State K-12 Broadband Leadership 2019
Kentucky Case Study

STATE K-12 BROADBAND LEADERSHIP

KETS Guiding Principle

Ensure a minimum standards of equitable anytime, anywhere, always-on access to instructional and administrative education technology services for all students, teachers, and administrators.

The 1990 Kentucky Education Reform Act (KERA) created the Kentucky Education Technology System (KETS) authorizing the Office of Education Technology (OET) within the Kentucky Department of Education (KDE) to provide internet access to all school districts. One of the key components included in the legislation was the development of a technology masterplan, typically covering 6 years. The Master Plan for Education Technology guides decisions about network infrastructure and future bandwidth needs and provides technology leadership and guidance In 1994, Kentucky schools adopted ethernet as a local area network standard and by 1995 implemented the first statewide K-12 network in the country having every K-12 district connected to the internet. In FY2007, based on a bandwidth forecast from OET, the state legislature established a recurring budget to dramatically increase funds for the network infrastructure. This funding established the Kentucky Education Network (KEN) in conjunction with the KETS program. Currently, guided by the technology masterplan, OET uses state funds to purchase and manage the statewide K-12 private middle mile network and internet access on behalf of all school districts. For KETS standard technology items including wired and wireless classroom connections, OET provide a specific dollar amount per student. In order to use the state funds, each district must match the state funds dollar for dollar. At the discretion of the district, state funds are available to escrow for up to three years. OET provides a statewide contract for internal wired and wireless connections that districts can purchase from. Currently, 100% of districts purchase from this contract. Districts may also use the state funding for out-of-school access, including providing connectivity on school buses.

Biannually, Kentucky conducts the Teacher Voice and Working Conditions Survey (TELL) survey of teachers and administrators to inform the school, district and state education improvement planning processes. The survey includes ten data elements that directly relate to technology access in schools. Kentucky consistently receives high response rates to the survey with positive feedback. In the most recent publicized results, 85% of respondents reported that the reliability and speed of the internet in schools was sufficient to support instructional practices. The state's Digital Readiness tool provides snapshots, reports and trends of technology infrastructure and data gathered from the TELL survey. The interactive tool enables users to view results by state, district, or school.

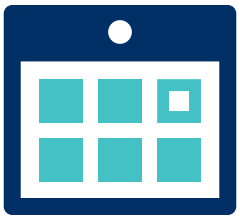
Highlights

Kentucky was one of the first states to adopt the FCC standard of 100 mbps/1000 students at minimum. The state provides bandwidth to districts and schools in an equitable, efficient and cost effective manner. Kentucky works with district leaders to provide the amount of bandwidth a district needs to achieve their instructional goals. Not all district are implementing digital learning at the same pace, so connectivity needs may differ. State technology leaders focus on statewide technology services, such as Internet

access and security; allowing district technology officers to focus on the specific technology needs of their schools. OET carefully monitors district bandwidth usage throughout the year, as well as 10 "bandwidth drivers" in order to forecast growth and file for E-Rate as a statewide consortium. With the support of OET field staff, KDE and school districts filed for a record $52M in E-Rate funds for FY2020.

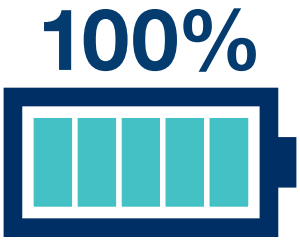
STATEWIDE K-12 EDUCATION BROADBAND NETWORK

KEN is comprised of a Middle Mile network which connects all 173 district hub sites to each other and to the internet. As a local control state, each district is responsible for providing connectivity from the district hub site to each individual school and other district buildings. The network provides secure Internet access to nearly 700,000 administrators, teachers and students. A significant benefit of the statewide network is the ability to integrate security services. The OET has enterprise level services for Firewall, Internet Content Filtering, Anti-Virus, DDoS, and statewide VPN services.



Launch Year
1995

700,000
Number of Users Served



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Network Performance

OET uses various tools to collect and analyze network usage. Kentucky monitors both network traffic and total usage (GB transferred). The statewide internet and district hub usage is based on the "95%" calculations, peak, and average demand. Overall internet usage and individual district usage, is monitored throughout the month to insure adequate capacity. The network vendor is responsible for monitoring specific performance metrics and providing monthly reports on network performance, security status, and district bandwidth upgrades.

Network Upgrades Process

For SY2018-19, all districts have at least 250 Mbps per 1,000 students. OET aims to provide bandwidth on an as needed basis to best meet district instructional and administrative needs. In order to determine recommended upgrades for upcoming year, OET monitors district network utilization, assesses known bandwidth drivers (i.e. Student to Device Ratios, digital learning coaches, and LMS usage, verifies network management "best practices", and assesses confirmed district plans for new initiatives). Final determination is based on the above mentioned analysis and funding availability. Since SY2008-09, all recommended upgrades were fully funded and implemented. Kentucky gathers data on customer satisfaction via the TELL survey and Bright Bytes survey, and relies on these customer satisfaction surveys to advocate for network upgrades. In SY 2013-14, customer satisfaction surveys played a significant part in persuading legislators to increase funding for the network.

POLICIES/GUIDANCE FOR DISTRICTS

The state coordinates a district group to develop specific policies/guidelines for all districts via the Office of Educational Technology at the Department of Education, providing contracts with specific criteria for network and voice hardware as well as Wi-Fi based on a nomination process.

DISTRICT IMPLEMENTATION

Education leaders in Johnson, Carter, Barren and Jefferson counties are reimagining learning opportunities for both teachers and students by creating collaborative and innovative experiences powered by digital tools. Johnson County is using digital tools and collaboration to reimagine professional learning by allowing teachers to work anywhere and anytime to earn e-badges that provide practical application of digital teaching strategies. In Carter County, based upon data from the TELL survey, 91% of teachers report that they have sufficient access to instructional technology, including devices, software and the internet. The district is able to harness the efficiency of digital tools to gather and visualize student data in new ways, allowing for more opportunities to personalize learning for students. Barren County is expanding digital opportunities for students with their Innovation Academy that is preparing students for computer science and technology fields through practical experience and industry certifications. Jefferson County is collaborating with partners to implement a digital backpack program where students can create products to show mastery of learning in different ways and carry that with them through school and beyond. With 89% of students with home access, most students can easily access their digital backpack at home.

OFF CAMPUS

Off campus access is tracked via the KETS Digital Readiness Survey. Based on 2017-2018 data, approximately 80% of students reported having Internet access at home. As with many states, Kentucky has a gap between available affordable access in certain areas of the state. In order to address this gap, OET promotes provider based solutions to help students with off campus access. However, it's ultimately the responsibility of parents to help students meet off campus access needs. Some districts provide Wi-Fi on buses to help meet off campus access needs. In some areas of the state, schools provide hotspots for students to check out to take home or a bundle of a device and hotspot. Districts also work with providers to inform families about options for internet access. Two districts lease the education broadband spectrum (EBS) to Sprint telecommunications company. Sprint provides cell phones and hotspots for students and staff to check out on an as needed basis to support student learning.

FUTURE PLANS

Kentucky works to connect the dots between the state education strategic plan and the KETS 2018 – 2024 KETS Master Plan to ensure that the technology is available to meet the educational goals. Bandwidth upgrades and capacity needs continue to increase. OET is planning to upgrade the bandwidth of 24% of districts this coming year due to network growth. Kentucky continues to focus on future bandwidth needs as they plan for the next network contract in 2022-2023.

24%

of districts

are planned for a bandwidth upgrade this coming year due to network growth.

Other areas which OET intends to focus on now and in the near future include:

- Address the importance of having adequate numbers of education technology roles/positions in all districts to ensure that existing and new education technology is (a) extremely reliable and available in the classroom, (b) maximized, (c) secure and safe, and (d) provides data of the highest quality
- Address funding required for basic cost of living increases, previous budget cuts to basic services and projected growth by districts (e.g., Internet consumption)

- Recognize the most crucial education technology professional development needs identified by teachers and identify who can best address the needs
- Focus efforts on shifting basic cyber security and safety to a prime position on the radar screen of teachers and district staff members
- A higher percentage of districts annually examining education technology investments to determine which technologies are and are not being used/maximized
- Identify and communicate the EdTech product/design standards, EdTech safety and security, EdTech services, and reporting requirements of other schools that apply to charter schools