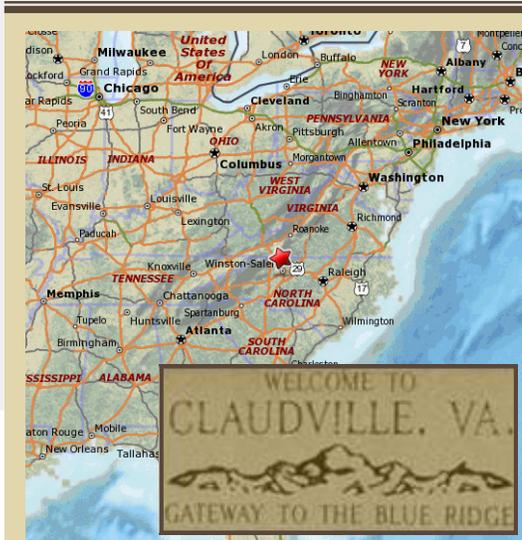


Improving Access to High Speed Broadband



Rural town near the Virginia/North Carolina state line

- Population, 916
- No Broadband Services for Education or Business
- Unlicensed alternatives impractical due to distances and dense foliage

Improving Access to High Speed Broadband In Claudville, Virginia With Spectrum Bridge's TV White Spaces Network Architecture

Using Spectrum Bridge's (SBI) wireless network architecture and technology to wirelessly deliver high-speed internet connectivity to business, education and community users in Claudville, Virginia, SBI launched the nation's first TV White Spaces broadband network. The SBI solution is able to access available TV White Spaces spectrum and manage the deployed network by dynamically assigning non-interfering frequencies to White Spaces devices.

High Costs and Environmental Landscape Limit Broadband Access

Like many other rural communities, business and residential users in Claudville are limited to dial-up or costly satellite-based internet delivery that can be unacceptably slow or cost prohibitive. "We had been trying to get local service providers to bring broadband into Claudville for over 6 years with no success," said Roger Hayden, Director of the Claudville Computer Center and Chairman of the Patrick County Broadband Task Force.

In September 2009, the TDF Foundation, working with the support of the Patrick County Broadband Task Force, funded the construction of a computer lab, with high-speed Internet. However, the TDF Foundation wanted to deliver the benefits of broadband access to more of the community than just the

computer lab. Due to the distances between locations, and dense foliage in the area, extending broadband further into the community via fiber or copper lines was impractical and cost prohibitive. To solve this dilemma, the TDF Foundation contacted Spectrum Bridge.

Spectrum Bridge Solution

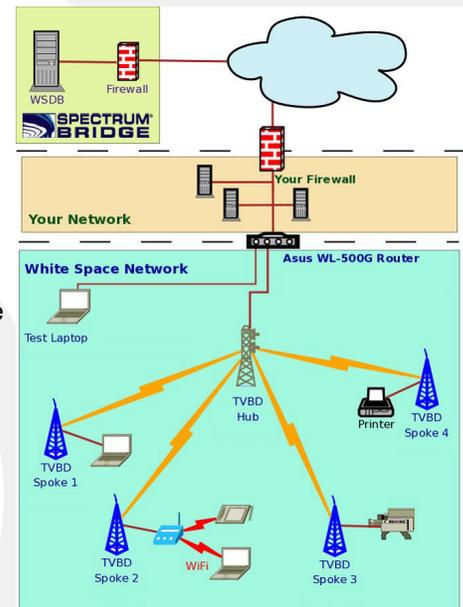
SBI deployed its new wireless network architecture which integrates database-driven bandwidth allocation software with off the shelf radio equipment to enable an innovative wireless solution that took advantage of the newly available TV White Spaces channels.

Using existing infrastructure, SBI installed its software application on a white space radio at locations throughout the service area. These radios were set up at the local school, the café located in the business district, as well as to SoHo business users in the community creating "middle mile" connections between the computer lab and multiple WiFi hot spots installed (See diagram at right).

As part of this TV White Spaces project, Dell and Microsoft, long time supporters of TV White Spaces, donated state-of-the-art computer equipment, Internet video systems and software to the school.

The initial deployment using SBI's TV White Spaces technology:

- Provided access to broadband, finding available TV White Spaces in the locations required
- Determined channel availability including contiguous and non-contiguous channels
- Provided real-time updates to move users in the event of incumbent use



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Robust Network Architecture offers Alternative Solutions

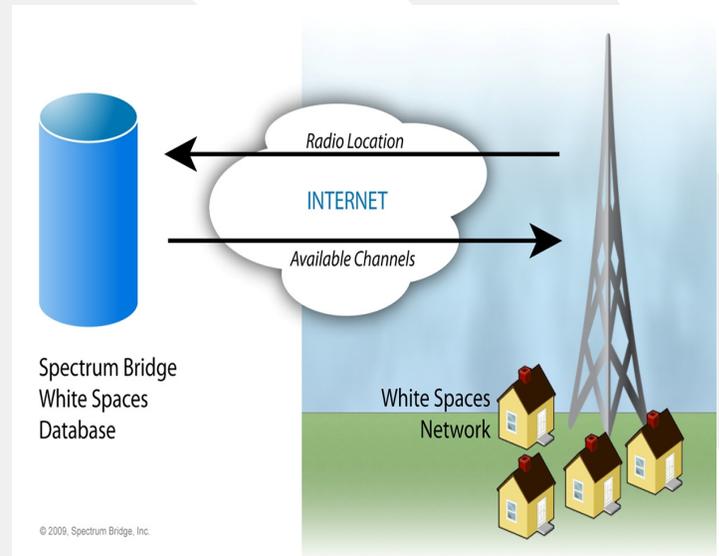
Deploying SBI's White Spaces technology enabled high speed internet service extending broadband internet access to the Claudville business district and the local school while protecting the incumbent users of TV spectrum, including TV broadcasters and wireless microphone users.

Two benefits for deploying our wireless network technology included:

- Bandwidth efficiency: Accessing available spectrum and optimizing network performance
- Cost effectiveness: The Network was deployed with fewer towers than were previously required for available unlicensed frequencies

To address the issue that TV White Spaces frequencies are unlicensed, certain precautions were taken by SBI to ensure that the White Spaces network does not cause interference with licensed television broadcasts and other protected TV band users. This was accomplished using the preliminary rules issued by the FCC for TV White Space Device operation and propagation models for the TV stations located within the area. No interference issues were found in the deployment area.

This network is monitored remotely by SBI's intelligent TV White Spaces Network Management Application and integrated database, which dynamically assigns non-interfering frequencies to White Spaces devices. These White Spaces devices are assigned channels in real-time to assure TV broadcasts, as well as other protected TV band users operating in the area, are not interfered with.



The Trinity School in Claudville, Virginia

Tangible Results and Network Benefits

Spectrum Bridge's TV White Spaces broadband network solution created a significant impact in Claudville, Virginia. According to Jerry Whitlow, Administrator of the Trinity School in Claudville, the school had been interested in distance learning as a way to expose its students to courses and resources that are not available in Claudville. "We knew we could enhance our students' education and learning opportunities by having them virtually attend classes or interact with students from other schools," said Whitlow. With the implementation of this network, teachers can finally incorporate distance learning opportunities into the school's curriculum.

The business area is also benefiting from SBI's solution. Residents can now use the WiFi capabilities built into their laptops and smart phones to get high-speed Internet via the WiFi hotspot at the Cafe. "I have seen students bring their laptops to the café in order to use the internet to complete homework assignments. This should also bring more residents down to the commercial area and help drive traffic to local businesses," said Roger Hayden. "I'm sure the community will find new ways to use this broadband access as time progresses. I use it myself to send emails and connect to the Internet from my phone while at the café."

TV White Spaces: Looking Ahead

Spectrum Bridge's next deployment using its intelligent database-driven technology will support multiple "Smart City" applications in Wilmington/New Hanover, NC. As SBI continues to plan and deploy additional database-driven network solutions both domestically and internationally, the possibilities for these open frequencies to provide solutions to a variety of different applications have become more viable.

About Spectrum Bridge Inc.

Spectrum Bridge is making wireless spectrum more available, accessible and productive for everyone as part of its Universal Spectrum Access initiative. Named to Fierce Wireless' Fire15 as one of "the most innovative and smart emerging companies in the wireless industry," the company is privately held and headquartered in Lake Mary, Florida. For more information, contact us at (866) 598-7426 or visit SpectrumBridge.com.