

# **Pre-Delegation Testing**

## **DNS Zone Test Cases**

**Version F**

File name: PDT\_DNS\_TC\_Zone.docx  
Last saved: 2013-07-25

Copyright (c) 2013 Internet Corporation For Assigned Names and Numbers. All rights reserved.

# Document control

## Document information and security

Made by	Responsible for fact	Responsible for document
Patrik Wallström	Patrik Wallström	Patrik Wallström

Security class	File name
External	PDT_DNS_TC_Zone.docx

## Revisions

Date	Version	Name	Description
2013-04-04	PA1	Patrik Wallström	New document from updated SOW
2013-04-08	B	Staffan Hagnell	Delivery D2 for production
2013-04-16	C	Patrik Wallström	Updated objective for DNS30, updated DNS31
2013-05-03	D	Mats Dufberg	Released
2013-05-31	P(E1)	Patrik Wallström	Added SubDomain to input and DNS28, removed dependency on the EPP Test Level.
2013-06-04	E	Mats Dufberg	Released
2013-07-18	PF1	Mats Dufberg	Minor update of wording.
2013-07-25	F	Mårten Frosth	Released.

## LIST OF CONTENTS

<b>1.</b>	<b>INTRODUCTION.....</b>	<b>4</b>
1.1	SCOPE .....	4
1.2	REFERENCES .....	4
1.2.1	<i>External</i> .....	4
1.2.2	<i>Internal</i> .....	4
1.2.3	<i>Document Hierarchy</i> .....	4
1.3	CONTEXT.....	4
1.4	NOTATION FOR DESCRIPTION .....	4
<b>2.</b>	<b>CHECK FOR TOO LONG TTL ON DS RECORDS.....</b>	<b>5</b>
2.1	TEST CASE IDENTIFIER .....	5
2.2	OBJECTIVE .....	5
2.3	INPUTS .....	5
2.4	OUTCOME(S).....	5
2.5	ENVIRONMENTAL NEEDS.....	5
2.6	SPECIAL PROCEDURAL REQUIREMENTS.....	5
2.7	INTERCASE DEPENDENCIES .....	5
2.8	ORDERED DESCRIPTION OF STEPS TO BE TAKEN TO EXECUTE THE TEST CASE.....	5
<b>3.</b>	<b>WILDCARDS MUST NOT EXIST IN THE TLD ZONE .....</b>	<b>6</b>
3.1	TEST CASE IDENTIFIER .....	6
3.2	OBJECTIVE .....	6
3.3	INPUTS .....	6
3.4	OUTCOME(S).....	6
3.5	ENVIRONMENTAL NEEDS.....	6
3.6	SPECIAL PROCEDURAL REQUIREMENTS.....	6
3.7	INTERCASE DEPENDENCIES .....	6
3.8	ORDERED DESCRIPTION OF STEPS TO BE TAKEN TO EXECUTE THE TEST CASE.....	6
<b>4.</b>	<b>CHECK FOR USE OF ZONE AS “DOTLESS DOMAIN” .....</b>	<b>7</b>
4.1	TEST CASE IDENTIFIER .....	7
4.2	OBJECTIVE .....	7
4.3	INPUTS .....	7
4.4	OUTCOME(S).....	7
4.5	ENVIRONMENTAL NEEDS.....	7
4.6	SPECIAL PROCEDURAL REQUIREMENTS.....	7
4.7	INTERCASE DEPENDENCIES .....	7
4.8	ORDERED DESCRIPTION OF STEPS TO BE TAKEN TO EXECUTE THE TEST CASE.....	7
<b>5.</b>	<b>NIC.&lt;TLD&gt; MUST BE DELEGATED.....</b>	<b>8</b>
5.1	TEST CASE IDENTIFIER .....	8
5.2	OBJECTIVE .....	8
5.3	INPUTS .....	8
5.4	OUTCOME(S).....	8
5.5	ENVIRONMENTAL NEEDS.....	8
5.6	SPECIAL PROCEDURAL REQUIREMENTS.....	8
5.7	INTERCASE DEPENDENCIES .....	8
5.8	ORDERED DESCRIPTION OF STEPS TO BE TAKEN TO EXECUTE THE TEST CASE.....	8
<b>6.</b>	<b>GLOBAL.....</b>	<b>9</b>
6.1	GLOSSARY .....	9
6.2	DOCUMENT CHANGE PROCEDURES .....	9

## 1. Introduction

---

### 1.1 Scope

The Pre-Delegation Testing Provider will test the DNS service for the designated zone and verify the resulting answers. The test case described in this document is done using a program for doing introspective DNS tests of the zone content from the designated zone.

### 1.2 References

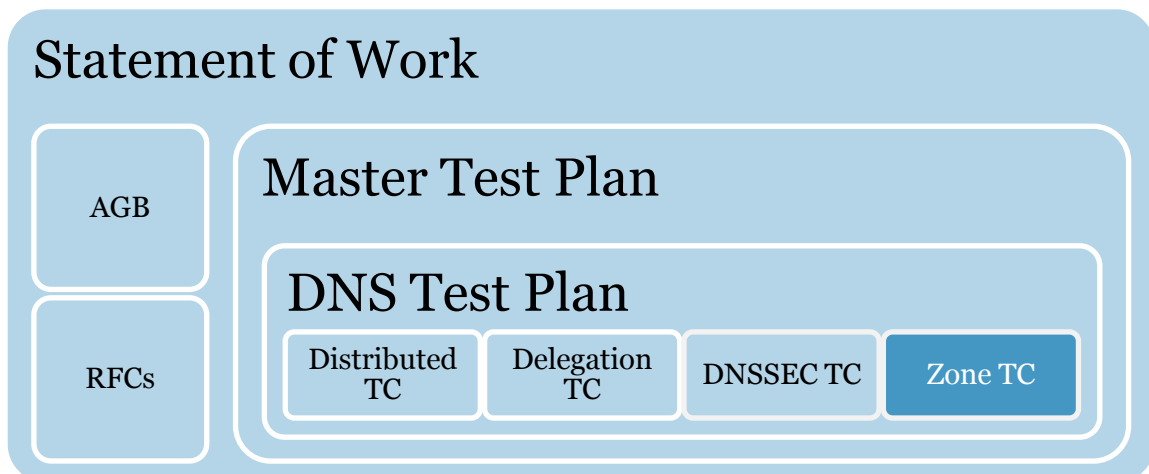
#### 1.2.1 External

- IEEE 829-2008
- ICANN gTLD Applicant Guidebook, Version 2012-06-04

#### 1.2.2 Internal

- Pre-Delegation Testing, Statement of Work
- Pre-Delegation Testing, Master Test Plan
- Pre-Delegation Testing, DNS Test Plan

#### 1.2.3 Document Hierarchy



### 1.3 Context

All tests are to be performed over IPv4 and IPv6 from at least five points on the Internet. At least one probe node should be located in every ICANN region.

### 1.4 Notation for description

Each test case for the DNS service is described in their own section. The test procedures are described directly in the test case.

## 2. Check for too long TTL on DS records

---

### 2.1 Test case identifier

DNS28 DS TTL

### 2.2 Objective

The TTL on DS records in the designated zone must not be too long (>172800 seconds).

### 2.3 Inputs

The following information will be needed as input for this test case:

Id	Description	Type
TLD	The ASCII compatible name of the TLD	String
DnsNameServer-[1..n]	FQDN of authoritative name server	String
DnsGlueRecord-[1..n]	All IPv4 or IPv6 addresses for auth NS	String
SubDomain	A delegated domain with NS and DS records published in the TLD zone	String

The above input is also considered to be the exact same information that is sent to IANA for inclusion in the root zone. IANA will only publish the subordinate host glue records in the root zone.

### 2.4 Outcome(s)

All TTL values from the DS record must be less than or equal to 172800 seconds for this test to pass. If there are missing DS records, or the TTL value is higher than 172800 this test emits a warning.

### 2.5 Environmental needs

All authoritative name servers listed in the inputs section should be authoritative for the designated zone.

### 2.6 Special procedural requirements

This test has no procedural requirements.

### 2.7 Intercase dependencies

This test has no procedural requirements.

### 2.8 Ordered description of steps to be taken to execute the test case

A query for the DS record of the SubDomain is done for all the listed name servers. The TTL of the DS record is evaluated, and it must not exceed 172800 seconds.

### 3. Wildcards must not exist in the TLD zone

---

#### 3.1 Test case identifier

DNS29 Wildcards

#### 3.2 Objective

There must not be any wildcards in the designated zone, also known as Site Finder.<sup>1</sup>

#### 3.3 Inputs

The following information will be needed as input for this test case:

Id	Description	Type
TLD	The ASCII compatible name of the TLD	String
DnsNameServer-[1..n]	FQDN of authoritative name server	String
DnsGlueRecord-[1..n]	All IPv4 or IPv6 addresses for auth NS	String

The above input is also considered to be the exact same information that is sent to IANA for inclusion in the root zone. IANA will only publish the subordinate host glue records in the root zone.

#### 3.4 Outcome(s)

Both queries must answer with the RCODE NXDOMAIN for this test to pass. All other RCODEs will generate a fail.

#### 3.5 Environmental needs

All authoritative name servers listed in the inputs section should be authoritative for the designated zone.

#### 3.6 Special procedural requirements

This test has no procedural requirements.

#### 3.7 Intercase dependencies

This test has no procedural requirements.

#### 3.8 Ordered description of steps to be taken to execute the test case

Two queries are made, for the A and the AAAA records for an almost certainly nonexistent name in the designated zone. The RCODE should not be NOERROR.

---

<sup>1</sup> [http://en.wikipedia.org/wiki/Site\\_Finder](http://en.wikipedia.org/wiki/Site_Finder)

## **4. Check for use of zone as “dotless domain”**

---

### **4.1 Test case identifier**

DNS30 Dotless domain

### **4.2 Objective**

The apex of the domain must not contain authoritative data such as an A/AAAA record, or an MX record, for use as what is called a “dotless domain”.

### **4.3 Inputs**

See section 3.3 in this document.

### **4.4 Outcome(s)**

All queries must answer with the RCODE NOERROR, and the ANSWER and AUTHORITY parts of the answer must not contain NS records for this test to pass. Any NS records in the answer will fail this test.

### **4.5 Environmental needs**

All authoritative name servers listed in the inputs section should be authoritative for the designated zone.

### **4.6 Special procedural requirements**

This test has no procedural requirements.

### **4.7 Intercase dependencies**

This test depends on the EPP test level to finish, since we need a registered domain with a secure delegation in order to have a DS record available for testing.

### **4.8 Ordered description of steps to be taken to execute the test case**

Three queries are made, for the A, the AAAA and the MX records for the label <TLD> in the designated zone. The RCODE should be NOERROR, with the ANSWER and AUTHORITY parts of the answer should be empty.

## **5. nic.<TLD> must be delegated**

---

### **5.1 Test case identifier**

DNS31 nic.<TLD> or whois.nic.<TLD> must be delegated

### **5.2 Objective**

The names nic.<TLD> or whois.nic.<TLD> must be a delegated zone.

### **5.3 Inputs**

See section 3.3 in this document.

### **5.4 Outcome(s)**

The answer must be NOERROR and the ANSWER or AUTHORITY section must contain NS records, for either nic.<TLD> or whois.nic.<TLD>. If any of the queries fail to return an NS set, this test fails.

### **5.5 Environmental needs**

All authoritative name servers listed in the inputs section should be authoritative for the designated zone.

### **5.6 Special procedural requirements**

This test has no procedural requirements.

### **5.7 Intercase dependencies**

This test depends on the EPP test level to finish, since we need a registered domain with a secure delegation in order to have a DS record available for testing.

### **5.8 Ordered description of steps to be taken to execute the test case**

A query is made for the NS record for the label nic.<TLD> and the whois.nic.<TLD> in the designated zone. The answer should be a set of NS records for the name server handling the delegation.



6.	Global
6.1	Glossary
6.2	Document change procedures

---