



Zone File Access Workshop



Zone File Access Advisory Group

ZFA Workshop

10 March 2010

What is a TLD Zone File

- Zone file **contains** all data provisioned to the DNS servers of a Top Level Domain:
 - List of all delegated domains in a TLD
 - Authoritative name servers for each domain
 - Glue records (nameserver IP addresses)
 - Possibly: other resource records (e. g. DNSSEC)
- Zone file **does not contain** domain registration information or registrants' contact information

Origins and history of gTLD Zone File Access

- Pre-ICANN: DNS as a public directory of all hosts on the internet
 - Zone file for .com/.net/.org available from Network Solutions
- ICANN, single gTLD operator (.com/.net/.org)
 - ZFA system inherited from the NSI Cooperative Agreement
- ICANN, introduction of 13 new gTLDs 2001-2009
 - ZFA agreement and procedures copied for new gTLDs
 - Worked in an environment with few gTLD operators
 - Scalability issues already noticeable, but still tolerable



Bulk Zone Access Background

- gTLD registries are required by ICANN contracts to provide access to a copy of their TLD zone files
 - Access is provided to anyone who agrees to registry ToS
 - Access is provided at no charge
 - ZFA agreements quite similar across all gTLD registries

- Updated file is provided on a daily basis
 - Access usually provided via FTP server
 - User/Password Access – no encryption
 - Some providers use access control lists
 - No set standards or SLA's

Consumers of Zone File Data

gTLD	ZFA Accounts	Recent Monthly Change
.com/.net	828	+ 33
.biz	703	+ 3
.org	691	+ 6
.info	426	+ 5
.name	203	+ 8
.mobi	185	+ 1
.asia	73	+ 1
.aero	42	Unchanged
.pro	53	+ 1
.coop	33	Unchanged
.tel	32	+ 3
.travel	26	Unchanged
.cat	11	Unknown
.museum	Unknown	Unknown
.jobs	Unknown	Unknown

ccTLDs and Zone File Access

- Most ccTLDs do not provide similar access
- ccTLDs could elect to participate in any enhanced system that might be developed for gTLD registries

ZFA Uses : IP & Trademark Protection

- Examination of domains for protected terms
 - New registrations – violations
 - Research for new marks to register (avoid infringement)
 - Competitive analysis

- Investigation of systemic behavior
 - Broad numbers of domains registered
 - Evidence to support infringement claims across brands

ZFA Uses : E-crime Prevention/Investigation

- Examination of domains for sensitive terms
 - Bank, ecommerce, ISP names
 - Common security terms (e.g. “login”, “account”)
 - New registrations – find criminal sites prior to spamming
- Research into networks of criminal activities
 - Criminals utilize common infrastructures
 - Nameserver monitoring
 - Cross-registry patterns of abuse
- “White listing” of legitimate domains

ZFA Uses : Business and other Applications

- Consolidated information on domain use/distribution
 - Hosting statistics
 - Competitive analysis
- Domain name investments
 - Expiration of domains
 - Domain history
 - Cross-registry applications of labels
 - Registration term trends
- Marketing
 - Keywords and navigation
 - Geographic/demographic trends and ad targeting
- Basic research on Internet trends and behavior
- Many more...

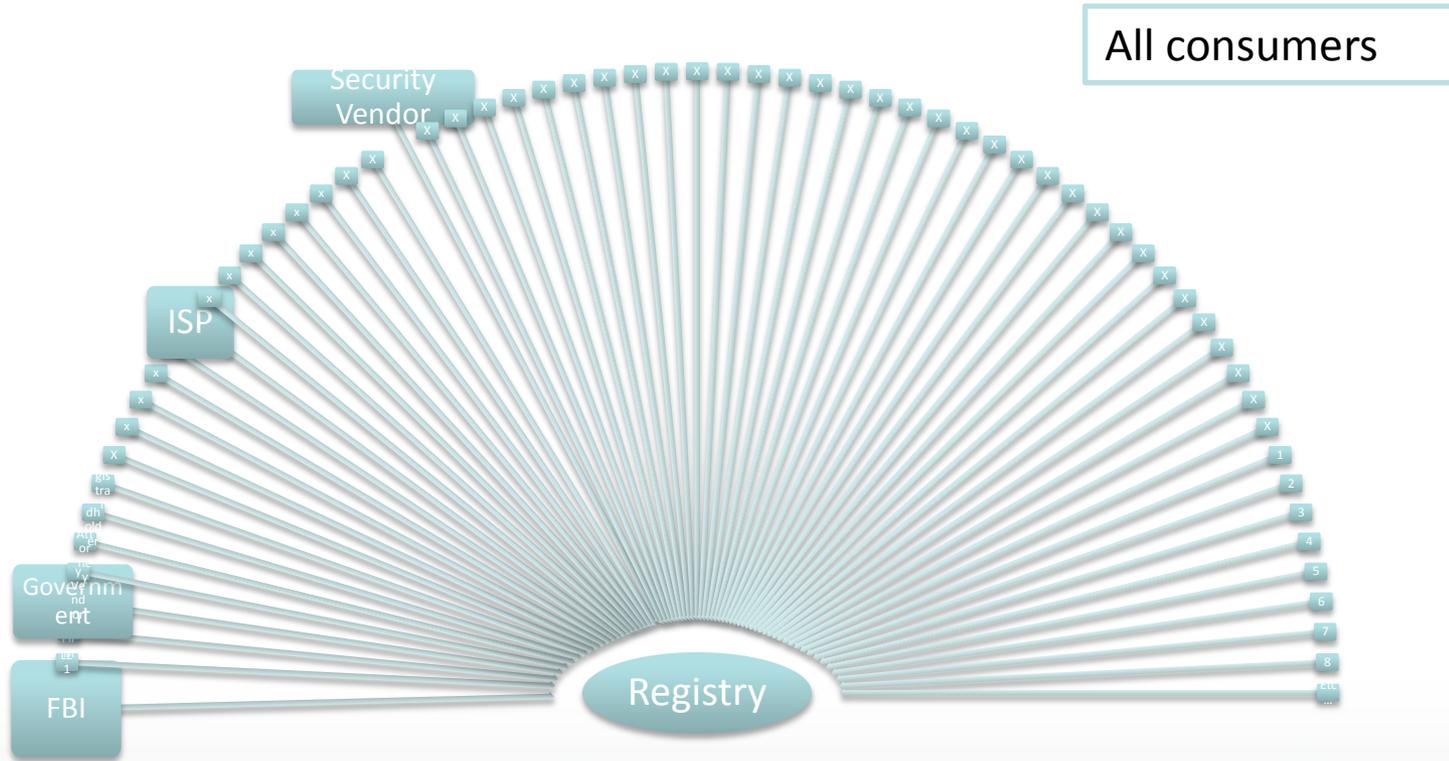


Expansion of gTLD space

- Existing system drawbacks:
 - Security issues (protocols, password management)
 - No SLAs
 - Sub-optimal costs for providers and consumers

- New challenge: system scalability
 - Each registry has different:
 - Process for entering into ZFA agreements
 - Protocol and technology for accessing data
 - Customer support and problem resolution procedures
 - Costs to consumers could increase by orders of magnitude
 - Increase in Zone File sizes due to DNSSEC

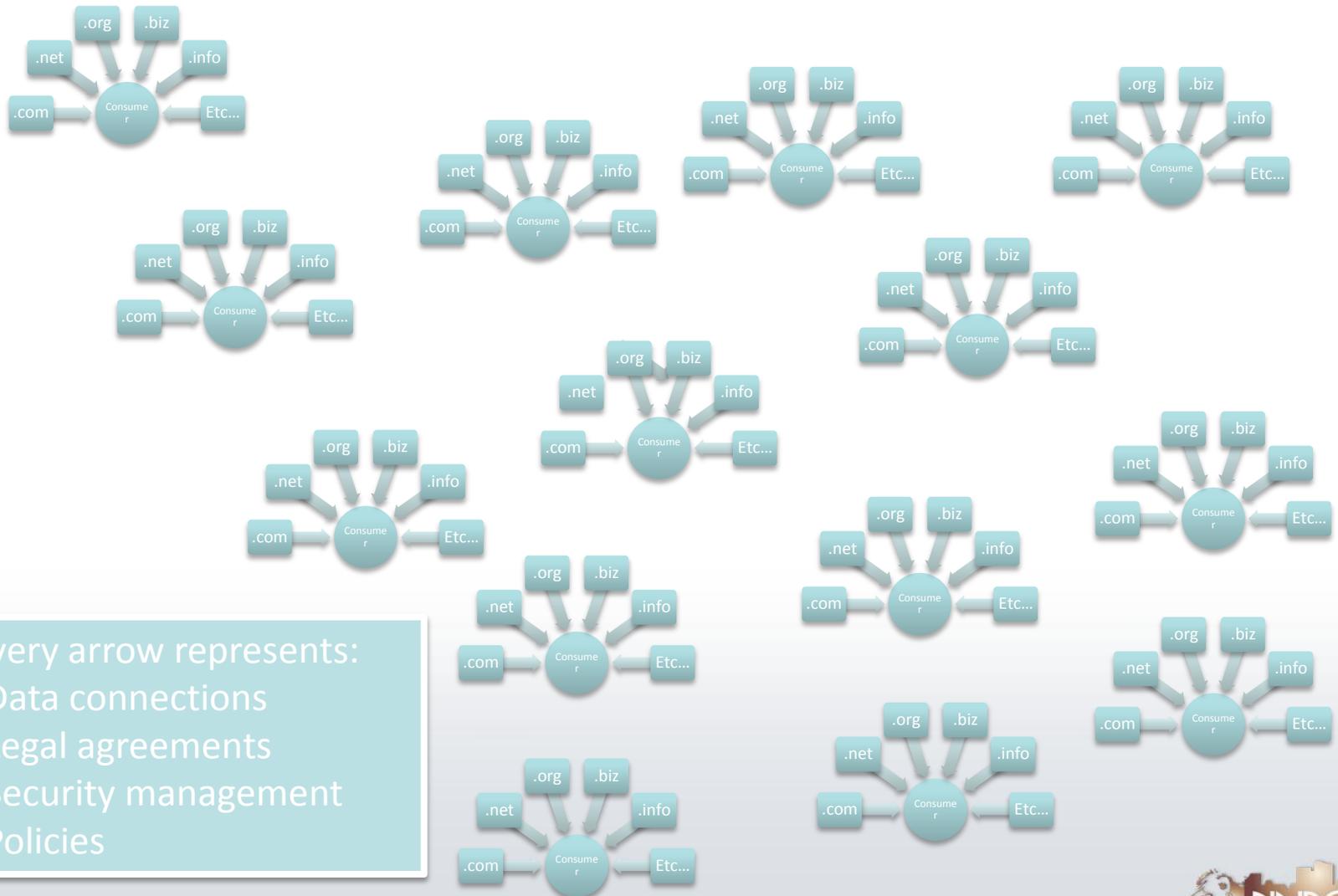
Current System – Registry Point of View



Every arrow represents:

- Data connections
- Legal agreements
- Security management
- Policies

Current System – Consumer Point of View



Every arrow represents:

- Data connections
- Legal agreements
- Security management
- Policies

Origins of the Advisory Group

- Improving the ZFA system is part of the ICANN new gTLD process
- Applicant Guidebook v2 and comments during and after the Sydney meeting: issue raised by the community
- Applicant Guidebook v3: provisions for supporting centralized ZFA
- December 2009: call for volunteers to serve on an Advisory Group

Tasks before the Advisory Group

- Collect the information
- Analyze the status quo
- Identify the issues
- Propose potential solutions
- Create a Concept Paper

Desired outcome of ZFA program

- Develop a multilateral, scalable, secure and consistent Zone File Access program
- Considerations
 - Provide opportunities for operational efficiencies and cost improvements
 - Be resilient and defend against abuse
 - Maintain equal, non-discriminatory basis among qualified consumers
 - Do not impinge on registries' ability to innovate

Members of the Advisory Group

- Registries (both gTLD and ccTLD)
 - Registrars
 - Internet security companies
 - Market research companies
 - Legal professionals
 - Knowledgeable individuals
 - ICANN staff
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- Co-chairs:
 - Rod Rasmussen, Internet Identity
 - Vladimir Shadrinov, Telnic

Problem statement

- Current model for Zone File Access
 - Consumers arrange access with each gTLD registry operator
 - Individual bi-lateral agreements and operational processes
- Scaling this model where numbers of parties increases poses problems for both zone data consumers and gTLD registry operators

Burdens for Zone data providers (Registries)

Current Model

- Create and maintain access agreements for each applicant
 - Application process, review, contract maintenance, maintain accurate consumer contact information
- Maintain FTP service for all approved applicants
 - Account credential management, security, bandwidth and connectivity, abuse monitoring and mitigation
 - Change management, troubleshooting, customer care

Burdens for Zone data consumers

Current Model

- Apply for and obtain access agreements for each gTLD registry
 - Application process, contract maintenance, satisfy per registry contact accuracy requirements
- Create separate FTP “client” for each gTLD registry
 - Manage per gTLD registry account credentials, IP addressing, security mechanisms
 - Manage downloads, aggregate and normalize zone data across multiple registries to suit consumer’s applications needs
 - Change management, problem reporting

ZFA operational issues

Current Model

- Risk of unauthorized access is higher than desirable
- Costs are significant for a non-essential, uncompensated registry function
- Infrastructure change management is challenging for both consumers and providers
- No standards or metrics for availability or performance

Alternative Models for Zone File Access

- Enhanced Bi-lateral model
- Repository model
- Proxy model
- Clearinghouse model

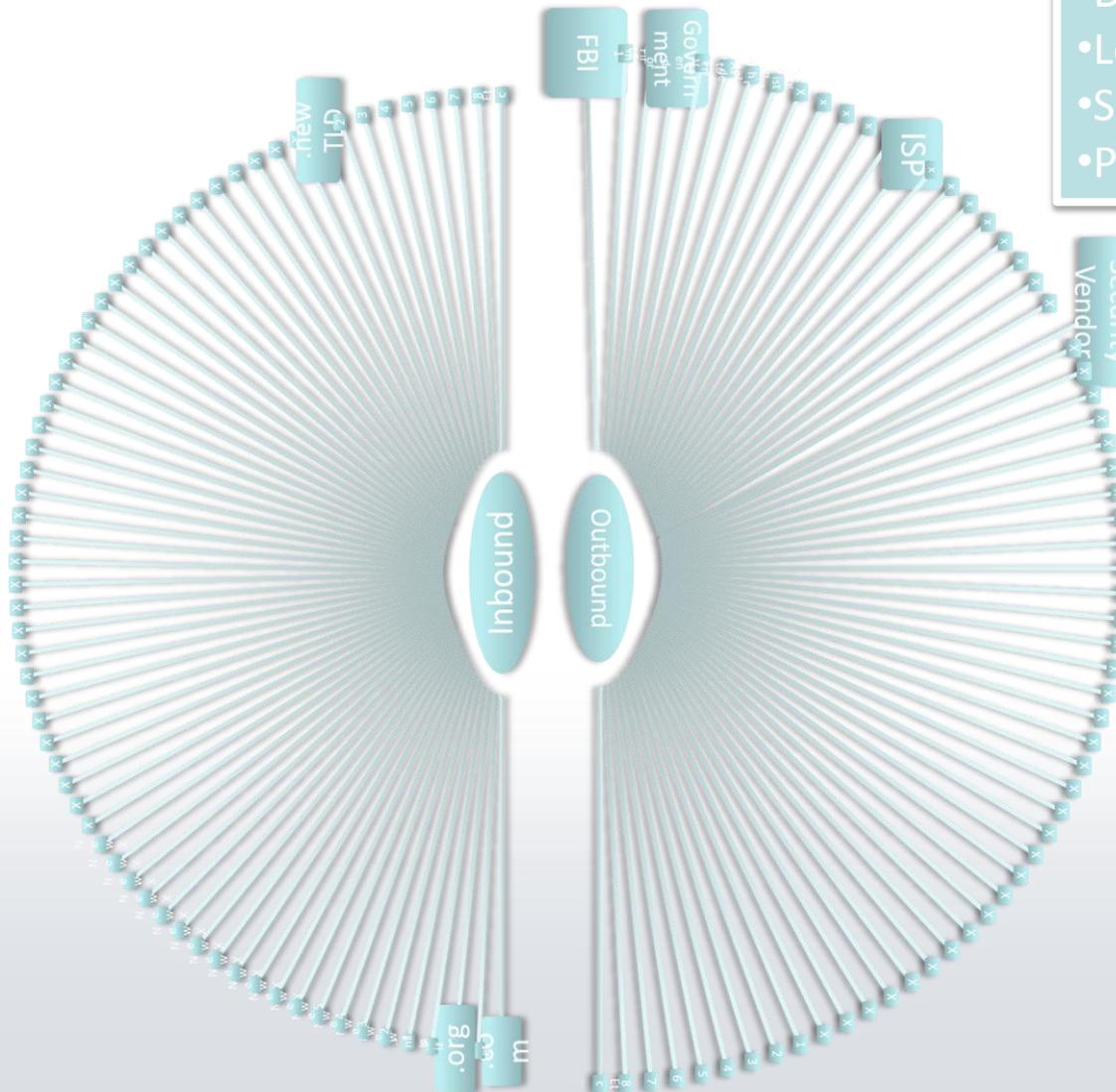
Enhanced Bi-lateral model

- Evolve existing system of bi-lateral registry-consumer agreements to address main drawbacks
- Standardize essential elements of relationships
 - Zone file access application process
 - Submission of zone file access agreement
 - Data transport
 - Path and naming conventions for the zone file
 - Timing of zone file updates
 - Customer support procedures
 - Security-related procedures
 - Change management procedures
- Note that this model could possibly be combined with others

A Different Model: Centralized Provision

- Instead of a bi-lateral model
 - Have a neutral, independent third-party (or, parties) mediate between:
 - Providers of data
 - Consumers of data
- Third-party, neutral service provider could
 - Do aggregation
 - Standardize access
 - Provide a point of access control and security
- The Advisory Group identified three models that exploit this centralized approach

Centralized ZFA Models



Every arrow represents:

- Data connections
- Legal agreements
- Security management
- Policies

High-level Model Comparison

Feature	Enhanced Bi-lateral	Repository	Proxy	Clearinghouse
Standardized agreements	Yes	Yes	Yes	Yes
Standardized operations (file names, formats, etc)	Yes	Yes	Yes	Optional
Independent 3 rd -party operator (with SLAs, customer service, etc)		Yes	Yes	Yes
Stores zone file data		Yes		
Consumers download from...		Central location	Central location	Each registry
Credentials managed...	At registry	Centrally	Centrally	Centrally

Repository Model

- Independent third-party operator(s)
 - Manages contractual agreements on behalf of all registry operators
 - Collects zone data files from registry operators and
 - Provides security administration and connection management
 - Provides zone file access to data consumers
 - Manages troubleshooting, abuse monitoring, and customer care
 - Potentially provides normalization and other benefits to consumers
- Operates according to service level agreements



Proxy Model

- Independent third-party operator(s)
 - Manages contractual agreements on behalf of all registry operators
 - Provides security administration and connection management
 - Accepts requests from consumer, verifies consumer is authorized to access the desired zone, proxies the request back to the designated registry
 - Manages troubleshooting, abuse monitoring, and customer care
 - Potentially provides normalization and other benefits to consumers
- Operates according to service level agreements

Clearinghouse Model

- Independent third-party operator(s)
- Centralized point through which a consumer applies for access to registry zone files
 - Manages contractual agreements on behalf of all registry operators
 - Manages consumer credentials on behalf of all registry operators
 - Manages troubleshooting, abuse monitoring, and customer care
- Consumers use credentials to connect directly to registry to download zone data
- Operates according to service level agreements



Cost Implications for Zone File Access

- ZFA AG did significant work to develop a cost model for Zone File Access
 - Much of the focus of the early work was on costs to consumers
- Subgroup of the ZFA AG is working on improving the model
 - Incorporating registry costs
 - Improving the consumer cost modeling
 - Cost model assumptions and delivery model are still under discussion – considerable ongoing work remains
- Early indications are that subscription-maintenance is the primary cost-reduction opportunity

Funding Strategies for Zone File Access

- Currently “no charge” to the ZFA consumer
- But, is this the correct (or, only) model?
- Several alternatives have been discussed in the AG
 - Transactional models
 - Subscription models
 - Tiered approaches to funding
 - Hybrid models
- Still very early in the discussion for funding strategies
 - Significant work still needs to be done on this topic

Next Steps for Zone File Access

- Today: community discussion of the Concept Paper
- Next Steps for the Advisory Group
 - Identify a candidate model(s)
 - Enhance the existing ZFA cost model for both providers and consumers
 - Identify a funding approach for the candidate model(s)
 - Contribute a Zone File Access strategy to the next version of the Applicant Guidebook
- Resources
 - ZFA page: <http://www.icann.org/en/topics/new-gtlds/zone-file-access-en.htm>

Thank You!

Questions and Discussion