

Oregon Health Network

Request for Proposals Number 1*

*This request for proposals is issued by the Oregon Association of Hospitals Research and Education Foundation in its role as fiscal sponsor for the Oregon Health Network.

- A. For a Network Operations Center**
- B. For Network Access and Transport Links**
- C. For Internet2 and/or National Lambda Rail Service**
- D. For Regional Internet Exchanges**

Due Date: 14 days after the allowable contract date posted on the Universal Service Administrative Company (USAC) web site. See <http://www.usac.org/rhc-pilot-program/tools/search-postings.aspx>

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Introduction/Overview

Oregon Health Network (OHN) requests proposals for components of an Internet Protocol (IP) network to provide broadband connections among hospitals, clinics and health education institutions throughout Oregon. The network is intended to provide a reliable data transport platform for a wide variety of health-related applications, including rapid transfer of very large digital imaging files, exchange of electronic medical records, and real-time high-quality videoconferencing for medical education and telemedicine consults.

Funding for Oregon Health Network is available over three fiscal years. The first set of requests is intended to put a basic “network of networks” of existing health care networks in place and set the stage for expansion to all hospitals, clinics and health education institutions in Oregon in the later phases of this program. This initial request for proposals includes network common elements and a few initial sites. Service to additional sites will be requested in subsequent requests for proposals.

The public Internet, as it currently exists, is not suitable for all health applications in Oregon for two reasons. First, many rural locations do not have adequate network capacity for rapid transfer of large files or for high-quality real-time applications. Second, real-time medical network applications require stronger guarantees of availability and service quality than the current “best efforts” standard of the public Internet.

OHN is not seeking to purchase or lease telecommunications infrastructure that is exclusively dedicated to health applications. Rather, OHN seeks to be one tenant in infrastructure

that also could be used for a wide variety of other governmental, educational or business applications. OHN does not require a responder to propose to provide the entire network. The large number of different telecommunications carriers and Internet Service Providers (ISPs) serving different geographic regions of the state make it unlikely that one provider would have the most cost-effective solution for every different location. OHN seeks the most cost-effective proposals on a site-by-site basis.

Because different service providers are likely to provide components of the resulting network, OHN seeks to obtain the services of a Network Operations Center (NOC) that is independent of the businesses providing the transport infrastructure. The NOC need not be exclusively dedicated to OHN and may be more cost-effective if it also serves other customers and applications, however, OHN will pay only for services provided to OHN.

The NOC is requested to monitor the end-to-end quality of network services, and, when quality is unsatisfactory, work cooperatively with the providers of different network components to resolve any network problems that are observed.

Much of the health-related communication in Oregon is relatively local, for example, between a local clinic and its nearest hospital or radiology imaging service. Consequently, OHN network quality and cost-effectiveness goals are more likely to be met if local data traffic is connected locally. Unlike the public Internet in Oregon, for which many of the connections between different networks occur out of state, OHN requires in-state connectivity at Oregon Internet exchanges. All providers of OHN data transport services are required to connect to the NorthWest Access Exchange (NWAX) in Portland for the exchange of Internet data traffic. OHN service providers are also encouraged to exchange regional traffic within the different geographic regions of the state. Currently, the only other Internet exchange in Oregon is the Oregon Internet Exchange (OIX) in Eugene. OHN service providers are encouraged to exchange traffic at OIX when that will result in a more cost-effective route between OHN sites.

OHN seeks proposals for two additional Oregon Internet exchanges, one in southern Oregon and one east of the Cascades to serve central and eastern Oregon. OHN data traffic that can be exchanged within a local region should be exchanged locally to provide improved quality and cost-effectiveness. OHN seeks to improve “off-net” OHN connectivity for OHN sites connecting with physicians in their homes, employees working or on-call at home and patients in their homes, for home health applications. Therefore, OHN service providers are encouraged to exchange their other Oregon Internet traffic, in addition to OHN traffic, at existing and planned Oregon Internet exchanges.

Some Oregon health-related communications will need to be transported out of state. OHN seeks proposals for connections to National Lambda Rail (NLR) and/or Internet2 (I2) at NWAX. Once such connections are in place, OHN transport service providers will be able to exchange Internet traffic with NLR or I2 through their connections at NWAX. For other IP

traffic that cannot be exchanged at Oregon exchanges, OHN transport providers will be required to make their own connections to the public Internet for other IP traffic.

OHN subsidy funds from the Universal Service Administrative Company (USAC) are available in three different fiscal years. This request for proposals is the first of several RFPs. In the first phase OHN intends to issue RFPs to interconnect existing major hospital and health system networks in Oregon by getting them connected to NWAX. Connecting those primarily urban systems into OHN is important to making the telehealth services provided by urban health systems available to rural sites seeking such services. Also in the first phase, OHN intends to establish a Network Operations Center, provide I2 and/or NLR connectivity and establish additional regional exchanges. OHN also intends to connect some rural sites into OHN in phase one. Other sites throughout Oregon will be connected in later phases when additional subsidy funding becomes available. When completed, OHN estimates that approximately 300 Oregon sites will be connected to the network.

More background information is available in the OHN application to the Federal Communications Commission (FCC) for the funding that makes OHN possible. That application can be viewed at:

http://gullfoss2.fcc.gov/prod/ecfs/retrieve.cgi?native_or_pdf=pdf&id_document=6519409632.

This RFP rather than the application will apply in the event of any discrepancies between the two documents. The application lists the sites OHN intends to connect to the network. Some changes will be made to that original list and other sites may be added. The current site list is attached.

The FCC order governing this process may be viewed at:

http://hraunfoss.fcc.gov/edocs_public/attachmatch/FCC-07-198A1.pdf. Details of the USAC process for administering this program are available at: <http://www.usac.org/rhc-pilot-program/>.

The following sections provide the specifications for the OHN Network Operations Center, for data access and transport links from each end user site to NWAX, for NLR and/or I2 connectivity, and for additional Oregon Internet exchanges. Responders are invited to propose how they would meet the intent of these specifications for the project components they wish to provide. Responses that propose a better way of meeting the intent of OHN will be considered whether or not they meet every detail of the specifications.

GENERAL INFORMATION

Issuing Office: The Oregon Health Network Proposal Review Team is the sole point of contact for clarifications regarding technical specifications and procedures in this Request for Proposal (RFP). All correspondence pertaining to these matters should be addressed to the contact person below:

Questions concerning clarification of technical requirements should be submitted by e-mail to:

Dr. Edwin Parker, with a copy to Donald Westlight, not later than 28 days after the RFP is posted to the Universal Service Administrative Company (USAC) website, <http://www.usac.org/rhc-pilot-program/tools/search-postings.aspx>. All questions and answers will be shared with all responders to this Request for Proposals.

E-Mail to: edparker@teleport.com and westligh@ohsu.edu

Mailing Address:

Oregon Health Network Proposal Review Team
c/o Peggy Allen
Oregon Association of Hospitals and Health Systems
4000 Kruse Way Place
Building 2, Suite 100
Lake Oswego OR 97035
Telephone No: 503.636.2204

GENERAL PROVISIONS

The Oregon Health Network reserves the right to reject any and all Proposals received as a result of this Request for Proposals (RFP). Federal Communications Commission (FCC) and Universal Service Administrative Company (USAC) rules govern this process. See <http://www.usac.org/rhc-pilot-program/> for details.

1. Modification or Withdrawal of Proposal: Any Proposal may be modified or withdrawn at any time prior to the closing deadline, provided that a written request is received by the OHN RFP Committee, prior to the Closing date. The withdrawal of a Proposal will not prejudice the right of a Proposer to submit a new Proposal.

2. Protest of Specifications - Request for Changes: Protests of the specifications or requests for non-substantive or procedural changes to the RFP must be received in writing on or before 4:00 p.m. (Pacific Time), not later than 28 days after this RFP is posted to the USAC web site, at the address or email listed under “General Information” in this RFP. Protests may be hand

delivered, mailed or emailed. Protests may not be faxed. Protests of specifications will include the reason for the protest and any proposed changes to the requirements.

The purpose of this requirement is to permit OHN to correct technical requirements, prior to the opening of Proposals, that may be unlawful, improvident or which unjustifiably restrict competition. OHN will consider all requested changes and, if appropriate, amend the Request for Proposals.

3. Clarifying Questions. Proposers may submit questions regarding the specifications of the RFP. Questions must be emailed on or before 5:00 p.m. (Pacific Time), not later than 28 days after the RFP is posted to the USAC web site, at the email address listed under “General Information” in this RFP. To ensure open competitiveness, OHN will provide answers to clarifying questions to all Proposers that submit a Notice of Interest as described in Paragraph 20. Every effort will be made to respond to questions within one business day.

4. Bidders’ Conference. OHN does not currently plan to hold a bidders’ conference. All questions should be submitted by e-mail to edparker@teleport.com with a copy to westligh@ohsu.edu. All questions and answers will be shared publicly in a manner accessible to all responders to this Request for Proposals.

5. Addenda: If any part of this RFP is amended, addenda will be provided to all parties who submit a Notice of Interest pursuant to Paragraph 20 below.

6. Post-Selection Review and Protest of Award: OHN will name the apparent successful Proposer in a “Notice of Intent to Award Contract Letter”. Identification of the “apparent successful Proposer” is procedural only and creates no right in the named Proposer to award of the contract. Competing Proposers will be notified in writing of the selection of the apparent successful Proposer(s) and shall be given five (5) calendar days from the date on the “Notification of Intent to Award Contract” letter to review the file and evaluation report at OHN offices and to file a written protest of award. Any award protest must be in writing and must be delivered by hand delivery, mail or email to the address for the OHN as listed under “General Information” in this RFP.

OHN will consider any protests received and:

- (A) reject all protests and proceed with final evaluation of, and any contract language negotiation with, the apparent successful Proposer and, pending the satisfactory outcome of this final evaluation and negotiation, enter into a contract with the named Proposer; OR
- (B) sustain a meritorious protest(s) and reject the apparent successful Proposer as nonresponsive, if such Proposer is unable to demonstrate that its Proposal complied with all material requirements of the solicitation and Oregon public procurement law; thereafter, OHN may name a new apparent successful Proposer; OR

(C) reject all Proposals for the element or elements of the RFP under protest.

The OHN Proposal Review Team or designee will respond to the protest within a timely manner of receipt. The decision shall be final.

7. Acceptance of Contractual Requirements: Failure of the selected Proposer to execute a contract and deliver required insurance certificates within ten (10) calendar days after notification of an award may result in cancellation of the award. This time period may be extended at the option of OHN.

8. Public Records: It may be later determined that the documents necessary for this RFP process and any resulting contracts may be subject to Oregon public record laws. This Request for Proposals and one copy of each original Proposal received in response to it, together with copies of all documents pertaining to the award of a contract may be open to public inspection. If a Proposal contains any information that is considered a **TRADE SECRET** under ORS 192.501(2), **SUCH INFORMATION MUST BE LISTED ON A SEPARATE SHEET CAPABLE OF SEPARATION FROM THE REMAINING PROPOSAL AND MUST BE CLEARLY MARKED WITH THE FOLLOWING LEGEND:**

“This information constitutes a trade secret under ORS 192.501(2), and shall not be disclosed except in accordance with the Oregon Public Records Law, ORS Chapter 192.”

The Oregon Public Records Law exempts from disclosure only bona fide trade secrets, and the exemption from disclosure applies only “unless the public interest requires disclosure in the particular instance.” ORS 192.500(1). Therefore, non-disclosure of documents or any portion of a document submitted as part of a Proposal may depend upon official or judicial determinations made pursuant to the Public Records Law. The above restriction will not include cost information.

9. Investigation of References: OHN reserves the right to investigate references and/or past performance of any Proposer with respect to its successful performance of similar services, compliance with specifications and contractual obligations, its completion or delivery of a project on schedule, and its lawful payment of subcontractors and workers. OHN may postpone the award or the execution of the contract after the announcement of the apparent successful Proposer in order to complete its investigation.

10. RFP Preparation Costs: Cost of developing the Proposal, attendance at an interview (if requested by OHN) or any other such costs are entirely the responsibility of the Proposer, and will not be reimbursed in any manner by OHN.

11. Clarification and Clarity: OHN reserves the right to seek clarification of each Proposal, or to make an award without further discussion of Proposals received. Therefore, it is important that each Proposal be submitted initially in the most complete, clear and favorable manner possible.

12. Right to Reject Proposals: OHN reserves the right to reject any or all Proposals, if such rejection would be in the public interest, as determined by the OHN.

13. Cancellation: OHN reserves the right to cancel or postpone this RFP at any time or to award no contract.

14. Proposal Terms: All Proposals, including any price quotations, will be valid and firm through the period of contract execution.

15. Oral Presentations: At OHN's sole option, Proposers may be required to give an oral presentation of their Proposals to OHN, a process which would provide an opportunity for the Proposer to clarify or elaborate on the Proposal but will in no way change Proposer's original Proposal. If the evaluating committee requests presentations, the Issuing Office will schedule the time and location for said presentation. **Note:** Oral presentations are at the discretion of the evaluating committee and may not be conducted; therefore, **written Proposals should be complete.**

16. Usage: It is the intention of OHN to utilize the services of the successful Proposer(s) to provide services as outlined in this RFP.

17. Rejections and Withdrawals. The OHN reserves the right to reject any or all Proposals or to withdraw any item from the award.

18. RFP Incorporated into Contract. This RFP will become part of the Contract between the Board and the selected contractor(s). The contractor(s) will be bound to perform according to the terms of this RFP and their Proposals.

19. Communication Blackout Period. Except as called for in this RFP, Proposers may not communicate with members of the Proposal Review Team about the RFP until the apparent successful Proposers are selected.

20. Notice of Interest. The Notice of Interest will be due at the office of the OHN by **5:00 p.m. Pacific Time not later than 28 days after the RFP is posted to the USAC web site**, via email, or hardcopy. In the notice, the Proposer must provide the name of the primary contact person, plus that person's telephone number and email address for communication of information about the RFP, answers to questions submitted by Proposers, and other matters about the selection process. Proposers that complete and return the Notice will receive the same supplementary information.

21. Prohibition on Commissions. The OHN will contract directly with organizations capable of performing the requirements of this RFP. Contractors must be represented directly. Participation by brokers or commissioned agents will not be allowed during the proposal process.

22. Ownership of Proposals. All proposals in response to this RFP are the sole property of the OHN, and may be subject to the provisions of Oregon Revised Statutes ORS 192.410-192.505 (Public Records Act).

23. Clerical Errors in Awards. The OHN reserves the right to correct inaccurate awards resulting from its clerical errors.

24. Rejection of Qualified Proposals. Proposals may be rejected in whole or in part if they limit or modify any of the terms and conditions and/or specifications of the RFP.

25. Collusion. By responding, the Proposer states that the proposal is not made in connection with any competing Proposer submitting a separate response to the RFP, and is in all aspects fair and without collusion or fraud.

26. RHCPP Requirements. All bidders must comply with all regulations and requirements of the Federal Communications Commission (FCC) and the Universal Service Administrative Company (USAC) related to the FCC's Rural Health Care Pilot Program (RHCPP).

TERM OF CONTRACTS

Each Contract is expected to begin in autumn 2008, and extend for a fixed period of time (typically three years), with the option to extend. OHN intends to reserve the right upon 30 days notice to the Contractor to terminate the Contract.

DELIVERY OF PROPOSALS

Due Date:

Proposals must be received not later than 4 p.m. on the 14th day after the allowable contract date posted on the Universal Service Administrative Company (USAC) website, <http://www.usac.org/rhc-pilot-program/tools/search-postings.aspx>.

Copies

An original (marked "original") and four paper copies of each response plus an electronic copy on CD must be delivered to:

Oregon Health Network Proposal Review Team
c/o Peggy Allen
Oregon Association of Hospitals and Health Systems
4000 Kruse Way Place
Building 2, Suite 100

Lake Oswego OR 97035
Telephone No: 503.636.2204

The envelope/package containing the response must be clearly marked “**Response to RFP for Oregon Health Network.**” At least one original Proposal shall be **signed in blue ink** by an authorized representative of the Proposer. Alterations or erasures shall be initialed in ink by the person signing the Proposal. Proposals may not be submitted by telephone or fax. An electronic copy must be submitted on CD in addition to the paper copies. It is the responsibility of the Proposer to ensure that Proposals arrive by the closing date and time. **NO LATE PROPOSALS WILL BE ACCEPTED.**

Proposals will be opened on the Closing Date by a representative of the OHN Proposal Review Team at:

Oregon Association of Hospitals and Health Systems
4000 Kruse Way Place
Building 2, Suite 100
Lake Oswego OR 97035

SCHEDULE OF EVENTS

The timing and sequence of events resulting from this RFP will be ultimately determined by the OHN. This Schedule is illustrative of optimal timing goals, but may be changed.

RFP Issue Date: effective on posting at the USAC website

Notice of Interest Deadline: 28 days after posting

Deadline for Protest of Specifications: 28 days after posting

All Clarifying Questions Due: 28 days after posting

Closing Date (Proposals Due): 14 days after the allowable contract date posted on the USAC website

Deadline for Protest of Award: 5 calendar days after date on Notice of Award letter

Anticipated Contract Begin Date: autumn 2008

Request for Proposal # 1A

Functional Specification for Network Operations Center (NOC)

Overview

The Oregon Health Network (OHN) may consist of as many as 100 end user locations in the first year, and potentially five times that by the end of the third year of the FCC subsidy period. These locations will be linked across as many as 25 participating service providers. The NOC will support the OHN service providers and the OHN customers directly to facilitate the quality necessary for synchronous applications and healthcare grade service.

The NOC will be an impartial agent of OHN and will serve several functions:

- Direct customer support
 - Support participating service providers
 - Monitor & troubleshoot network infrastructure for customer service
 - Monitor network health for service level agreement reporting
 - Report service level agreement data to the OHN board
-

Requirements: The successful bidder must meet the following requirements:

1. The NOC will maintain web portal for the OHN containing:
 - (i) Participant directory (contacts, services, general information)
 - (ii) Service Provider directory (contacts, services, general information)
 - (iii) OHN Board and Business Office directory
 - (iv) Consolidated access to network management & troubleshooting tools, statistics, and reports, inclusive of real-time state information as well as historical reports of capacity, capability, and state. Candidates include looking glass or equivalent service¹, in addition to more specific tools listed later.
 - (v) Standard forms and other documents needed by members to participate in the OHN
 - (vi) OHN marketing information
 - (vii) Note that the web portal will require access control and division of content by roles
2. The NOC will answer calls from OHN Participants and OHN service providers

¹ See <http://www.nanog.org/lookingglass.html> and <http://neptune.dti.ad.jp/>

24/7/365.² Success will be an average time to answer a call under 30 seconds, and improving customer satisfaction scores. Initially, OHN is less concerned about time per call, as we would rather see the NOC take time with each customer to ensure that proper resources are engaged, and the issues are actually resolved.

3. Entry-level support will include using pre-established checklists and access to on-line network telemetry data to validate connection status and get appropriate technical staff involved. Escalation could include OHN NOC engineering staff, as well as technical professionals across the Service Providers and Participants (based on the path and application needs). A principal function of the NOC is to determine which professionals these might be, and broker constructive resolution in real time.
4. The NOC will describe access to advanced engineering support staff after hours. Advanced engineering support can be characterized as network troubleshooting beyond looking at pre-existing reports, managing the network management systems themselves, and assisting service providers to understand the nature of the technical issues – e.g., network demands for specific applications, Quality of Service parameters, interpreting troubleshooting data, and other network management functions.
5. In all work, the NOC will ensure confidentiality of customer data. Wherever possible, tools will be configured to work with header data, not packet body. Access control will limit troubleshooting detail to those individuals compliant with OHN privacy and integrity contracts (to meet the requirements of the Federal Health Information Portability and Accountability Act (HIPAA)).
6. The NOC will limit access to proprietary information in network management reports, documentation, and online access. Generally accessible information will be anonymous, and more specific information will require non-disclosure agreements and access control. Some technical detail may only be available on a “need to know” basis.
7. The NOC will maintain a distributed network management system with dedicated devices placed across participating service providers and customers. Components include:
 - (i) One or more dedicated network management devices called “leaf nodes” will be placed at each customer site. These devices will be small (presumably both open-source and embedded) systems with network management and Service Level Agreement (SLA) management software installed and maintained by the NOC. The OHN will determine baseline requirements, and the NOC may suggest changes over time subject to OHN approval. These systems will be in regular contact with the NOC and the data will be used to support OHN applications and report Service Level

² This function can simply be added to an existing NOC; there is no requirement that the OHN NOC be limited to only OHN work. OHN will only pay for OHN work, however. The NOC is envisioned as a safety net for the local service providers that may not otherwise have access to end-to-end troubleshooting information.

Agreement (SLA) compliance for payment to network service providers. “Leaf nodes” will have multiple functions; the predominant function will be ongoing SLA reporting, but the device could also be used for arbitrary end-to-end troubleshooting by the NOC or any approved technical representative of a local service provider. The NOC may choose to deploy more than one “leaf node” per organization, or to create industrial versions for varying types of organizations, based on need.

- (ii) The NOC will be responsible for the design and deployment of these systems, but could out-source, subject to OHN approval, if they so choose. OHN has a working prototype to deliver to the selected NOC provider. Responders may propose specific hardware and software (and associated costs) for the 'leaf node' monitoring function, or, alternately, may propose detailed specifications, subject to Oregon Health Network approval, for a later OHN request for proposals to procure such devices.
- (iii) The OHN will require back end network management servers (most likely open-source) that pull in Simple Network Management Protocol (SNMP) information and other historical data from “leaf nodes” and use these to create an “OHN weather report” that is readable by a layperson, as well as a more technical version for approved service provider personnel. The detailed report will be a primary support tool for the NOC and engineering professionals. These servers should be spread out to more than one site for physical redundancy of the system.
- (iv) Access control will need to be maintained on all network management systems, given HIPAA requirements, such that only authorized support staff will have access to the systems and the potential healthcare information and proprietary infrastructure data. This could involve requiring an intermediate system for all direct access to “leaf nodes” at a customer site (to ensure that access is limited to authorized support staff) and some sort of Virtual Private Network (VPN) tunnel.
- (v) Network management devices will need to have the Operating Systems (OS) hardened, some sort of firewall rule base, and a means of regularly updating software in the face of ongoing software vulnerability churn. Intrusion detection is also required.
- (vi) General historical network telemetry data will be provided for OHN participants and OHN management in the form of an “OHN weather report” to characterize quality, utilization, and availability of the OHN infrastructure.
- (vii) Availability is calculated between OHN devices, “leaf nodes”, and does not include customer devices. Availability is defined as (actual operational time) / (scheduled operational time not included planned outages) total to exceed .9999.
- (viii) In the course of troubleshooting, detailed network telemetry data (historical and real-time, including tools graded by invasiveness) will be available to

specific engineering representatives of participating service providers and customers. The NOC will be responsible to qualify non-NOC personnel to access and use this system, as well as to determine operational processes around this information to best facilitate excellent service.

(ix) The NOC management infrastructure will be available .9999.

8. The NOC will provide a monthly report to the OHN board covering uptime and SLA compliance data for OHN members and participating service providers. This report will be consulted when OHN authorizes payment to network providers. The NOC will also provide the relevant information back to each of the service providers.
9. The NOC will provide OHN management, subject to OHN approval, proposed amendments to the OHN service level agreements for participating service providers. This could include specifications for Jitter, Packet Loss, Quality of Service or other interfaces between organizations, network management requirements, or other technological or logistical requirements. The OHN board will provide initial service level agreement criteria such that synchronous voice/H323 applications work end-to-end, and mechanisms exist for large file transfer (1 gigabit and above).
10. The NOC will propose a feasible business model for NOC operations that will include starting up, running under the FCC subsidy, and operating after the FCC funding sunsets. As an option, the NOC could define fees charged to service providers per NOC supported customer.
11. OHN will reimburse the successful bidder for start-up equipment costs to the extent they can be allocated to OHN service. In the event that the NOC finds the operation financially nonviable or in the event of termination for cause they may be required to provide all NOC equipment purchased by the OHN to a third party to continue operations.
12. The NOC must be operated by an entity that is not affiliated with any of the telecommunications transport service providers whose performance is being monitored.
13. The NOC must have connectivity to the NorthWest Access Exchange (NWAX) in Portland.

Proposal Requirements. The successful proposal must include:

1. Demonstration of capability and commitment to meet the requirements specified above.
2. Description, including cost and model number, of all equipment including switches, routers, terminals, servers, embedded systems or other computers.
3. Description of all software to be used, especially network management tools
4. Provide a detailed plan to implement network management software and applications complete with a dynamic plan for ongoing improvement in tools and methodology.
5. Commitment by the host facility (if any) to provide space, power and air conditioning to the NOC in the event of contract award.

6. Demonstration that the bidder has the requisite skills and personnel available to successfully operate the NOC.
 7. Description of all services including proposed prices.
 8. Proposed NOC privacy and confidentiality policy.
 9. Proposed NOC customer/member agreement/contract including agreement to hold OHN, customers and members harmless for any traffic including mal-ware or mis-formed packets.
 10. Certification of independence from telecommunications carriers being monitored.
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Supporting Notes Regarding Network Quality Measurement:

To understand this RFP, please read the following:

Global Summary <http://e2epi.internet2.edu/npw/binder-docs/tools-cookbook.pdf>

Smokeping <http://www.fastmirrors.org/smokeping/index.en.html>

H323 Beacon <http://www.ece.osu.edu/~calyama/#Publications>

Visualization references, the spirit of what we hope to achieve with the NOC:

Overview http://mappa.mundi.net/maps/maps_025/

Global <http://www.internettrafficreport.com/>

Abilene (Internet2) http://weathermap.grnoc.iu.edu/abilene_jpg.html

NORDU <http://www.nordu.net/stat-g/load-map/ndn-map,,traffic,peak>

(Example only) IP Multicast Beacon <http://dast.nlanr.net/Projects/Beacon/>

Provider Service Level Agreement (SLA)

Multiple service providers will provide OHN services. Each participating provider will need to subscribe to the service level agreement and support the terms and implementation so that OHN can deliver end-to-end applications across the state. The NOC will assist the service providers in executing the terms of the SLA, and will ultimately make recommendations to the OHN board regarding refinements.

The Oregon Health Network will support synchronous applications such as H323 video conferencing, and real time health modeling across the various provider boundaries. This means that any given session or call will need to have sufficient end-to-end quality to support the service. No one provider can use the entire quality budget. (The applications can handle only so much packet loss and jitter.)

The most stringent application standard is for synchronous voice. That standard is adopted in order to ensure that videoconferencing and other real-time applications work well. OHN is using the Voice over Internet Protocol (VOIP) Quality template from Cisco Systems for the benchmarks. Standards will need to be adopted for H323 video conferencing and a few other applications to be determined by the OHN applications committee. However, OHN expects that meeting the VOIP standard will be sufficient for all currently contemplated applications.

We need a common service level agreement, and an arbitrary starting point. Each OHN end-user location will have a network service provider responsible (as a prime contractor) for the service quality between the end-user location and an OHN-specified Internet exchange location, even though there may be different service providers (sub-contractors) on different parts of the link.

In terms of uptime, initially, OHN is requiring .9999 compliance or not more than 52.56 minutes out of compliance per year. Telephone systems typically operate at .99999 compliance or 5.26 minutes a year. The OHN will be complicated by the fact that there will be many participating providers, so planned outages will need to be well communicated and coordinated.

To define packet success criteria for the Service Level Agreement (SLA) with OHN telecommunications service providers, we must define our starting and ending points for measurement.

Customer Demarcation: The point where the Local Service Provider hands off to the customer. This will be a measurement point for the NOC. Typically this is an Ethernet switch owned by either the local service provider or the customer where the two are connected. In the case where there is a choice, the “leaf node” network management device will be connected to the service provider equipment; otherwise we will use the adjacent port on the customer switch.

Peering Demarcation. This is the point where one Local Service Provider hands off to another Local Service Provider, generally defined by the OHN as an exchange. This will be used as a measurement point by the NOC. (Note that OHN is expecting exactly one of these demarcations between any two points in Oregon, and the provider of record for each OHN customer is responsible to ensure this budget is adhered to, even if subcontracting a portion of the responsibility).

- (1) 20%: Source Customer: Network, Encryption, and Application
- (2) 30%: Source Local Service provider (customer demarc to peering demarc)
- (3) 30%: Destination Local Service Provider (peering demarc to customer demarc)
- (4) 20%: Destination Customer: Network, Encryption, and Application

In cases where two customers ride the same Local Service Provider, the peering demarcation is irrelevant and the measure should be customer demarcation to customer demarcation, with 60% of the total budget available for the end-to-end link.

Note that OHN is discounting the possibility of national or international quality assurance. (Though we think the services will still work across National Lambda Rail, Internet2 or to West Coast partners.) In any case, the first pass of splitting up the quality budget for providers in Oregon works out as follows:

Performance requirements for Local Service Providers “customer demarc to peering demarc”

Latency: 150ms (end-to-end) 45ms (customer demarc-to-exchange)

Latency is network transit delay. Local peering (e.g., hand-offs between providers) shortens latency as our traffic goes direct rather than wandering out of state first.

The OHN plan to use regional exchange points will largely solve the latency problem. We expect that end-to-end will typically run less than 50ms, anywhere in the State of Oregon.

Packet Loss: 1% (end-to-end) 0.30% (customer demarc-to-exchange)

Packet loss is generally a measure of capacity and traffic congestion. Conventional wisdom is that 1% is the ceiling for end-to-end loss on synchronous applications – voice, video conferencing, and the like. Beyond this, and users tend to find the service unusable. While asynchronous applications such as file download can technically tolerate more loss than this, they start to retransmit a great deal and the performance degrades quickly, so 1% packet loss end-to-end is a meaningful number to apply to all OHN traffic. Given that the OHN will be used for real-time medical purposes, we need to be able to transfer files reasonably quickly.

Networks that exceed 1% loss generally have a capacity problem with at least one link or router.

Note that the providers will not be responsible for packet loss at the application or “Customer Premises” device level, and so long as the test passes between leaf nodes, the network vendors will be cleared and paid. The OHN does not cover end user application devices. The NOC will be instrumental in benchmarking packet loss between OHN devices and involving OHN participants/users when the loss can be shown to originate on their local networks.

Jitter: 30ms (end-to-end) 9ms (customer demarc-to-exchange)

Jitter is variability in network travel time.

While this may not seem like an important idea (and it isn’t for web access and e-mail) it can become a big problem for synchronous applications, especially when packets start arriving out of order or clumped in strange groups that are difficult for the application to sort out and assemble in time for the human eye or ear. Jitter is complex, and represents the single most difficult engineering challenge of our collaborative and collective approach to state-wide networking. Software based decisions (e.g., routers and firewalls) introduce jitter as do the applications themselves.

First and foremost, OHN does not intend to ensure jitter for all OHN traffic, just synchronous OHN traffic: e.g., two-way real-time applications including voice- or video-conferencing.

Given the number of administrative boundaries and variety of physical networks, OHN expects to run close to the allowable jitter budget and will need to work collaboratively across all members of the OHN family to ensure that synchronous services work. This may imply some Quality of Service (QoS) implementations between networks, and potentially within service provider networks.

A major job of the NOC is to provide a common toolset for measuring and triangulating jitter such that participating service providers have the awareness and opportunity to optimize their networks with jitter in mind.

The NOC will define a standard measure for jitter and apply this uniformly to the entire OHN using (presumably open-source) tools such that participating providers can themselves make the same tests. The NOC tools are subject to approval by OHN.

Brokering Quality of Service (QoS) hand-offs between providers

In order to meet the jitter specification, service providers may need a Quality of Service hand-off to the next provider. The NOC will facilitate this and refine a standard scheme for use across the OHN. (Providers may need to implement QoS within their networks as well; the proof is in the delivery. It may prove easier for some providers to meet the specification by having adequate network and router capacity and a minimum number of router hops.)

Note that network equipment implements QoS in various fashions. The authors of this RFP tend to believe that a simple model can be implemented across Oregon, and propose a 5-tier model, though it might actually take more specificity. The idea is that top-tier traffic always goes first, and if that queue is not used, then the bandwidth can temporarily be used for something lower in priority. Since we put the jitter sensitive applications at the top, these are more likely to operate successfully across the State. Note that even these five buckets can be redistricted into additional layers, and perhaps should be. The difficulty is that the application set is a moving target, so we assume that a simple model can be implemented more easily and we simply shunt the applications into the relevant bucket and refine as we go along.

Prototype QoS Standard:

- (1) 30 % Real-time jitter-sensitive applications
- (2) 10% Call signaling (control, routing protocols, critical net management)
- (3) 30% Critical Data (major asynchronous applications e.g., medical image downloads)
- (4) 25% Best effort (standard service – web, email, etc.)
- (5) 5% Bulk & Scavenger (large transactions that are not time dependent)

This model is a simple industry standard (Cisco WAN QoS Design AT-A-Glance.) It may be (with consideration) that the NOC and OHN providers would rather use a different standard. The OHN board is supportive of evolution so long as it meets the goal of making cross-vendor service quality a reality across Oregon.

Participating service providers may need a standard format for tagging packets with QOS priority, and the engineering side of the house may need to work with the OHN applications folks to determine which applications fit into which category and get them tagged appropriately.

The Oregon Health Network (potentially via the NOC) will make recommendations about how the hand-offs could occur and provide consulting or other collaborative help, but fundamentally participating service providers will be responsible for working toward and ultimately meeting quality benchmarks as a means of getting paid. The goal is to meet the jitter benchmark, and therefore to support synchronous applications across Oregon.

Respondents will differentiate themselves with their QOS plans.

Evaluation Criteria for NOC Proposals

With 100 total points available, proposals will be evaluated and assigned points based on the judgment of reviewers as to how well the respondent meets each of the following criteria. The categories for evaluation are indicated below.

Price

Specificity and credibility of NOC development plans

Specificity and credibility of leaf node development plans

Capability, staff skills, track record of providing similar services

Innovative ideas beyond baseline requirements

Request for Proposal # 1B

Network Access and Transport Specifications

Introduction

This statement of requirements provides a description of network access and transport services requested to and from each of the end-user points on the Oregon Health Network (OHN). OHN anticipates that different network vendors will provide the services to different geographic locations. This is not a single vendor procurement process. OHN will select the most responsive vendor for each specific location to be served. Responders must specify which sites they propose to serve and the terms of their proposal, including price, for each location.

OHN anticipates that new facility construction will be required to provide service to many of the locations. Bids are requested for both the one-time construction and/or installation costs plus monthly recurring costs (under multi-year contracts). Service providers are requested to propose alternatives to the specifications described below when they believe alternative specifications will be more cost-effective, while meeting the general intent.

The purpose of the resulting network is to provide secure and reliable data communications links connecting each point on the OHN to any other point on the network and to off-network locations, such as patient homes (for home health monitoring applications) and physician homes (for off hours consultations), even though off-site connections are not subsidized under this program. The anticipated applications include high-speed transport of very large data files for both store-and-forward and real-time applications. These will include digital image files from a variety of diagnostic imaging machines (x-rays, Computerized Tomography scans, Magnetic Resonance Imaging and others), transmission of electronic medical records, real-time high definition television (HDTV) quality interactive videoconference transmission for health education applications and for medical consultations, robotic surgery, data collection from medical monitoring devices and a number of other applications. A secure and reliable network, with sufficient quality and capacity for high-quality, real-time voice, videoconferencing and imaging applications, will enable development of new applications that will take advantage of this new kind of network service that was not previously available.

OHN is not requesting dedicated, leased line type of network capacity. Rather, it is requesting Internet-type data transport on multi-purpose shared networks, but with guaranteed network capacity, reliability and security significantly greater than what is currently available through “best efforts” Internet access. To meet the requirements of reliable off-net connectivity between OHN and local users, providers are encouraged to exchange all of their local IP traffic, not just OHN traffic, at the selected Oregon exchange points. This will avoid a requirement to differentiate OHN traffic from other IP traffic in the provider’s network. OHN assumes that it will be more cost-effective for transport providers to meet the OHN specifications by having

enough general network capacity to avoid congestion problems. However, how the OHN specifications are met is up to the transport providers.

For many locations, OHN anticipates that more than one service provider will be needed to connect the end-user location with an OHN-specified data exchange location. In order to provide the requested transport capacity at the specified quality of service levels between each end-user location and specified exchange location, OHN requests that a single service provider bid the access and transport service as the primary provider that assumes overall responsibility for the entire link through appropriate sub-contracting arrangements.

OHN plans to contract with a Network Operations Center (NOC) that is not affiliated with any OHN access and transport provider and to provide each end user site appropriate network quality monitoring equipment connected through the network to the NOC so that OHN can monitor independently in real time, whether each access and transport provider is meeting agreed service level specifications.

The list of specific sites for which service is requested is provided in Appendix A.

Access and Transport Requirements

1. Transport Internet Protocol (IP) data packets to and from a specified Ethernet interconnection point at each physical address for which service is contracted. Other communications protocols may be used to transport data packets; however, IP over Ethernet is required at the user and network interfaces.
2. Following the Open Systems Interconnection (OSI) model³: Layer three interfaces will be Internet Protocol version four (IPv4) with a potential future upgrade to version six (IPv6) after the initial period of contracted service. Layer two interfaces will be Ethernet, preferably meeting Metro Ethernet⁴ standards. Layer one may be any physical medium (fiber optic cable, co-axial cable, copper wire, wireless, satellite or other) meeting the performance requirements specified below. OHN prefers fiber-optic cable as the physical medium because of the reliability and scalability advantages of fiber, but this is a preference, not a requirement.
3. All OHN end user sites must be connected for IP over Ethernet traffic to the NorthWest Access Exchange (NWAX)⁵ in the Pittock Building in Portland for exchange of Internet traffic at that location. Preference may be given to vendors that also connect with the

³ http://en.wikipedia.org/wiki/OSI_model

⁴ http://en.wikipedia.org/wiki/Metro_Ethernet#MPLS-based_Ethernet_MANs

⁵ <http://www.nwax.org/>

Oregon Internet Exchange (OIX)⁶ in Eugene. OHN data transport providers must transport all data packets from the contractually served address first to an OHN exchange site for delivery to addresses that can be reached through that exchange. (Exception: Data traffic that can be delivered directly to a local end user destination with fewer router hops and less transit delay than going through an exchange point may be handed off locally.) OHN transport providers must also accept, for delivery to the OHN end user site, all data packets addressed to that user site that can be picked up at the exchange location. Preference will be given to IP data transport providers that also exchange IP traffic other than OHN traffic that can be handed off (in either direction) at that exchange. [Note: The reason for this preference is to provide high-quality, low-latency, multi-carrier IP data transport service for connection of OHN users within Oregon and between “on-net” OHN users and other “off-net” IP addresses to which they wish to connect IP traffic, even though off-site connections are not subsidized under this program. The IP traffic from these other “off-net” OHN sites may be patients, clinicians, employees, home health monitoring devices for patients, medical radiology images being transported to or from a radiologist at his home office, communications from OHN member employees working from home, or other traffic between OHN sites and locations within the region served by the exchange.]

4. Additional OHN exchange locations may be added later in southern Oregon (Medford area), and east of the Cascades (Bend/Redmond area). Preference will be given in the selection of those exchange locations to publicly accessible Internet exchanges that interconnect any Internet traffic at the exchange site. If the nearest OHN Internet exchange location is other than the one in Portland, each OHN data access and transport provider may exchange OHN traffic at that local exchange, but must deliver data packets not handed off at the nearest exchange to the OHN exchange location in Portland. The OHN data transport provider must also accept data packets from other providers at the Portland exchange location (and other exchanges to which they connect) for delivery to the served OHN end user location. Data packets addressed to or from Internet2/National Lambda Rail locations are expected to be exchanged at NWAX in Portland.
5. The data transport provider will provide an Internet data connection for other Internet data packets addressed to or from the OHN end-user location that cannot be delivered or accepted for delivery at the Portland or other Oregon Internet exchange sites.
6. The data capacity between each OHN user location and OHN exchange locations will be a minimum of 10 Megabits per second bi-directional. OHN anticipates that many users will want to later upgrade capacity in increments of 10 Megabits or 100 Megabits, up to 1 Gigabit, with potential future expansion to 10 Gigabits. Some locations will specify higher rates than 10 Megabits per second bi-directional for the initial service period.

⁶ <http://www.oregon-ix.net/>

7. Transport services must be available with at least 99.99 percent reliability. [Note: this availability level permits approximately 52 minutes of unscheduled downtime per year.] Even though the “tail-circuit” into the end-user facility need not be redundant, OHN will give preference to vendors with geographic route-diversity from the community in which the end-user facility is located to the exchange facility.
8. Latency is network transit delay. Transit delay between the served end user site and the exchange connections shall not exceed 45 milliseconds per link from end user to NWAX, and 150 milliseconds, end to end.
9. Packet Loss is generally a measure of capacity and traffic congestion. The number of data packets requiring retransmission shall not exceed 0.3 percent per link from end user to NWAX and 1 percent for end-to-end loss.
10. Jitter is variability in network travel time. The jitter rate should not exceed 9 milliseconds per link from end-user site to NWAX or 30 milliseconds end to end.⁷
11. The data access and transport provider must be willing to agree to Service Level Agreements (SLAs) with financial penalties for service outages, lack of availability of the contracted service capacity and any failure to meet quality of service specifications for transit delay, jitter and packet loss.
12. The data access and transport proposals must offer a price schedule that specifies the one-time non-recurring construction and/or installation charges and the monthly recurring prices for a three-year service contract. Other contract periods may also be offered in the proposal.

Evaluation Criteria for Network Access and Transport Proposals

With 100 total points available, proposals will be evaluated and assigned points based on the judgment of reviewers as to how well the respondent meets each of the following criteria. The categories for evaluation are indicated below.

Price

Quality commitments, including commitment to work with the OHN NOC to resolve issues

⁷ **Supporting notes regarding specifications discussed in 8, 9, and 10:** The OHN recognizes that how performance is tested will determine how the data is reported. To this end, the OHN wants to know what independent measures will be used to validate transport performance. Tools such as OWAMP, the One-Way Active Measurement Protocol, (<http://e2epi.internet2.edu/owamp/>) test for jitter, latency and packet loss. Please include in your proposal how measurements (the tool, the test) for latency, jitter and packet loss will be obtained.

Scalability commitments

Commitment to exchange non-OHN traffic at NWAX

Commitment to exchange traffic at OIX

Route diversity commitment

Request for Proposal #1C

Functional Specification for Internet2 and/or National Lambda Rail Service

Overview:

The Oregon Health Network (OHN) will be served by perhaps as many as 25 regional Internet Service Providers in Oregon. Some of these are public and some private. All will be providing last mile connectivity and commodity Internet transit for OHN customers. In addition, all will peer their traffic at the NorthWest Access Exchange (NWAX.NET) in Portland.

One OHN requirement is that all OHN members have access to Internet2 (I2) and/or National Lambda Rail (NLR) service. Both are national IP backbones serving the public interest. OHN members would benefit from a connection to one or both backbones as a mechanism for participating in national health related services. This connectivity is a requirement of the FCC for the Rural Healthcare pilot program that is subsidizing OHN.

The goal is to make at least one advanced network transit backbone service available to each OHN service provider at the NWAX.NET facility regardless of whether the provider is public or private. If it is possible to provide I2 or NLR service via a different demarcation, this is also acceptable so long as a general purpose NWAX demarcation is maintained.

The OHN requires the services of an aggregator to serve as a limited service ISP purely for the purpose of connecting regional Oregon Internet Service Providers up to the I2/NLR.

Exclusions:

Any last mile connectivity for OHN end users is outside the scope of the Internet2 and/or National Lambda Rail Service portion of this RFP. We are simply talking about advanced national upstream connectivity for a few I2 and/or NLR routes serving OHN Local Service Providers.

Commodity Internet service for participating OHN Local Service Providers is outside the scope of this RFP for I2 and/or NLR service.

This RFP takes a neutral view on peering beyond Oregon. Significant exchanges exist in California, Washington, Utah, and Colorado—peering Oregon traffic at one or more of these exchanges might have some value, as this is something that would be difficult for most regional Internet service providers. This item is optional, and the OHN Technical committee makes no requirement about bidding or providing this service, nor is there a requirement for participating local service providers to use the service should it be made available.

Severability: Due to reasons of policy, some OHN Local Service Providers may be variously eligible or ineligible for specific upstream advanced services. Our commitment is to make some sort of advanced service available to all constituencies, and allow those with eligibility to take advantage of additional connectivity or service offerings.

Specification:

1. The winner of this RFP will provision one or more routers in Portland Oregon, and provide physical connectivity through NWAX.NET where participating service providers will already be gathered.
 2. The mechanism for connecting service providers will be the BGP4 routing protocol.
 3. Pricing for advanced network transit service will be provided in a standardized format.
 4. All BGP links will use encrypted passwords and limit the number of expected routes to prevent mishap.
-

Service Requirements: The successful bidder must meet the following requirements:

1. Define terms of Service Level Agreement
 - (i) 24 x 7 x 365 access to knowledgeable technical support
 - (ii) Define Operational Procedures for customers
 - (iii) Specify all mechanisms for support included in the Annual Support Contract, how these are accessed.
 - (iv) Specify response times and escalation procedures.
 2. Specify any services offered as part of the initial installation
 3. Specify any value added services offered by the Support Organization and include fee schedule.
-

Proposal Requirements. The successful proposal must include:

1. Define responsible parties; list personnel
2. Describe equipment used to deliver these services
3. Description of commitment & accountability
4. Description of one-time and ongoing costs, rate models (by volume?)
5. Description of billing process & technology
6. Description of any additional services offered
7. Provide a proposed implementation plan.

Evaluation Criteria for Internet2/National Lambda Rail Service

With 100 total points available, proposals will be evaluated and assigned points based on the judgment of reviewers as to how well the respondent meets each of the following criteria. The categories for evaluation are indicated below.

Price

Upstream connectivity

Capability to provide the hardware & service, inclusive of engineering depth & resources

Operational processes & accountability

Capability of personnel

Track record providing similar services

Request for Proposal #1D

Functional Specification for Additional Internet Exchanges

Overview. The OHN will use Internet exchange points to interconnect participating networks using Border Gateway Protocol (BGP) version 4 peering. OHN plans to use the [Northwest Access Exchange \(NWAX\)](#) in Portland and the [Oregon Internet Exchange \(OIX\)](#) in Eugene to provide this service in those locations. The purpose of this RFP is to stimulate the development of additional IXPs, one in Eastern/Central (most likely Bend/Redmond) and one additional IXP in Southern (likely Medford) Oregon. OHN will encourage or provide incentives for OHN telecommunications service providers to interconnect their local data traffic at the selected exchanges.

Requirements. The successful bidder must meet the following requirements:

1. Location in at least one of the two target areas (Eastern/Central and/or Southern Oregon)
2. Provide a “vendor neutral” facility. The intent of this requirement is to enable any network service provider or Internet Service Provider (ISP) to locate equipment in or near and peer at the IXP on an equal basis with all other participants. This requirement could be met in several ways. An IXP could be located, for example, in a university or hospital or a “carrier hotel” like the Pittock Block in Portland. The main requirements for neutrality are for neutral operation and support of the exchange equipment and associated interconnection facilities (cable ways, patch panels, etc) and co-location (rack) space, air conditioning and power supplied and available to all OHN service providers.
3. Provide the ability for IXP customers to peer using BGP4 via IXP equipment and the ability to acquire transit to the Internet as well as OHN-connected Research and Education Networks (REN), most likely Internet2 and National Lambda Rail via other IXP customers.
4. Support as a minimum 10/100/1000 million bit per second (Mbps) Ethernet copper connections (“ports”). The IXP should ideally also offer options for optical ports and may if desired also offer non-Ethernet (T-3 or OC-3 for example) ports. The intent here is for the IXP to provide the most convenient, lowest cost options for customers in its area.
5. Provide overall monthly availability, defined as (actual operational time)/(scheduled operational time not including time prior to notification) of .9999 or higher. “Overall” in this context means availability of exchange functionality to most exchange customers, i.e., does not prohibit problems on one or a few customer ports.
6. Traffic latency (delay) across the exchange not greater than 20 milliseconds (Ms), jitter not greater than 10 Ms and packet loss not greater than .1%.
7. The ability of IXP support personnel to securely analyze and control operation of the exchange equipment as well as acquire and analyze traffic statistics for the Network Operations Center (NOC) and customers and to ensure that latency, jitter and packet loss requirements are met.
8. Continuous availability of on-call technical support 7/24 consistent with the above

availability requirements. The OHN NOC will be the first responder to customer calls and will in turn contact IXP support if required.

9. Ensure the confidentiality of customer data as well as traffic flows between customer networks.
10. Demonstrate that the IXP has a feasible business model. OHN may reimburse the successful bidder for the proportion of start-up equipment costs that can be allocated to OHN use, but it will be the IXP operator's responsibility to pay for its own operational costs from fees charged to IXP customers or funds provided on its own. In the event that an IXP finds the operation financially nonviable or in the event of termination for cause they may be required to provide all IXP equipment paid for by the OHN to a third party to continue operation of the exchange.

Exchange Proposal Requirements. The successful proposal must include:

1. Demonstration and commitment to meet the specified requirements.
2. Description including cost and model number, number and type of ports for all equipment including switches, routers, terminal, computer, and interconnection (patch panels, trays, etc) to be acquired for the exchange.
3. Commitment by the host facility (if any) to provide space, power and air conditioning to the exchange in the event of contract award.
4. Demonstration that the bidder has the requisite skills and personnel available to successfully operate the exchange
5. Diagram(s) showing where all exchange and customer equipment including cabling between customers and the exchange will be located within the facility including distances between equipment.
6. Description of all services including proposed prices to be charged to OHN service providers.
7. Proposed exchange privacy and confidentiality policy.
8. Proposed exchange customer/member agreement/contract including agreement to hold OHN, customers and members harmless for any traffic including mal-ware or mis-formed packets.

Evaluation Criteria for Additional Internet Exchanges

With 100 total points available, proposals will be evaluated and assigned points based on the judgment of reviewers as to how well the respondent meets each of the following criteria. The categories for evaluation are indicated below.

Price to OHN, with highest points for a no-cost to OHN option

Price to OHN service providers

Quality and specificity of plan

Commitments from service providers to connect

Capability, staff skills, track record of providing similar services

Business model/sustainability plan, post USAC subsidy period

Appendix A

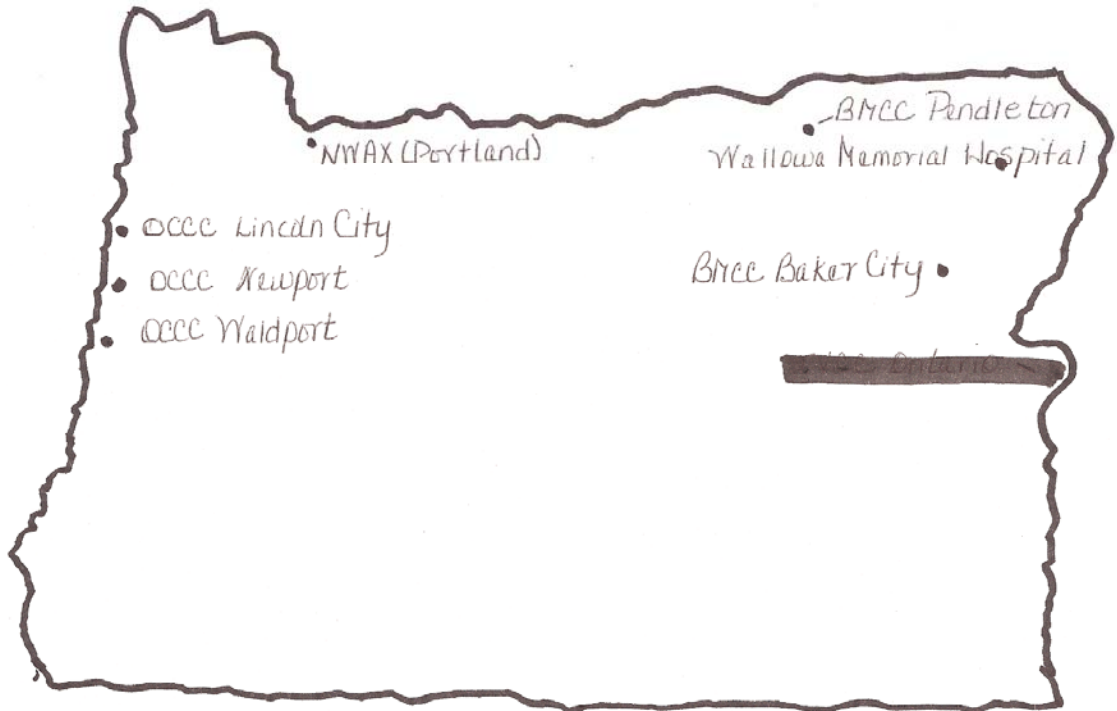
RFP #1B site list for proposals

**OHN RFP #1B
Appendix A
Site Information**

Facility	Campus	Address	Bandwidth	Contact	Number	email
Blue Mt. Community College	Pendleton Campus	2411 NW Carden Pendleton, OR 97801	30 mb. to NWAX	Larry Bundy	541-278-5892	lbundy@bluecc.edu
	Baker City Campus	3275 Baker Street Baker City, OR 97814	20 mb. to NWAX			
Oregon Coast Community College	Lincoln City Campus	3788 High School Drive Lincoln City, OR 97367	100 mb. to Newport Campus	Russ Engle	541-574-7149	renge@occc.cc.or.us
	Newport Campus	550 SE 40th Street Newport, OR 97365	100 mb. to NWAX			
	Waldport Campus	2750 Crestline Drive Waldport, OR 97394	100 mb. to Newport Campus			
Wallowa Memorial Hospital		601 Medical Parkway Enterprise, OR 97828	10 mb. to NWAX	John Straughan	541-426-5307	john.straughan@wchcd.org

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Network Access and Transport Links
For the Sites Shown

1. OCCC in Newport will connect to OHN at NWAX with a 100 mb line.
2. OCCC in Waldport will connect to OCCC Newport with a 100 mb line.
3. OCCC in Lincoln City will connect to OCCC Newport with a 100 mb line.
4. BMCC in Pendleton will connect to OHN at NWAX with a 30 mb line.
5. BMCC in Baker City will connect to OHN at NWAX with a 20 mb line.
6. Wallowa Memorial Hospital in Enterprise will connect to OHN at NWAX with a 10 mb line.



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NOC-RIE-I2/NLR

