

BCIU Regional Wide Area Network E-rate Consortium  
Regional Wide Area Network and Internet Access Request for Proposals

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**Clarification #1 to BCIU RWAN and Internet Access RFP**  
**October 14, 2020**

This clarification addresses the following service provider questions in accordance with Section 1.5 of the Request for Proposals:

**General Questions**

- Due to office logistic challenges with COVID 19, will Berks County IU accept a handwritten signature on a scanned document for the original hard copy submission?
  - **Yes.**

**Internet**

- Do you own your Public IP Address space for each current Internet connection or are they provided by the current ISP?
  - **The BCIU owns its Public IP Address space.**
- Are you running BGP with the current Internet service provider?
  - **Yes.**
- How is failover from between the Internet circuits accomplished today (ie: BGP routing protocol)?
  - **Failover from between the Internet circuits is accomplished using the BGP routing protocol.**
- How is Internet access pushed out to the schools today? Is it controlled and managed by Berks IU routing hardware over the RWAN Layer 2 infrastructure?
  - **It is managed by the BCIU over current RWAN Layer 2 infrastructure.**
- Are the routers at both hub locations capable of accepting a 40Gbps or 100Gbps Ethernet hand-off?
  - **No.**
  - If not, when is this capability planned to be available?
    - **BCIU will consider upgrading to 40Gbps/100Gbps routers as appropriate for the new RWAN build.**

**RWAN**

- Does Berks IU manage all Layer 3 routing over the current RWAN Layer 2 infrastructure or is this managed by a 3<sup>rd</sup> party?
  - **Layer 3 routing is managed by the BCIU over current RWAN Layer 2 infrastructure.**
- The topology is currently a hub-and-spoke with the schools terminating to the either of the hub sites. Are there individual port hand-off connections for each school at the hub sites?
  - **Yes.**
- Are individual port hand-offs required or would you accept a trunked port hand-off carrying multiple VLANs for the lower bandwidth schools?
  - **The BCIU would prefer individual hand-off's but will consider accepting a trunked port hand-off carrying multiple VLANs for the lower bandwidth schools if necessitated in the network design.**

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- What is the average bandwidth utilization per circuit?
    - **The BCIU does not currently monitor the transport circuits for utilization, we monitor Internet utilization.**
  - What is the expected bandwidth growth over the next five years?
    - **The BCIU anticipates Internet utilization growth of 10Gbps-20Gbps.**
    - **With regards to Transport bandwidth, vendors are encouraged to provide expanded bandwidth proposals as part of the BCIU RWAN and Internet Attachment 1.A, Tab A.2 and Tab A.3.**
  - What applications are currently in use on the existing RWAN?
    - **The BCIU is currently supporting voice applications, video applications, teleconferencing (Zoom, Google Meet, and Microsoft Teams), Web-based applications, and data replication processes.**
    - Do any of the current applications have any specific performance requirements like latency or jitter?
      - **Yes. Video, voice, and teleconferencing applications are very sensitive to delay and jitter.**
  - What applications are planned over the next 5 years? Do any of them have specific bandwidth, latency, or jitter requirements?
    - **Cybersecurity applications, telephony, and video conferencing applications are planned for the next 5-10 years.**

**QoS Requirements for Voice**

    - **≤ 150 ms of one-way latency from mouth to ear (per the ITU G.114 standard)**
    - **≤ 30 ms jitter**
    - **≤ 1 percent packet loss**
    - **17 to 106 kbps of guaranteed priority bandwidth per call (depending on the sampling rate, codec, and Layer 2 overhead)**
    - **150 bps (plus Layer 2 overhead) per phone of guaranteed bandwidth for voice control traffic**

**QoS Requirements for Video**

    - **≤ 150 ms of one-way latency from mouth to ear (per the ITU G.114 standard).**
    - **≤ 30 ms jitter.**
    - **≤ 1 percent packet loss.**
    - **Minimum bandwidth guarantee is videoconferencing session + 20 percent. For example, a 384-kbps videoconferencing session requires 460 kbps guaranteed priority bandwidth**
  - Are you using any cloud services like AWS or Microsoft Azure? If so, how are you accessing them today?
    - **Yes. The BCIU is using AWS, Microsoft O365 and Azure, and Google's G-Suite. In all cases, they are predominantly used for application services, cloud storage, and video hosting.**
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- Is the Berks IU RWAN network hardware at each site capable of accepting a 40Gbps or 100Gbps Ethernet hand-off?
  - **No.**
  - If not, when is this capability planned to be available?
    - **The BCIU will consider upgrading to 10Gbps/20Gbps/40Gbps/100Gbps routers as appropriate for the new RWAN build.**
    - **With regards to Transport bandwidth, vendors are encouraged to provide expanded bandwidth proposals as part of the BCIU RWAN and Internet Attachment 1.A, Tab A.2, and Tab A.3.**
- Is the BCIU able to measure the average bandwidth utilization per school district, and if yes, what are the averages by the school district.
  - **The BCIU does not monitor transport circuits across the RWAN, only Internet utilization. The BCIU currently subscribes for a total of 24Gbps of Internet**
    - **Vendor 1: 8Gbps of the Internet to each of the two hub sites for a total of 16Gbps**
    - **Vendor 2: 8Gbps supplemental Internet through PAIUnet.**
- Other than Internet access, what other services are the school districts receiving from the BCIU through the RWAN?
  - **The BCIU also provides Software Hosting services, SFTP services, and DNS hosting services.**
- Is the RWAN used for school districts to communicate to each other, or is all communication between the school district and their corresponding BCIU data center?
  - **The current RWAN design is hub-and-spoke. Therefore, all traffic traverses the routers at one of the two BCIU hub sites before going to the other school.**

**Insignificant Changes**

- In BCIU RWAN & INTERNET RFP ATTACHMENT 1.A, the address for the BCIU Administrative Offices (Column E) was changed from 111 Commons Blvd to 1111 Commons Blvd.

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End of Clarification

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