BusinessCom | Internet via Satellite
PROFESSIONAL BROADBAND SOLUTIONS WORLDWIDE

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TELEPHONY SERVICES CONFIDENTIAL

Asterisk
The Open Source PBX

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What is VoIP?

Internet Voice, also known as Voice over Internet Protocol (VoIP), is a technology that allows you to make telephone calls using a broadband Internet connection instead of a regular phone line.

Some services using VoIP may only allow you to call other people using the same service, but others may allow you to call anyone who has a telephone number - including local, long distance, mobile, and international phone numbers around the world. Also, while some services only work over your computer or a special VoIP phone, other services allow you to use a traditional phone through an adaptor or gateway.

VoIP allows you to make telephone calls using a computer network, over a data network like the Internet. VoIP converts the voice signal from your telephone into a digital signal that travels over the internet then converts it back at the other end so you can speak to anyone with a regular phone number. When placing a VoIP call using a phone with an adapter, you'll hear a dial tone and dial just as you always have. VoIP may also allow you to make a call directly from a computer using a conventional telephone or a microphone.

VoIP has several advantages over traditional telephony:

- **Wider range of features and facilities.** In addition to the basic end-to-end voice conversation, more information and control about each call can easily be provided. This includes sending and receiving messages or data files in parallel with the voice conversation, audio conferencing, managing address books and passing presence information about whether friends/colleague are available online to interested parties.

- **Freer innovation.** Innovation progresses at market rates rather than the slow pace of the multilateral International Telecommunications Union (ITU) committee process, resulting in more new advanced features.

- **Lower per-call costs.** Once the capital costs of terminals and/or computers and the operating costs of a data network connection are in place, there per call charges versus traditional telecom operators are significantly lower, almost to any destination in the world. A typical VoIP user saves approximately 400% in his monthly bills.

- **Lower infrastructure costs.** VoIP reduces the traditional scheme—two separate wiring systems, one for voice and one for network—to a single connection. VoIP is easy to deploy and manage and with BusinessCom Internet via Satellite services now telephone access is available almost in any point of the world!

Although now office environments and homes use a pure VoIP infrastructure, telecommunications providers routinely use IP telephony, often over a dedicated IP network, to connect switching stations, converting voice signals to IP packets and back. The result is a data-abstracted digital network which the provider can easily upgrade and use for multiple purposes.

VoIP is also widely employed by carriers, especially for international telephone calls. It's commonly used to route traffic starting and ending at conventional PSTN (Public Switched Telephone Network) telephones. Many telecommunications companies are looking at the IP Multimedia Subsystem which will merge Internet technologies with the mobile world, using a pure VoIP infrastructure. It will enable them to upgrade their existing systems while embracing Internet technologies such as the web, email, instant messaging, presence and video conferencing. It will also allow existing VoIP systems to interface with the conventional PSTN and mobile phones.

Key Advantages of BusinessCom Telephony Services

BusinessCom is proud to introduce a Premium Quality Voice over IP solution to the world. Since we have selected MCI® as our primary International Voice Traffic Carrier, the service delivers a crystal clear sound with lowest transit latency and very high redundancy. MCI® owns, operates, monitors and maintains one of the largest communications networks in the world. MCI® network facilities are scattered throughout North America, Latin America, Europe, Africa, and the Asia-Pacific region, in more than 140 countries and over 2,800 cities.

The 98,000-mile fiber optic network is designed to support the largest array of data communications and voice products in the world. MCI owns the world's farthest reaching global network (based on company-owned POPs), and spans more than 4,500 Points of Presence (POPs) throughout the world, with 2.2 million global dial modems and high-capacity connections to more than 102,000 active buildings. The global IP network can circle the globe more than four times. Additionally, MCI remains the most connected Internet backbone provider with the greatest number of Autonomous System network connections. The company's expansive IP footprint, coupled with its direct interconnections, exceeds all other competitor networks and enables its business customers and ISPs to reach more destinations directly through MCI's global IP backbone than any other carrier.
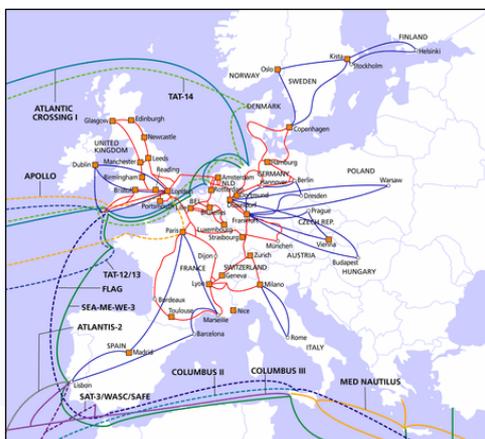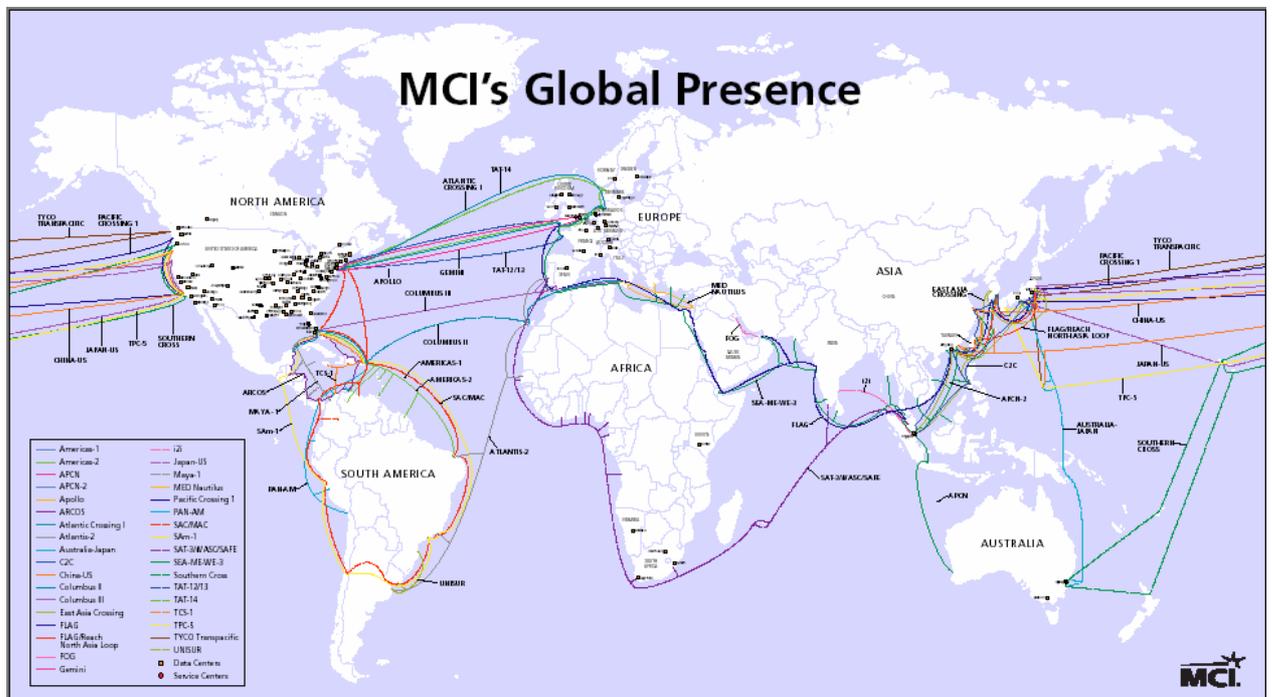
Simultaneously with a Premium quality MCI® termination, BusinessCom has established routes to WaveCrest and TeleGlobe – worldwide known 1st Tier Voice Carriers.

Such concept of excessive redundancy and automatic failover routing results in a very high succeeding call ratio – with delivering a first class service to our customers.

Telephony with Global IP Sound iLBC Codec

BusinessCom is one of the first companies in the industry to introduce VoIP with applying a leading edge vocoding technology. One of the additional advantages of our telephony system is a revolutionary iLBC codec developed by Global IP Sound (GIPS) which is used to convert your analog voice to a digital traffic which is then transferred over your Internet connection.

GLOBAL IP SOUND

GIPS iLBC

Enabling robust telephony with a low-bit rate codec

iLBC from Global IP Sound is a royalty-free codec for Voice over IP (VoIP) networks. GIPS iLBC delivers speech quality better than G.729A and equal to G.729E, while offering substantially better quality over congested networks with packet loss.

iLBC is the first codec ever to be standardized by the IETF (RFC3951 and RFC3952) and is designated by CableLabs as a mandatory component of PacketCable voice-over-cable telephony systems.

Other standard low bit rate codecs exploit dependencies between speech frames, resulting in error propagation when packets are lost or delayed. In contrast, iLBC encoded speech frames are independent. This unique technology gives iLBC robustness against packet loss and delay. Furthermore, iLBC has the added benefit of avoiding the complex licensing structure of current standard low bit rate codecs, because it is royalty-free.

iLBC offers substantially better quality than G.729A and G.723.1.
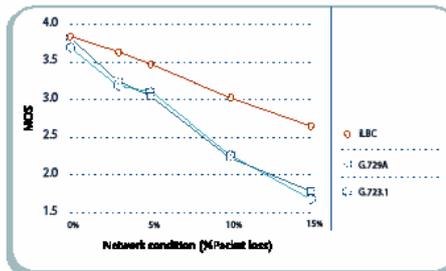
Tests were performed by Dynastat, Inc., an independent test laboratory.
Score system range: 1 = bad, 2 = poor, 3 = fair, 4 = good, 5 = excellent.

Some of the key features of GIPS iLBC are:

- The only codec ever to be standardized by IETF
- Royalty-free with speech quality better than G.729A and G.723.1
- Better packet loss robustness compared to other low-bit rate codecs, including G.723/8/9
- Supports multiple frames sizes giving increased flexibility
- iLBC delivers the same quality as G.729E and exceeds G.729E under packet loss conditions
- Multiple awards, including

BusinessCom Telephony Features and Benefits

Features	Benefits
Premium Quality Termination Through MCI®, TeleGlobe and WaveCrest Carriers 24/7 Monitored Termination Routes Quality Least Cost Routing Mechanism Automatic Fail-Over Routing with Multiple Priorities	A highly redundant business quality telephony service at competitive rates, ready for any subscriber from DTH to Enterprise.
Redundant Terrestrial Connectivity Qwest, UUNet/MCI, Level(3), Cable & Wireless, Savvis, France Telecom OpenTransit	The best available first tier connectivity from within a heart of Internet brings improved stability with more than 99.95% of uptime.
Support of Multiple Interconnection Protocols IAX™ (Inter-Asterisk Exchange) SIP (Session Initiation Protocol) MGCP (Media Gateway Control Protocol) SCCP (Cisco® Skinny®), H.323 (In development)	Our service is compatible with almost all the hardware and software available on the 3rd party markets. Multiple protocols enable you to use our service even behind the NAT or Firewall.
Flexible Codecs Choice GIPS iLBC Speex G.723.1, G.726, G.729 ADPCM, G.711 (A-Law & u-Law) GSM, Linear, LPC-10	Although we mainly recommend GIPS iLBC codec to all our customers on the satellite links, you may select your own codec to interoperate with our Telephony system, whichever is comfortable to you.

A fully redundant core network and backbone connectivity our Telephony servers are residing on is unsurpassed in its efficiency and performance. With seven separate sites, located in five different states on both coasts and central US, the network offers extremely low latency, no packet loss, and, best of all, direct connectivity to all major global tier 1 backbones. This unique combination provides a superior network infrastructure with an unmatched quality of service.

The physical layer of the network consists of a number of interconnected private OC-12 & OC-48 SONET rings. The Washington, DC private IDSR (IntelliLight Dedicated Sonet Ring) is provided by Verizon, while Virginia - DC multiple OC-48 SONET rings are operated by Looking Glass Networks. The transport to Chicago, IL and Palo Alto, CA is provided over redundant Level 3 OC-48 SONET rings, while to New York the network uses Looking Glass Networks. All fibre carriers are financially healthy and highly respectable, well known organizations with proven 100% uptime and reliability (Verizon, Looking Glass Networks, and Level 3). The OC-12 & OC-48 SONET rings consist of two redundant OC-12s or OC-48s traversing two separate paths and having two diverse routes to our facilities, thus providing the ultimate in reliability and performance. Even if both of the lines are cut at any point, the SONET ring is still operational, with less than 50 ms (0.05 second) self-healing restoration time.

Connectivity Maps

The northern Virginia / DC area is an ideal location for a network. A very large portion of the world's Internet traffic passes through here, and the area is not subject to earthquakes, tornadoes, floods or other natural disasters.

We are located at the true heart of the Internet, and in a very safe and secure area. This central location ensures optimal connectivity, speed, and routing, minimizing the number of hops - and thus the chance of any problems. We are located in between a great number of of private and public peering points, in one of the most densely and best connected areas in the world, including directly peering at the Equinix Exchanges (IBX'es) in Ashburn, Virginia, Chicago, Illinois, at the NYIIX in NYC, New York, and at PAIX in Palo Alto, CA. All providers have multiple, redundant routes into the DC/VA area. This is further built upon by our redundant connectivity to multiple Tier 1 providers via separate circuits, terminating at diverse locations in Virginia and the District of Columbia. We are redundantly set-up Internet connectivity wise (multiple backbone connectivity providers), as well as physically. In terms of fibre optics, we have multiple private OC-12 & OC-48 SONET rings with multiple financially-healthy fibre providers, taking different physical paths.
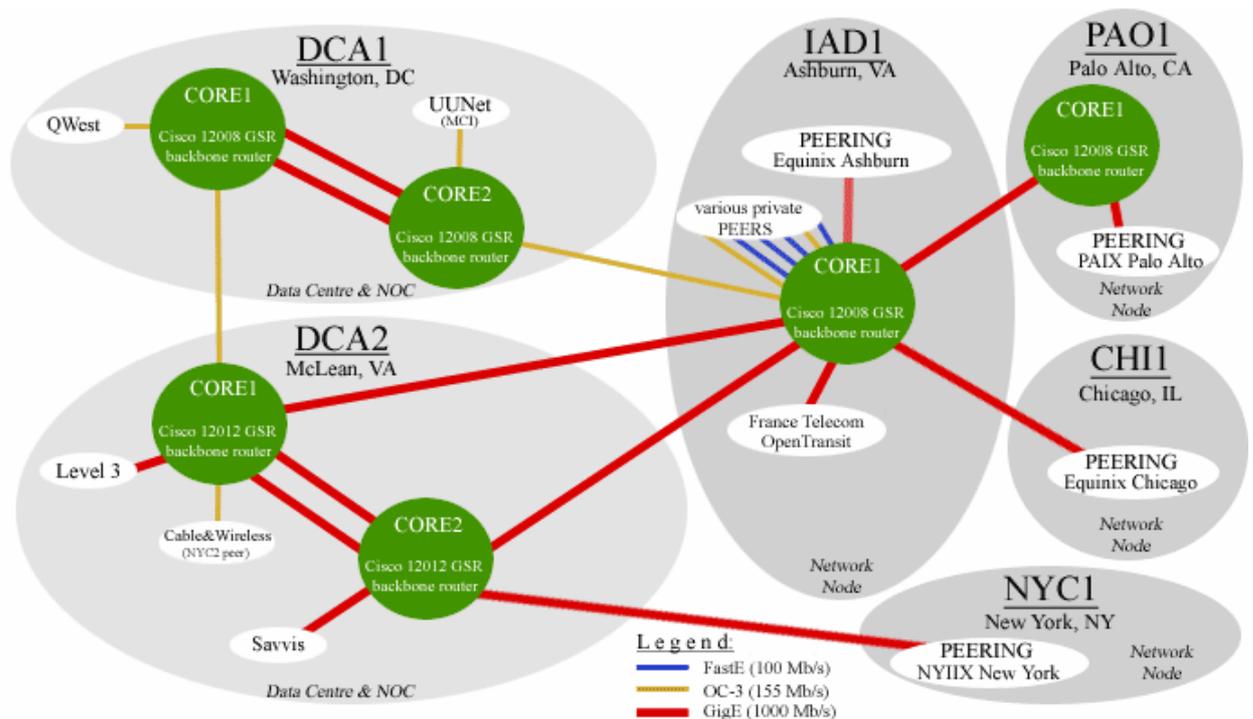
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