

## E. State of the Space

***NeuStar has successfully managed the usTLD space since 2001. During the past contract term, NeuStar has improved and grown the space and is poised to continue providing exemplary services to the DoC, registrars, and the American Internet community.***

### ***Introduction***

The usTLD is a public resource and asset of the U.S. Government that requires responsible management, careful oversight, and firm enforcement of all governing policies. There are many key differentiators between the usTLD and every other TLD in existence. To protect its integrity, the usTLD has important policies and procedures that do not exist, or are not enforced, in any other gTLD. Those key polices are what make the usTLD so special – they anchor the reliability of the space and, most importantly, the trust of the American Internet user.

NeuStar's administration of the usTLD is based on the fundamental principles of reliability, security, stability, integrity, innovation and responsible growth. The usTLD is not a .COM or .INFO, it is America's official Internet address. Unlike other TLDs, success in the usTLD can not be measured only by the number of domains under management, or the profitability of the business, or the value of a domain name in the secondary marketplace. The true success of the usTLD lies in its integrity and reliability and in being a national resource that engenders pride among all Americans.

This section provides an overview of where the usTLD is today, with historical data and future projections included for context. We specifically address four main components of the usTLD domain, each with several subsets:

1. usTLD Size and Composition
  - a. Second-level Expanded Space
  - b. Locality-based structure
  - c. Kids.us
2. Development of usTLD Policies and Procedures
  - a. usTLD Nexus Requirement
  - b. usDRP and Sunrise Policy
  - c. usTLD Registrar Accreditation and usTLD Administrator-Registrar Agreements
  - d. Policies concerning data rights, WHOIS, Reserved Domain Names, Transfers, Redemption Grace Period, Domain Name Review, Registration Abuse

### Highlights

- In six years, usTLD second-level registrations has grown from zero to over 1.26 million.
- Kids.us was successfully launched in 2002. With the most comprehensive set of content guidelines of any TLD, kids.us is a safe haven for children of all ages to use the Internet.
- The usTLD presently handles more than nine billion DNS queries monthly.
- With the illegitimate use of domain spaces on the rise, NeuStar proactively polices the usTLD space to ensure that America's Internet domain remains known for its quality and integrity

- e. Kids.us Content Policies, Agreement and Content Manager Sub-Contract
- f. usTLD Code of Conduct
- 3. Responsible Promotion of a Public Resource
  - a. Market Overview
  - b. Growth with Integrity
  - c. 2001-2007: Challenges, Successes, and Lessons Learned
- 4. Current Operations
  - a. Core Systems
  - b. Infrastructure
  - c. Auxiliary Systems
  - d. Processes

## usTLD Size and Composition

### *Overview*

Since assuming responsibility for the usTLD in October 2001, NeuStar has overseen steady and responsible growth while ensuring the long-term integrity of the domain. In 2001 the usTLD was entirely confined to the locality-based naming structure. There was no centralized registration database, no central WHOIS service, no registrar sales channel, and virtually no policy or contractual structure governing the use of a usTLD domain name. In the past six years, the space has undergone a dramatic transformation into one of the premiere ccTLDs on the Internet.

Exhibit E-1 illustrates how dramatically the usTLD space has changed since 2001.

### Tale of the Space

2001	usTLD Administration Component	2007
17k	Domains under management	1.26M
300M	Average #DNS queries per month	9B
8M	Average #WHOIS queries per month	22M
No	Registry-Registrar Model	Yes
0	Average # EPP transactions per month	71M
Minimal	Policy environment	Rich
Yes	Locality space	Yes
No	Expanded space	Yes
No	Kids.us space	Yes
No	Reserved name program	Yes
No	Nexus compliance check	Yes
0	usTLD accredited registrars	101
800 known	usTLD delegated managers	1,945
0	Domains with usTLD administrator as registrar	~10,000
No	Centralized database	Yes
2	Services provided	>10
1	Unique & critical processes	8
No	ICANN ccNSO representation	Yes

014.us2

**Exhibit E-1.** During the present contract term, usTLD has undergone dramatic transformation, evolving from the origins of RFC1480 to become one of the most policy-rich TLDs.

The usTLD is now composed of four core components as further described in Proposal Section B, Sub-section C.3.

- Legacy Hierarchical Locality Space
- Expanded Second-Level Space
- The kids.us Space
- The Reserved Name Programs

These four core usTLD segments are collectively managed by a comprehensive Shared Registry System (SRS) which is among the most advanced and reliable in the industry. Among the characteristics of the SRS are:

- Centralized database of all registrations
- Highly robust and secure DNS infrastructure
- Publicly accessible WHOIS database
- A registry-registrar model enabling a robust registrar sales channel

- An extensive suite of features to support registrars including reporting tools, testing environment, secure web-based registration tool, etc.
- We operate a very robust and redundant system – exceeding some of the highest SLAs in the industry

The four core spaces within the usTLD are administered by a number of unique and special policies and registration restrictions only found within this space. Enforcement of and adherence to these policies has been a strong contributing factor to the quality of the registrations found in the space today. The principle policies governing the usTLD space today are:

- All usTLD registrants must meet the Nexus requirements
- Accurate WHOIS data must be provided at all times
- Proxy registrations are not permitted
- Certain objectionable words may not be registered
- Kids.us registrations must meet all the guidelines concerning usage and content
- Locality Delegated Managers must agree to the terms of the Delegated Manager Agreement

### ***usTLD Second-Level Expanded Space***

NeuStar launched the expanded second-level space in April 2002 and has since increased usTLD second-level registrations from zero to over 1.26 million names. Over the last three years, the usTLD has grown an average of 14% per year, and is forecast to grow 19% for the year ending December 2007. This compares favorably to average ccTLD growth (e.g. .DE and .UK) at 15% annually, and compares well to gTLD growth (e.g. COM) which averages 28% annually but has a significantly larger addressable market and is beset with volume-inflating speculation and domain tasting activities. As of June 2007, with 1.26 million names under management, an upward trending renewal rate of 70%, and a growth rate of 19%, the usTLD is a strong performer in the TLD market place and a reliable choice for American consumers.

A key differentiator of the usTLD has been the development, implementation and enforcement of unique usTLD policies and procedures that support the steady, responsible growth of registrations in the second-level expanded space, while ensuring compliance with all required policies and registration procedures. This accountability framework is critical to ensuring both responsible growth and long-term integrity and it remains the foundation of our vision for the usTLD.

The usTLD expanded space has grown and matured thanks to the stability and security of the usTLD infrastructure, the integrity of usTLD registrant data, and guarantee of equitable treatment to all usTLD registrars. From this foundation, the usTLD is projected to average a 22-25% growth rate over the next 5 years, with an average renewal rate of 75%, resulting in approximately 3.7 million names under management by the end of 2012. This responsible and steady growth is built on a solid foundation established by NeuStar's existing administration of the usTLD to protect the valuable usTLD brand.

### ***usTLD Locality-Based Structure***

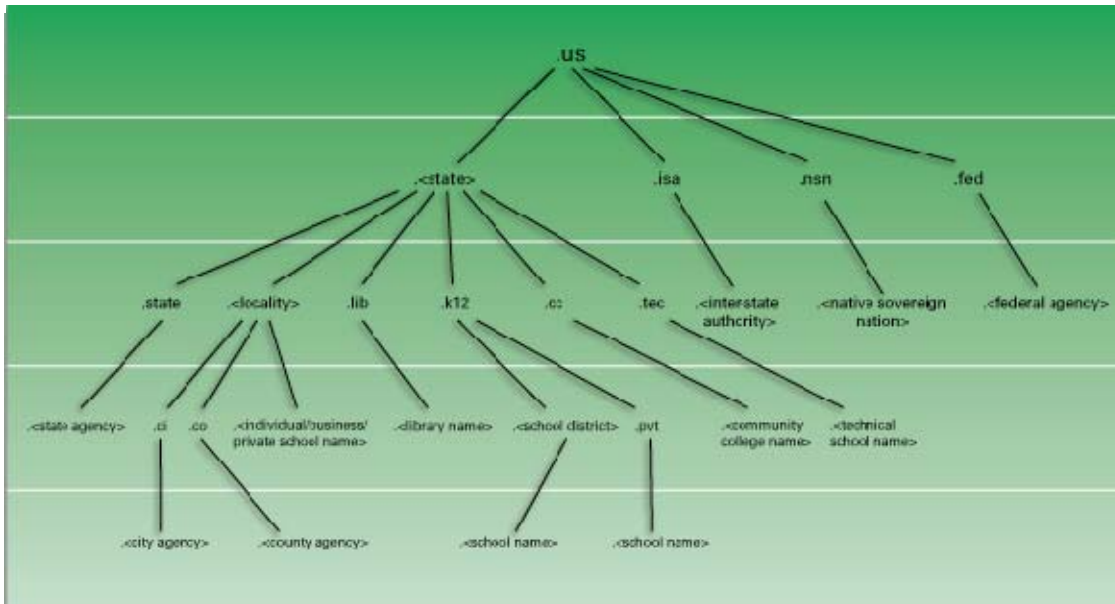
When NeuStar assumed responsibility for the management and administration of the usTLD in October 2001, we inherited the legacy Locality-based usTLD Structure from the previous operator. During the last usTLD procurement, it was estimated that approximately 8,000 locality names and

800 Delegated Managers existed. Over the last 5 years, NeuStar has identified over 17,000 locality names and 1,500 Delegated Managers and we continue to work diligently to bring order to this space.

As the incumbent usTLD Administrator, NeuStar is currently providing service for all known existing delegated managers and registrants including SRS, DNS, WHOIS and customer support. We are committed to our continued support of managers and users of the Locality-based usTLD structure.

Exhibit E-2 illustrates the complexity of the usTLD locality-based hierarchy:

### usTLD Hierarchy



**Exhibit E-2 The usTLD hierarchy provides structure, name uniqueness, and geographic reference points.**

As required by the existing usTLD Administrator contract, NeuStar conducted an investigation and submitted a report evaluating the compliance of existing locality sub-domain managers with the requirements of RFC 1480 and other documented usTLD policies. In addition, we were required to recommend structural, procedural, or policy changes designed to enhance such compliance and increase the value of the locality-based structure to local communities. Following the completion of the report, in close cooperation with the DoC, NeuStar developed and implemented a contractual framework that ensures all delegated managers abide by usTLD polices and maintain minimum technical and service requirements.

As the incumbent usTLD Administrator, NeuStar is best positioned to ensure continued service and support for existing locality-based Delegated Managers and Locality registrants under current practice. Any new bidder for the usTLD will have a significant learning curve and will require

significant training, education and oversight from the COTR. More information on the following ongoing locality structure activities can be found in Proposal Section C.5:

- Notable Delegated Manager Policies
- Delegated Manager Tool
- Process for Rescinding Delegation
- Services for Un-delegated Third Level Sub-Domains
- Coordinate Locality-Based usTLD Users
- WHOIS Database of usTLD Delegated Managers
- WHOIS Database of usTLD Locality Registrants
- Ensuring the Accuracy of Data
- Take-Back Scenarios
- usTLD Take-Back Activities

NeuStar is conducting four main phases of compliance activity: (1) Investigation; (2) Outreach; (3) Compliance; (4) Take-back. NeuStar has completed the take-back of the Phase 1 locality domains - approximately 4,700 locality domains with unknown delegated managers, unknown registrants and no evidence of recent use. NeuStar currently serves as de facto Delegated Manager for 9,673 locality domains, including those domains for which there is no known alternate delegated manager.

### **Kids.us**

The Dot Kids Act requires that NeuStar, *"as the administrator of the .us country code top-level domain (ccTLD), establish a kids.us domain to serve as a haven for material that promotes positive experiences for children and families using the Internet, provides a safe online environment for children, and helps to prevent children from being exposed to harmful material on the Internet."* This legislation was the culmination of years of effort by several members of the United States Congress.

Pursuant to the Dot Kids Act, the usTLD Administrator has responsibility for creating a process for removing from the kids.us domain any content that is not in accordance with the [content] standards and requirements of the registry. This enforcement power strengthens a core objective of the Dot Kids Act, which is both to create an online arena that is free from material that is harmful to minors and to ensure that the kids.us domain remains safe from such harmful material.

Before launching kids.us domain registrations on September 4, 2003, NeuStar developed and implemented a number of crucial policies and procedures that support a more robust, certain, and reliable kids.us experience. During the last four years, NeuStar has administered the kids.us domain space and the content review system that ensures a safe online environment devoid of harmful material for children aged 13 or younger. Our enforcement of those policies has directly contributed to the safety and reliability of the kids.us space.

Following are the historical registration trends in the kids.us space:

- NeuStar commenced the kids.us Open Registration Period on September 4, 2003, three (3) months prior to the statutory deadline. By the end of 2003, 1460 kids.us domains had been registered and five kids.us websites were reviewed, approved, and active.



- In 2004, there were 333 new kids.us registrations, expiration (non-renewal) of 288 kids.us domains, resulting in a net increase of 45 domains and a total of 1505 registered kids.us domains. There were 18 new kids.us websites activated in 2004, resulting in a total of 23 reviewed, approved, and active kids.us websites.
- In 2005, there were 27 new kids.us registrations, expiration (non-renewal) of 216 kids.us domains, resulting in a net decrease of 189 domains for a total of 1316 registered kids.us domains. There was one new kids.us website activated in 2005 and two kids.us websites deactivated for a total of 22 reviewed, approved and active kids.us websites.
- In 2006, there were 15 new kids.us registrations, expiration (non-renewal) of 186 kids.us domains, resulting in a net decrease of 171 domains for a total of 1145 registered kids.us domains. There were no new kids.us websites activated in 2006 and 2 kids.us websites were deactivated for a total of 20 reviewed, approved and active kids.us websites.
- Since the price reduction was implemented on June 1, 2007, there have been 130 new kids.us domain registrations and five new CMS accounts established. We look forward to additional content providers taking advantage of the reduced price and marketing programs.

For more information on the following items related to kids.us, please refer to Section C.8:

- Compliance with existing laws, regulations, and relevant voluntary standards
- Compliance with existing rules and regulations regarding indecency on the airwaves
- A commitment to offer some educational and informational content
- Compliance with the children's online privacy protection act (COPPA) requirements
- Compliance with children's advertising review unit (CARU) advertising standards
- Restrictions within the kids.us domain
- Technology restrictions
- Process for Removing Content
- Dispute Resolution Policy
- Kids.us WHOIS Database
- Annual Kids.us Compliance Report to Congress
- Kids.us Reserved List
- Marketing and Promotion of Kids.us

## Development of usTLD Policies and Procedures

*NeuStar's sound policies and processes developed over the past six years have established and maintained the integrity of the usTLD, and have made the usTLD a model ccTLD for the United States and the global Internet communities.*

Any discussion of the state of the usTLD space must include the unique policies and procedures not found in any other name space. These elements add complexity to the operation and administration of the space, but also serve to create a trusted partnership with the United States Internet community. Since 2001, NeuStar has cooperated closely with the DoC to develop, modify and

enhance a number of key policies and procedures and we are committed to enforcing these integral policies throughout the next term of the agreement.

Key policies created and implemented over the past term include:

- U.S. Nexus Requirement
- usDRP and Sunrise Policy
- usTLD Registrar Accreditation and usTLD Administrator-Registrar Agreements
- Government Advisory Committee Principles
- Policies concerning data rights, WHOIS, Reserved Domain Names, Transfers, Redemption Grace Period, Domain Name Review, Registration Abuse
- usTLD Code of Conduct

Although each of the policies have been developed and implemented by NeuStar during the current term, as a standard business practice, the usTLD team continuously reviews all policies, processes, and programs associated with the usTLD Administration for effectiveness and improvement, where appropriate.

In preparation for this procurement, NeuStar performed an exhaustive review of all of these Core Policies. Based on such assessment, NeuStar is recommending a number of modifications and entirely new policies and procedures that we believe will enhance the utility of the space and increase the use of or otherwise improve the usTLD. These have been provided in Proposal Section J.



## Responsible Promotion of a Public Resource

### Market Overview

As discussed throughout this proposal, NeuStar recognizes that the usTLD is a unique space with rich policy elements and complex requirements that set it apart from any other TLD. Therefore, many traditional domain space marketing tactics are ineffective in regards to the usTLD as they do not take into account the complexities and intricacies of the usTLD policies and regulations. Strictly commercial TLD registries are not always concerned with the appropriateness of their marketing tactics or the resulting names that come under their management. Other domains have limited or no policy elements and, as such, growth of domain names is the sole arbiter of success. Integrity of the domain space becomes, at best, a secondary consideration. Because of these limited policy requirements, unscrupulous registrars and registrants are able to take advantage of an uncontrolled space. Phishing, pharming, the distribution of malware and other illegitimate uses are rife in such spaces. The usTLD cannot be allowed to devolve into such a state.

Over the past six years, we have worked diligently to ensure that the usTLD remains a pinnacle representation of a quality space. Our past marketing programs have focused on this and our future plans are designed to expand the space in this manner.

### Growth with Integrity

Throughout the current contract term, NeuStar's marketing programs have focused on registration growth while improving the quality and integrity of the space. Since 2001, NeuStar has implemented a broad range of marketing and awareness programs and developed an unparalleled understanding of the effectiveness of those programs for the usTLD space.

- Our programs were designed to stimulate responsible, mainstream, registration for , website and email usage. The current mix is: American businesses (64% of all .us domains), individuals, (29% of domains), non-profits (5%), and Government and educational institutions (2%).
- Our programs maximized adherence to US policies (such as United States Nexus Requirement and WHOIS accuracy) and minimized forms of abusive registration such as traffic aggregation, cyber-squatting, spam, phishing and malware.
- Our marketing programs were successful in ensuring a much lower portion of abusive registrations (speculation, spamming, inaccurate WHOIS data) than other spaces. Studies have shown that, with some TLDs, more than 50% of all registrations fall into this abusive category.
- Our programs enhance the visibility and recognition of the usTLD brand.

As with any marketing endeavor – and especially so with TLDs – the initial growth phase is the most difficult. Buyers tend to remain with established brands. In the sense that domains are “online real estate” there is reluctance from buyers to be “the first in a new neighborhood.” This phenomenon was particularly pronounced in the United States where .com achieved dominant market presence prior to the launch of the expanded usTLD space. As a result, .com gained early acceptance and became widely viewed as the de facto domain space for the United States.

In comparison, .uk and .de are uniquely the country code TLDs for the United Kingdom and Germany respectively and also had an advantage in that they experienced high growth during the Internet boom years. With approximately eight years of a head start on the .us expanded space, .com clearly gained significant market share. Since 2001, NeuStar has confronted this disadvantage and has made considerable progress in building the usTLD.

Historically, once a space reaches a 'critical mass' of usage, there is a greater willingness for new buyers to participate; hence the rate of growth can accelerate. Based on the number of businesses and consumers using .US, the increased visibility of .us web sites, and the increasing number of .us web sites being advertised in mainstream media, we believe .us has passed this critical mass point and there is now has a sufficiently large number of businesses, consumers and other entities who responsibly use and promote their .us addresses. In the next phase of the contract NeuStar will leverage this usage base to grow the usTLD at an accelerated rate via marketing programs and expenditure commitments as detailed in this proposal. NeuStar's marketing plans are based on the lessons we have learned over the past six years combined with our thorough understanding of the policy and content requirements and restrictions that set the usTLD apart from all other TLDs. Based upon this experience, we are targeting an aggressive growth rate that we believe to be very attainable through an appropriately administered marketing program.

### **2001-2007: Challenges, Successes, and Lessons Learned**

When NeuStar began management of the usTLD in 2001, a number of prevailing challenges presented themselves:

- The usTLD was effectively a third-level space under the control of an independent delegated manager. The space was fragmented with little central management and administration.
- The technology sector and domain/Internet market had entered a period of "cooling off" and was facing an industry-wide correction.
- .com had launched more than eight years earlier and, without competition, had monopolized consumer mind share in the American market.

In addition to the technical, operational, and policy initiatives undertaken by NeuStar, we also implemented a wide variety of product, promotional, and sales channel programs to grow the volume, visibility, and usage of usTLD. These initiatives met with mixed success and the results of those programs form the basis of the programs proposed today.

NeuStar also understands the marketing programs that attract undesirable registrations. We purposely avoided these types of programs and will continue to avoid using them in any follow on contract for the management of the usTLD. These programs include promotional programs based on aggressive price discounting and programs targeted at the speculative, cyber squatter or traffic monetization segments of the domain market (these market segments have seen dramatic growth in other TLDs over the last 24 months). Programs aimed at these segments, or involving aggressive price discounting have had demonstrably negative effects on the overall quality of TLDs that have run these programs. This is evidenced by the high levels of speculation and abusive practice in such TLDs as .eu, .info and .cn, and in a large number of the .com registrations that occurred in 2006/2007. Although these TLDs have achieved high growth over the past few years they have done so in a way that is damaging to the long term quality of their brands, and in a way that is exclusionary to legitimate businesses and consumers.



## Current usTLD Operations and Processes

*NeuStar's operations platform, including facilities, equipment, software, hardware, and related technology, has facilitated the delivery of exemplary services for usTLD stakeholders. This platform is capable of supporting operations during the upcoming term, with periodic upgrades as dictated by technological evolution. Further, NeuStar's implementation of core functions for the expanded usTLD namespace supports an unlimited number of competitive registrars and encourage second-level registrations in the namespace and locality-structure delegated managers and locality registrants.*

### 1. Core Systems

The current usTLD includes the core systems required to support the modern TLD operations with SRS, DNS, WHOIS, and associated web tools. The following provides a representative, but not exhaustive, description of the core systems.

#### Shared Registry System (SRS)

The SRS is built around a thick data model (domains, contacts, hosts, registrars with associated relationships) and stores the reference database of usTLD. It enforces a variety of business rules related to data restrictions, registration term, and grace periods. The usTLD SRS has features in excess of a typical TLD SRS in that it accommodates the rich multi-level hierarchy of the locality space (RFC1480). Registry objects are associated with registrars (for the expanded space) or Delegated Managers (DMs) (for the locality space). Related to the SRS are a number of additional processes (e.g. domain expiration, auto-renewal, and deletion).

usTLD has redundant SRS data centers with geographic separation. Each SRS data center has redundant internet connectivity. There are redundant, private, high-capacity links between the data centers, used primarily for management, monitoring, and database replication. The SRS uses load-balanced "farm" configurations for both protocol and application services. These configurations provide high reliability and scalability.

Access to the SRS is protected by a number of components, including: connection limiter, firewall, digital certifi can, and login/password. The SRS contains further application-level security to maintain the integrity of data, with business rules that restrict the edit rights to the sponsor of each object.

Both the primary and secondary SRS locations in [REDACTED] and [REDACTED] have two database servers available: one primary and one backup configured for local failover. The local failover machine provides a means to quickly restore service in the event of a database hardware issue.

The database servers are sized to efficiently handle both current and projected growth volumes as configured. All servers can be easily upgraded within hours to service dynamically changing transaction volumes, if necessary. This ability allows us to rapidly respond to changing transaction load levels while minimizing down time.

For provisioning interactions with registrars, the SRS software supports the Extensible Provisioning Protocol ("EPP") standard as defined by the IETF RFCs 3730, 3731, 3732, 3733, 3744, and 3745. The

SRS meets all IETF standards and will be updated as necessary to keep pace with any further updates to the EPP standards that will be deployed in .us in a timely fashion.

NeuStar currently provides documented SRS EPP toolkit software in both Java and C++ to assist in providing access to the SRS. To provide even greater connectivity assistance to new and potentially inexperienced registrars we also provide a specialized technical certification environment. This environment consists of a "scripted" EPP server that returns default responses to properly formatted EPP requests.

## DNS

The DNS provides usTLD query resolution services with global reach, high capacity, and extremely high availability. DNS is composed of a large number of machines spread across a large number of locations. It provides responses to a various queries, including the authoritative nameservers for a particular domain and the IP address for a particular host. It is updated in near-real-time with changes to the reference data.

usTLD has a widely dispersed DNS capability, operated from locations across the US. The wide variety of locations and number of servers provides exceptional performance, availability, and scalability. The capacity also provides the ability to absorb attack traffic caused by bad actors. The DNS is provided on both IPv4 and IPv6 networks, so as to enable the deployment of this important networking technology.

Our nameserver sites employ three diverse hardware configurations. This diversity of hardware ensures stability and protection from unforeseen problems with any one particular vendor or version of servers. In each nameserver site we employ multiple servers to share load

NeuStar's usTLD DNS infrastructure uses BIND 9 resolver software, heavily modified for the purposes of authoritative TLD operations, to service queries for .us. Throughout the present contract term, usTLD has had 100% availability of DNS while using BIND.

In addition to core resolution, usTLD includes continuous, near-real-time zone modifications, distributed to geographically diverse locations, resulting in up-to-date responses from nameservers. As registrars submit changes in domain records, the system will reflect these in the zone almost immediately. The DNS data is maintained within the registry, pushed into the nameserver infrastructure, and then across the nameserver infrastructure via zone replication.

## WHOIS

The WHOIS provides query access to the data in the registry database, including domains, contacts, hosts, and registrars. It is updated in near-real-time with changes to the reference data. As a thick registry, the data in the usTLD is comprehensive, and provides users with a complete picture of domain information, without needing to refer to a registrar WHOIS service (as is required in a thin registry). The usTLD WHOIS includes data for all registrations, including the multi-level locality space.

usTLD has two WHOIS sites, each with redundant servers. The load-balanced configuration provides for scalability and reliability. The WHOIS servers include local disk storage in order to provide responsiveness and to allow for operations that are independent of other parts of usTLD (e.g. the SRS).

## Web Tools

The registry provides a number of web-based interfaces to its services. These include information web pages (standard web site), web interface to WHOIS (which augments the protocol-oriented service), the Registry Admin Tool ("RAT") (which provides registrars with secure web-based access to the SRS), the DM Tool (which provides DMs with web-based access to the SRS), and the kids.us Content Management System. Web capabilities are deployed at multiple sites and on redundant infrastructure in order to provide availability and scalability.

The RAT allows registrar personnel to more easily process transactions for themselves without needing to contact Registry Customer Support, which saves time for the registrar and enhances productivity. The RAT interface has been modified to support usTLD UCPs, for example, kids.us and Nexus requirements. Given the obvious importance of high security on this facility, access to the RAT is controlled by two-factor authentication using RSA SecureID tokens and encryption of all data traffic (HTTPS). This allows registrars to closely control (by utilizing physical tokens) the accessibility of RAT.

The DM Tool (<https://dm.neustar.us>) is a simple web site that provides a means for delegated managers to manage WHOIS and DNS changes in real time. Through this tool they are able to manage nameservers and contacts associated to their domains without having to go through a manual request to customer service

The kids.us Content Management System allows .kids.us registrants who would like to launch a kids.us website a way to request content review. A registrant first requests a content review through [www.kids.us](http://www.kids.us) by purchasing an annual subscription. This subscription then starts the regular review of the web site to ensure that it is in full compliance with the kids.us content policies.

In summary, the equipment and hardware have interoperated as necessary, for six years. Since NeuStar first built its .biz and .us SRS in 2001, there have been advances in technology, many of which we have implemented as part of a wider technology "refresh" beginning in 2004. This refresh included the replacement of all new hardware components of the SRS, WHOIS and DNS, as well as the network infrastructure

## 2. Infrastructure

NeuStar operates and maintains a world-class registry infrastructure for usTLD. In Proposal Sections Q, F, and C.6 we describe how NeuStar's registry architecture, infrastructure, facilities and operations combine to exceed the need of usTLD for a stable, secure and redundant infrastructure solution.

### Registry facilities and locations

NeuStar's registry facilities consist of corporate and administrative headquarters, along with two redundant data centers and 10 nameserver sites to provide a reliable and secure registry service to registrars, DoC and Internet users. NeuStar's primary data center location in [REDACTED] also houses the Registry customer support and sales offices, as well as all software and hardware operational support personnel.

NeuStar maintains stable, secure and redundant world-class facilities, and each facility shares similar environmental and security attributes required to meet stringent support and service level requirements. NeuStar's SRS, WHOIS and nameserver infrastructure is operated and maintained on



a full-time basis by dedicated NeuStar personnel. The [REDACTED] site houses a data center and NeuStar's customer support, sales and operations staff, responsible for the management and day-to-day operations of the Registry system.

NeuStar vigilantly controls physical access to our facilities. Physical security mechanisms include closed circuit TV surveillance video cameras and intrusion detection systems. Our network operations center (NOC) monitors access to all locations on a 7x24x365 basis.

### Network Connectivity and Capacity

NeuStar uses the Internet to provide Registrar connectivity to the SRS and three dedicated, secure DS-3's for communication between the SRS data centers. A Virtual Private Network (VPN) provides a secure Registry Management Network for communications between the SRS data centers and the nameserver sites. Each nameserver site is connected to the Internet via two or more transit providers and a multitude of BGP peers, independently of the other sites.

NeuStar has deployed two ISP links at each SRS data center to serve registry needs. One link at each location is provided by a different ISP for a total of three separate ISP interfaces. The common interface in both [REDACTED] is AT&T, which also provides DDOS protection on their circuits at both sites. Each link has available capacity of 45 Mbps for a total of 90 Mbps at each data center.

Nameservers sites located at the SRS data centers share Internet bandwidth with the SRS data center. Bandwidth engineering for those sites is covered in the previous sub-section. For co-location sites, the co-location facility provider provisions Internet bandwidth at the co-located sites. The facility provider has provisioned a highly diverse and redundant network. NeuStar has provisioned at least 5MB of capacity into each nameserver location, burastable to 100Mbps depending on load.

Each nameserver site is connected to both SRS data centers via an Internet-based VPN. Furthermore, three dedicated DS-3 circuits connect the two SRS data centers. These links comprise NeuStar's Secure Registry Management Network.

Within NeuStar's data centers, a redundant switched 1 Gbps Ethernet building LAN backbone maintains high network availability via redundant Ethernet switches. Devices are dual attached to each of the Ethernet switches to provide a redundant LAN architecture. The LAN is protected from the Internet via a firewall that provides IP filtering and network-based intrusion detection services. This protects the system from hacking, viruses and denial of service attacks.

## 3. Auxiliary Systems

In addition to the core systems described above usTLD contains a number of auxiliary systems that operate behind the scenes, performing critical functions as part of usTLD service delivery.

### Data Warehouse

The Data Warehouse is a central data repository used to create both internal and external reports, primarily to support registrar billing and contractual reporting requirements for DoC. For billing reports, the database is updated incrementally 4 times daily, then supplies those updates to the PeopleSoft Billing system, which provides billing information for the registrars. For DoC reporting, daily full backups are copied to the reporting database to perform report queries on a monthly and daily basis, per contractual requirements.



## Billing and Collection system

NeuStar's proven experience in successfully operating complex Billing and Collection (B&C) systems for communications and domain name registry services ensures that our usTLD registry billing services are feature-rich, accurate, secure, and accessible to the entire customer base. The B&C system maintains customer accounts, creates account statements, and audit and tracks information for both customers and the industry. Our B&C systems and processes are fully compliant with Sarbanes-Oxley (SOX).

## Web-Based Registrar Extranet

NeuStar currently maintains a web portal for registrars use. This secure portal provides a variety of services and information that includes operational notifications for planned maintenance or upgrades, operational updates on incidents such as degradations or outages, general registrar business notices, Registrar Operations Guide, Frequently asked questions (FAQ), and client toolkit downloads. Access to the portal is controlled by login ID/password. The home page of the web portal includes notices to registrars of planned outages for maintenance or installation of upgrades.

## 4. Processes

Operational processes in the usTLD fall into two basic categories: common (across most TLDs) and usTLD-specific.

### Common Processes

**Registrar accreditation** – In order to promote strong competition among registrars, and ensure the continued neutrality of the registry, NeuStar uses a straightforward, fair and efficient accreditation process for all usTLD registrars. Eligibility to access the registry is subject only to an accreditation application process and technical testing and approval by NeuStar staff, payment of a registrar accreditation fee, and the execution of a usTLD Registrar Accreditation and usTLD Administrator-Registrar Agreements.

**Registrar technical certification process** – Before a registrar is permitted to access the production SRS, it must first pass the usTLD Technical Certification Process, to verify the correct operation and performance of a registrar's client system. The technical certification process begins when a registrar becomes accredited by NeuStar to register names in the usTLD, at which point the registrar enters the usTLD registry provisioning process. NeuStar sends the registrar a usTLD welcome package that includes information to help implement its EPP client application for connecting to the SRS.

All tests performed during OT&E certification must be completed without errors. The registry provides the certification results in a timely manner and provides feedback for those registrars that failed to successfully complete the tests. Those registrars may correct their systems and reschedule for certification. Registrars are not limited in the number of attempts at OT&E certification. Upon successful OT&E certification, the registrar is eligible to being operations in the live SRS. The registrar is assigned a username and password for the production environment, and we configure the live system to recognize the SSL certificate, username, password, and subnet blocks for the registrar.

**Redemption Grace Period (RGP)** – The RGP enables registrars to restore domain names that may have accidentally been deleted. NeuStar remains the only registry operator that has developed a

completely automated RGP solution using the existing EPP standard this has been in operation for three years. We offer unique tiered pricing approach during the RGP period, allowing registrants whose names were accidentally deleted to restore that domain name for a lesser price during the first five days following the deletion.

**Other Domain Management Processes** – Like most TLDs, the usTLD SRS provides for a variety of domain management processes, for example transfer, auto-renew, et. Related to these domain management processes are a variety of grace periods and related business rules. Among the notable processes is the Add Grace Period (“AGP”), which provides for a full registrar refund if a domain is deleted within five days. This process is currently the subject of considerable discussion in the domain name community.

**Customer support processes** – Our customer support provides support to Registrars as well as registrants and the general dotUS Internet community. Our support team is available 7x24x365 and provides support via telephone or email. The support team operates an issue management process that manages issues of various priorities according to defined timelines. When necessary issues are escalated to our Tier 2 and/or Tier 3 support teams.

### usTLD-specific Processes

**US Nexus enforcement process** – Since assuming responsibility as the usTLD Administrator, we have proven our ability to successfully operate the usTLD in compliance with the United States Nexus requirement. We conduct regular spot-checks for Nexus compliance and also investigate specific Nexus check requests from interested third parties. The existing Nexus policy and process, properly enforced, helps ensure that the usTLD serves the Internet community of the United States without attracting or encouraging registrations from outside the United States or from those without a bona fide connection to the United States

**US Nexus dispute process** – In the event a domain name is registered but is alleged to not meet the Nexus requirement (i.e. the Nexus certification received from Registrar and Registrant was incorrect or fraudulent), NeuStar developed and implemented a Nexus Dispute Resolution process that provides a legal and policy framework for resolution of any such dispute. The official usTLD Nexus Dispute Policy can be found at: [http://www.neustar.us/policies/docs/nexus\\_dispute\\_policy.pdf](http://www.neustar.us/policies/docs/nexus_dispute_policy.pdf) and Appendix G-1 of this proposal.

If a Nexus dispute is initiated pursuant to the above-referenced usTLD Nexus Dispute Policy, it may be submitted to any approved Nexus Dispute-Resolution Service Provider listed below. Each provider follows the Nexus Dispute Policy and Rules as well as its own supplemental rules (which may not conflict with the Nexus Dispute Policy and Rules. The two Nexus Dispute-Resolution Service Providers under agreement with NeuStar are the National Arbitration Forum and the American Arbitration Association.

**Kids.us processes** – Pursuant to the Dot Kids Act, the registry operator has responsibility for creating “a process for removing from the new domain any content that is not in accordance with the [content] standards and requirements of the registry.” At the time of initial content review, all potential websites must completely abide by the kids.us Content Guidelines and Restrictions before any content may reside within the kids.us domain. On an on-going basis, NeuStar follows a defined process for removing appropriate content from the kids.us domain. This process is designed to balance the needs of maintaining a stable domain space as well as ensuring a timely and expeditious means for registrants to resolve any true or alleged content infractions.

NeuStar developed specific content restrictions and a corresponding “severity level” that guide the registry in addressing content violations. Because the registry does not have direct access to the content within a website, actions by the registry are limited to removing a domain name from the zone file, thereby blocking the site in its entirety. Although complete removal of a domain name may appear to be an extreme course of action in some instances, the objective of protecting children is paramount and must be the guiding factor in the enforcement process. More information on kids.us processes can be found in Proposal Section C.8 and online at [www.kids.us](http://www.kids.us).

**Registration abuse process** – NeuStar has an extensive defined and documented process for taking the necessary action of removing a domain from the zone when its presence in the zone poses a threat to the security and stability of the infrastructure of the Internet or the NeuStar registry. NeuStar has been successfully implementing this first of its kind program since 2006.

**Domain name review process** – In April 2002, NeuStar developed and implemented the usTLD Domain Review policy. The usTLD Administrator will follow a policy to preserve and enhance the value of the .US Internet address to all users, including, in particular, state and local governments, libraries, and K-12 schools. Given the importance of .US as a national public resource, certain guidelines must apply. Therefore, NeuStar reviews, for possible deletion, all registered second-level and locality domain names that contain, within the characters of the domain name registration, any of the seven words identified in *Federal Communications Commission v. Pacifica Foundation*, 438 U.S. 726, 98 S. Ct. 3026, 57 L.Ed.2d 1073 (1978), the “Seven Words”.

**Enforcement of proxy prohibition** – NeuStar performs regular, weekly scans of the entire usTLD database searching for evidence of proxy or anonymous domain name registrations. Upon discovering a domain that appears to have invalid WHOIS data, the registrar is immediately notified and instructed to take corrective action. Eventually, if the information is not corrected, the name is deleted.