

Internet Bandwidth Allocation Policy - Version 6 Effective July 1, 2012

Background

The K-12 Technology Committee has faced many challenges in the endeavor to meet the goal of economically funding legitimate educational traffic with appropriate and equitable bandwidth allocation for each public school District and Library System in South Carolina. The following factors were considered in establishing this bandwidth allocation policy:

A. Internet Bandwidth Allocation Policy for Schools

1. Tier Structure

For 2012 we will continue to use a "Tiered" approach based on student headcount in each district (*from Free & Reduced Lunch data on the State Department of Education website posted in November before the start of the next July 1 funding year*). We will begin using a new 100 Mbs baseline tier structure for Districts which will consist of six bandwidth levels. A revised twenty tier structure will be utilized for Special Schools and Career & Technology Centers (CATE). Each Tier has an eligible baseline bandwidth provided at no cost to the district/school/center, when approved by the K-12 Technology Initiative Committee or under its designated authority.

The 2012 Tiers breakdown for Districts:

<u>Tier</u>	<u>SD Student Headcount</u>	<u>Baseline DIA\MIS BW</u>	<u>DIA\MIS Service Cost</u>	
			<u>AT&T</u>	<u>Spirit (Avg)</u>
1	up to 30,000	100 Mbs	\$4,950	\$5,285
2	30,001 to 39,999	120 Mbs	\$5,940	\$6,660
3	40,000 to 49,999	150 Mbs	\$7,425	\$7,938
4	50,000 to 59,999	200 Mbs	\$7,865	\$8,156
5	60,000 to 69,999	250 Mbs	\$8,168	\$8,318
6	70,000 to 79,999	300 Mbs	\$9,444	\$9,444

The 2012 Tiers breakdown for Special Schools and Career & Technology Centers (CAT):

Tier	SD Student Headcount	Baseline DIA\MIS BW	DIA\MIS Service Cost	
			AT&T	Spirit (Avg)
1	up to 2,999	10 Mbs	\$1,416	\$2,003
2	3,000 to 9,499	20 Mbs	\$2,102	\$2,616
3	9,500 to 11,999	30 Mbs	\$3,010	\$3,122
4	12,000 to 14,999	40 Mbs	\$3,722	\$3,391
5	15,000 to 16,999	50 Mbs	\$4,307	\$3,578
6	17,000 to 18,999	60 Mbs	\$4,411	\$3,785
7	19,000 to 19,999	70 Mbs	\$4,628	\$3,917
8	20,000 to 23,999	80 Mbs	\$4,730	\$4,273
9	24,000 to 27,999	90 Mbs	\$4,846	\$4,867
10	28,000 to 30,000	100 Mbs	\$4,950	\$5,285
11	30,001 to 39,999	120 Mbs	\$5,940	\$6,660
12	40,000 to 49,999	150 Mbs	\$7,425	\$7,938
13	50,000 to 59,999	200 Mbs	\$7,865	\$8,156
14	60,000 to 69,999	250 Mbs	\$8,168	\$8,318
15	70,000 to 79,999	300 Mbs	\$9,444	\$9,444

Districts/Special Schools/CATs are "eligible" for the bandwidth shown above based on student headcount; however, the bandwidth will not be implemented until approved by the K-12 Technology Committee, or by designated authority to the Bandwidth/Security sub-committee, according to the "Bandwidth Qualification Process" described in Section 2 below. School Districts may present their requests or appeal to the K-12 Committee at any time.

2. Bandwidth Qualification Process

Due to the continued critical budget constraints expected during the 2012-2013 fiscal year, the K-12 Technology Committee must confirm that districts/libraries are taking appropriate measures to filter and/or screen traffic so that only legitimate educational traffic is carried before granting approval for any bandwidth above 10 Mbs, regardless of the eligible Tier level. Any district/library requesting more bandwidth must demonstrate the true need by undergoing a Security and Traffic Monitoring evaluation to be conducted by the SC Chief Security Officer. (See Section C for details.) The cost of this monitoring process will be covered through K-12 funds and at no expense to the schools and libraries.

No "grandfather clause" will apply under this policy; therefore, sites that already have more bandwidth than they are eligible for under the 2011 Internet Policy will begin paying the appropriate Cost Share on July 1, 2012.

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This will be accomplished as follows:

- a. District provides written request for bandwidth upgrade evaluation to SC State E-Rate Coordinator (Valarie Byrd at vdbyrd@cio.sc.gov).
- b. State Coordinator submits a traffic monitoring request to the SC Chief Security Officer's staff.
- c. An Intrusion Detection System (IDS) will be installed on the district or library network (if not already in place), either by the SC Chief Security Officer staff or the district/library staff. Traffic monitoring will be performed by the SC Chief Security Officer's staff to provide reports on existing bandwidth utilization and recommendations for improvements, if any, to the district. No network changes will be made by the Security Staff unless approved by the District personnel. Full cooperation with the DSIT Security staff is required for any upgrade.
- d. The recommendations and any actions taken will be shared with the E-Rate Coordinator for reporting to the K-12 Technology Committee. The District will be notified of the date when their request will be reviewed and they are welcome to attend the meeting.
- e. The utilization reports and recommendations will be reviewed by the K-12 Technology Committee to determine if the request for additional bandwidth should be approved.
- f. The SC State E-Rate Coordinator will notify the District contact of the Committee's decision and take appropriate action if orders need to be processed.

3. Unfunded Bandwidth

If a district/library wants more than the funded baseline bandwidth in their Tier, they will be responsible for the difference in cost of that additional bandwidth. The amount paid by the District/Library is referred to as the "Cost Share" and is calculated as described in Item 4 below.

No "grandfather clause" will apply under this policy; therefore, Districts/Libraries that already have more than their 2011 baseline bandwidth for Internet will begin paying the Cost Share for any bandwidth above their 2011 baseline on July 1, 2012.

4. Cost Share Calculations

The monthly Cost Share is the portion of the Total Cost of the bandwidth above the funded baseline for DIA\MIS service that is not covered by E-Rate funding.

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The Cost Share formula is:

$$\text{Cost of Requested Tier} - \text{Cost of Funded Tier} = \text{Cost Difference}$$

$$\text{Cost Difference} * \text{District Non-Discount \% (100\% - District \%)} = \text{Monthly Cost Share}$$

Example 1 - District A (90%) is in Tier 1 and approved for 10 Mbs DIA & wants 20 Mbs (and increase is approved by the K-12 Technology Committee):

Current 20 Mbs cost	\$3,198
Minus baseline 10 Mbs cost	<u>\$2,344</u> (Spirit Avg for 10 Mbs)
Difference	\$854 difference
Times 10% (100%-90%)	\$85.40 Monthly Cost Share

Example 2 - District A (80%) is in Tier 1 and approved for 10 Mbs DIA & wants 20 Mbs (and increase is approved by the K-12 Technology Committee):

Current 20 Mbs cost	\$3,198
Minus baseline 10 Mbs cost	<u>\$2,344</u> (Spirit Avg for 10 Mbs)
Difference	\$854 difference
Times 20% (100%-80%)	\$170.80 Monthly Cost Share

B. Internet Bandwidth Allocation Policy for Library Systems

The K-12 Technology Committee faces the same challenge for libraries that it has for schools in the attempt to economically fund legitimate educational traffic with appropriate and equitable bandwidth for each Library System in South Carolina.

Since we do not have headcount information for libraries, the only verifiable user component we could identify is the number of personal computers (PCs) with Internet access at each Library System site. **The quantity of computers is reported by each Library System to the State Library and must be certified as an accurate count of PCs to be used for the Internet bandwidth calculations.**

1. Funded Bandwidth

For 2012, DIA/MIS bandwidth for Library Systems is based on a 10 Mbs funded baseline and the reported the number of computers with Internet access within the Library System. We will use 128 kilobits (kb) for each PC to calculate the total Internet bandwidth funded for each Library System. Validation of Internet traffic will also be performed via the use of bandwidth reports provided by SC-ISAC.

The following chart shows the 2012 Tiers breakdown for Library Systems:

<u>PC Count</u>	<u>Funded Bandwidth*</u>
0 to 82	10 Mbs
83 to 160	20 Mbs
161 to 238	30 Mbs
239 to 310	40 Mbs
311 to 394	50 Mbs
395 to 472	60 Mbs
473 to 543	70 Mbs
544 to 622	80 Mbs
623 to 707	90 Mbs
708 and above	100 Mbs

** Bandwidth for Hubs/Aggregation points considers total PC counts plus the bandwidth of feeder branches. This will be determined by the DSIT Network Design group based on the technology available. Any additional hardware and/or software required for the agreed upon network design will be the responsibility of the Library System.*

*** Note: 10 Mb Ethernet may be provided where it is more economical than multiple T1s.*

2. Bandwidth Qualification Process

Library Systems must follow the same process described in *Section A. Internet Bandwidth Allocation Policy for Schools* under *Item 2 - Bandwidth Qualification Process* for any bandwidth above 10 Mbs.

3. Unfunded Bandwidth

If a Library System wants more than the funded baseline bandwidth, they will be responsible for the difference in cost of that additional bandwidth. The amount paid by the library is referred to as the "Cost Share" and the process for determining if a Cost Share will apply is described in Item 3 of *Section A. Internet Bandwidth Allocation Policy for Schools*.

4. Cost Share Calculations

Cost Share calculations for Library Systems will use the same formula as described in Item 4 of *Section A. Internet Bandwidth Allocation Policy for Schools*.

C. Security and Traffic Monitoring Activities to be performed by the SC Chief Security Officer's staff:

- Real-time Monitoring of the K-12 Schools & Libraries Network
 - Network entry point monitoring using an Intrusion Detection System (IDS) on district networks
 - Internal and DMZ monitoring
 - Reporting of most critical security events based on IDS events
 - Notification of critical security events based on SOC monitoring
 - Notification of configuration or hardware issues that may be affecting correct IDS operation

- Real-time visibility / insight over critical assets and bandwidth usage.

- Periodic baseline scans of public-facing IP space.

- Optional service. Some of these services may incur additional costs for hardware, licensing and/or time billed.
 - Security consulting, training, and implementation assistance
 - Security implementation assistance
 - Security policy management, including formulation and review
 - Security system design and planning
 - Network scanning to identify some forms of unauthorized access
 - Incident consulting & law enforcement coordination
 - Assistance with forensic analysis & reporting
 - Web application testing
 - Periodic vulnerability and compliance assessment
 - Caching proxy server installation and host server/reports management. Host server management may be done by network members via their own servers. Where feasible, IDS and proxy may be combined in a transparent in-line configuration for SC-ISAC owned servers.
 - Bandwidth management/improvement consultation

Summary of Previous Policy Revisions

1. **Version 1** - The original document created in 2007 established bandwidth allocations for school districts based on student headcount and placed each district in one of four bandwidth tiers (10 Mbs, 20 Mbs, 50 Mbs or 100 Mbs).
2. **Version 2** was approved in 2008 to expand to ten tiers in 10 Mbs increments to provide more flexibility to meet the needs of districts in a more affordable manner. It also added the requirement for Security Monitoring for districts and large libraries before upgrades would be approved.
3. **Version 3** was approved in August 2009 to update the Internet rates used in Cost Share calculations when the new Direct Internet Access (DIA) contract started July 1, 2009.
4. **Version 4** was approved with the following updates effective July 1, 2010. The approved updates in this revision are:
 - a. **Establish new bandwidth baselines**
 - i. School Districts - based on District student headcount with an expanded Tier structure with 10 Megabits (Mbs) increments from 10 Mbs to 200 Mbs.
 - ii. Library Systems - based on PC count for the Library System.
 - b. **Establish a new Internet Cost Share Formula for schools and libraries**
 - i. Applies to those who want additional bandwidth above what the new baseline provides
 - ii. Provides Funded Baseline Cost based on the serving Local Exchange Carrier (LEC) rates to avoid penalty in high-cost areas
 - iii. Uses the individual E-Rate Discount Matrix percentage for each District or Library system to calculate the amount of the Cost Share (rather than the statewide average discount percentage).
 - c. **District/Library System Responsibilities**
 - i. All required E-Rate documents (CIPA and Technology Plans) must be current and on file with the Division of State IT (DSIT) and/or SC Department of Education (SDE).
 - ii. District/Library must be in good financial standing with DSIT (no past due invoices).
 - iii. Annual Block 4 Inventory Verification Documents submitted to DSIT by November 15 each year.

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1. Any District/Library site not listed on this inventory will be direct billed to the District/Library until the start of the next funding year. (DSIT cannot be reimbursed for sites not listed in the Block 4 section of the statewide E-Rate Applications.)
 2. Districts/Libraries must notify DSIT of site disconnects as soon as possible. Failure to do so could result in a charge to the District/Library for 100% of the ineligible charges paid by DSIT for an inactive location plus any audit re-payments required.
 3. For school or library moves or replacements, the state can only fund one circuit; therefore, simultaneous services at both the old site and the new site will only be provided for a maximum of thirty days. After thirty days, the old site will be disconnected or direct billed to the school district or library.
 4. Full cooperation with the DSIT Security Staff is required for any Dedicated Internet Access (DIA)/Managed Internet Service (MIS) bandwidth upgrade.
5. **Version 5** was approved with no updates effective July 1, 2011.
6. **Version 6** is proposed to be effective July 1, 2012. The proposed updates under this revision are:
- a. **District/Library System Responsibilities**
 - i. Modify title, and statements to include the words "School" and "CATE".
 - ii. Add the following statements regarding CIPA compliance requirements to remain an active member of the K-12 Schools & Libraries Network.
 1. All schools/districts/libraries residing on the K-12 Schools & Libraries Network must be 100% compliant with the "Protecting Children in the 21st Century Act" by July 1, 2012 as required by the FCC E-Rate Program rules.
 2. Any school/district/library that is noncompliant with E-Rate CIPA rules may be removed from the K-12 Schools & Libraries Network. This will result in direct billing for services rendered.
 3. Request to be returned to the network will require proof of compliance before approval can be granted.

- b. Internet Bandwidth Allocation Policy for Schools**
 - i. Add new separate Tier Structure for School Districts
 - ii. Revise current 10 Mbs tier structure (tiers eliminated)
 - iii. Increase minimum bandwidth baseline to 100 mbs for District
 - iv. Include Managed Internet Service (MIS) to service description

- c. Security and Traffic Monitoring Activities to be performed by the SC Chief Security Officer's staff**
 - i. Updated statements added to this section of the policy.