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Guidelines for the Use of the "OAM" Acronym in the IETF

Abstract

At first glance, the acronym "OAM" seems to be well-known and well-understood. Looking at the acronym a bit more closely reveals a set of recurring problems that are revisited time and again.

This document provides a definition of the acronym "OAM" (Operations, Administration, and Maintenance) for use in all future IETF documents that refer to OAM. There are other definitions and acronyms that will be discussed while exploring the definition of the constituent parts of the "OAM" term.

Status of This Memo

This memo documents an Internet Best Current Practice.

This document is a product of the Internet Engineering Task Force (IETF). It represents the consensus of the IETF community. It has received public review and has been approved for publication by the Internet Engineering Steering Group (IESG). Further information on BCPs is available in Section 2 of RFC 5741.

Information about the current status of this document, any errata, and how to provide feedback on it may be obtained at http://www.rfc-editor.org/info/rfc6291.

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1. Introduction

The main purpose of this document is to provide a definition of the acronym "OAM" (Operations, Administration, and Maintenance) for use in all future IETF documents that refer to OAM.

The acronym "OAM" is frequently used in the data and telecommunication industry. One would assume that something that is so widely used is very clearly defined. However, a closer look reveals some points that need to be clarified.

If such an important piece of our technology is so poorly defined, or if there are dialects of the technology with different understandings of such a key concept, this will eventually cause problems.

Trying to understand the use of an acronym that is as "content-rich" as OAM reveals two levels of complexity. First, each letter in the acronym represents an integrated piece of functionality. Second, the acronym, as such, represents something that is more than just the sum of its parts.

There is also the issue of how each piece of the acronym is defined. This document provides an analysis of what each initial of the initialism represents and provides possible interpretations of the acronym. Finally, a recommendation for the interpretation of the "OAM" acronym is provided.

Another useful document to make the "OAM" term understandable in a wider scope is found in "An Overview of Operations, Administration, and Maintenance (OAM) Mechanisms" [OAM-OVERVIEW].

1.1. Terminology

- "Mgmt" - Management
- O&M - OAM and Management
- OAM - Operations, Administration, and Maintenance
- SDO - Standards Development Organization

2. Pre-Existing Uses of OAM

This section provides information on how OAM is used in other SDOs (Standards Development Organizations) and provides the background necessary to understand the how the term is used in the IETF.

2.1. Uses of OAM in Other SDOs

Operations And Maintenance (OAM): A group of network management functions that provide network fault indication, performance information, and data and diagnosis functions. ATM OAM ITU-T I.610 [ITU-T-I.610] is an example specification that uses this expansion of the "OAM" acronym.

Operations, Administration, and Maintenance (OAM): A group of network management functions that provide network fault indication, fault localization, performance information, and data and diagnosis functions. Examples where this acronym is used are Clause 57 of IEEE 802.3-2008 [IEEE.802.3-2008] and ITU-T Y.1731 [ITU-T-Y.1731].

The ITU-T M.3010 [ITU-T-M.3010] Recommendation defines operations systems function as a function block that processes information related to the telecommunications management for the purpose of monitoring/coordinating and/or controlling telecommunication functions including management functions (i.e., the TMN (Telecommunications Management Network) itself).

The Metro Ethernet Forum refers to OAM as the tools and utilities to install, monitor, and troubleshoot a network, helping carriers run their networks more effectively MEF 17 [MEF-17].

2.1.1. The "O" in OAM

The "O" in OAM invariably stands for "Operations". However, there is some ambivalence in the definition and scope of the term "Operation".

Examples of tools related to "operations" are performance monitoring tools used for service level agreement (SLA) measurement, fault management tools used to monitor the health of nodes and links in the network, and network provisioning tools.

2.1.2. The "A" in OAM

The "A" in OAM stands for "Administration".

Examples of "administration" tools are network discovery and planning tools.

2.1.3. The "M" in OAM

The "M" in OAM stands for "Maintenance" or "Management".

Examples of "maintenance" tools are implementations of connectivity check, loopback, link trace, and other tools that can be used to monitor and diagnose failures in a network or network element.

The Recommendation ITU-T M.20 [ITU-T-M.20] defines maintenance as the whole of operations required for setting up and maintaining, within prescribed limits, any element involved in the setting up of a connection (see the ITU-T M.60 [ITU-T-M.60] Recommendation). The purpose is to properly plan and program the maintenance operations required to establish and maintain a network.

A major aim of the concept of maintenance is to minimize both the occurrence and the impact of failures and to ensure that in case of a failure the correct actions are taken.

2.2. Uses of OAM in the IETF

The examples below show a number of different ways that the "OAM" acronym has been expanded in IETF RFCs. The reference list is not exhaustive.

- OAM = Operations, Administration, and Maintenance in RFC 5586 [RFC5586]
- OAM = Operations and Maintenance in RFC 3429 [RFC3429]
- OAM = Operations and Management in RFC 4377 [RFC4377]
- O&M = OAM and Maintenance in RFC 1812 [RFC1812]

Sometimes there is a fourth letter added to the acronym:

- OAM&P = Operations, Administration, Maintenance and Provisioning in RFC 4594 [RFC4594]

3. Recommendations on the Use of the "OAM" Acronym

The IETF-recommended expansion of the "OAM" acronym is given below. In addition to the "OAM" acronym, two other recommendations are made in this section.

- OAM - Operations, Administration, and Maintenance
- O&M - OAM and Management

- "Mgmt" - Management

The components of the "OAM" acronym (and provisioning) are defined as follows:

- Operations - Operation activities are undertaken to keep the network (and the services that the network provides) up and running. It includes monitoring the network and finding problems. Ideally these problems should be found before users are affected.

- Administration - Administration activities involve keeping track of resources in the network and how they are used. It includes all the bookkeeping that is necessary to track networking resources and the network under control.

- Maintenance - Maintenance activities are focused on facilitating repairs and upgrades -- for example, when equipment must be replaced, when a router needs a patch for an operating system image, or when a new switch is added to a network. Maintenance also involves corrective and preventive measures to make the managed network run more effectively, e.g., adjusting device configuration and parameters.

"Provisioning" is outside the scope of this document, but the following definition is provided for completeness.

- Provisioning - Provisioning activities involve configuring resources in the network to support the offered services. This might include setting up the network so that a new customer can receive an Internet access service.

In general, Provisioning is used to configure the network to provide new services, whereas OAM is used to keep the network in a state that it can support already existing services.

Sometimes it is necessary to talk about the combination of functions and tools supplied by OAM and Management, it is preferred that this is spelled out as "OAM and Management". In cases where an acronym is needed, O&M should be used.

"Mgmt" will be used if an abbreviation for "Management" is needed. This document does not define Management.

4. Security Considerations

This document provides guidance for the use of the "OAM" acronym in other documents. This document does not have direct security implications.

The misunderstanding of an acronym may lead to incorrect specification or implementation which may, in turn, open up security concerns with protocols or deployed networks. Clarifying the meaning of OAM is, therefore, a benefit for future stability of specifications.

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