

# Security Issues Concerning Wireless Broadband

By Farhat Abbas  
(General Manager, Onetel Pakistan)

# What is Broadband?

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- ▶ Broadband is often called "high-speed" Internet, because it usually has a high rate of data transmission. In general, any connection to the customer of 256 kbit/s (0.256 Mbit/s) or greater is more concisely considered broadband Internet.



# Broadband Proliferation in Pakistan

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- ▶ Broadband is offered in Pakistan from 512 kbit/s to 12 Mbit/s in all major cities.
- ▶ Currently Pakistan has 600,000 broadband subscribers in the country.
- ▶ Major broadband service providers:
  - ▶ Cybernet
  - ▶ PTCL
  - ▶ LINKdotNET
  - ▶ Wateen



# What is Wireless Internet?

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- ▶ Wireless internet is a form of access to the web; an extension to the wired system through
  - ▶ 802.11 a, b, and g, and 802.16 fixed wireless WiMax
  - ▶ GSM Edge or 3G
  - ▶ Evolution Data Optimization (EVDO) on Code Division Multiple Access (CDMA) networks
  - ▶ Satellite broadband



# Introduction to Hacking

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- ▶ All business and home users must know that their systems can be compromised, and that there are ways to prevent it.
- ▶ This is most commonly known as “hacking” where the hacker may gain access to your personal/official information.
- ▶ Most people are unaware of how hacking takes place, and how important it is to save their systems and networks from people with malicious intent.



# Reasons for Breach of Security

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- ▶ By gaining access to your computer, the hacker would want to achieve any one or more of the following:
  - ▶ Free internet access (in most cases)
  - ▶ Your credit card number and PIN code
  - ▶ Access to your bank account
  - ▶ Business documents
  - ▶ Personal files
  - ▶ Redirect malicious activities to your server



# How to Hack Through Wireless Broadband

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- ▶ A wireless router allows all network cards within an 18-30 foot radius to pick up signals. (Eavesdropping)
- ▶ For a greater radius, an antenna can be used to aid the network card.
- ▶ Encryption-breaking tools. Examples:
  - ▶ Aircrack-ng
  - ▶ Kismet
  - ▶ Scanners
  - ▶ Arping
- ▶ Problems with security features on broadband devices:
  - ▶ The security feature is turned off by default
  - ▶ The default password is easy to guess



# Preventing Wireless Hacking

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- ▶ **Wireless Encryption Protocol (WEP)**
  - ▶ This encrypts the packets the network is sending out, and cannot be accessed without the wireless encryption protocol key.
  - ▶ However, certain software is designed to generate these keys, so that these encrypted algorithms can be broken.
- ▶ **Firewall**
- ▶ **Wi-Fi Protected Access (WPA)**
- ▶ **Device management (Manufacturers should set all features on security by default)**
  - ▶ Turn on security feature on router
  - ▶ Change default password
  - ▶ Change default SSID (Service Set ID)
  - ▶ Hide SSID through router configuration



# Preventing Wireless Hacking

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- ▶ **Secure Portals and Payment Gateways**
  - ▶ Especially designed for credit card and banking transactions
  - ▶ Trusted names: Paypal and CCavenue
- ▶ **Be Aware of Phishing**
  - ▶ Phishing is the use of fraudulent emails and requests demanding user ids and passwords on the basis of security verification. It is best to ignore these requests, and to never give out any information.
- ▶ Turn off ad hoc mode, if not required (Ad hoc mode enables people to have peer to peer connections without a WAP)



# Cyber Terrorism

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- ▶ Cyber terrorism is the premeditated, politically motivated attack against information, computer systems, computer programs, and data which result in violence against noncombatant targets by sub national groups or clandestine agents.
- ▶ Hacking and unauthorized access to servers and databases have eventually been helpful to terrorists.



# Cyber Terrorism

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▶ *Example 1*

A cyber terrorist disrupts bank software, interrupts financial transactions, and hacks into the stock market, deleting and changing stock prices. The cyber terrorist also introduces false information to the media concerning corporate mergers, stock prices, and corporate earnings. The disinformation causes a rapid decrease in stock prices, a loss of market capitalization, and a destabilization of the market. The citizenry lose faith in the economic systems and economic destabilization is achieved.

▶ *Example 2*

A possible cyber terrorist attack could target children through a cereal manufacturer. A cyber terrorist could hack into the manufacturer's production computer and change the iron content to be added to the cereal. The cyber terrorist tells the computer to add eighty percent iron to the cereal instead of two percent. Many children eat the cereal and become very ill or possibly even die. Although several experts agree that this is a possible situation, many argue that the plan's success is unlikely.



# Wi-Fi Hotspots in Pakistan

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## ▶ *Karachi*

Avari Towers,  
Pearl Continental Hotel  
Marriott Hotel  
Sheraton Hotel and Towers  
Hotel Mehran  
Regent Plaza  
Beach Luxury Hotel  
Costa Coffee  
Evolution  
Espresso  
Basement Café  
Hot Spot



# Wi-Fi Hotspots in Pakistan

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- ▶ McDonald's (Clifton)
- Dunkin' Donuts (Tipu Sultan Road)
- Time Out (The Forum)
- Park Towers (Food court)
- Royal Rodale Club,
- SZABIST
- IBA
- CBM
- Bahria University
- FAST-NU
- Synergy
- Uniplaza Jinnah Terminal
- Karachi Broast



# Wi-Fi Hotspots in Pakistan

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## ▶ **Lahore**

LUMS

Pearl Continental Hotel

Allama Iqbal Airport

DigiMart

Windmills

Pizza Hut

FAST

Subway MM Alam Road

UCP (PCBA)

## ▶ **Islamabad**

Serena Hotel

Marriott Hotel

Quaid-e-Azam Univ

Islamabad International Airport

Blue area GD Arcade, MAJU

