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. For more information about EPP please see the response to Question 25, EPP.	All registry systems under Verisign's management use EPP with no security or stability issues. Approximately 915 registrars use the Verisign EPP service, and Verisign, as a company, has handled more than 140 million EPP transactions daily without performance issues.
B. Dissemination of TLD zone files	Verisign disseminates top-level domain (TLD) zone files through its Domain Name System (DNS) resolution infrastructure, which fully complies with all IETF DNS specifications. Verisign ensures updates are processed and distributed rapidly to meet end-user needs. In addition, Verisign, as a company, provides DNS resolution services through its 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 Verisign's experience, end users demand rapid updates of zone information in the DNS. Verisign's system supports this capability in full compliance with applicable RFCs by updating its 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, Wedb-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 its registry service, Verisign's Whois system is designed and built for both reliability and performance. Its current Whois implementation has answered more than five billion Whois queries per month for the TLDs it manages, and has experienced more than 250,000 queries per minute in peak conditions. Verisign commits to implementing a RESTful Whois service upon finalization of agreements with the IETF. 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.
D. International-ized domain names (IDNs)	At this time, Vanguard does not plan to offer IDNs. If it offers IDNs in the future, Vanguard will contact ICANN to initiate the ICANN processes required to gain the applicable approvals to offer IDN services.	

Registry Service	Description of Technical Component	Description of Business Component
E. DNSSEC	Verisign's registry system supports the registration and resolution of DNSSEC-enabled domain names. Verisign's 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. Verisign has always worked closely with the Internet community in the development of standards and solutions related to topics of Internet security, including DNSSEC. Verisign recognizes 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 Verisign's 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.*

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	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	At this time, Vanguard does not plan to offer IDNs. If it offers IDNs in the future, Vanguard will contact ICANN to initiate the ICANN processes required to gain the applicable approvals to offer IDN services.	
E. DNSSEC	**RFC 4033:** DNS Security Introduction and Requirements	ICANN approved the same service for Verisign's 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 Verisign management.*

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
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.*