



Oregon State University

Optical/Ethernet Equipment

RFP #197957

ADDENDUM NO. 4

ISSUE DATE: June 27, 2019

CONTRACT ADMINISTRATOR:

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This Addendum is hereby issued to inform you of the following revisions and or clarifications to the above-referenced RFP and/or the Contract Documents for the Project, to the extent they have been modified herein. Any conflict or inconsistency between this Addendum and the Solicitation Document or any previous addenda will be resolved in favor of this Addendum. Proposals shall conform to this Addendum. Unless specifically changed by this Addendum, all other requirements, terms and conditions of the Solicitation Document and or Contract Documents, and any previous addenda, remain unchanged and can be modified only in writing by OSU. The following changes are hereby made:

MODIFICATIONS:

Item 1 - Section 1.04 'GENERAL DEFINITIONS' is modified to include the following definition:

j. "Manufacturer" means the corporate entity that has overall responsibility, including product and service warranties, for the design, production, marketing and branding of the proposed equipment – whether the company produces the equipment itself or through the use of third parties.

k. "Reseller" means the corporate entity that i) has an established business relationship with the Manufacturer to purchase and resell the proposed products and ii) proposes to resell these products to OSU.

Item 2 – Section 1.02 is removed and replaced with the following:

A mandatory, online Pre-Proposal web and audio conference will be held on June 13, 2019 at 10:00 a.m. PDT. Registration is required prior to this event. To register, and obtain further information about this event, go to: <https://oregonstate.webex.com/oregonstate/onstage/g.php?MTID=ee0893df098bd3208ca0a2762f33dc016>

At minimum, a single authorized representative of the proposing firm must be in attendance at this Pre-Proposal Meeting. Failure to attend, of at least one authorized representative of the proposing firm, will result in that firm being disqualified and a rejection of any proposal received from that firm.

Item 3 – Attachment C ‘CORPORATE INFORMATION AND REFERENCES’ part 1. H. is removed and replaced with the following: Involvement of the equipment manufacturer, including membership and any other activities, within the Open ROADM MSA or the Telecom Infra Project or an equivalent entity or project.

Item 4 – Section 6.01 is removed and replaced with the following:
OSU may award to a single Proposer of both an OLS and an ETS if both are located within their respective competitive range in order to obtain a more comprehensive and administratively more efficient solution.

Item 5 – Section 5.01 ‘QUANTITY OF PROPOSALS’ is modified to increase the electronic proposal maximum size from ‘under 1 GB’ to ‘under 2 GB.’

Item 6 – Part IV. PRODUCT AND SERVICE FEATURES’ first sentence, second paragraph is revised as follows (links may no longer be used in proposal submissions):
Technical or operating manuals, product data sheets, and sales literature, may be submitted as accompanying material to a proposal.

Item 7 – This item removes and replaces Attachment E ‘PROPOSER QUALIFICATIONS RESPONSIVENESS CHECKLIST.’
The Revised Attachment E is a separate attachment posted with this Addendum #4.

Item 8 – This item removes and replaces the following in ATTACHMENT A ‘NETWORK MAPS AND FIBER SEGMENT DATA’:

Map 3: LOGICAL MAP OF RINGS A AND B See Revised Tables and Maps

Table 1: NETWORK SITES

Table 2: FIBER SEGMENT DATA

Table 3: ESTIMATED CLIENT PORT REQUIREMENTS

The Revised Maps and Tables are included as a separate attachment posted with this Addendum #4.

Item 9 – This item removes and replaces ATTACHMENT F ‘BID COST FORM.’ The revised Bid Cost Form is included as a separate attachment posted with this Addendum #4.

QUESTIONS:

Item 10

Question: On the minimum requirements page 30, #4, can you clarify if that is a reseller shipping or a manufacturer shipping product for at least 5 years?

Answer: The Manufacturer is the entity that must have been shipping commercially available product for at least five (5) years. The requirement for the minimum duration of the Reseller’s relationship with the Manufacturer is three (3) years. See the complete and revised Attachment E.

Question: Can you help reconcile section 6.01 “At any stage of evaluation, OSU will only choose an OLS and an ETS for which OSU determines there is evidence that the two systems are interoperable.” And scoring giving points for interoperability in second round only

Answer: Section 6.01 is modified by this addendum. See modification to this section above.

Question: Can you clarify why this is an equipment focused (with minor emphasis on services) RFP but the first round of scoring seem much more focused on services and very little on product details?

Answer: The first round assigns the highest weight, thirty (30), to the Quality of Goods and Services. Proposer's responses to Attachment D, including the network design and the information provided on how the features of the proposed solution provide the capabilities required by OSU, will provide offer a sufficient amount of product detail for our evaluation of the proposed equipment.

Question: With regards to the weighting of the second stage evaluation – Are the weights specified here intended to be maximum point for each category?

Answer: The weights do not represent the points that will be awarded to a proposal for a particular criterion. For each criterion, proposals will be scored from one (1) as the lowest score through five (5) as the highest score. The score will then be multiplied by the weight. A proposal that received a score of three (3) for a criterion that had a weight of twenty (20) would receive a weighted score of 60. Similarly, if the same proposal had received a score of five (5) in that category, it would have received a weighted score of one hundred (100). These weighted scores for each criterion then are added together to obtain a cumulative weighted score that will be the basis for ranking the proposals.

Question: Can you provide any additional information on fiber type Level 3 ULH? Any information on the specifications for this would be helpful.

Answer: Please see the new fiber type information available in the Revised Fiber Data Tables and Map added by this Addendum #4.

Question: When will the fiber data be updated?

Answer: See the Revised Fiber Data Tables and Map for currently available data. Further data, including data showing the impacts of planning for fiber laterals, will be shared with the successful Proposer for use in development of a final design prior to execution of the contract and purchase order.

Question: Should the proposal include all sites, or just those included in Rings A & B?

Answer: Only the sites on Rings A & B are within the scope of this RFP.

Question: Our solution may be able to bypass some of the indicated ILA sites resulting in cost savings. Is this acceptable?

Answer: A Proposer's base proposal must include all identified ILA sites for the potential of meeting future add/drop requirements at these locations. However, in addition, a Proposer may identify which ILAs are not required in the proposed design to satisfy the RFP requirements for Rings A and B while describing the financial and other benefits of this subtraction.

Question: Do you have a guideline for expected traffic patterns on the proposed network? i.e. – are there primary 'hub' sites and secondary/tertiary sites?

Answer: The five founding members of Link Oregon maintain separate extensive presences in Eugene, Corvallis, Salem, and Portland. We expect these sites will become aggregation points for transport circuits. Portland and Eugene will be the primary locations for external Internet connectivity.

Question: Please advise as to the origination of the 100G DWDM line-side optic. Is OSU requesting that the 100G coherent optic be in the ETS equipment and feed directly into the OLS mux/demux or is a transponder required in the OLS (in which case a short-reach 100G optic is required in both the ETS and OLS to connect the two)?

Answer: As discussed in RFP Attachment D, Statement of Work, Part IV.A, OSU is open to both options.

Question:

Is the ETS layer to perform individual L2 VLAN management and grooming of all the client Ethernet ports or is it looking to be clear transport of the Ethernet ports over the OLS layer?

Answer:

We envision scenarios for both options. The OLS may support transponders and/or devices creating coherent signals. We expect to use an E-LAN/E-LINE/VPLS/EVPN service type and to aggregate customer connections onto the ETS platform prior to the OLS. We also envision the use case where some customers will plug directly into the OLS – by utilizing approved hardware – to create their own L2 service types. We are designing the Link Oregon service delivery platform to support both of the service options described above.

As to the requirement for add/drop capability at any location, the client requirements are listed in the RFP. The Proposer should design accordingly and then describe how these client ports are delivered. Support for 100-Gbps client connectivity is a stated requirement of the RFP.

Question: Table 3 lists ‘Estimated Client Port Requirements.’ Do you have specific requirements for the Network Line Side or have you left that up to the respondents?

Answer: It is the responsibility of the Proposers.

Question: Attachment F – Bid Cost Form, specifically states “Proposer shall provide detailed pricing information according to Section 3.08 in the RFP”. It is stated in the following tabs: Optical and Satellite PoP Sites, ILA Sites, Spares, Professional Services, Maintenance and Miscellaneous. Where is Section 3.08?

Answer: See the instructions in the revised Bid Cost Form.

Question: If submitting a proposal for both the OLS and ETS, does Oregon State want 2 completely separate proposals or 1 proposal separated into part 1 and part 2?

Answer: The RFP requires that Proposers wishing to advance both an OLS and an ETS solution submit a single Proposal in response to the RFP. Section 5.01 states that Proposers submitting more than one Proposal will be found to be non-responsive. Instructions for proposal submission are also contained in Section 5.01. See Section 2.0 for additional requirements that apply when combined OLS and ETS solutions are presented in a single proposal, i.e. solutions must be separate, independent and not as a unified, integrated system or presented in such a way that would require OSU to accept one solution as a condition of accepting the other.

Question: Is the ring containing the Corvallis PoP considered part of Ring A, Ring B or other.

Answer: The Corvallis fiber segment, shown by the black line on the revised Map 3, serves as additional redundancy for Ring A and is considered part of Ring A.

Question: Is it required that the Corvallis PoP interface with the existing Pilot equipment directly on the OLS (Open ROADM)? If so, what equipment was used on the Pilot?

Answer: The existing Pilot equipment does not need to interface with the OLS equipment to be placed at the Corvallis PoP.

Question: Do the extensions to the satellite PoPs have a known loss/distance? Are multiple fibers available and how many?

Answer: All Satellite PoPs are all with the limits of standard commercial, long-range Ethernet transceivers – most all Satellite PoPs, except Bend, are within less than 10 kilometers (km) distant of an Optical PoP. Bend is within 40 km of the Bend Optical PoPs.

Question: Is there a projected growth estimate for the traffic requirements at the PoP Satellite sites?

Answer: No, satellite PoP locations can be trunked back to the Optical PoP locations via standard 10km or 40km Ethernet optics at standard 1/10/40/100 Gbps speeds, depending on the needs of the PoP.

Question: Who is the manufacturer of the fiber type “Level 3 ULH” and/or which ITU standard does it adhere to?

Answer: Please see the new fiber type information available in the Revised Fiber Data Tables and Map added by this Addendum #4.

Question: The loss on the spans between Eugene/Corvallis and Portland1/Salem ILA is above the standard loss for their given fiber types and would indicate heavily degraded fiber or sub-standard/mechanical splices. Both scenarios create a potential for excessive reflection. Are OTDR results available for the span?

Answer: They are not at this time.

Question: For the estimated client port requirement, can we get a list of where each trunk port is intended (ex of the 8 100G clients at Eugene, 2 go to Portland, 6 go to Bend, etc.).

Answer: There may be multiple services on a client handoff, including point-to-point transport, point to multipoint, and IP transit. Please see Sections Attachment D, Statement of Work, Parts IV.B.2. IV.B.1.3, and IV.B.1.4.

Question: The fiber between Portland1, SalemILA, Corvallis and Eugene is designated as “Existing.” Will this require a migration in order to use or is it now or will be dark fiber at the time of implementation.

Answer: A migration order will not be required. A second maintenance pair already is available on this route for implementation of the new network.

Question: Is it required to assume the ETS and OLS services will be performed at the same time or is the bidder to assume each as an independent service and price accordingly?

Answer: The Proposer is to assume that each set of services is independent and should be priced separately.

Question: In ETS Section Question 10 please clarify whether Oregon State University is looking to utilize OTN based switching or OTN transport?

Answer:

We envision scenarios for both options.

The OLS may support transponders and/or devices creating coherent signals. We expect to use an E-LAN/E-LINE/VPLS/EVPN service type and to aggregate customer connections onto the ETS platform prior to the OLS. We also envision the use case where some customers will plug directly into the OLS – by utilizing approved hardware – to create their own L2 service types. We are designing the Link Oregon service delivery platform to support both of the service options described above.

As to the requirement for add/drop capability at any location, the client requirements are listed in the RFP. The Proposer should design accordingly and then describe how these client ports are delivered. Support for 100-Gbps client connectivity is a stated requirement of the RFP.

Question: In OLS Section Question 7 does OSU have visibility into the number of ILA sites it would look to convert to add-drop sites?

Answer: No, our assumption is that any of the ILA sites potentially could become full add-drop sites at a later stage.

Question: In OLS Section Question 8 as the RFP is written the transponders, which would typically perform the Encryption, are in the ETS network. Is OSU intending to perform L0 Encryption in the OLS or ETS network which would require the transponders be moved to the OLS network?

Answer: There is no requirement for transponders to reside in the ETS.

Question: In Section 5.0 pertaining to electronic submittals, OSU limits the electronic proposal file to 1 GB, however permits a vendor to respond to the OLS Network, the ETS Network or both. Is the 1 GB limit intended to pertain to both solutions or each solution independently?

Answer: The RFP has been modified to increase the file size limit from 1 to 2 Gigabytes. The 2 Gigabyte (GB) file size limit is intended to apply to the complete proposal submission from a Proposer, whether for either an OLS and ETS solution alone or a combined solution.

Question: In Section II.B Installation Services Paragraph I & II regarding cutover. Does this RFP requires the cutover (migration) of client-side services from an existing network to the new network? If yes, can you provide the services required for migration?

Answer: No, it does not require cutover.

Question: What is the overall capacity planned for the open line system over the next 3-5 years? (How many total channels are needed?)

Answer: As specified in Attachment D, Part IV.A of the RFP, access to the full G.694.1 C-band is expected. Actual channel usage will depend on the design of the network described by the Proposer.

Question: Can a manufacturer respond directly with quotes provided by an authorized reseller as part of the manufacturer's response?

Answer: Yes. A Manufacturer can respond directly and submit quotes from an authorized Reseller. The information about the Reseller requested in the RFP still must be submitted in addition to the required information about the Manufacturer. The proposed Reseller also must meet the requirements for Resellers included in the RFP.

Question: Is 200G roadmap support required or simply preferred? (Appendix 4.B, bullet 1 and section 1.1)

Answer: Please refer to Section Attachment D, Statement of Work, Part IV.B.1: "OSU requires a scalable, future ready, Ethernet service delivery platform that will enable it to deliver 1 Gbps, 10 Gbps, and 100 Gbps client interfaces today and 200+ Gbps in the future."

Question: Does the solution need to act as an OTN transport service (client) or does it need to wrap Ethernet services in an OTU frame for OTN transport? (Appendix 4.B, section 1.9-11, and Appendix 4.A, bullet 5)

Answer:

We envision scenarios for both options.

The OLS may support transponders and/or devices creating coherent signals. We expect to use an E-LAN/E-LINE/VPLS/EVPN service type and to aggregate customer connections onto the ETS platform prior to the OLS. We also envision the use case where some customers will plug directly into the OLS – by utilizing approved hardware – to create their own L2 service types. We are designing the Link Oregon service delivery platform to support both of the service options described above.

As to the requirement for add/drop capability at any location, the client requirements are listed in the RFP. The Proposer should design accordingly and then describe how these client ports are delivered. Support for 100-Gbps client connectivity is a stated requirement of the RFP.

Question: Does the solution need to support OTN clients? (Appendix 4.B, section 1.9-11, and Appendix 4.A, bullet 5)

Answer:

We envision scenarios for both options.

The OLS may support transponders and/or devices creating coherent signals. We expect to use an E-LAN/E-LINE/VPLS/EVPN service type and to aggregate customer connections onto the ETS platform prior to the OLS. We also envision the use case where some customers will plug directly into the OLS – by utilizing approved hardware – to create their own L2 service types. We are designing the Link Oregon service delivery platform to support both of the service options described above.

As to the requirement for add/drop capability at any location, the client requirements are listed in the RFP. The Proposer should design accordingly and then describe how these client ports are delivered. Support for 100-Gbps client connectivity is a stated requirement of the RFP.

Question: What protocols will the client-side systems be using? RFP only mentions link rates.

Answer: Client handoffs are assumed to be Ethernet. Client-side systems are the responsibility of the connecting customer and are out of scope for this RFP.

Question: Does the solution need to natively support coherent interfaces, or does it interface with OLS transponders?

Answer:

We envision scenarios for both options.

The OLS may support transponders and/or devices creating coherent signals. We expect to use an E-LAN/E-LINE/VPLS/EVPN service type and to aggregate customer connections onto the ETS platform prior to the OLS. We also envision the use case where some customers will plug directly into the OLS – by utilizing approved hardware – to create their own L2 service types. We are designing the Link Oregon service delivery platform to support both of the service options described above.

As to the requirement for add/drop capability at any location, the client requirements are listed in the RFP. The Proposer should design accordingly and then describe how these client ports are delivered. Support for 100-Gbps client connectivity is a stated requirement of the RFP.

Question: Does the solution need to support a DWDM coherent transceiver to interface with the OLS transponders at the defined client rates?

Answer:

We envision scenarios for both options.

The OLS may support transponders and/or devices creating coherent signals. We expect to use an E-LAN/E-LINE/VPLS/EVPN service type and to aggregate customer connections onto the ETS platform prior to the OLS. We also envision the use case where some customers will plug directly into the OLS – by utilizing approved hardware – to create their own L2 service types. We are designing the Link Oregon service delivery platform to support both of the service options described above.

As to the requirement for add/drop capability at any location, the client requirements are listed in the RFP. The Proposer should design accordingly and then describe how these client ports are delivered. Support for 100-Gbps client connectivity is a stated requirement of the RFP.

Question: Table 3 in the Appendix lists client ports for “Portland Optical POP” and “Portland Satellite POP”. Is this Satellite POP actually the Portland Optical POP #2 shown in the diagram?

Answer: See the Revised Fiber Data Tables and Map added by this Addendum #4.

Question: Are all client links optical, or is there a requirement for copper? Stated requirements (Appendix 4.B, section 1.1) are for 1/10/100G short and long reach client optics, 25/40G optics, and roadmap for 200/400G (if not available). What are the day-1 requirements for each client site? Are optical breakout cables OK or do client ports need to be native?

Answer: Handoffs will depend on client requirements. There is no specific RFP requirement for copper, but it will depend on client needs. Please refer to the revised Table 3 for the initial requirements for client interfaces at each site. This RFP takes no position on optical breakout cables.

Question: Total prefix count expected at the ETS solution (route scale)

Answer: Routing services are described in more detail in Attachment D ‘Statement of Work, Part V.A.

Question: QOS/HQOS?

Answer: Please describe which services your ETS platform offers.

Question: Can a manufacturer respond directly and include a bid from a VAR, or does the response need to come from the reseller?

Answer: Yes. A Manufacturer can respond directly and submit quotes from an authorized Reseller. The information about the Reseller requested in the RFP still must be submitted in addition to the required information about the Manufacturer. The proposed Reseller also must meet the requirements for Resellers included in the RFP.

Question: Pricing sheet references (pro services tab - bid cost form) refers to section 3.08 in RFP that doesn’t appear to exist.

Answer:

Question: What is the line-rate throughput requirement between the ETS and OLS solution? 200G? 400G? Should we assume the sum of client links rounded up to the nearest 100G, or is it a fixed value with permissible oversubscription?

Answer: ETS to OLS connectivity will support transport and transit services. Customers of the network will expect transport services to operate at a provisioned bandwidth levels at all times. Transit services are typically oversubscribed. We are interested in proposed solutions that take these factors into account.

Question: What level of participation does OSU plan to take part in regarding the design and deployment activities? Does OSU desire a full outsourced network configuration and implementation?

Answer: Working in collaboration with engineers and project managers from the other Link Oregon founding entities, OSU will engage with the selected Proposer(s) on the final network design that will be the basis for the actual equipment order for Rings A and B. We anticipate that OSU will outsource network implementation and that our technical team will work jointly with counterparts from the Proposer(s) on initial equipment configuration.

Question: Is it safe to assume that after standup and acceptance testing denote project end and that OSU will migrate production traffic to the environment?

Answer: Yes, OSU and the three other partners with statewide wide area networks (OSCIO, OHSU, and Link Oregon/NERO) will begin to migrate their production backbone circuits to Link Oregon services on Rings A and B once all installation, configuration, testing, and formal acceptance steps have been completed. The proposed professional services arrangements should terminate upon formal acceptance.

Question: In Table 3 what are the required client handoffs, fiber or electrical interfaces, and type (e.g. SMF/MMF/RJ45)?

Answer: Handoffs will depend on client requirements. They may be fiber (SMF or MMF) or electrical.

Question: In Table 3 is Portland Satellite PoP the same as Portland #2 Optical PoP referred to in Map 3, and Table 1 and 2? And Portland Optical PoP = Portland #1 Optical PoP?

Answer: See the Revised Fiber Data Tables and Map added by this Addendum #4.

Question: What is the traffic matrix for the Client Ports shown in Table 3?

Answer: The five founding members of Link Oregon maintain separate extensive presences in Eugene, Corvallis, Salem, and Portland. We expect these sites will become aggregation points for transport circuits. Portland and Eugene will be the primary locations for external Internet connectivity.

Question: What are the A/Z (origin and destination) connections for 100G, 10G, 1G for all locations?

Answer: The five founding members of Link Oregon maintain separate extensive presences in Eugene, Corvallis, Salem, and Portland. We expect these sites will become aggregation points for transport circuits. Portland and Eugene will be the primary locations for external Internet connectivity.

Question: Can you provide the Data Center location(s) that will be part of the network? Is there one location that will be a Head End or the primary DC that will have the most growth?

Answer: The five founding members of Link Oregon maintain separate extensive presences in Eugene, Corvallis, Salem, and Portland. We expect these sites will become aggregation points for transport circuits. Portland and Eugene will be the primary locations for external Internet connectivity.

Question: Is there any over-subscription for the Client Ports shown in Table ? For example, Portland Optical POP

shows 732G of client ports accessing the POP, there will be two rings at Portland. Do we plan for that amount of distributed traffic? Transit traffic through Portland is considered as part of the aggregated traffic? For example, is Hillsboro traffic destined for Bend, will need to transit Portland outside of the 732G. What is the expected traffic requirements between all POPs? A/Z traffic expectations? Is all the traffic considered to stay INTRA-OSU network?

Answer: Traffic will be a mix of transport between partner sites and transit both on and off network. The RFP takes no position on aggregation or over-subscription and asks the Proposer to describe solutions in its proposal.

Question: Map 1, physical addresses of each site, can LAT/LONG be included?

Answer: No, this information will be provided during a final design process prior to execution of a contract with the successful bidder.

Question: On Map 3 is the black line originating at the Portland #1 PoP continuing through Salem ILA, Corvallis PoP, with a connection to Corvallis Satellite PoP, that terminates at the Eugene PoP part of Ring A or Ring B or should they be considered part of a separate Ring?

Answer: The existing Pilot equipment does not need to interface with the OLS equipment to be placed at the Corvallis PoP.

Question: If the black line is part of Ring A or Ring B, will Ring E between Newport and Corvallis be connected and put in service during the Project Phase 1 implementation?

Answer: No, this segment is not within the scope of this RFP.

Question: If Ring E integration is part of the Phase 1 implementation, how much bandwidth will be in the connection between the two sites?

Answer: No, this segment is not within the scope of this RFP.

Question: What is the distance from Corvallis Optical PoP to Newport?

Answer: While the segment between Corvallis and Newport (Ring E) is shown on the map to indicate the extent of the Link Oregon optical network, this segment is not within the scope of this RFP.

Question: What is the distance from Corvallis Optical PoP to Corvallis Satellite PoP?

Answer: All Satellite PoPs are all with the limits of standard commercial, long-range Ethernet transceivers – most all Satellite PoPs, except Bend, are within less than 10 kilometers (km) distant of an Optical PoP. Bend is within 40 km of the Bend Optical PoPs.

Question: What is the distance from Bend Optical PoP to Bend Satellite PoP?

Answer: All Satellite PoPs are all with the limits of standard commercial, long-range Ethernet transceivers – most

all Satellite PoPs, except Bend, are within less than 10 kilometers (km) distant of an Optical PoP. Bend is within 40 km of the Bend Optical PoPs.

Question: Can you provide details on Link Oregon 501c3 status and timing? When do you expect to receive a 501c3 determination letter from the IRS?

Answer: The Oregon Fiber Partnership (whose service name is Link Oregon) was incorporated as an Oregon non-profit organization earlier this year. Its revised articles of incorporation and bylaws were adopted on May 24, 2019, and its Board of Directors is constituted and meeting on a monthly basis. We expect that the 501(c)(3) tax-exempt application will be filed by June 28, 2019 and anticipate a final determination letter from the IRS by December 31, 2019.

Question: Table 2: Fiber Segment Data. Segments 4, 7, 9 and 10 are listed as “Level3 ULH” fiber type. Is the exact fiber type known for these segments, or if unknown, what fiber type should be used to model these segments?

Answer: Please see the new fiber type information available in the Revised Fiber Data Tables and Map added by this Addendum #4.

Question: Table 2: Fiber Segment Data. Segment 11 fiber type is listed as “N/A.” What fiber type should be used to model this segment? Fiber segment 11 is 111 km long. If 0.4 dB/km is assumed based on the “will not exceed” amount listed in the table’s notes, it will significantly reduce expected performance on the network. We would like to suggest a design assumption of 0.25 dB/km with a repair loss margin of 3 dB instead of 0.4 dB/km assumption if measured loss is not available. How would Oregon State University like us to proceed?

Answer: It has been determined that an additional ILA Site will be required in Sunriver. See the Revised Fiber Data and Map as part of this Addendum.

Question: Table 2: Fiber Segment Data. Segments 5 and 6 are listed as “TrueWave RS + N/A.” Is the exact mix of fiber lengths and types known, or if unknown, should we model these segments with only TrueWave RS fiber?

Answer: The data provided in the RFP – combined with the Revised Fiber Data Tables and Maps with updated maps and loss data as part of this Addendum – represent what is known currently about the optical network.

Question: General question related to the ETS layer. Is the ETS layer looking to perform

- a) individual L2 VLAN management and grooming of all the client Ethernet ports

- b) Supporting the clear/transparent transport of the Ethernet ports over the OLS layer (i.e. Transponder and Muxponders), or

- c) a combination on both L1 and L2 transport for these client ports dependent on the client port applications and if so, what is that split?

Answer:

We envision scenarios for both options.

The OLS may support transponders and/or devices creating coherent signals. We expect to use an E-LAN/E-LINE/VPLS/EVPN service type and to aggregate customer connections onto the ETS platform prior to the OLS. We also envision the use case where some customers will plug directly into the OLS – by utilizing approved hardware – to create their own L2 service types. We are designing the Link Oregon service delivery platform to support both of the service options described above.

As to the requirement for add/drop capability at any location, the client requirements are listed in the RFP. The Proposer should design accordingly and then describe how these client ports are delivered. Support for 100-Gbps client connectivity is a stated requirement of the RFP.

Question: Table 3: Estimated Client Port Requirement. If some client ports need a pt-pt wave connection what are the A-Z traffic requirements for the pt-pt connections?

Answer: This is to be determined as it will depend on client needs.

Question: Table 3: Estimated Client Port Requirements. If some client ports are to be Ethernet Layer2 services, what are the expected network port counts for the listed client ports? Should some groups of client ports be segregated from other groups and if so, what are those groupings / A-Z endpoints? What amount of aggregation/oversubscription should be assumed for the network ports?

Answer: Please see Table 3 for expected number of client ports. The RFP takes no stance on segregating client ports into groups. Please see Attachment D, Statement of Work, Part IV.B.1.5. Also see response to question #59 regarding oversubscription.

Question: For Attachment A, please provide complete fiber data for each span, including type, length, and loss. For spans in which a mix of fiber types are used, please indicate the composition of the span. For example:



Answer: See the Revised Fiber Data Tables and Map attachments.

Question: In Section 1.05 Technical Definitions (g.), it's stated Satellite PoP's are "connected to the network via an Ethernet circuit and without any use of OLS equipment". Please elaborate. Is connectivity provided via one or more client optics? A managed service? One or more line optics over a short fiber span? Over multiple fibers?

Answer: We seek regular client Ethernet connections via manageable switches. All Satellite PoPs are all with the limits of standard commercial, long-range Ethernet transceivers – most all Satellite PoPs, except Bend, are within less than 10 kilometers (km) distant of an Optical PoP. Bend is within 40 km of the Bend Optical PoPs.

Question: Please confirm Oregon State University will purchase and own the equipment rather than leasing it or using managed services for this project.

Answer: The intended outcome of this RFP is for OSU to purchase and own all proposed equipment, provided that OSU has the option subsequently to transfer equipment ownership and all associated maintenance and service agreements to the Oregon Fiber Partnership non-profit organization, of which OSU is a founding member.

Question: Please confirm the specific requirements for the OLS. For example, does it require FlexGrid? ROADMs? What is the number of Channels? What is the exact Pass / Fail criteria for an OLS proposal?

Answer: Attachment D, Statement of Work, Part IV, 'Product and Service Features' includes statements of OSU's functional requirements, e.g., "OSU requires ...", and asks for information, "Describe how ...", on the Proposer's equipment will enable OSU to meet those functional requirements. As part of the proposal evaluation process, please see Section 6.01, responses to these requests for information, in addition to other information, will be evaluated to assign the proposal a score for the Quality of Goods and Services criterion.

Question: If ROADMs are required, is there a preference for either lower cost, Broadcast and Select ROADMs, or higher cost, Route and Select ROADMs that better support future high baud rate transponders and CDC ROADM configurations?

Answer: Please see Attachment D, Statement of Work, Part IV.A.2.

END OF ADDENDUM NO. 4