Figure 23-1

Registry Service	Description of Technical Component	Description of Business Component
A. Receipt of data from registrars concerning registrations of domain names and name servers	The Verisign-operated registry accepts registration information for domain names and name servers from registrars using the IETF EPP as defined in RFCs 3915, 5730 – 5734, and 5910. The Redemption grace period (RGP) elements of RFC 3915 are not applicable to the .NET_FOR_KOREAN gTLD. For more information about EPP please see the response to Question 25, EPP.	All registry systems under our management use EPP with no security or stability issues. Approximately 915 registrars use our EPP service, and as a company, we have handled more than 140 million EPP transactions daily without performance issues.
B. Dissemination of TLD zone files	We disseminate top-level domain (TLD) zone files through our Domain Name System (DNS) resolution infrastructure, which fully complies with all IETF DNS specifications. We ensure updates are processed and distributed rapidly to meet end-user needs. In addition, as a company, we provide DNS resolution services through our globally distributed constellation of resolution sites, which currently process an average of 60 billion queries per day. Question 35, DNS Service provides details of zone file dissemination.	Any TLD must have the capability to quickly and accurately distribute zone information to a set of globally distributed name servers. In our experience, end users demand rapid updates of zone information in the DNS. Our system supports this capability in full compliance with applicable RFCs by updating our zone files incrementally every three minutes with a complete zone update every 12 hours.
C. Dissemination of contact and other information concerning domain name registrations (i.e., port-43 WHOIS, Web-based Whois, RESTful Whois service)	Verisign uses the Whois service as defined in RFC 3912 to disseminate contact and other information regarding registered data objects. Like all other components of our registry service, our Whois system is designed and built for both reliability and performance. Our current Whois implementation has answered more than five billion Whois queries per month for the TLDs we manage, and has experienced more than 250,000 queries per minute in peak conditions.Verisign commits to implementing a RESTful Whois service upon finalization of appropriate IETF standards and protocol. For more information about Whois, please see the response to Question 26, Whois.	The Whois service facilitates the timely resolution of many technical problems, assists investigatory phases of law enforcement, and provides many other legitimate, non-abusive uses of domain name registration meta-data. One of the fastest growing uses for Whois data today is in the automated, analytic engines of Internet reputation services used to prevent spam and combat Internet-based identity crimes such as phishing.

Registry Service	Description of Technical Component	Description of Business Component
D. International-ized domain names (IDNs)	Our registry system supports the registration and resolution of IDNs. We contribute to the IDN standards process as a member of the IETF, which has led the effort to create standards for using non-ASCII characters in the DNS. We are the leading backend registry provider for IDNs at the second level and have played a key role in the development and proliferation of standards that are meaningful to communities that use non-Latin scripts. IDNs improve the accessibility and functionality of the Internet by enabling domain names in non-ASCII characters. The development of IDNs requires cooperation and communication among the various organizations and individuals who are responsible for the technologies, systems, and protocols of the Internet. The response to Question 44 provides IDN details.	Most domain names are registered in ASCII characters (A to Z, 0 to 9, and the hyphen "-"). However, non-English words that require diacritics, such as Spanish and French, and languages that use non-Latin scripts, such as Kanji and Arabic, cannot be rendered in ASCII. As a result, millions of Internet users struggle to find their way online using non-native scripts and languages. Our registry system complies with IDN-related industry standards and supports IDN services that enable Internet users to access websites in their local language characters and help global organizations protect and secure their brands.
E. DNSSEC	Our registry system supports the registration and resolution of DNSSEC-enabled domain names. Our DNSSEC implementation provides end-to-end authenticity and integrity and helps protect the Internet from certain types of attacks, such as man-in-the-middle and cache poisoning attacks. We have always worked closely with the Internet community in the development of standards and solutions related to topics of Internet security, including DNSSEC. We recognize that Internet security is constantly evolving, and DNSSEC is one of many measures that are currently underway to enhance security on the Internet. Please see the response to Question 43, DNSSEC, for details of our approach.	DNS was not originally designed with strong security mechanisms to provide integrity and authenticity of DNS data. Over the years, a number of vulnerabilities have been discovered that threaten the reliability and trustworthiness of the system. DNSSEC addresses these vulnerabilities by adding data origin authentication, data integrity verification, and authenticated denial of existence capabilities to the DNS.

Figure 23-1: Registry Services. *Each proposed service has been previously approved by ICANN to ensure registry security and stability.*

Figure 23-2

Registry Service	Applicable RFCs	Prior ICANN Approval and Evidence of Compliance

Registry Service	Applicable RFCs	Prior ICANN Approval and Evidence of Compliance
A. Receipt of data from registrars concerning registrations of domain names and name servers	**RFC 3915:** Domain Registry Grace Period Mapping. The Redemption grace period (RGP) elements of RFC 3915 are not applicable to the .NET_FOR_KOREAN gTLD.	• Currently implemented on .com; validated by ICANN during 1 March 2006 registry transition to delegation process. • Currently implemented on .net; validated by ICANN during 29 June 2005 registry transition to delegation process.
	RFC 5730: Extensible Provisioning Protocol	
	RFC 5731: EPP Domain Name Mapping	
	RFC 5732: EPP Host Mapping	
	RFC 5733: EPP Contact Mapping	
	RFC 5734: EPP Transport over TCP	
	RFC 5910: DNS Security Extensions Mapping for the EPP	
B. Dissemination of TLD zone files	**RFC 1034:** Domain Names – Concepts and Facilities	• Currently implemented on .com; validated by ICANN during 1 March 2006 registry transition to delegation process. • Currently implemented on .net; validated by ICANN during 29 June 2005 registry transition to delegation process.
	RFC 1035: Domain Names – Implementation and Specification	
	RFC 1101: DNS Encoding of Network Names and Other Types	
	RFC 1123: Requirements for Internet Hosts – Application and Support	
	RFC 1982: Serial Number Arithmetic	
	RFC 1996: A Mechanism for Prompt Notification of Zone Changes	
	RFC 2181: Clarifications to the DNS Specification	
	RFC 2182: Selection and Operation of Secondary DNS Servers	
	RFC 2308: Negative Caching of DNS Queries	
	RFC 2671: Extension Mechanisms for DNS	
	RFC 3226: DNSSEC and IPv6 A6 Aware Server/Resolver Message Size Requirements	
	RFC 3596: DNS Extensions to Support IP Version 6	
	RFC 3597: Handling of Unknown DNS Resource Record Types	
	RFC 3671: Collective Attributes in the Lightweight Directory Access Protocol	
	RFC 3901: DNS IPv6 Transport Operational Guidelines	
	RFC 4343: Domain Name System Case Insensitivity Clarification	
	RFC 4472: Operational Considerations and Issues with IPv6 DNS	
	RFC 5156: Special-Use IPv6 Addresses	
	RFC 5358: Preventing Use of Recursive Name Servers in Reflector Attacks	
	RFC 5735: Special Use IPv4 Addresses	
	RFC 5966: DNS Transport over TCP – Implementation Requirements	

Registry Service	Applicable RFCs	Prior ICANN Approval and Evidence of Compliance
C. Dissemination of contact and other information concerning domain name registrations (i.e., Whois service)	**RFC 3912:** Whois Protocol Specification	• Currently implemented on .com; validated by ICANN during 1 March 2006 registry transition to delegation process. • Currently implemented on .net; validated by ICANN during 29 June 2005 registry transition to delegation process.
D. IDNs	**RFC 5890:** Internationalized Domain Names for Applications: Definitions and Document Framework	• Currently implemented on .com; validated by ICANN during 1 March 2006 registry transition to delegation process. • Currently implemented on .net; validated by ICANN during 29 June 2005 registry transition to delegation process.
	RFC 5891: Internationalized Domain Names in Applications: Protocol	
	RFC 5892: The Unicode Code Points and Internationalized Domain Names for Applications	
	RFC 5893: Right-to-Left Scripts for Internationalized Domain Names for Applications	
E. DNSSEC	**RFC 4033:** DNS Security Introduction and Requirements	• ICANN approved the same service for our use on the .com and .net registries on 6 Nov 2009 (RSEP Proposal 2009011).
	RFC 4034: Resource Records for the DNS Security Extensions	
	RFC 4035: DNSSEC Protocol Modifications for the DNS Security Extensions	
	RFC 4509: Use of SHA-256 in DNSSEC Delegation Signer Resource Records	
	RFC 4641: DNSSEC Operational Practices	
	RFC 5155: DNS Security Hashed Authenticated Denial of Existence	
	RFC 5910: Domain Name System Security Extensions Mapping for the Extensible Provisioning Protocol	

Figure 23-2: ICANN RFC Compliance. *Verisign currently operates TLDs in full compliance with each registry service's applicable RFC(s). Each listed Verisign service has been previously approved by ICANN and is now operational on registries under our management.*

Figure 23-3

Status	Description	Zone Insertion
ok	The product is in Active state.	Yes
serverHold	The product is set on Hold by the server.	No
serverRenewProhibited	Server-specified Renew is prohibited.	Yes
serverTransferProhibited	Server-specified Transfer is prohibited.	Yes

Status	Description	Zone Insertion
serverUpdateProhibited	Server-specified Update is prohibited.	Yes
serverDeleteProhibited	Server-specified Delete is prohibited.	Yes
pendingDelete	The product is in Pending Delete state.	No
pendingTransfer	The product is in Pending Transfer state.	Yes
clientHold	The product is set to Hold by the client.	No
clientRenewProhibited	Client-specified Renew is prohibited.	Yes
clientTransferProhibited	Client-specified Transfer is prohibited.	Yes
clientUpdateProhibited	Client-specified Update is prohibited.	Yes
clientDeleteProhibited	Client-specified Delete is prohibited.	Yes
linked	The product is linked to other products.	Yes
pendingRestore	The product is in Pending Restore state.	Yes
redemptionPeriod	The product is in Redemption period.	No

Figure 23-3: Zone Server Status Information. *Verisign provisions to registrars status information related to the TLD.*