

SREB

# Beyond Bandwidth: Caching Technology

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**Wanda Barker, Director**

**April 27, 2015**

Poll: What level of education do you represent?



# Agenda

- What is Caching, Types of Caching and Why is it Important
- What Does the FCC Say About Caching
- Why Install Caching
- How Caching is Closing the Digital Divide
- Distribution Challenges Before Caching
  - Outside the Classroom
  - Inside the Classroom
- How Caching Facilitates Learning in the Classroom
- Training Teachers to Integrate Caching into Their Classroom
- Questions

# Speakers

Joe Freddoso - E-rate and Network Expert

Cindy Johnson - E-rate Expert and Former District Chief Technology Officer

Tammy Tucker - Mount Vernon Elementary Principal

Melody Faulkner – Mount Vernon Elementary Teacher

Ashley White - Apex High School Teacher

Carla Bolick - Teacher and Advisor for URCast

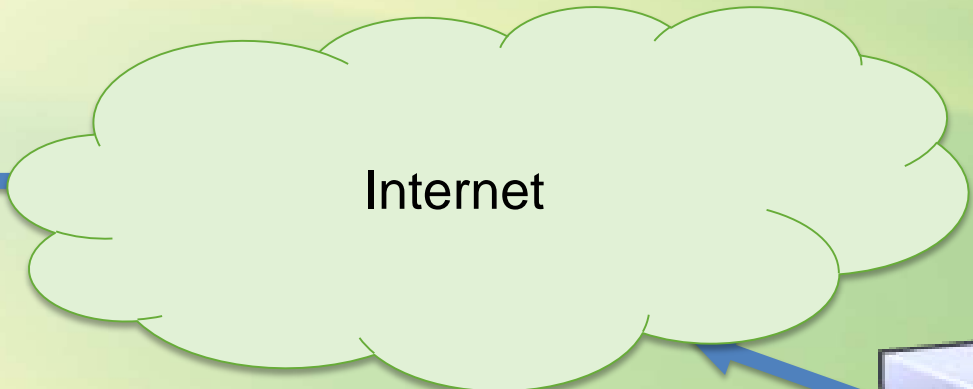
# Caching and the FCC

**Joe Freddoso,**  
COO Mighty River, LLC  
FCC Advisor  
Former CEO MCNC

# How Caching Works

# How caching works

Caching Server  
Internet PoP



ONE TIME

ONE TIME



Origin Server

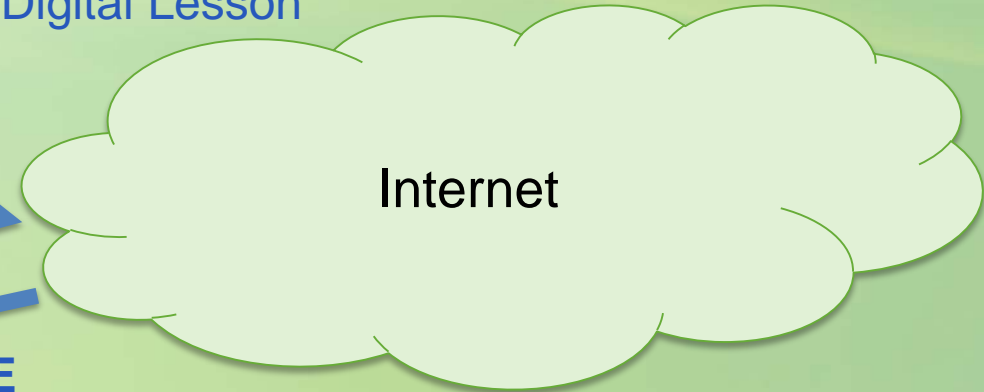


# Classroom caching works this way

School/  
Institution



Teacher/Professor Builds Digital Lesson



Stored on standard server at  
Institution/School  
and teacher schedules for  
delivery



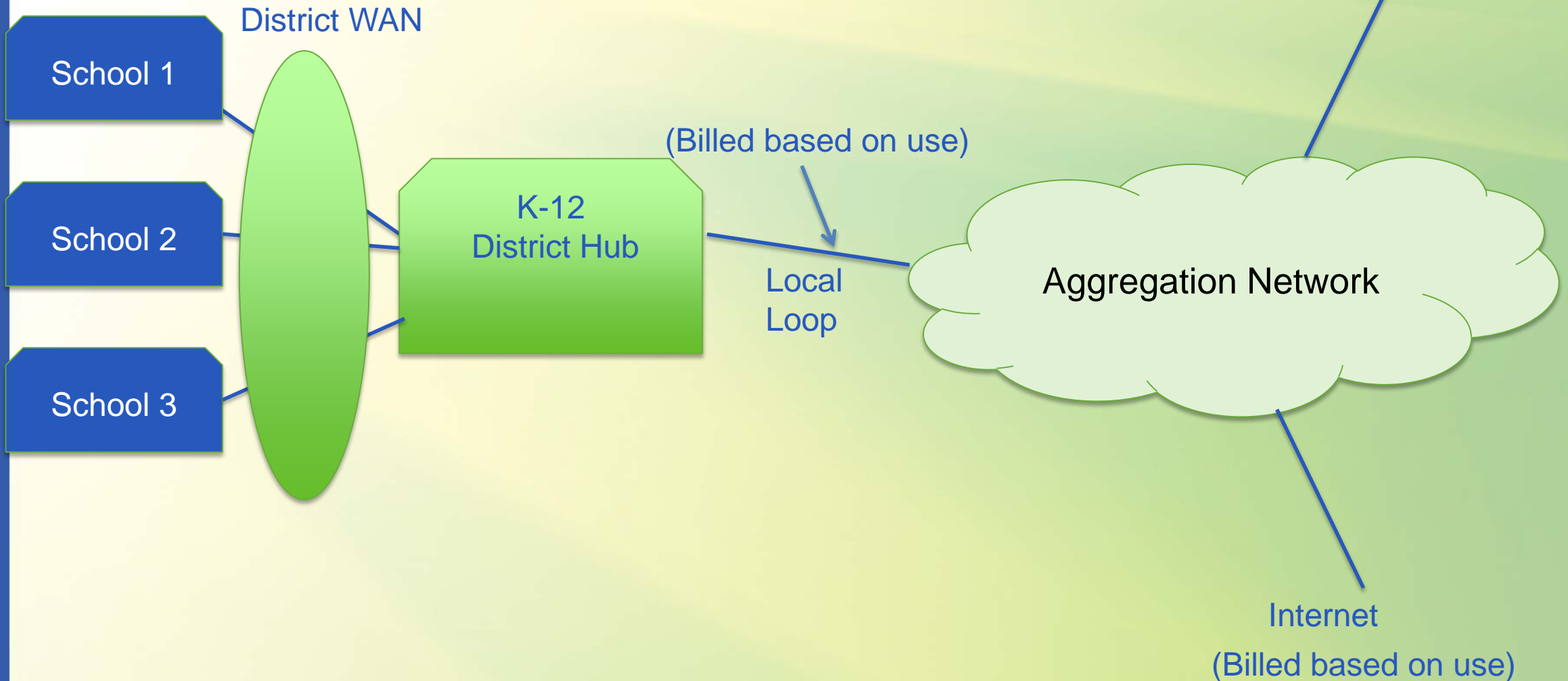
**ONE TIME**



Broadcast to students when they  
authenticate  
& stored on the hard drive of  
their device so they can take  
home



# Caching saves bandwidth on metered connections



# Caching is E-rate Eligible

- Modernization order #1 – July, 2014
- Flexible definition
- Standard is improved cost efficiency and better utilization of available bandwidth
- First applications under review
  - Feedback will be instructive

# FCC Data and Changing Pedagogy

**Cindy Johnson,**  
CEO E-Rate Services, LLC  
Former Chief Technology Officer Lee County  
Schools

# The Need for Caching



- Availability of digital content beyond the classroom is necessary for teachers to fully embrace a 1:1 instructional program
- High poverty students may not have Internet access at home
- Middle and upper class students often have activities beyond the school day and do not do homework at home



# Spin-off Advantages

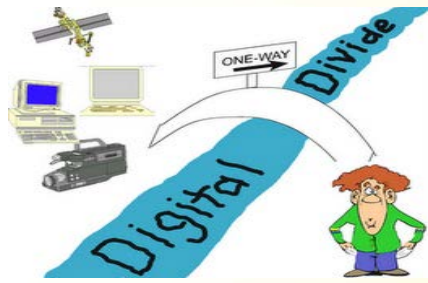
- Parents have an opportunity to learn
- Faster delivery of digital content in the classroom
- Less instructional time wasted while assisting young students obtain content
- Less time spent collecting students' digital content



# Digital Divide

**Tammy Tucker**, Mount Vernon Elementary  
Principal, Barbour County Schools, WV

**Melody Faulkner**, Mount Vernon Elementary  
Teacher, Barbour County Schools, WV



# Caching Enables Mount Vernon Elementary to Bridge the Digital Divide

- Many students have long school commutes and slow or no home Internet. Now all students, regardless of home Internet status, have access to our digital lessons whether at home, on the bus or anywhere else.
- Teachers send a cached lesson to each student's device. The students can then view the cached content without an internet connection anywhere they have their computer, whether at home, on the bus, or in the car.
- Students can learn at their own pace and take what they have learned home and continue their work.



# Caching use Outside the classroom

- In addition for regular homework we also use caching on snow or weather days. We send additional cached lessons to all student devices to work on during those days. Everyone has access to our digital lessons.
- We can use our managed caching tool to tell students what we want them to work on.
- Students can upload their weather day work when they're back in school.





# Other benefits

- Before caching we had trouble distributing large digital files, especially videos. The caching system enables us to send students almost any file and they can now access it anywhere.
- We can still distribute files even if our school Internet is down.
- Teacher supervision over Internet content means we don't have to worry about student online wandering or distractions!



# West Virginia Department of Education Mount Vernon Elementary Caching Video

<https://vimeo.com/119450079>



# Distribution Challenges and Facilitating Learning

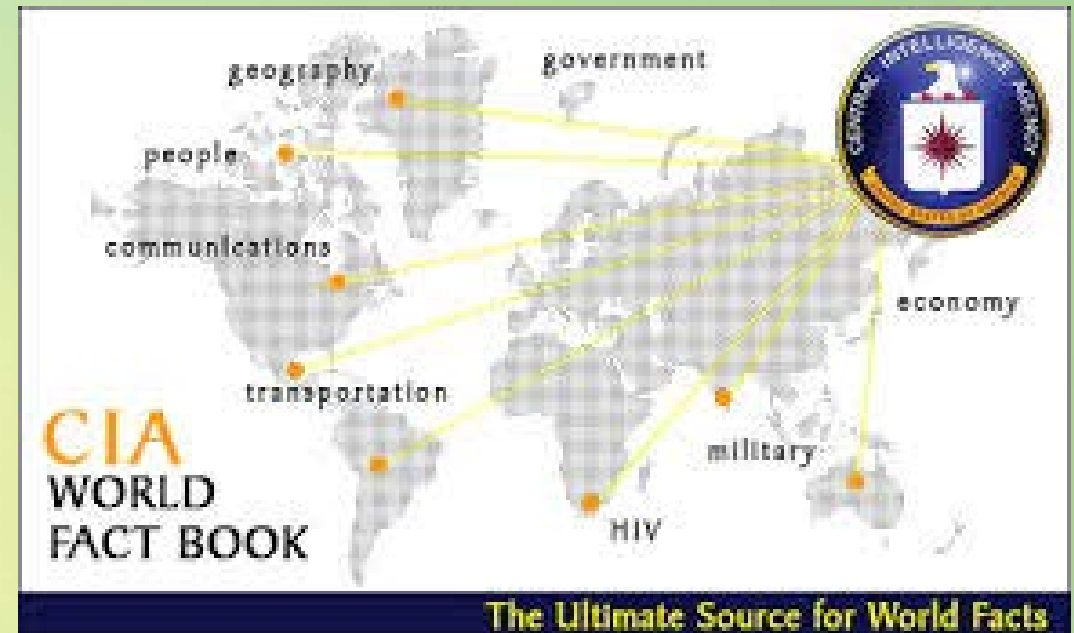
**Ashley White**, Apex High School  
Teacher, Apex, NC

# Classroom Experiences Before

- Procedures prior to caching
- “Forgot”
- Excuses



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# Classroom Experiences During

- Start time
- Remove students “getting” content
- Time on task
- Engaged and self pacing
- Content or enrichment
- Reactions



# Teacher Training and Adoption

**Carla Bolick, Teacher and URcast Advisor**

# Teacher Training and Adoption

- Learning a Managed Caching Tool
- Finding Resources
- Retrieving Rich Media from the Internet
- Sharing Among Peers



# Questions?



**Thank you for attending!**

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