

Internet Bandwidth Allocation Policy - Version 7 Effective July 1, 2013 (FY 2013-14)

Background

The K-12 Technology Committee has faced many challenges in attempting 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 updates apply to the Internet Bandwidth Allocation Policy for the state K-12 Schools & Libraries Network members:

A. Internet Bandwidth Allocation Policy for Schools

1. Funded Bandwidth

For FY 2013-14 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 move toward a **target** of **UP TO** approximately 10 Kbps per student. For districts with up to 1,000 students, this will result in the district being eligible for a circuit of Up to 100 Mbps. Districts with close to 10,000 students would be eligible for Up to 1 Gbps. Larger districts would have a corresponding eligibility as outlined in the table below. The full amount available to the district is known as the Baseline Maximum Bandwidth. Each has an eligible baseline maximum bandwidth provided at no cost to the district, when approved by the K-12 Technology Initiative Committee or under its delegated authority.

*In an effort to avoid over allocation of bandwidth coverage, DSIT will work with school district technology staff to review usage data when service upgrades are requested. This review process may not result in an immediate increase to the districts baseline maximum tier. DSIT reserves the right to decrease bandwidth service if periods of over allocation are identified.

The FY 2013-14 Tiers breakdown for School Districts:

<u>Tier</u>	<u>SD Student Headcount</u>	<u>*Baseline Maximum DIA\MIS BW</u>	<u>DIA\MIS Service Cost AT&T/Spirit</u>
1	0 to 1,000	100 Mbs	\$3,850
2	1,001 to 1,200	120 Mbs	\$4,675
3	1,201 to 1,500	150 Mbs	\$4,950
4	1,501 to 2,000	200 Mbs	\$6,050
5	2,001 to 2,500	250 Mbs	\$6,600
6	2,501 to 3,000	300 Mbs	\$7,150
7	3,001 to 3,500	350 Mbs	\$7,425
8	3,501 to 4,000	400 Mbs	\$7,700

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9	4,001 to 4,500	450 Mbs	\$7,975
10	4,501 to 5,000	500 Mbs	\$8,250
11	5,001 to 5,500	550 Mbs	\$9,625
12	5,501 to 6,000	600 Mbs	\$10,450
13	6,001 to 7,000	700 Mbs	\$11,550
14	7,001 to 8,000	800 Mbs	\$12,100
15	8,001 to 9,000	900 Mbs	\$12,650
16	9,001 to 10,000	1.0 Gbs	\$13,200
17	10,001 to 10,500	1.5 Gbs	\$14,850
18	10,501 to 20,000	2.0 Gbs	\$16,335
19	20,001 to 20,500	2.5 Gbs	\$18,340
20	20,501 to 30,000	3.0 Gbs	\$23,537
21	30,001 to 35,000	3.5 Gbs	\$25,022
22	35,501 to 40,000	4.0 Gbs	\$26,507
23	40,001 to 45,000	4.5 Gbs	\$29,403
24	45,001 to 50,000	5.0 Gbs	\$30,888
25	50,001 to 55,000	5.5 Gbs	\$33,190
26	55,001 to 60,000	6.0 Gbs	\$34,675
27	60,001 to 65,000	6.5 Gbs	\$36,160
28	65,001 to 70,000	7.0 Gbs	\$37,645
29	70,001 to 75,000	7.5 Gbs	\$39,130

Note: Managed Router Service (CPE) is available to all K-12 Schools & Libraries Network members. Members requesting this service must be willing to pay applicable monthly cost share assessment.

The tier structure below will be utilized for Special Schools and Career & Technology Centers (CATE).

The FY 2013-14 Tiers breakdown for Special Schools and Career & Technology Centers (CATE):

<u>Tier</u>	<u>SD Student Headcount</u>	<u>Baseline Maximum DIA\MIS BW</u>	<u>DIA\MIS Service Cost</u>	
			<u>AT&T</u>	<u>Spirit (Avg)</u>
1	up to 2,999	10 Mbs	\$1,416	\$2,182
2	3,000 to 9,499	20 Mbs	\$1,973	\$2,434
3	9,500 to 11,999	30 Mbs	\$2,508	\$3,141
4	12,000 to 14,999	40 Mbs	\$2,890	\$3,267
5	15,000 to 16,999	50 Mbs	\$3,111	\$3,672
6	17,000 to 18,999	60 Mbs	\$3,380	\$3,726
7	19,000 to 19,999	70 Mbs	\$3,639	\$3,699
8	20,000 to 23,999	80 Mbs	\$3,740	\$3,740
9	24,000 to 27,999	90 Mbs	\$3,795	\$3,795
10	28,000 to 30,000	100 Mbs	\$3,850	\$3,850
11	30,001 to 39,999	120 Mbs	\$4,675	\$4,675
12	40,000 to 49,999	150 Mbs	\$4,950	\$4,950

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13	50,000 to 59,999	200 Mbs	\$6,050	\$6,050
14	60,000 to 69,999	250 Mbs	\$6,600	\$6,600
15	70,000 to 79,999	300 Mbs	\$7,150	\$7,150

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 C below. These network members may present their requests or appeal to the K-12 Committee at any time.

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.

1. Funded Bandwidth

For FY 2013-14, DIA/MIS Internet bandwidth for Library Systems will be based on a 10 Mbs minimum funded baseline. DSIT will allocate funded bandwidth coverage based on usage data. Validation of Internet traffic will also be performed via the use of bandwidth reports provided by SC-ISAC / vendor management tools. Funded Managed Router Service (CPE) can be provided to libraries with 50 Mbs or below Internet Access, when funding is available if requested.

C. Bandwidth Qualification Process

Due to the continued critical budget constraints expected during the 2013-14 fiscal year, the K-12 Technology Committee must confirm that all network members 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 network member requesting more bandwidth must demonstrate the true need by undergoing a Security and Traffic Monitoring evaluation to be conducted by the SC Chief Information 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 network member.

No "grandfather clause" will apply under this policy; therefore, sites that already have more bandwidth than they are eligible for under the 2012 Internet Policy will begin paying the appropriate Cost Share on July 1, FY 2013-14.

This will be accomplished as follows:

- a. Member provides written request for bandwidth upgrade evaluation to SC State E-Rate Coordinator (Valarie Byrd at vdbyrd@cio.sc.gov).

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- b. State Coordinator submits a traffic monitoring request to the SC Chief Information Security Officer's staff.
- c. An Intrusion Detection System (IDS) will be installed on the member's network (if not already in place), either by the SC Chief Information 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 member. No network changes will be made by the Security Staff unless approved by network member 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 network member 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 network member contact of the Committee's decision and take appropriate action if orders need to be processed.

D. Unfunded Bandwidth

If a network member 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 network member 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, network members that already have more than their 2012 baseline bandwidth for Internet will begin paying the Cost Share for any bandwidth above their 2012 baseline on July 1, FY 2013-14.

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.

The Cost Share formula is:

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

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

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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	\$2,434
Minus baseline 10 Mbs cost	<u>\$2,182</u> (Spirit Avg for 10 Mbs)
Difference	\$ 252 difference
Times 10% (100%-90%)	\$ 25.20 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	\$2,434
Minus baseline 10 Mbs cost	<u>\$2,182</u> (Spirit Avg for 10 Mbs)
Difference	\$ 252 difference
Times 20% (100%-80%)	\$ 50.40 Monthly Cost Share

F. Security and Traffic Monitoring Activities to be performed by the SC Chief Information 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

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- 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.

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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.
 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. Network members 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.

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6. **Version 6-** was approved and went into effect July 1, 2012. The noted updates in this revisions 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/network members 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 School Districts
 - 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.
7. **Version 7-** Proposed policy revisions to go into effect July 1, FY 2013-14:
 - i. Revise "Background" statement
 - ii. Remove current 100 Mbs baseline, six tier structure for Districts
 - iii. Add new target 10 kbps per student baseline information for Districts
 - iv. Add a 29 tier structure for Districts
 - v. Add statement: " In an effort to avoid over allocation of bandwidth coverage, DSIT will work with school district technology staff to review usage data when service upgrades are requested. This review process may not result in an immediate increase to the districts baseline maximum tier. DSIT reserves the right to decrease bandwidth service if periods of over allocation are identified."

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- vi. Updated "DIA\MIS Service Cost (AT&T\Spirit (Avg) Cost" charts
- vii. Relocated sections "Bandwidth Qualification Process" and "Internet Bandwidth Allocation Policy for Library Systems"
- viii. Changed "schools and libraries" and "district/library" to "network member"
- ix. Corrected position title "SC Chief **Information** Security Officer"
- x. Add Note: Managed Router Service (CPE) is available to all K-12 Schools & Network members. Any member can request this service must be willing to pay applicable monthly cost share assessment
- xi. Revise "B. Internet Bandwidth Allocation Policy for Library Systems"
 - 1. Remove all references to the use of Internet access enabled personal computers (PCs) counts as a determining factor for eligible bandwidth tiers. Tier table removed.
- xii. Add statement: "Validation of Internet traffic will also be performed via the use of bandwidth reports provided by SC-ISAC / vendor management tools. Funded Managed Router Service (CPE) will be provided to libraries with 50 Mbs or below Internet Access, when funding is available if required."
- xiii. Add Note: Library Systems minimum funded bandwidth baseline will be 10 Mbs.