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ETH/XZXC (Tibor Csondes)		2011-11-29	D	GASK2

DNS Protocol Modules for TTCN-3 Toolset with TITAN, Function Specification

Contents

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1   Introduction

1.1   Revision history

Date	Rev	Characteristics	Prepared
2005-04-14	PA1	First draft version	EGBOTAT
2005-04-28	A	Final version after review	EGBOTAT
2005-06-27	B	New RRs added (SRV, NAPTR RR)	EJMTCSO
2007-08-07	PC1	Extended with DNS Update	QATTFLO
2009-03-19	PD1	New RR added (AAAA)	ETHEKR

1.2   How to Read this Document

This is the Function Specification for the set of DNS protocol modules. DNS
protocol modules are developed for the TTCN-3 Toolset with TITAN. This
document should be read together with Product Revision Information [5].

1.3   Scope

The purpose of this document is to specify the content of the DNS Test Port
and the additional modules containing TTCN-3 type definitions.

1.4   References

[1]   RFC 1035
        Domain names – Implementation and specification

[2]   RFC 2782
        A DNS RR for specifying the location of services (DNS SRV)

[3]   RFC 3403
        Dynamic Delegation Discovery System (DDDS), Part Three: The
        Domain Name System (DNS) Database

[4]   ETSI ES 201 873-1 v3.1.1 (2005-06)
        The Testing and Test Control Notation version 3; Part 1: Core
        Language

[5]   109 21-CNL 113 429-1 Uen Rev B
        DNS Protocol Modules for TTCN-3 Toolset with TITAN, Product
        Revision Information

[6]   RFC 3761
        The E.164 to Uniform Resource Identifiers (URI) Dynamic Delegation
        Discovery System (DDDS) Application (ENUM)

[7]   RFC 2136
        Dynamic Updates in the Domain Name System (DNS UPDATE)

[8]   RFC 1886
        DNS Extensions to support IP version 6

1.5   Abbreviations

ASP   Abstract Service Primitive

DNS   Domain Name System

IP   Internet Protocol

PDU   Protocol Data Unit

TTCN-3   Testing and Test Control Notation version 3

1.6   Terminology

No specific terminology is used.

2   General

The Test Port and the included protocol modules implement message structures of the related protocol in a formalized way, using the standard specification language TTCN-3. Thus allowing definition of test data (using templates) in TTCN-3 core-language format [4]. The Test Port assures encoding/decoding of messages during test suite execution using the TITAN TTCN-3 test environment.

The DNS protocol modules use external encoding and decoding functions.

The DNS PDU in TTCN-3 is represented in an uncompressed format.

3   Functional specification

3.1   Protocol versions implemented

This Protocol Module implements protocol messages and constants of the DNS protocol as described in [1], [2], [3], [7],[8] with the modifications specified in 3.2. Also, valid NAPTR queries and responses needed by the ENUM protocol (specified in [6]) can be sent and received via the Test Port.

3.2   Modifications/deviations related to the protocol specification

3.2.1   Unimplemented Messages, Message Fields and Constants

Only the message fields related to Internet and IP are implemented. DNS resource records with class CS (CSNET), CH (CHAOS) and HS (Hesoid) are not supported but will be decoded into a TTCN-3 octetstring.

3.2.2   Protocol Modifications/Deviations

None.

3.3 Encoding/Decoding and Other Related Functions

This product also contains encoding/decoding functions, which assure correct encoding and compression of messages when sent from TITAN, and correct decoding and decompression of messages when received by TITAN. Implemented encoding/decoding functions:

Name	Type of formal parameters	Type of return value
enc_PDU_DNS	PDU_DNS, boolean, boolean	octetstring
dec_PDU_DNS	octetstring	PDU_DNS

The decoder function can handle both compressed and uncompressed format and the PDU will be visible in uncompressed format in TTCN-3.

The encoder function can be instructed by a boolean parameter to perform compression and by a second boolean parameter to automatically calculate length fields.