.SE-DNSSEC

Start of project: 2001

Signing the .SE zone: Sep 2005

Soft launch of service: 2006

.SE’s challenge

- To make DNSSEC into a service…
- …to coordinate all parties needed to add value to the service and to get the market started
Begin with a study of the value chain!

ICANN/IANA → .SE registry → DNS Name Service Provider → DNS Resolver → Applications → Internet users

Registrants → .SE registrar → Domain name
Does the Registrants want DNSSEC?

Market research, November 2006

- Survey to .SE domain name holders
- 1 406 randomly selected, and 259 answers (20%).
How interesting is DNSSEC?

.SE is planning the commercial launch of .SE-DNSSEC. How interesting is this to you/your company?

- Very 14%
- Quite 51%
- Not particularly 29%
- Not at all 6%
- 259 answers
Are you willing to pay?

How would you react to an annual charge of €50 for this service?

- Rather high 54%
- Very high 22%
- Very low 2%
- Quite low 22%

259 answers

The survey indicated €20–€30 to be reasonable price
DNSSEC – values

- Today’s use
  - Connection to web sites
  - Delivery of e-mail – where it is going and where it comes from
  - Logging – to whom does the IP address belong?

- Tomorrow
  - IP-telephony (SIP, ENUM)
  - E-mail
    - DomainKeys Identified Mail, DKIM
    - SPF, Sender Policy Framework
  - DNSSEC adapted applications
    - IPsec, SSH, PGP, …
  - DNS as a repository for certificates and keys?

- DNS is becoming a more important infrastructure!
Create value - phase 1

- Validation of DNS data is done in Resolvers
  - IP resolver
  - Resolver in local server
- Value in phase 1
  - When validation is done close to the user, exposure of unprotected DNS data decreases

- Phase 2
  - Validation made by applications
<table>
<thead>
<tr>
<th>Registrars</th>
<th>.SE Registrars</th>
<th>DNS Name Service Providers</th>
<th>.SE</th>
<th>Resolver Operators</th>
<th>Applications</th>
<th>Internet Users</th>
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</thead>
<tbody>
<tr>
<td><strong>Phase 1</strong></td>
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Participants needed to crate value?
Pricing strategy for .SE-DNSSEC

- Caution!
  - Greater risks and problems with a rapid market penetration
- Pricing to stimulate all parties involved
  - Small volume makes it safer for resolver operators to start
  - Sales commission to registrars selling .SE-DNSSEC
  - Need time for system development at .SE
  - Establishment subsidies to name server providers
- We want DNSSEC to be a deliberate choice
  - In order to emphasise the importance of the service
  - In order for name service providers to maintain good quality

.se
Pricing strategy

- An additional service
- Add-on at lesser cost
- Bundled together with the domain name
- Domain with DNSSEC cheaper than without?

Start
Necessary activities for phase 1

- Target groups
  - Pilot Registrants
  - .SE Registrars
  - DNS Name Service Providers
  - .SE
  - Resolver Operators
Registrants

- Market survey
- Should be handled by Registrars
- …but .SE will work with important pilot customers
  - Governmental institutions
  - Banking and finance
  - Universities
  - Early adopters with technical interest

- Campaign
  - Information to all .SE registrants
  - Newsletter

- Public relations
  - Articles etc.
DNS Name Service Providers

- Those hosting and running DNS for the Registrants
- Who are they?
- How can we attract them to offer high-quality DNSSEC services?
In total: 12,766 DNS Name Service Providers, March 2007
Share of domains held by largest DNS Name Service Providers

- Top 10: 49.4%
- Top 100: 79.4%
- Top 1000: 94.2%
- Top 6383: 98.8%
- Total: 100%
.SE registrars are DNS Name Service Providers as well

Estimated share of .se domains run by registrars
Activities for DNS Name Service Providers

- **Development**
  - Supply one or more reference platform with automated tools for the administration of DNSSEC
  - Possibility of establishment subsidy

- **Education**
  - Courses
  - Workshops
.SE’s registrars

- Five registrars from day 1
- Drive for getting more Registrars to provide DNSSEC
  - Kick-back on first 5,000 registrations
  - Establishment subsidies
- Offer direct registration if not a functioning reseller market occurs!
Resolver operators

- Who are they?
  - .SE answers to anyone who asks!
  - Tens of thousands of resolvers throughout the world

- Pilots
  - The four largest ISP’s covers 80-90 % of the Swedish market for broad band connection
  - They are positive to DNSSEC

- How to distribute .SE’s public keys for DNSSEC?
.SE’s internal work

- Key signing and signing of the .SE zone

- Some of our work
  - Development of .SE’s system for customer administration
  - Manual administration in the meantime
  - Signing of .SE’s own domains
  - Test tools for DNSSEC on customer domains
  - Additional agreement to contracts with registrars and domain name holders
  - ....
## Key findings

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<th>Registrants</th>
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<tr>
<td>Bigger interest for DNSSEC than we expected.</td>
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<td>Often, before applying DNSSEC the present DNS Name Service should be reviewed.</td>
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<td>Requirements of system adjustment and development.</td>
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<td>With some exceptions, the Registrars has to be motivated</td>
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<td>The market is consolidating. A few large players.</td>
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<td>The service (DNS) is taken for granted (at no cost) and the quality isn’t an issue.</td>
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<td>Tools for administration of DNSSEC is lacking.</td>
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<td>Good start! The large Swedish ISP’s are willing to enable DNSSEC in their resolvers serving their customers</td>
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<th>Applications</th>
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<th>Users</th>
<th>How to make them DNSSEC aware?</th>
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Conclusion

- We have started with DNSSEC!
  - Pilot Registrants, .SE registrars, DNS Name Service Providers, .SE, Resolver operators
- We will continue our dedicated work to spread DNSSEC within .SE!
- We encourage all Registrars, DNS Name Service provider, Resolvers to begin now
  - It’s easy now when the volumes still are low
  - You will need time to develop your internal systems