# CHAPEL
## COMMUNICATIONS

## FireCracker
### MEGA-SPEED WIRELESS

*1212 West Main Street, Richmond, KY 40475   859.623.1500*

**Chapel "Firecracker"**
**Ultra-Speed Broadband Internet**

The technology behind Chapel FIRECRACKER Wireless is absolutely the best means to move large amounts of data without using expensive copper telco lines. Join the growing number of companies that have discovered that wireless is faster and more economical than wired Point to Point or Frame Relay service.

- 24/7 Dedicated Service, **full duplex** transfer rates as high as 3.3 Mbps and can reach subscribers up to 20 miles away depending on conditions.

- Installation fee **MUCH** less than Telco  T-1

- Fee, billed monthly, in advance, starting at $37.95 per month for residential.

- **NEVER** a busy signal .... always "ON" connection.

- No equipment to buy, router included, just plug it in.

- No expensive telephone line fees or hidden charges.

- Static IP addresses available on request.

- Full time monitoring and other network services available.

- Business accounts include 10 e-mail mailboxes. Custom E-mail (yourname@yourcompany.com)

- Discounted domain name hosting available.

- Typical installation time, 3-10 days.

- Technology, implemented, and serviced by Chapel Communications, not an outside contractor.

- Technology developed by US Military.

- Building-to-Building available without costly T1 charges. Links as large as 45 Mbps.
  That is equivalent to 30 T1 lines.
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Let's run through a few details of Wireless Connectivity

**Benefits of WLANs (Wireless Local Area Networks)**

The widespread strategic reliance on networking among competitive businesses and the meteoric growth of the Internet and online services are strong testimonies to the benefits of shared data and shared resources. With wireless LANs, backbone providers like Chapel Services can provide extremely fast Internet connectivity at a fraction of the cost of standard copper based data lines.  In house users can access shared information without looking for a place to plug in, and network managers can set up or augment networks without installing or moving wires.

**Wireless LANs offer the following:**
- Productivity
- Speed of deployment
- Convenience
- Cost advantages over traditional wired networks:

**Mobility**
Wireless LAN systems can provide LAN users with access to real-time information anywhere in their organization. This mobility supports productivity and service opportunities not possible with wired networks.

**Installation Speed and Simplicity**
Installing a wireless LAN system can be fast and easy and can eliminate the need to pull cable through walls and ceilings.

**Installation Flexibility**
Wireless technology allows the network to go where wire cannot go.

**Reduced Cost-of-Ownership**
While the initial investment required for wireless LAN hardware can be higher than the cost of wired LAN hardware, overall installation expenses and life-cycle costs can be significantly lower. Long-term cost benefits are greatest in dynamic environments requiring frequent moves, adds, and changes.

**Scalability**
Wireless LAN systems can be configured in a variety of topologies to meet the needs of specific applications and installations. Configurations are easily changed and range from peer-to-peer networks suitable for a small number of users to full infrastructure networks of thousands of users that allows roaming over a broad area.

**How WLANs Work**

Wireless LANs use electromagnetic airwaves (radio and infrared) to communicate information from one point to another without relying on any physical connection. Radio waves are often referred to as radio carriers because they simply perform the function of delivering energy to a remote receiver. The data being transmitted is superimposed on the radio carrier so that it can be accurately extracted at the receiving end. This is generally referred to as modulation of the carrier by the information being transmitted. Once data is superimposed (modulated) onto the radio carrier, the radio signal occupies more than a single frequency, since the frequency or bit rate of the modulating information adds to the carrier.

Multiple radio carriers can exist in the same space at the same time without interfering with each other if the radio waves are transmitted on different radio frequencies. To extract data, a radio receiver or augment networks without installing or moving wires. Wireless LANs tunes in (or selects) one radio frequency while rejecting all other radio signals on different frequencies.

In a typical WLAN configuration, a transmitter/receiver (transceiver) device, either an access point or a bridge, connects to the wired network from a fixed location using standard Ethernet cable. At a minimum, the access point receives, buffers, and transmits data between the WLAN and the wired network infrastructure. A single FIRECRACKER access point can support a group of users of 5 to 100, and can function within a range from less than one hundred feet to over 20 miles, depending on radio power output and antenna gain. The access point (or the antenna attached to the access point) is usually mounted high, but may be mounted essentially anywhere that is practical as long as the desired radio coverage is obtained.

End users access the VVLAN through wireless-LAN adapters, which are implemented as PC cards in notebook computers, ISA or PCI cards in desktop computers, or integrated within hand-held computers. WLAN adapters provide an interface between the client network operating system (NOS) and the airwaves (via an antenna). The nature of the wireless connection is transparent to the NOS.

**WLAN Customer Considerations**

While Chapel's Firecracker wireless LANs provide installation and configuration flexibility and the freedom inherent in network mobility, customers should be aware of the following factors when considering Chapel's Firecracker wireless LAN systems:

• Range/Coverage
• Throughput


*Range / Coverage*

The distance over which RF and IR waves can communicate is a function of product design (including transmitted power and receiver design) and the propagation path, especially in indoor environments. Interactions with typical building objects, including walls, metal, and even people, can affect how energy propagates, and thus what range and coverage a particular system achieves. IR is blocked by solid objects, which provides additional limitations. Most wireless LAN systems use RF because radio waves can penetrate many indoor walls and surfaces. The range (or radius of coverage) for typical WLAN systems varies from under 100 feet to more than 20 miles. Coverage can be extended and true freedom of mobility via roaming, provided through microcells.

*Throughput*

As with wired LAN systems, actual throughput in Chapel's *FIRECRACKER* is product and set-up dependent. Factors that affect throughput include airwave congestion (number of users), propagation factors such as range and multipath, as well as the latency and bottlenecks on the wired portions of the *FIRECRACKER* WLAN. Typical data rates range from 300k  to 10 Mbps. Users of traditional Ethernet LANs generally experience little difference in performance when using a wireless LAN and can expect similar latency behavior. Chapel's FIRECRACKER provides a very high speed alternative to standard analog modems or expensive telco T-1 charges.


**See image below for an example of the outside customer equipment.**