registerOrg

Strength. Stability. Community.

August 28, 2002

M. Stuart Lynn
President and CEO
ICANN
4676 Admiralty Way, Suite 330
Marina del Rey, CA 90292-6601

RE: Response to the Gartner Evaluation Report

Dear Mr. Lynn:

RegisterOrg appreciates this opportunity to comment in response to the technical evaluations prepared by Gartner, Inc. (the "Gartner Report") in conjunction with the evaluation of the eleven proposals submitted for the reassignment of the .Org Registry. In addition, we have also submitted a separate, more thorough comment in response to all of the evaluation team reports, as well as the ICANN staff report.

RegisterOrg is gratified that the Gartner Report gave RegisterOrg its highest rating, "above average," for the technical strength and overall competence of the bid. We would like to address a few of the issues raised by the report to clarify RegisterOrg's technical strengths. What follows below is a brief section that highlights some of the strengths that distinguish the RegisterOrg application, along with a response to issues raised in the Gartner Report.

I. RegisterOrg Strengths:

The Gartner Report considered the four major technical evaluation criteria of the RFP (1, 7, 8, 9). Below, we have outlined RegisterOrg's strengths in each of the four areas, which we believe distinguish the RegisterOrg bid from others:

Criteria 1: Need to provide a stable, well-functioning registry.

RegisterOrg has a well-functioning registry system. RegisterOrg's parent company, Register.com, which will provide the Registry with technical services through its business unit, Registry Advantage, has substantial experience managing 3.4 million domain names as a registrar. Register.com runs authoritative DNS, a Whois service and a thick customer database. In addition, the company has extensive experience with registrar-registry connections. Register.com's experience demonstrates significant scalability of its systems and experience of operations. While Registry Advantage's databases are not as large as the registrar databases, the registry system is designed to be as scalable as those in the registrar business. The core systems architecture for the registry mirrors the registrar, so that they are equally stable and scalable.

RegisterOrg is the strongest and most financially stable applicant. Following capitalization from its parent company, Register.com, RegisterOrg has $10 million in cash currently in the bank, and can therefore finance the transition without reliance on third party partners or money from capital markets. Consequently, RegisterOrg is uniquely situated in that it has the funding to work continuously towards transitioning the .org registry on January 1, 2003. We strongly contend that financial strength should be considered in the overall evaluation of each applicant's ability to provide a stable, well-functioning registry. Indeed, the first Criteria for Assessing proposals clearly states that "proposals should include specific plans, backed by ample, firmly committed resources." Hence, the financial commitment and ability of each applicant should have been reviewed as a fundamental resource for the registry's operation. The financial viability of the new operator, and its ability to withstand changes in market conditions may well affect the new registry operator's ability to transition, grow and service the .org registry – especially in the early stages when revenue will be deferred.

RegisterOrg's technical systems have been extensively tested. Registry Advantage's systems demonstrate capability of supporting the .org registry. As described in RegisterOrg's proposal, Registry Advantage has conducted extensive testing of its systems to demonstrate that they have the capacity, performance, and reliability required by the .org TLD. These same tests demonstrate the capability to rapidly and successfully migrate the entire .org data set to its own systems. This parallels Registry Advantage's results transitioning ccTLD registry operations, in which all data was migrated with zero downtime and zero data loss.

Criteria 7: The type, quality, and cost of the registry services proposed.

As the .org registry operator, RegisterOrg will provide a full range of registry services, including 24x7 customer service, registrar toolkits, a thick WHOIS, testing environment, billing and collection, reporting and compliance capabilities.

Based on its extensive testing of its systems, the Registry will provide best of breed SLAs, which exceed both the current SLAs in place for existing gTLDs and the proposed SLAs for all the other .org applicants. Without strong confidence in the system, and the ability to perform at all of those levels, the Registry would not have entered into the highest service level commitments of all the proposals.

Criteria 8: Ability and commitment to support, function in, and adapt to protocol changes in the shared registry system.

RegisterOrg's provider, Registry Advantage, has a current deployment of EPP-06/04, and is committed to maintaining a state-of-the-art registry system with support for the latest industry accepted protocols. Indeed, Registry Advantage deployed the first known public EPP-06/04 server in May of this year. It is currently working on implementing RRP.

RegisterOrg has established the necessary policies and procedures to ensure equivalent access to the Shared Registry System and will support all .org registrars with training, testing, 24/7 ongoing customer service, all of which will be provided in various formats and languages to maximize equivalent service. Because its leaders are seasoned domain name leaders, RegisterOrg understands how critical it is to provide its registrar partners with equivalent access and support through the shared registry system.

Criteria 9: Transition considerations.

RegisterOrg's application provides a highly detailed transition plan based on Registry Advantage's previous experience in transitioning multiple ccTLDs. While these ccTLD registries are on a small scale as compared with the .org registry, Registry Advantage has done multiple transitions and has a strong knowledge of the requirements to complete a smooth transitions that minimizes downtime. The application also features a carefully considered plan to migrate from a thin to a thick registry.

II. Response to the Gartner Report

We appreciate the work of the Gartner evaluation team and their firm understanding of the overall issues involved with registry operations. We believe however, that undue consideration was given to the experience of certain applicants as current registry operators. We appreciate that experience in running registry or registrar systems provided certain applicants with a stronger foundation given the short timeframe in which the registry must be transitioned. However, we believe that the Report does not consider three additional factors:

1. Problems have arisen with some of the existing operators. These problems have been well documented and present issues for the transition of the registry.

2. While operating a large registry may be useful, the scaling problems involved with the operation of a registry that is the size of the .org registry may not manifest themselves in a registry with a million names or less. As the experience of Register.com in providing DNS service for approximately three million domain names, and Nominet[1] in operating the second largest ccTLD registry in the world, have taught, a number of scaling issues present themselves at the level of approximately two million domain names. Registries that are not yet operating with at least this number of names may need to overcome significant technical hurdles in order to operate the .org registry. Additionally, since newer registries have not yet experienced expiration and non-renewal issues, they may not suffer from the problems of "add storms" currently faced by the .org registry. While Registry Advantage does not currently operate a registry that meets either of these criteria, we have conducted extensive testing to ensure that our systems were not only capable of supporting the full scope of the .org registry and its zone file, but also to

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[1] See Section C17.1 of the Organic Names .org proposal at
http://www.icann.org/tlds/org/applications/organic/iii.html : "The experience gained at Nominet UK - a registry roughly 150% the size of .org, is that there are some unusual file size scalability issues at the level of about 2 million registrations."

ensure that registry operations would continue normally even under the extreme conditions of an add storm. We believe that this type of testing provides significantly greater validation than the mere operation of a registry at a scale significantly smaller than required for .org.

3. We also note that the Gartner Report did not discuss relevant operational experience from related non-registry activities. For example, Register.com, currently provides services such as registration, thick Whois, and DNS for over two million domain names. Retail domain name registrations actually require significantly more resources and complexity (multi-step process versus atomic transactions; real-time billing versus batch reporting and invoicing; etc.) than SRS-based registry operations. Additionally, Register.com provides registration services through its Third Party Protocol, which significantly exceeds the capabilities of an SRS by allowing registration-related activities such as the addition, modification and deletion of domain names, as well as enhanced capabilities such as provisioning authoritative DNS records. The systems upon which the Registry Advantage infrastructure is based have a proven track record of handling over ten thousand domain name registrations per day, significantly exceeding the historical peak requirements of the .org registry. Register.com has been providing these services for a significantly greater time than any new gTLD operator, having begun activities as the first live test-bed registrar in June of 1999. As a result, we have the second longest history of experience with the RRP protocol in the world, with most new registry operators having no operational experience with the protocol to date. We believe the breadth of this experience forms a thorough basis for migrating and operating the .org registry within the extremely limited timeframe available.

Size and scope of existing registries

Registry Advantage is a registry outsource provider to the .pro gTLD and seven ccTLD registries and provides services for over 15,000 names in total across these registries. Despite the small size of the registry, it is significant to note that Registry Advantage does have the technical experience as well as the systems in place to ensure a smooth transition and the continued stable operation of the .org registry.

The details of our ccTLDs were not described in RegisterOrg's original proposal to ICANN based on Registry Advantage's need to maintain client confidentially. However, subsequent to the proposal's submission, Registry Advantage obtained permission to publicly list the ccTLD registries. They are as follows:

ag (Antigua)
.ec (Ecuador)
.hn (Honduras)
.la (Laos)
.mn (Mongolia)
.sc (Seychelles)
.uz (Uzbekistan)

As mentioned in the RegisterOrg proposal, 19 registrars currently register domains through Registry Advantage's SRS systems. Although they represent a relatively small total number of domain names, 8 registry clients have provided a breadth and depth of experience in terms of transitioning and managing registries with various policy and business requirements. For example, various registries have different Whois information requirements, different pricing models for different sets of domain names – varying between those at the second level versus those registered in sub-domains. The various registries and registrars have different levels of personnel expertise, language proficiency, and systems, all of which requires us be flexible, innovative and to plan well for a variety of circumstances. Based on the wide-ranging needs of its clients, RegisterOrg does not believe that the size of Registry Advantage's operations should be minimized.

RegisterOrg submits that rather than viewing the relatively smaller number of names supported by Registry Advantage as a detriment, it should be considered as a potential operator that will enhance competition in the registry market. Neither RegisterOrg, nor Register.com (through Registry Advantage) operate a large unrestricted gTLD, as compared with the other top applicants. Hence delegating the registry to RegisterOrg would diversify the registry services base in the domain name industry. Moreover, because RegisterOrg is the strongest of the five applicants to receive an A grade by the Gartner Report, it will be in the best position to grow the .org registry a competitive registry in the future.

Firewall security

The Gartner Report made the following technical: "Proposal indicates only one firewall tier, comparable proposals include a second firewall tier protecting the core SRS databases."

We believe that Registry Advantage has designed a superior network security model to a straightforward 2-tier physical firewall model via a combination of virtual LAN, switch-level access control lists, host-based logical firewalls, and one tier of physical firewall appliances.

First, all servers are segregated into specific virtual LANs (VLANs). Hosts with multiple network interfaces are generally assigned to one VLAN per interface; hosts with only one interface will only be assigned to a single VLAN. 802.11q tagging is used to carry VLAN information between switches and enforce global VLAN consistency. All communications between VLANs must occur at layer 3 and are routed through the core network switch.

Second, the core switch enforces an access control list (ACL) that prevents access between unauthorized hosts. Access control policies can be established either for an entire VLAN, or for an individual host within a VLAN. As is the case throughout the Registry Advantage security model, access is only permitted in cases where there is a clear functional requirement—the default policy is to deny all traffic between VLANs and exceptions must be created where access is specifically required. The ACL limits not

only whether communication is allowed with a specific host, but also allows fine-grained control over communication to specific UDP or TCP ports. In this respect, the switch performs the same function as a dedicated firewall appliance in some other architectures. By using the switch instead of a firewall, two principal advantages are achieved. First, because the core switch is capable of processing ACLs at line rates, there is no potential performance penalty as a result of introducing the firewall into the network environment. Second, security is actually increased because access controls are provided between all areas of the network as opposed to large layers segregated by the firewall.

In addition to the ACLs enforced by the switch, Registry Advantage employs another layer of network level security on the hosts themselves. Each host is configured with IP filtering software, such as "ipfilter", which allows administrators to strictly limit which hosts may communicate with various services. This software provides a high degree of security, and is used as the basis for some dedicated firewall appliances. Finally, individual applications enforce Internet Protocol-based restrictions as part of their individual access policies. This applies to both user-accessible applications as well as administrative and management tools.

Redundancy at the Secondary Site
The Gartner Report states that Registry Advantage's "… secondary site is not fully redundant, comparable proposals include equivalent redundancy between the primary and backup site."

From an operational perspective, the Registry Advantage architecture described in the RegisterOrg application provides the same level of redundancy as the other leading applicants, if not more so. It appears to our technical team that Gartner did not fully consider the issue of redundancy in its totality when comparing the leading bids; indeed, Gartner's concern about a lack of redundancy at the secondary site may be based on a failure to appreciate the extent of the redundancy at the primary site. Although we would rather not comment directly on the bids of the other applicants, we feel that this is the only effective approach in responding to this issue. We respectfully suggest that ICANN consider these points in its evaluation of the overall question of redundancy.

a) Redundancy in Functionality

ISOC does not replicate all functionality between sites.   That is, there are production features that are hosted at one site and not the other. Specifically, the secondary site deploys "enhanced functionality" servers and OT&E only. There is no mention of what will happen to these services if the D/R site fails, and some basic services may become unavailable even in the event of a failure at the primary site..

NeuStar appears to replicate all functionality between sites, but the lack of detail makes it difficult to determine the level of redundancy at either site. In particular, the DNS zone file distribution components are not listed in either top-level diagram as being anything but single, non-redundant components at both sites. The description of the overall level of redundancy is vague, and only commits to replicate the 5 layer architecture without making any specific component replication assertions.

GNR replicate all functionality as specified in section C-15 of their application. However, section C-15 of their application does not enumerate any functionality. It does refer to GNR's sudden need to change primary data centers in the UK for .NAME when their data center vendor went bankrupt, and claims that no services experienced any downtime during the three days in May they operated out of their D/R facility in Norway. Although this is an impressive demonstration of their fail over capabilities, the .NAME registry did not begin taking real-time registrations until June 26, so the applicability to their current environment is unknown.

Registry Advantage replicates all production site functionality at the secondary site.

b) Redundancy in Database Servers

ISOC does not have a duplicate database at their secondary site -- only a single database using legacy Sun storage products that Sun Microsystems no longer advertises as an enterprise class managed storage solution. Furthermore, their primary site has a single A5200 attached to each of the database servers, not two arrays each attached to both database servers.

NeuStar indicates redundant data server pairs, but does not specify any details. The clustered data servers are said to have 288GB of internal disk storage in each cluster member, which is clearly not available to the other cluster member. They also claim that each of the clusters at the primary site has access to 10TB of external data, but do not elaborate on how or why this is the case (is the same 10TB dual attached to both cluster members?), and do not specify that this 10TB data store is also replicated at the D/R site. Once again, the only claim is that the 5 layer architecture is replicated at both sites, without mention of what level of component redundancy they plan to have.

Registry Advantage's storage is all managed SAN based storage. The primary disk array is the leading SAN storage array in the industry, and comes with a zero downtime guarantee from EMC. (Such a guarantee is not offered by either Neustar's or Affilias' storage vendors; despite this, Gartner classifies the Afilias platform as "best of breed".) We also have another leading SAN product as a secondary storage array at the primary site. Each storage array is attached to both database servers, so any failure scenario is handled at the primary site short of both database servers or both SAN arrays failing simultaneously, at which point the secondary location would become active. At our secondary site, we chose to deploy the same guaranteed zero downtime pre-eminent SAN array from EMC and attach through a full SAN fabric to a single Sun 6500 so that we could subsequently move to full redundancy by adding a secondary storage array and an additional Sun 6500 without interruption of the deployed infrastructure. Such a deployment could be completed rapidly in the event of an extended outage at the primary site.

GNR indicates that they run an active/active cluster configuration for their three databases, but do not elaborate. Their primary site diagram has only a single storage device for all three databases. It also only lists single components for all of the services below the DMZ. Although GNR give no details about their Norway D/R facility, they do indicate that it provides a lower capacity than the primary facility.

c) Redundancy in Application Servers

Although ISOC claims that their D/R site is configured with N+1 redundancy, in the very next line of text, they contradict this by only deploying a single web server, single Whois server, and single SRS server. They also deploy "enhanced functionality" servers and OT&E only at the secondary D/R site.

NeuStar does not provide sufficient detail in their response to identify which applications are replicated and to what degree.

GNR only lists single components at their primary site for any services below their DMZ. Again, they provide no details about their D/R facility in Norway, but it is reasonable to assume this facility is also at a single component level for at least these services.

Registry Advantage replicates everything else with component redundancy at both sites. Our clustered approach to application servers provides for a significant degree of redundancy generally absent from other applications. Application servers are deployed in at least a 2N configuration, meaning that under peak loads, half of all servers can fail with no noticeable impact; under lesser loads, the majority of servers may fail without effecting the registry's operations. Additionally, because multiple servers are simultaneously serving requests, even in the event that the required number of servers is not available, the impact is generally for performance to degrade rather than the service becoming unavailable.

"Unknown issues" raised by using Tokyo as the secondary site location
Gartner made the following technical observation in its letter to ICANN:
"Running the Registry entirely from the backup Tokyo location raises unknown issues."

It is difficult to provide a response to this observation because we do not understand what Gartner means by "unknown issues." However, we wish to make the following points regarding the selection of the Tokyo location.

First, we are not contractually bound to the selection of Tokyo or Japan as the location of the secondary site. To date, we have had preliminary discussions with vendors and co-location facilities in Tokyo, but have not entered into any formal agreements. We would be completely open to the advice of ICANN regarding the location of the secondary site, as long as we felt we could manage the site operationally in whichever location was recommended.

Second, we selected Japan for its excellent network connectivity to the rest of the world, and because of our extensive experience in the region. Our Director of Infrastructure served for five years as a technology manager in Tokyo and Osaka, and we also have additional staff fluent in Japanese.

Third, locating the secondary site in Tokyo has lower operational risk than other candidate offshore locations. This is due to the high quality of technical expertise and networking available, our previous operational experience in the region, and the greater geographic separation provided by Japan as compared to other domestic sites. War, terrorism or natural disaster is less likely to affect sites with both geographic and geopolitical separation than a purely domestic solution.

Finally, we would like to emphasize our solid commitment to firm, industry leading RTO/RPO objectives. Compared to the other leading bidders, we note that neither NeuStar nor ISOC commit to any recovery times or even recovery points. While NeuStar says they have 3-minute synchronization schedules with detailed procedures for identifying and handling delays, they don't commit to any specific times in the remediation part. ISOC and GNR make no mention of recovery times or points at all. RegisterOrg's application contained substantially more technical details about our redundancy and recovery plans than any of the leading competitors.

Operations Testing Environment

Gartner's letter to ICANN suggested, "No Operations Testing Environment was proposed" by RegisterOrg. This statement suggests that Gartner may have overlooked our discussion of our test environment in section C22 to our proposal, although Gartner's analysis in Appendix B to their report suggests otherwise. Gartner mentions our test environment as a positive aspect to our proposal several times in the Appendix B analysis.

To clarify, RegisterOrg will provide an Operations Testing Environment as described in section C22. We call this environment TEST (Testing Environment, Support and Training) in our proposal as it will be used for two purposes: (a) to allow existing ICANN accredited .org registrars to test EPP and/or RRP connections with our Shared Registry System, and (b) to certify potential .org registrars in a customary OTE certification test.

VeriSign Roles and Responsibilities in the Transition

Registry Advantage recognizes the importance of establishing clear responsibilities for both the current registry operator as well as the newly selected registry operator throughout the transition process. Without a significant degree of cooperation from VeriSign, it is possible that not all data will be transferred successfully, or a longer than envisioned interruption in services may occur. Because we are not aligned with VeriSign in our application, nor are they partners in our regular course of business, we would not presume the level of support in the transition.

With the exception of providing DNS services for a year, VeriSign's existing .org contract does not specify the type of assistance that they are required to provide during the transition process. As a result, Registry Advantage considers it imprudent to build a migration plan that depends significantly on specific activities undertaken by VeriSign. The transition plan presented in section C18 of the original application materials outlines a transition approach that is minimally dependent on VeriSign for a successful migration. We believe that the spirit of the existing .org contract would require VeriSign to cooperate on at least these essential steps. The specific points on which co-operation from VeriSign would be required were:

1)   Continued operation of their constellation of DNS servers on behalf of the .org TLD. Initially, the DNS servers would continue to serve a zone filed based on registrations in the VeriSign database as of the end of their tenure as .org registry operator. Later, VeriSign would be required to receive updated zone file information from Registry Advantage.

2)   Provision of registry data to Registry Advantage on a daily basis, beginning 30 days in advance of the registry cut-over. This data would be imported into the Registry Advantage database on an ongoing basis in order to validate the data import methodology, as well as to allow registrars, registrants and the internet community to identify any potential data errors prior to the final cutover.

3)   Provision of a final and complete set of registry data immediately after the termination of the current .org contract. This data set would subsequently form the basis for the final and authoritative data import by Registry Advantage.

4)   Possible reconciliation efforts in the event that discrepancies are discovered between the new registry's database and the legacy data set.

The elements listed above represent the set of activity that Registry Advantage believes is essential to a successful transition, and represent a minimum level of effort and commitment on behalf of VeriSign. To support the migration process, Registry Advantage would work closely with VeriSign, ideally meeting on a weekly basis to verify the completion of various milestones related to the transition process and exchange additional information such as:

- Disclosure of current .org database schema;
- Establishing a database export format used to transmit the data set from VeriSign to Registry Advantage;
- Listing of all current .org registrars;
- Disclosure of IP address ranges used by .org registrars to connect to the SRS;
- Approval of a final migration and transition schedule;
- Transfer of data relating to any current disputed domain names, as well as establishing a mechanism to resolve disputes involving historical transactional data from VeriSign;

- Establishing a mechanism for Registry Advantage to begin updating the VeriSign DNS constellation; and
- Exchange of contact information for key players involved in each party's operations, as well as a clear escalation process.
- Important elements produced as a result of these meetings (such as the final migration and transition schedule) would be published as part of the new registry's outreach efforts to registrars, registrants and the Internet user community. Registry Advantage would also propose continuing these meetings through at least the first 30 days after the initial cutover in order to ensure that any post-transition issues were effectively communicated between the two parties.

In the event that VeriSign were willing to undertake additional activities in order to ensure the smoothest possible transition, Registry Advantage would further propose that VeriSign perform the following:

- Update WHOIS server software to automatically redirect queries to the new .org Whois servers, or simply provide a referral entry for any queries made for .org names,
- Send notices to existing .org registrars to provide details of the transition process,
- Update relevant web pages, mailing lists, telephone recordings, and other public data sources to provide a referral to the new operator's comparable resources;
- Continue to provide WHOIS service during the brief interval in which Registry Advantage is importing the final data set, so that the service is continuously available to the public throughout the transition; and
- Prohibit transfers starting five days prior to the cutover, so that all transfer events have completed prior to the transfer of operator.

Registry Advantage has also developed contingency plans for completing the migration even in the event of minimal or no co-operation from VeriSign. These contingency plans include:

- Using public data sources, such as Bulk Whois and the zone file access program to build the initial registry database during the final 30 days leading to the cutover. This approach does not have the full set of data required by the registry, but has sufficient information to provide functional registry services.
- Using the registry data escrowed as part of VeriSign's current operation of the .org registry in order to build the final registry database. This step would require that ICANN recover the data from the escrow provider under the terms of its contract with VeriSign, and turn over the relevant files to Registry Advantage. We believe that ICANN would be fully within its rights as a beneficiary of the escrow agreement to access the data for a task as critical as the stable transition of the registry.
- Working with registrars to compare the data in these alternate data sources with the registrars' own data for each domain.
- More rapid transition from VeriSign's name server constellation to the Registry Advantage name servers, possibly including a complete cutover to Registry

Advantage name servers upon the termination of the registry contact. This scenario might result in some recently registered names failing to resolve for a brief period of time.

Note that it is extremely unlikely that either of these alternate approaches would be required, but they represent final fallbacks in the event that VeriSign fails to meet its obligations under the existing .org contract.

Conclusion

RegisterOrg greatly appreciates the recognition by the Gartner Report that it provides a grade A technology plan. We have provided the comments above to underscore our belief that we have put forth the strongest application to operate the .org registry upon its redelegation from VeriSign.

Sincerely,

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