



El Dorado Springs eliminates bandwidth congestion with **CACHEBOX**

Challenge

- 100Mbps internet connection congested from 1:1 software updates, videos and e-learning content
- Slow access to content, disrupting lessons
- Expensive bandwidth

Solution

- **CACHEBOX230**
- Serves files locally via LAN

Benefit

- 90%+ Windows & Apple updates cached
- 70%+ bandwidth savings overall
- Guarantees significantly higher ROI than bandwidth

About El Dorado Springs

Based in Cedar County, Missouri USA, El Dorado Springs School District serves almost 1,500 students in three schools on a single campus, all sharing an internet connection of 100Mbps. The district seeks to maintain the highest standards of education and deliver equal access through its use of technology.

1:1 software updates congesting the network

In 2016, El Dorado Springs introduced a one device to one pupil (1:1) scheme to enable e-learning for all 1,500 students. With the substantial leap in device numbers, Technology Director Brent Hillsman expected internet traffic to increase as more students accessed online learning content.

Sure enough, when the first new devices connected to the internet, they simultaneously attempted to download a multi-gigabyte Windows update file, maxing out the connection. The resulting congestion meant that instead of enjoying new e-learning content, teachers and students faced slow access, disrupting lesson plans.

Costly bandwidth in rural Missouri

In its rural locale, El Dorado Springs faces bandwidth costs significantly higher than average – so upgrading is expensive. Realising that bandwidth consumption would continue to rise as more devices were added and more online content was accessed, Brent feared having to pay out for one upgrade after another.

To avoid the endless cycle and secure a higher return on investment for the district, he decided to invest in a caching solution to help deliver the fast access teachers needed in the classroom.

CACHEBOX: the only fit for purpose schools cache

Considering his options, Brent assessed E-rate's most popular caching solution - **CACHEBOX**. Engineered specifically for schools, he found it did a lot more than just cache software updates from a single specific platform. It caches content from all vendors – Microsoft, Windows, Apple, Chrome, etc as well as handling core classroom content including video and HTTPS, which are routinely difficult to cache.

By storing and serving masses of in-demand content from local cache - at much faster LAN speeds – **CACHEBOX** ensures a premium user experience, providing significantly higher returns-on-investment than upgrading bandwidth.

And thanks to federal approval for caching through the US schools' E-rate programme, the district was able to part-fund a **CACHEBOX230** – everything it needed to support up to 1,500 users at 200Mbps.



*We had limited bandwidth and **CACHEBOX** presented itself as a more cost-effective alternative than bandwidth.*



Brent Hillsman, Technology Director

Offloading demand on bandwidth

With **CACHEBOX** deployed, gigabytes of downloads were offloaded from the district's internet connection. Over time, device numbers and traffic have steadily increased. By the latter half of 2019, the numbers were even more impressive.

El Dorado reports monthly bandwidth savings of 70-80% - releasing substantial availability for more learning content or extra devices.

“
CACHEBOX significantly helped us reduce our bandwidth requirements.”

| Month | Traffic volume (GB) | Traffic served from cache (GB) | % served from cache |
|-----------|---------------------|--------------------------------|---------------------|
| July | 145 | 109 | 71% |
| August | 977 | 847 | 76% |
| September | 597 | 496 | 79% |
| October | 908 | 784 | 86% |
| November | 414 | 342 | 83% |
| December | 335 | 293 | 88% |

El Dorado Overall Traffic | July - December 2019

Brent Hillsman, Technology Director

Software update surges routinely taken off the WAN

Network traffic from software updates has also grown significantly, today regularly accounting for 90% of all monthly downloads.

Yet **CACHEBOX** is storing and serving up to 97% of updates from Microsoft, Apple, Google and other platforms locally – avoiding significant network congestion. And being served at LAN speeds, updates reach devices 7-8x faster than from the internet, clearing the network faster too.

| Domain | Traffic volume (GB) | Traffic served from cache (GB) | % served from cache |
|---------------------|---------------------|--------------------------------|---------------------|
| *.microsoft.com | 369 | 353 | 96% |
| *.google.com | 227 | 207 | 91% |
| *.windowsupdate.com | 39.1 | 35.6 | 91% |
| *.adobe.com | 5.74 | 4.35 | 76% |

El Dorado Traffic from Software Updates | October 2019

HTTPS content included

As El Dorado owns and manages all devices on the network, it is also able to intercept HTTPS traffic via self-signed SSL certificates held on each device.

CACHEBOX's HTTPS caching functionality means the district can preserve even more bandwidth - including YouTube, as well as gigabytes of HTTPS content from Chrome software updates.

| Month | GVT1 traffic volume | GVT1 traffic served from cache | % served from cache |
|----------|---------------------|--------------------------------|---------------------|
| October | 6.27GB | 1.90GB | 30% |
| November | 5.86GB | 969MB | 17% |
| December | 4.13GB | 2.96GB | 72% |

El Dorado Traffic from HTTPS content GVT1.com | October - December 2019

Thanks to **CACHEBOX**, El Dorado gets the most of out of its 1:1 scheme without worrying about bandwidth congestion. In fact, the district's bandwidth savings are so significant Brent has put all thoughts of upgrading bandwidth on hold.

“We had limited bandwidth and **CACHEBOX** presented itself as a more cost-effective alternative than bandwidth. It significantly helped us reduce our bandwidth requirements,” he says.