

CC1 ENUM LLC Response to Provider ENUM Bidders' Questions

Questions to which revised answers have been provided by the LLC are marked **[Revised]**

Also, Note the following clarification:

Confidential or Proprietary Information. The proposals received by the LLC in response to the RFP shall not contain any confidential or proprietary information, nor shall any such proposals contain "**confidential**" or "**proprietary**" markings thereon. The LLC will be unable to review or evaluate any proposals marked "confidential" or "proprietary." The LLC will not disclose the details of a bidder's proposal to other bidders, provided however, the LLC shall be permitted to query all of the bidders in connection with implementation variations or alternatives contained in any bidder's proposal. Notwithstanding the foregoing, except for disclosure to a consultant or other third party hired by the LLC for the purpose of evaluating any proposal(s), the LLC will not disclose 1) specific equipment configurations, 2) equipment quantities, configurations or locations, or 3) pricing information contained in any proposal(s) to any other party.

1. Does the LLC intend to have all telephone numbers contained in a single ENUM registry or is it considering more than one registry?

The LLC expects to have a single Tier0/1 Registry. If the bidder, however, believes that allocating the registrations across multiple name servers would produce some benefit, they should address this in their proposal.

2. How does the CC1 LLC anticipate interoperability with other ENUM registry operators?

At this point the LLC only contemplates interoperability with Registries outside of Country Code 1. The LLC does not wish to preclude future provisions for other types of interoperability.

3. In order for bidders to develop a price model that can be directly compared by the LLC, it is necessary to have a mutual understanding of the volume expectations. Can the LLC provide estimated baseline (minimum) numbers/transactions? What is the anticipated number of queries over time? What is the minimum/maximum anticipated numbers the registry should anticipate at "Daybreak"?

[R1] What is the expected demand at initial launch and year-over-year projections? 16.

[R2] What specific transaction rate need is expected?

A Registry database:

[R1] Shall be sized to accommodate the expected demand at initial launch, and to support growth without interruption as Provider ENUM matures

[R2] Shall be able to perform transactions at a rate that meets the needs of the ENUM users

With respect to the quantity of numbers registered in Provider ENUM, the LLC cannot provide definitive projections as the number of other parties who might become Registry users is not known, nor is the penetration of VoIP for all such parties. However the LLC notes some public data points and projection that may be useful:

- *Per the last NRUF there were on the order of 600M numbers assigned in the US. LLC members serve on the order of 120M wireline access lines (there may be multiple numbers per line) and 180M wireless subscribers*
- *Industry estimates of VoIP penetration in the 2009 time frame range from 10% to 30% depending on the type of service. It is suggested that in estimating costs, bidders consider penetration values ranging from 5% to 25%. Further growth may be estimated from industry projections*

With respect to the volume of queries, it may be noted that:

- *While all calls originating from VoIP end points are likely to be queried, service providers may query internal databases first, eliminating some external queries. Further, some and potentially all service providers may elect to make use of zone transfers or other mechanisms to maintain local copies of registry data*
- *Bidders should consider a range of scenarios between the two logical extremes:*
- *All providers make use of local copies*
- *The Registry is queried on all calls originating from VoIP end point as reflected in the number of Provider ENUM registration above (standard calls/endpoint numbers may be applied)*

4. R111: This requirement references RFC 2874. Our understanding was that the tenets of RFC 2874 were rejected in 2001. Please clarify.

[R111] Bidders must respond with plan to accommodate IPv6 per RFC 2874

[Revised] [R111] Bidders must respond with a plan to accommodate IPv6 e.g., per RFCs 3152,3226, 3364, 3596, 3901 and any subsequent revisions.. This must include IPv6 data in the Registry and ultimately, resolution and provisioning via IPv6. Initial deployment should not be inconsistent with eventual support of IPv6.

5. R112: This requirement references RFC 2535. This RFC is obsolete. Does the requirement refer to the latest RFCs from IETF related to DNSSEC (RFCs 4034, 4035, 4036)?

[R112] Bidders must respond with plan to accommodate DNSSEC per RFC 2535

[Revised] [R112] Bidders should discuss their views as to the utility and applicability of DNNSEC e.g., per RFCs 4033, 4034, and 4035 or subsequent revisions) and must offer a plan for how and when it might be deployed as part of Provider ENUM.

6. R172: With regards to Section 10, Registry Reporting, R172 seems to be missing. Is there a requirement for R172?

There is no R172.

7. Please clarify the anticipated requirements and processes regarding the responsibilities of an SPR with transborder use of US telephone numbers?

The LLC does not see the relevance of this question to the RFP. Bidders should indicate if they see an impact.

Could queries come in from outside the US?

Yes

8. Section 2.7.5 seems to imply that upon termination or expiration of the contract the vendor must provide a complete copy of the "registry" hardware, software, and any technical know-how to the LLC or a successor registry.

a. Would the provision of transition services to be performed by the registry upon expiration or termination of the agreement be an acceptable substitute to requiring the delivery of the complete registry system to the LLC and/or the successor provider?

b. Vendors with the requisite level of experience needed to successfully operate the ENUM Tier 0/1 registry would likely leverage existing infrastructure to deliver the services required. However, Section 2.7.5 effectively eliminates the ability for vendors to leverage this infrastructure without incurring significant risk. Please clarify the ramifications of Section 2.7.5 as it relates to the use of existing platform and/or networks to deliver the services detailed in the RFP.

Section 2.7.5 does not seek transfer of existing platform and/or networks in the case of termination. Rather it addresses the requirements for transition and the ownership of new intellectual property developed incident to the work performed for the LLC.

c. Did the LLC intend that all hardware and software, even 3rd party software and hardware, should be transferable to the LLC or a successor vendor? 3rd party software and hardware is generally non-assignable or transferable and to obtain such transferable licenses from those vendors would likely be cost prohibitive.

The LLC does not expect Registry hardware to be turned over. The LLC does expect the vendor to provide the technical know-how and software necessary to move the data to an alternate registry.

9. The RFP appears to require that the chosen vendor utilize the LERG to validate the numbers registered by an SPR (see e.g. Section 4.1 footnote 3). Because the LERG is a privately-owned, commercial database licensed by Telcordia, one of the potential bidders under this RFP, there is no assurance that bidders other than Telcordia will have access to the LERG at a fair, or indeed any, price. Additionally, Telcordia's activities concerning the LERG are not known to be subject to any neutrality or other similar obligations (e.g., equal treatment of LERG licensees, etc.), and, in fact, is known arbitrarily to charge different fees to different licensees. Absent some mechanism for leveling the competitive playing field, a requirement to license the LERG, therefore, would enable a potential vendor to engage in anti-competitive behavior in its bidding under the RFP, thus jeopardizing the RFP process. As a result, what method does the LLC propose for leveling the playing field with respect to this particular issue?

Telcordia has assured the LLC they will make the LERG available.

10. An alternative to using the LERG is the use of publicly-available data on the NANPA and Pooling Administrator (PA) Web sites. These Web sites disclose, at no-charge, authoritative data that the CC1 ENUM Registry would require for the purposes set forth in the RFP. Would the LLC allow registry providers to use the publicly-available, no-charge, and authoritative data on the NANPA and PA Web sites in lieu of the privately-administered LERG?

If bidders feel there are alternatives that are equally authoritative and reliable they may propose the use of such but must also provide justification that such alternatives will meet all of the LLC's needs.

11. Please clarify the limitation of contracts statement contained in Section 3.8.14? How does this affect commercial product relationships and services such as the LERG, software/hardware and clearinghouse functions?

This language is meant to preclude preferential dealing with LLC members or affiliates but does not preclude commercial relationships with members or affiliates that do not involve such a member or affiliate in provision of the core Registry function as outlined in Section 3.8.14 .

12. What is the expected timeframe for contract award? *The LLC's currently anticipates the vendor to be selected 2Q2008, a contract signed in 3Q2008, beta test in 4Q2008, and commercial service in1Q2009.*

This not guaranteed.

13. What is the expected timeframe for acceptance testing?
See response to 12 above.

14. What is the expected timeframe for production service?
See response to 12 above.

15. [R18] This requirement implies exclusive use of Zone Transfers. Are other data distribution mechanisms for name servers also of interest to the LLC?

[R18] Zone data distribution procedure should conform to appropriate IETF standards (see Section 2)

The LLC is willing to consider alternate proposals.

16. [R22] Requirement [R22] implies exclusive use Zone Transfers. Are other data distribution mechanisms for name servers also of interest to the LLC?

[R22] Zone transfers, including incremental zone transfers, shall be available to certified SPRs so as to allow them to maintain a local copy of the Tier 0/1

The LLC is willing to consider alternate proposals based on industry standards.

Are they any preferences for standards bodies?

No. However, standards proposed for use should reflect the broader interests of the industry.

17. [R24] Are alternative technologies of interest to the LLC in addition to IRIS?

[R24] The appropriate technology for maintaining public access to such ContactInfo should be the IRIS protocol developed by the CRISP Working Group.

The LLC is willing to consider alternate proposals based on industry standards.

18. [R42] What specific requirements are intended?

[R42] Requirements for maintaining security updates for all software

The requirement is that the registry operator shall apply all security updates to software expeditiously.

19. [R44] What specific encryption requirements are intended?

Any data maintained outside of the secure environment of the registry facility must be encrypted. The bidder should indicate any other situations in which they feel encryption is appropriate and specify the encryption techniques to be employed.

20. [R45] What specific requirements are intended?

[R45] Authentication & Authorization requirements

See R53, R56 and R158-R161.

[R53] Access to the server room shall be controlled by a two-factor authentication system. An authorized individual shall require both an authorized access token and a valid PIN or passcode to gain physical access to the servers. Any use of an access token shall be logged and such logs shall be archived for at least 1 year.

5.5.3 Network Security

[R56] The Tier 0/1 shall use techniques such as User identification, passwords, and/or IP range checking for all restricted services (which includes services other than DNS resolution.).

The bidder should propose a set of security applications for the SRS, such as what is being proposed in the following:

[R158] Security of the SRS applications shall be provided in part via the mandatory use of the TLS [RFC 2246] protocol for transport layer security.

[R159] Each EPP session shall be authenticated and encrypted using TLS. The ENUM Registry shall authenticate every EPP client connection using both an X.509 server certificate, issued by a commercial Certification Authority identified by the Tier 0/1 Registry, and its SPR password.

[R160] Security of the SRS application shall be provided via an authenticated and encrypted connection. At a minimum, IPSEC will be used to secure the connection.

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[R161] Each EPP session shall be authenticated and encrypted using IPSEC. The Tier 0/1 Registry shall authenticate every EPP client connection using a valid PKI.

21. [R46] What specific requirements are intended?

5.5.1 Operational System Security

Security requirements are detailed below:

[R46] Requirements on ISPs providing connectivity for Tier 0/1

Bidders are expected to make use ISPs that address the issues discussed in RFC 3013.

22 [R114] Please clarify whether a failover, with subsequent removal of a server from the constellation, contributes to the service unavailability calculation.

[R114] Service Availability–DNS Name Service = 100% per calendar month. Service Availability as it applies to the DNS Name Server refers to the ability of the DNS Name Server to resolve a DNS query from an Internet user. DNS Name Service unavailability will be logged with the Registry Operator as Unplanned Outage Minutes. Registry Operator will log DNS Name Service unavailability when such unavailability is detected by monitoring tools, or once an SPR reports an occurrence to Registry Operator's customer service help desk in the manner required by the Registry Operator (i.e., e-mail, fax, and telephone) and Registry Operator confirms that the occurrence is not unique to the reporting SPR. DNS Name Service unavailability shall mean when greater than 25% of sites on the Registry Operator's constellation are returning answers to queries with more than 1% packet loss averaged over a Monthly Timeframe or 5% packet loss for any five minute period. The committed Service Availability for DNS Name Server is 100% per calendar year.

[Revised]

A. Yes

Q. *If there are three sites and one goes down, is it a violation?*

A. Yes

Q. *From what point(s) are measurements made?*

A. *The Registry Operator is expected to monitor availability supplemented by User reports as indicated in R114 and to propose an appropriate measurement plan.*

Q. *What measurements are really needed to ensure the availability requirement is met?*

A. *The Registry Operator is expected to monitor availability supplemented by User reports as indicated in R114 and to propose an appropriate measurement plan.*

23. [R115] Is it the intent of this requirement that maintenance can occur, with removal of redundant equipment from service, as long as Service Availability remains unaffected?

[R115] Planned Outage – For DNS resolution service no Planned Outages are allowed

Yes

24. [R127] Does this processing time apply specifically to an average across actions on single records, while processing times for large batches are not specified?

6.2.2 SRS

1. [R127] Processing Time Add, Modify, Delete = 1000 milliseconds for 95%. Processing Time - Add, Modify, and Delete is applicable to the SRS as accessed through the EPP protocol defined in RFC 4114. It measures the processing time for add, modify, and delete transactions associated with domain names, name servers, contacts, and SPR profile information. The Performance Specification is 1000 milliseconds for 95% of the transactions processed. That is, 95% of the transactions will take 1000 millisecond or less from the time the Registry Operator receives the request to the time it provides a response.

In the case of batches, the requirement applies to the average per element of the batch.

25. [R128] Please define “Query Domain” that precedes this requirement since this term is not defined elsewhere in the document.

2. Processing Time–Query Domain

ContactInfo Processing Time - Query Domain is applicable to the SRS as accessed through the designated protocol. It measures the processing time for an availability query of a specific domain name.

[R128] The performance specification is 500 milliseconds for 95% of the transactions. That is, 95% of the transactions will take 500 milliseconds or less from the time the Registry Operator receives the query to the time it provides a response as to the domain name's availability.

Query Domain refers to a query with respect to a fully qualified domain name associated with a specific E.164 number.

26. [R129] Does this processing time apply specifically to an average across retrievals of single records, while processing times for large batches are not specified?

6.2.3 ContactInfo

Processing Time - ContactInfo Query is only applicable to the ContactInfo. It measures the processing time for a ContactInfo Query.

[R129] The Performance Specification is 1000 milliseconds for 95% of the transactions. That is, 95% of the transactions will take 1000 milliseconds or less from the time the ContactInfo receives a query to the time it responds.

The LLC does not envision allowing batch queries for contact information.

27. In Section 10.1, [R170], Registrations, Deletions, Port-outs, what are “syncs”?

Delete references to “synchs” in Section 10.1.

28. Costs vs. Price?

The LLC is not requesting bidders to provide information on their costs, only on their pricing and cost recovery proposals.

29. Regarding [R20], name server placement in geographically diverse locations. Where?

[Revised] *Registry name servers should be primarily deployed within North America and with sufficient geographic diversity that no single event is likely to cause the Registry to fail to meet R114.*

30. Site visits - will these be associated with a “second round”?

Whether site visits are required may depend on the LLC's familiarity with a bidder. Such visits will not necessarily be associated with a “short list” or “second round”.

31. Section 2.7.3, Testing – Comment on scope of functionality and scale relating to joint testing and prototype mechanisms?

The LLC does not generally expect joint testing to commence prior to the point at which the vendor is ready to begin beta testing. The LLC would look to prototyping only where a novel implementation suggests the need for proof of concept testing.

32. More clarity around [R39], practices to protect credit card information?

Delete the second sentence of R39.

33. Format of responses, summary format?

Should the summary call out if bid goes above and beyond requirements?

Yes, it also identify proposed alternatives to specific implementations in requirements.

Really double spaced?

Double spacing is not required

34. Basis for specification of EPP?

[Revised] *The LLC specified use of EPP based on its desire for a standard approach to ENUM provisioning, which EPP appears to represent. If vendors prefer other approaches that would meet this objectives they may propose those but should justify the use of the alternative and indicate the impact on their proposal if EPP were required.*

35. [R63] packet sniffers - vendor obligations?

The LLC expects vendors to deploy packet sniffers to detect intrusions and other forms of attacks (e.g. DDOS) rather than for general traffic analysis.

36. Flexibility of implementation requirements?

[Revised] *The LLC discourages alternatives to required implementations except as noted in previous questions. The LLC will consider alternatives as long as the intent of requirements is met and interfaces to SPRs and users are not materially adversely affected in the judgment of the LLC.*