VNNIC

**DNSSEC Implementation for .VN**

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1  DNSSEC Deployment Status
2  Preparations
3  Planning Next ...
DNSSEC Deployment Status

- AP ccTLD DNSSEC deployment map:

AP ccTLD DNSSEC Status on 2015-06-19

→ .VN status: Announced !!!
DNSSEC Deployment Status

1. Experimental:
   - Attended the forum, conference
   - RFC for DNSSEC
2. Announced:
   - DNSSEC OT&E
   - Training & drills
Some recent activities

- **11Oct, 2014:**
  VNNIC officially replaced the current domain name management system (DMS) with the Shared Registry System (SRS), using EPP standards.

- **23Oct, 2014:**
  The Minister of Information and Communication approved the project of DNSSEC deployment for .VN domain name:
  - Phase 1: Preparation (2015)
  - Phase 2: Implementation (2016)
  - Phase 3: Accomplishment (2017)
DNSSEC Plan

2015
• Preparation
  • Planning
  • Preparing human and technical resources
  • Promote co-operate activities, training
  • Policy, procedure, process

2016
• Implementation
  • Key generation & zone signing for .VN
  • .VN zone is signed & DS has been published to DNS ROOT
  • Continue promotion activities, training

2017
• Accomplishment
  • Upgrade SRS to support EPP
  • ISP, Registrar, DNS Owner in Vietnam
There are two sides of DNSSEC:
- Signing (Authoritative DNS)
- Validation (Caching DNS)
Preparation

- Preparing human resources:
  - VNNIC has organized 3 DNSSEC training courses for ISPs, Registrars, DNS Hosting Providers in VN.

- Preparing Infrastructure:
  - Physical Security
  - Hardware: HSM, Servers.
  - DC & DR site: Hanoi & Ho Chi Minh city

- Software development

- DNSSEC procedures

- Policy:
  - Deploy gov.vn is mandatory!
  - Recommend registrar to deploy dnssec with other domain .VN
DNSSEC Signing Topology

DC Site (Hanoi)
- DNS Primary 1
  - Inline Signing
  - Key Generator
  - Signing box
- HSM
  - ZSKs
  - KSKs
- Signed zone
- Signed zone
- Signed zone
- Signed zone

SRS System
- SRS DR

DR Site (HCM city)
- DNS Primary 2
  - Inline Signing
  - Sync Key from HSM-DC
  - Signing box
- HSM
  - ZSKs
  - KSKs
- Signed zone
- Signed zone

DNS Secondary
- Key Synchronization

Vietnam Internet Network Information Center
Preparation - Topology

- All key pairs are generated in HSM
- Resilient: built with DC and DR (HN & HCM city)
- Inline Signing: Bump in the wire
- Separations of roles:
  - System Administrator (SA)
  - Security Officer (SO)
  - Witness (WI)
## Preparation – KSK & ZSK

### - Key Algorithm & Key length

<table>
<thead>
<tr>
<th>Key Type</th>
<th>Function</th>
<th>Algorithm</th>
<th>Key length</th>
<th>NSEC/NSEC3</th>
</tr>
</thead>
<tbody>
<tr>
<td>KSK</td>
<td>Sign DNSKEY</td>
<td>RSA-SHA256</td>
<td>2048 bits</td>
<td>NSEC3</td>
</tr>
<tr>
<td>ZSK</td>
<td>Sign RRSET</td>
<td>SHA256</td>
<td>1024 bits</td>
<td></td>
</tr>
</tbody>
</table>

### - Key rolling cycle & RRSIG period

<table>
<thead>
<tr>
<th>Key Type</th>
<th>Period</th>
<th>Key Rollover</th>
<th>RRSIG Period</th>
</tr>
</thead>
<tbody>
<tr>
<td>KSK</td>
<td>13 month</td>
<td>12 month</td>
<td>30 day</td>
</tr>
<tr>
<td>ZSK</td>
<td>100 day</td>
<td>90 day</td>
<td></td>
</tr>
</tbody>
</table>
1. Phase 1: For testing

Zone Generation → Hidden Master → Name Servers

DNSSEC Signer → Test Name Servers
2. Phase 2: Implementation

- Zone Generation
- Hidden Master
- Name Servers
- DNSSEC Signer
Planning Next

- **2015:**
  - Finish DPS for .VN
  - Open test with ISPs, Registrars, DNS Hosting Provider in Vietnam

- **2016:**
  - Script for Key Signing Ceremony
  - Key generation & zone signing for .VN
  - Publish DS to DNS ROOT

- **2017:**
  - SRS/EPP support DNSSEC
  - Deploy DNSSEC in ISP, Registrar, DNS Hosting Provider in Vietnam
Some our interested issues:

- Risk Management:
  - Expired signature
  - Mis-understand

- Monitoring:
  - Monitoring of zone data, keys, signing process, validate process...
  - NAGIOS?
  - dnssec-tools.org?

- Validate data after signing:
  - Validate process before publishing a signed zone to DNS Secondary
  - Validate process between DC & DR site
Thank You!