MTA falls into one of four categories:

I) MTA without regular operator, and low traffic volume

II) Supervised MTA, low traffic volume

III) Moderately used regular MTA, possibly one of several mail systems (i.e. alternatives exist)

IV) Professionally managed MTA, used as main MTA, main relay or gateway.

Table 1: CATEGORIES

	PNT max.	UNT max.	FI 95% fractile	OOD min.
I	75	45	1440	0
II	40	20	60	20
III	20	5	5	37
IV	10	2	5	37

3. Backbone

To participate as a bacbone node, an MTA must be in category IV. The planned unavailabilty should be coordinated with the other bacbone nodes, with the goal that only one backbone MTA is unavailable at a given time. Internationally the target for the service level of DEnmark as a whole is shown in table 2.

Table 2: DK R&D MHS service level target

PNT max.	UNT max.	FI 95% fractile	OOD min.
0	1	5	37

A backbone MTA shall route to all Danish and international domains of relevance for Danish R&D users, and provide subnet relaying if technically possible.

4. Management procedures

The purpose of the management procedure is to collect data relevant for measuring the actual values for the service parameters listed above.

At the end of each calendar month the following information is trensferred from the participants to the Danish X.400 manager. The manager produces and distributes a summary. Until OSI management software is available for X.400, this process is semiautomatic.

The four parameters shown in table 3 are reported for relays and gateways, and in addition for single MTA's, which does not belong to a domain being served by a doimain relay.

Tabel 3: Reporting of mesured parameters

PNT	total actual unavailability in the given month due to e.g. general unavailablity of the system, or X.400 service being closed down, in whole hours
UNT	total actual unavailability in the given month, due to unplanned circumstances, in whole hours
FI	for all transportded messages in the given month the 50%, 95% and 99% fractiles, and the maximum for message delay time, measured in whole minutes
OOD	actual supervised time in the given month, mesaured in whole hours