Wires crossed: The industry struggles to remain relevant against competing technologies
### About this Industry

#### Industry Definition
This industry provides local and long distance voice communication services using the public switched telephone network (PSTN). Industry operators also generate revenue by providing internet access and video services and by wholesaling access to their networks for a variety of purposes. This industry excludes operators that solely resell telecommunications services (IBISWorld report 51791a).

#### Main Activities
The primary activities of this industry are:
- Providing local voice communication services
- Providing long-distance and international voice communication services
- Wholesaling network access
- Selling telecommunications equipment
- Providing internet access
- Providing video services

The major products and services in this industry are:
- Internet access
- Local voice services
- Long-distance voice services
- Wholesale network access

#### Similar Industries

<table>
<thead>
<tr>
<th>Similar Industry</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>51332 Wireless Telecommunications Carriers in the US</td>
<td>Wireless carriers provide direct communications via airwaves. Wireless services are increasingly a competitive substitute for wired voice services.</td>
</tr>
<tr>
<td>51711e VoIP in the US</td>
<td>VoIP is a communications method in which voice transmissions are sent as data packets using internet protocol (IP) technology. VoIP has emerged as a major threat to traditional wired voice services.</td>
</tr>
<tr>
<td>51791a Telecommunications Resellers in the US</td>
<td>Firms in this industry resell access to telecommunications networks, but do not own or operate their own infrastructure.</td>
</tr>
<tr>
<td>51741 Satellite Telecommunications Providers in the US</td>
<td>Satellite telecommunications operators provide a variety of services via satellite, including internet access and telephony services. Operators may also lease or resell access to satellite networks.</td>
</tr>
</tbody>
</table>

#### Additional Resources
For additional information on this industry:
- www.fcc.gov
  Federal Communications Commission
- www.ntia.doc.gov
  National Telecommunications and Information Administration
- www.telegeography.com
  TeleGeography
Industry at a Glance
Wired Telecommunications Carriers in 2013

Key Statistics Snapshot

Revenue
$130.3bn

Annual Growth 08-13
2.1%

Annual Growth 13-18
-0.5%

Profit
$14.5bn

Wages
$22.1bn

Businesses
1,345

Market Share
AT&T Inc. 40.2%
Verizon Communications Inc. 31.7%
CenturyLink Inc. 13.9%

Revenue vs. employment growth

Number of mobile internet connections

SOURCE: WWW.IBISWORLD.COM

Key External Drivers
Number of mobile internet connections
Demand from broadcasting and telecommunications
Number of cable TV subscriptions
Number of broadband connections

Products and services segmentation (2013)

Internet access 41.2%
Long-distance voice services 12.5%
Wholesale network access 12.8%
Local voice services 26.7%
Other 6.8%

SOURCE: WWW.IBISWORLD.COM

Industry Structure

Life Cycle Stage: Mature
Revenue Volatility: Low
Capital Intensity: High
Industry Assistance: None
Concentration Level: Medium
Regulation Level: Medium
Technology Change: Medium
Barriers to Entry: High
Industry Globalization: Low
Competition Level: High

FOR ADDITIONAL STATISTICS AND TIME SERIES SEE THE APPENDIX ON PAGE 34
Industry Performance

Executive Summary

Although the Wired Telecommunications Carriers industry was once the principle provider of voice communication services, numerous substitutes have taken its place. Wireless telephony and voice over internet protocol (VoIP) technology have especially siphoned revenue away from the industry. At the same time, however, industry operators have benefited from increasing demand for internet access, mitigating declining demand for its traditional products. Because demand for more robust internet access outweighed the effects of decreased demand for wired voice telephony, industry revenue is expected to increase at an annualized rate of 2.1% to $130.3 billion over the five years to 2013. Revenue is projected to increase 1.6% in 2013, as consumers increasingly demand more reliable and higher speed internet access.

Wired telecommunications carriers have begun deploying optical fiber networks, which provide faster speeds and larger bandwidth capacity than cable or wireless networks, to compete with providers of substitute technologies. For example, major players like Verizon and AT&T provide video services via an internet protocol television network; these services are typically bundled with internet access and voice telephony and are experiencing increased adoption as carriers expand their network footprint. The development of fiber-optic networks has also partially mitigated declining demand and revenue for wired voice telephony services.

Major telecommunications players are diversified across several different sectors of communications, including internet access and video services. As a result, they will likely continue focusing on and expanding more in-demand services, like high-speed internet, and decreasing the scope of the Wired Telecommunications Carriers industry. In the five years to 2018, IBISWorld estimates that industry revenue will decline an annualized 0.5% to $127.1 billion as the decline in demand for voice services outweighs the increase in demand for video and data services. The number of subscriber access lines (i.e. wires that connect an end user to a local telephone office) is projected to contract during the same five-year period. Meanwhile, the number of mobile internet connections, a key indicator of the mobile threat to both wired telephony and broadband internet, is expected to grow at an 8.3% average annual rate in the five years to 2018.

Key External Drivers

Number of mobile internet connections

The largest threat to the industry is its wireless counterpart, the Wireless Telecommunications Carriers industry (IBISWorld report 51332). As mobile telephony continues to improve in quality and reliability, consumers are increasingly viewing wired telephony as a redundant expense and are eliminating their landlines altogether. The number of mobile internet connections is expected to increase during 2014, representing a threat to the industry.

Demand from broadcasting and telecommunications

Wireless carriers and satellite operators all use some form of wired infrastructure in providing their services. For example, wireless carriers and satellite operators often buy backhaul capacity (connections from a core network to access points with less robust connections) from wired carriers as part of their network strategy. Demand from broadcasting and telecommunications is expected to
Industry Performance

Key External Drivers continued

increase during 2014, representing an opportunity for the industry.

**Number of cable TV subscriptions**
Cable providers directly compete with this industry through the provision of voice over internet protocol (VoIP) services, television programming and internet access. As VoIP has come into prominence, cable providers are increasingly bundling VoIP, cable TV and internet together and marketing these services as one package. Consequently, an increase in the number of cable TV subscriptions now correlates with an increase in VoIP and internet subscriptions, which takes away subscriptions and revenue from this industry. The number of cable TV subscriptions is expected to decrease during 2014.

**Number of broadband connections**
Although demand for wired voice telephony has plummeted, demand for wired broadband internet connections continues to increase significantly. As a result, revenue garnered from providing internet access services has partially mitigated the detrimental effect of decreasing demand for wired voice telephony. As the number of broadband connections increases, demand for internet access provided by this industry rises as well. Demand for broadband internet connections is expected to increase through 2014.

![Graphs showing number of mobile internet connections and demand from broadcasting and telecommunications](source: www.ibisworld.com)
Industry Performance

Current Performance

The Wired Telecommunications Carriers industry faced significant challenges during the past five years. Although revenue is expected to grow at an annualized rate of 2.1% to $130.3 billion over the five-year period to 2013, carriers have experienced rapidly decreasing demand for their traditional voice telephony services. This decrease in demand has been slightly outweighed, though, by increasing demand for wired internet access and, to a lesser extent, internet protocol television (IPTV) services. In 2013, the expected 1.6% revenue growth will be driven primarily by the increasing adoption of IPTV services, as carriers expand the coverage of these networks. Although revenue has grown, carriers have struggled to maintain their economies of scale. With fewer subscribers to spread out fixed costs, industry profit has suffered, declining from 16.4% of revenue in 2008 to an estimated 11.1% of revenue in 2013.

While major players have been able to slow revenue loss by bundling voice services and other in-demand services into one package, the past five years have marked a shift away from traditional copper-wire infrastructure. According to data from the annual filings of the industry’s major players, data transmissions, as opposed to voice, now represent the majority of all transmissions over the public switched telephone network (PSTN). As such, technological innovation in the industry has been geared toward developing more efficient means of transferring data. While traditional copper wire is more than sufficient for voice transmission, its low bandwidth makes it a poor means of transferring the high-bandwidth data (e.g. high-definition streaming video) of today’s world. Wired carriers are investing in high-speed fiber-optic networks to stay relevant.

Technology substitution

Wireless technology has emerged as the greatest threat to the industry during the past five years. According to the National Health Survey published by the Centers for Disease Control and Prevention, 39.4% of US homes solely use wireless telephones as a means of communicating. Moreover, 15.7% of all US homes received all, or almost all, calls on wireless telephones, despite also having a landline phone. Major wireless telecommunications operators have invested billions of dollars in their wireless networks over the past five years. As coverage and reliability have improved, particularly in population-dense areas, consumers are opting for the mobility and versatility of wireless telephony. The percentage of wireless-only homes is expected to continue increasing through 2013, as US consumers using wireless telephones for the majority of their calls drop wired services to cut costs.

Wireless technology has emerged as the greatest threat to the industry

Voice over internet protocol (VoIP) technology has also emerged as a competing substitute to traditional wired telephony. VoIP, which transmits voice in data packets using internet protocol technology, remains an unregulated service. Without the burden of regulation and by taking advantage of preexisting internet infrastructure, VoIP providers can offer less-expensive phone service than regular telephony providers. Also, VoIP offers greater mobility as the technology can be used anywhere a broadband internet connection exists. Issues with call quality and 9-1-1 calling protocols have hindered VoIP’s growth in the past. During
Industry Performance

Technology substitution continued

Over the past five years, however, higher-bandwidth networks have been diminishing the quality gap between VoIP and traditional telephony, and VoIP providers have worked out more comprehensive emergency call procedures. Cable providers, the industry’s main external competitors, are the primary providers of VoIP services. Some wired carriers provide VoIP services over their fiber-optic networks, though, lessening this external threat. Still, technological substitution has forced operators to cut employment and save costs, due to decreased demand for wired telephone services. In the five years to 2013, the number of employees in the industry has declined an average of 0.4% annually to 305,898.

Abandoning the wire

Wired carriers have softened the blow of declining demand for wired voice telephony by offering their traditional voice services in a package with other products. According to the Federal Communications Commission (FCC), the majority of consumers report that the prospect of having to change their bundle of services is a major reason for staying with their service provider. Thus, a customer that receives internet, voice telephony and television from the same provider is less likely to drop their voice telephony service if they also have to change their internet and television services. This factor has helped the industry maintain revenue over the past five years.

Additionally, in the past five-year period, major operators have overhauled their traditional copper infrastructure. Verizon has invested more than $20.0 billion in its fiber-optic network, which brings fiber-optic cabling all the way to customers’ homes. Similarly, AT&T has developed a fiber-optic network that brings fiber-optic cabling to customers’ neighborhoods. Verizon’s FiOS digital voice service and AT&T’s U-verse voice digital home phone service are offered in place of these networks and use VoIP technology. While fiber-optic networks can transmit voice without using VoIP technology, telecommunications carriers are opting to use VoIP to take advantage of the reduced costs and lack of regulation associated with the technology. Building out these networks has increased the number of industry establishments at an annualized rate of 1.5% to 13,728 in the five years to 2013.
Industry Performance

Continued external competition

The continuing shift in consumer demand toward wireless products that offer the same functionality as wired products without the constraint of a fixed location will drive the transition away from traditional wired telephony. Carriers, particularly those offering wireless and wireline services, will continue to shift resources toward supporting their wireless business. This transition may benefit diversified major players, but it will ultimately decrease industry revenue and the relevance of traditional voice services. The industry may be able to recapture some of this lost revenue by offering backhaul services (i.e. transferring data from a provider’s local network to its core network). As internet traffic increases, the need for alternative data routes will be paramount, particularly for wireless providers whose networks are almost at capacity in 2013. Similar to the bundling of services, backhaul services will likely serve to temper, but not stop, revenue loss. Mobile backhaul services inherently increase the reliability of mobile telephony, which will likely increase the rate at which consumers substitute wireless service for traditional wireline. Faced with decreased...
Industry Performance

Continued external competition continued

Due to external competition, operators are expected to shrink existing operations. The number of industry establishments is expected to decline an average 0.1% annually in the five years to 2018 to 13,687.

The industry’s major players will also face a challenging environment as they build their fiber-optic networks to offer more robust internet access and compete with external competitors that offer VoIP services. Fiber networks require a larger upfront investment than copper networks, and fiber deployment requires more expensive optical transmitters and receivers. Furthermore, operators will have to invest in labor to install the new networks; the number of employees is expected to increase at an average annual rate of 0.4% to 311,367 in the five years to 2018. The advantages of fiber (e.g. its low weight and data-carrying capacity that is thousands of times greater than copper) actually reduce operational costs in the long run, though. Furthermore, the development of active Ethernet technology dramatically increases the range of fiber-optic networks from central offices at no significant additional cost. The implementation of this technology and the development of new, gel-free optical fiber cable, which is less labor-intensive to install, should help bring down the cost of deploying fiber networks. This decrease in cost will likely accelerate fiber deployment over the next five years. Consequently, the number of VoIP subscriptions will increase and the number of traditional wired access lines will fall.

Dismal future

Overall, the Wired Telecommunications Carriers industry is not expected to fare well going forward. Data traffic over the US communications infrastructure is growing exponentially, and the use of low-bandwidth copper wiring is no longer viable. Furthermore, as the number of access lines continues to decrease, operators’ economies of scale are getting smaller, hurting profit margins. Fiber network deployment represents a logical shift away from the services this industry offers. Even so, fiber deployment takes time and money, with an estimated five to eight hours to install and $2,000 to $4,000 per house. Thus, industry profitability is anticipated to decline over the next five years.

Profitability will continue to decline with the deterioration of existing industry infrastructure
Industry Performance

Declines in demand for one product segment are being offset by increases in another

Industry value added is expected to increase over the 10 years to 2018

Consolidation is occurring as firms seek to maintain economies of scale

Life Cycle Stage

Quality Growth
High growth in economic importance; weaker companies close down; developed technology and markets

Maturity
Company consolidation; level of economic importance stable

Decline
Shrinking economic importance

Quantity Growth
Many new companies; minor growth in economic importance; substantial technology change

Key Features of a Mature Industry
Revenue grows at same pace as economy
Company numbers stabilize; M&A stage
Established technology & processes
Total market acceptance of product & brand
Rationalization of low margin products & brands

Wireless Telecommunications Carriers
VoIP
Internet Service Providers
Transmission Line Construction
Telecommunication Networking Equipment Manufacturing
Wired Telecommunications Carriers

SOURCE: WWW.IBISWORLD.COM
Industry Performance

The Wired Telecommunications Carriers industry is in the mature stage of its life cycle. Industry value added (IVA), which measures the industry’s contribution to the overall economy, is forecast to decrease at an annualized rate of 0.7% over the 10 years to 2018. In contrast, GDP is forecast to grow at an annualized rate of 2.1% during the same period. Despite declining IVA, the industry is still considered to be mature because its diverse services will continue to mitigate decreasing demand for wired voice telephony.

The industry has exhibited a steady decline in demand for wired voice telephony as more efficient means of communication have supplanted traditional methods. Wireless telephony is increasingly replacing traditional wired voice services as wireless providers have increased their coverage areas and reliability. VoIP technology has emerged as an alternative to traditional wired voice services as well. At the same time, however, demand for internet access and, to a lesser extent, IPTV services has grown over the period. For the time being, demand for internet access has outweighed declining demand for wired voice telephony. Carriers have achieved this primarily through the bundling of services, whereby internet access, video services and voice telephony are sold in a single package.

Moving forward, the industry will likely fail to deliver any significant technological breakthroughs that will reverse the substitution of wireline services. Seeing as data transmissions, not voice, constitute the majority of information being transferred over the public switched telephone network in 2013, technological development has been geared toward facilitating and improving the transfer of this data. Providers that have invested in high-bandwidth fiber-optic networks have done so to improve internet speed and reliability, not to improve on voice services. As access lines continue to decline, large firms have consolidated to maintain economies of scale and smaller firms have left the industry.
The fundamental output of this industry is the facilitation of point-to-point communications. Wired telecommunications carriers generate revenue from the provision of local and long-distance voice services, internet access, internet-protocol (IP) television services as well as through the wholesaling of access to their core networks. Demand for traditional voice products, such as local and long-distance, has declined considerably over the past few years and competition from substitutes such as VoIP and wireless telephony has proved detrimental to industry revenue.
Products & Markets

Products & Services continued

Internet access
The provisioning of internet access has been the saving grace of the industry. Although demand for core voice telephony services has declined markedly over the past five years, demand for internet access has shot through the roof as a greater portion of services have moved online. Industry firms typically bundle internet access along with voice telephony and video services to tie demand for one product segment with demand for another. Internet access services account for an estimated 41.2% of revenue.

Local voice services
Local voice services are the main services that wired providers offer, accounting for about 26.7% of revenue. Additionally, operators provide value-added services to consumers such as call waiting, caller ID, and voice mail. Demand for traditional local voice services offered by this industry has deteriorated significantly over the past five years.

Long-distance voice services
Long-distance voice services make up an estimated 12.5% of revenue. Traditionally, long-distance services have been more expensive, as a long-distance call involves transporting information through a number of different switching centers and through different networks, which usually entails an access charge. However, as information has become digitized and the routing of information has become automated, long-distance costs have decreased. VoIP technology holds a particular advantage over traditional long-distance voice services, as calls using the internet do not cost more if they are long-distance. Downward pressure on pricing as well as customer migration to other technologies will likely continue to decrease this product segment’s share of revenue over the next five years.

Wholesale network access
Wholesale network access refers to the fees collected by wired telecommunications providers as they provide access to their networks to external firms. These firms may use this access to provide an array of services, including telephony and internet access. Wholesale network access makes up about 12.8% of revenue. Additionally, VoIP providers that use the public switched telephone network to deliver some of their services must also pay access fees. Incumbent local telecommunications providers are required to provide fixed, regulated access rates to smaller competitive local telecommunications providers; however, the rates they charge other service providers, such as internet service providers (ISPs) and wireless providers, are not regulated. This factor is especially significant as available bandwidth becomes increasingly rare amid the proliferation of high-bandwidth services such as streaming high-definition video. Wired telecommunications carriers are able to help divert and route traffic from networks that are over capacity through their own (a process known as backhaul). As the need for backhaul services increases, wired carriers will be able to increase their pricing in line with demand. Consequently, IBISWorld expects this product segment’s share of revenue to increase over the next five years as available bandwidth becomes an increasingly valuable commodity.

Other
This product segment, which accounts for about 6.8% of revenue, is primarily composed of budding internet protocol television (IPTV) services offered by wired carriers. These television services are provided via fiber-optic networks and have emerged as value-added services that carriers can bundle with their other products. As AT&T and Verizon continue to expand the footprint of these services, this product segment’s share of industry revenue is anticipated to expand. This product segment also includes private network services.
Household income levels influence consumer demand for telecommunications services, with higher incomes facilitating more revenue per access line. Business demand is affected by the level of economic activity, particularly in sectors of the economy that are high users of telecommunication services.

Demographic variables also influence demand for wired telecommunication services. Increases in the US population and household numbers provide a natural boost in the demand for fixed line services. In the past, growing internet activity prompted many homes to establish a second phone line for dial up internet and fax purposes; however, there is no longer the need for a second phone line with dial-up services nearing the end of their decline. The need for a single landline is now threatened, with cell phones becoming an economically viable alternative. The population’s age mix is another important demographic factor. Cell phone usage among baby boomers is low relative to Generation X and Generation Y, so the underlying demand for fixed line services will trend lower as the baby boomer population share declines with time.

Technological and service innovations are particularly influential on wired telecommunications demand. The advent of integrated services digital network (ISDN) standards integrated data transmission into the public switched telephone network (PSTN). By tying data communications into the same line used for voice communications, telecommunications carriers have been able to sell different services (e.g. direct subscriber line (DSL) internet access and traditional voice telephony) as one bundled product. Consequently, an increase in demand for one integrated service resulted in a de facto increase in demand for all the integrated services. Industry participants often bundle services such as wired, wireless, internet access and various entertainment options into one package so that customers receive one bill for all services.

Conversely, new technology also reduces the demand for some existing products as product substitution occurs. Wireless technologies represent the biggest threat; a growing proportion of the US population prefers wireless phones as means of communication, rather than just a complement to traditional wireline services. Furthermore, VoIP technology has also emerged as a more efficient, cost-effective means of communicating, decreasing demand for traditional voice services.

The price of hardware, installation and services has a considerable effect on demand. Greater competition and declining costs of service provision have contributed to a fall in the price of services offered. Long-distance phone service has particularly experienced this trend, with the price per minute falling considerably in the face of deregulation and the ensuing rise in competitive pressures, product substitution and excess network capacity. The cost of equipment (e.g. fax machines and cordless phones) has also rapidly dropped.
Products & Markets

Major Markets

Within the industry, there are three primary market segments: business, residential and government. The relative importance placed on any of these three segments varies among industry participants; however, newer entrants in the local call market tend to target the more stable nonresidential market segments.

**Businesses**

While telecommunications use varies by industry, this segment is often favored by newer entrants given the lower churn rate (the percentage of subscribers that discontinue their subscription in a given time period). More predictable usage patterns and the existence of long-term contracts give segment providers a greater degree of stability. This segment also includes other telecommunications carriers that purchase data capacity from network owners and wireless operators purchasing backhaul services (i.e. the transfer of data from a local network to a provider’s core network). IBISWorld estimates that this segment accounts for 52.5% of revenue and will increase its share of revenue over the next five years as wholesale access revenue increases.

**Residential market**

The residential market accounts for about 44.0% of industry revenue. While it is still a relatively important market segment, the residential market has been invaded more than other markets by substitute services like wireless telephony and VoIP. A growing number of households have now disconnected landlines and are relying purely on wireless mobile communications. Other residential consumers have moved to VoIP services. As VoIP and wireless services have become reliable enough to meet the standards of communication a majority of residential users require, the uptake of these services has increased. Consequently, the residential market’s share of industry revenue is expected to decrease over the next five years.

**Government**

This segment includes government customers and accounts for about 3.5% of industry revenue. Wireline operators value long-term government contracts because they provide a steady income stream. The government market is becoming a more important segment for
Products & Markets

Major Markets continued

Telecommunications providers as demand for private networks among government agencies rapidly expands; however, these networks are increasingly becoming internet protocol-based data networks and are outside the scope of this industry.

International Trade

Industry trade is conducted when a US consumer connects to someone outside of the United States, and vice versa. Carriers compensate each other for the right to connect (terminate) on another carrier’s network. Total revenue, the cost per call and the cost per minute all fell over the past five years. This result has occurred because of increased competition and technological and infrastructure advancements (including higher-capacity and lower-cost submarine cables). Decreasing costs have led to a rise in the number of international US carrier calls and minutes. Key countries called include Mexico, Canada, the United Kingdom, Germany and the Philippines.

Over the next five years, the number of international minutes is expected to fall due to the rapid emergence of VoIP. This service, which transmits voice conversations in digital packets the same way email is sent, does not take into consideration the geography of callers, the distance between callers or the time of a call. VoIP phones can have phone numbers, but they work anywhere in the world when plugged into an internet broadband connection. Most importantly, VoIP calls are substantially cheaper than those made over the public switched telephone network (PSTN). Consequently, the international component of the industry is expected to decrease over the next five years.
Products & Markets

Business Locations 2013

Additional States (as marked on map)

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<th>State</th>
<th>Establishments (%)</th>
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Establishments (%)

- Less than 3%
- 3% to less than 10%
- 10% to less than 20%
- 20% or more

SOURCE: WWW.IBISWORLD.COM
About 95.7% of all US households have a telephone connection, although this percentage varies between states and regions. Previous regulations have had a significant impact on the geographic spread of the industry. For example, following AT&T’s divestiture, the divested Regional Bell Operating Companies (RBOC) were precluded from offering toll services that crossed the boundaries of their local access and transport areas (LATAs), thereby limiting the geographic footprint of their operations. Moreover, given the size of the United States and the cost of required infrastructure, other carriers were also forced to limit their operations to particular areas and regions.

Southeast
The Southeast region accounts for 24.3% of total industry establishments. Florida alone accounts for 5.1% of industry establishments. The high population density of this region makes network deployment more economical as more consumers can use the same infrastructure. Consequently, the Southeast region enjoys some of the most comprehensive telecommunications coverage in the country.

Mid-Atlantic
The Mid-Atlantic region accounts for 17.0% of total industry establishments. Based on establishment growth, the Mid-Atlantic has exhibited the fastest growth during the past five years. New York and Pennsylvania account for 6.0% and 4.6% of industry establishments, respectively. Major player Verizon has its headquarters in New York.

Great Lakes
The Great Lakes region accounts for 15.5% of total industry establishments and has an establishment share roughly in line with its population share. Population-dense areas are key markets for telecommunications operators. As such, industry activity in this area is concentrated in states like Illinois (4.7% of industry establishments and 4.2% of the population) and Michigan (3.1% of industry establishments and 3.2% of the population).
Competitive Landscape

Market Share Concentration | Key Success Factors | Cost Structure Benchmarks
Basis of Competition | Barriers to Entry | Industry Globalization

The industry exhibits a high level of concentration; the top four companies in this industry account for 85.8% of industry revenue. The high upfront investment required to create a communications network, along with the complexity of managing a large, interconnected infrastructure, generally precludes smaller operators from entering the industry. Government regulation has limited the market share of the industry’s major players since 1984, however, when a court forced AT&T to divest its 22 local Bell companies into seven Regional Bell Operating Companies. Additionally, the Telecommunications Act of 1996 regulates the rates that telecommunications companies can charge for wholesale access to their lines, precluding larger companies from raising their wholesale rates to force smaller operators out of the business. Still the major companies in this industry dominate the landscape, as industry giants such as AT&T are the incumbent local exchange carrier in many states.

As wired telecommunications carriers continue to experience a decline in their number of access lines and traditional voice services are supplanted by wireless and VoIP technology, larger operators may continue to spin off large parts of their wireline divisions in favor or focusing more on their broadband internet or wireless offerings. Consequently, IBISWorld expects industry concentration to decrease during the next five years.

Key Success Factors

IBISWorld identifies 250 Key Success Factors for a business. The most important for this industry are:

Development of a symbiotic relationship with another industry
Providing backhaul capacity for mobile phone providers is increasingly important as customers gravitate toward mobile products and wireless networks face capacity constraints.

Accessibility to consumers
The range limits of wired telecommunications carriers require providers to install significant infrastructure in order to reach the largest subscriber base.

Ability to allocate service to area of greatest need
The ability to effectively determine areas most in need of enhanced infrastructure investment, such as last-mile fiber-optic, is important for the future viability of wired telecom providers.

Ability to quickly adopt new technology
The need to adopt new technologies within existing and planned infrastructures is essential in keeping up with the increasing data demands placed on telecommunication networks.

 Provision of a related range of goods/services
Wired telecommunications carriers must offer a variety of services in order to retain customers. Providers are bundling traditional voice services with internet access, wireless and TV services to combat the decline of the traditional voice market.
Competitive Landscape

Cost Structure

The Wired Telecommunications Carriers industry’s cost structure is characterized by high fixed costs and associated depreciation expenses. Present-day costs have little to do with how many calls customers make or how long they talk. In the past, the industry has placed an emphasis on upgrading existing infrastructure to avoid the upfront investment of a complete network overall; however, the current infrastructure of the Public Switched Telephone Network (PSTN) will be unable to accommodate the exponential increase in data traffic volume expected over the next five years. As such, telecommunications carriers will place more emphasis on implementing new network technologies like fiber-to-the-premises and will more rapidly phase out the traditional copper wires of the PSTN.

Profit

Although demand for traditional wired voice telephony has declined over the past five years, many operators that offer traditional wireline services continue to achieve respectable profit margins. The basic infrastructure of the PSTN is more than a century old. The fact that telecommunications carriers are still able to use a large part of this infrastructure to provide legacy voice services has kept fixed costs down and maintained profitability; however, the number of access lines has been steadily decreasing over the past five years as consumers have switched to other forms of voice communication. IBISWorld estimates that average carrier profit, as defined as earnings before income taxes, has decreased over the past five years and will account to about 11.1% of revenue in 2013. Price competition from substitute services and the bleeding of scale economies is expected to decrease industry profit margins further over the next five years.

Purchases

As the largest cost to industry participants, purchases represent a fairly large cost, accounting for 29.0% of total industry revenue. For new participants, purchases include cost of service expenses, which are expenses necessary to start in the industry. Such purchases include the infrastructure and network equipment necessary for voice calls. More established operators have, in addition to operational purchases, have begun investing in technology to upgrade their existing networks, replacing the copper infrastructure mentioned above. Operators hope to compete with industry substitutes by increasing the speed of their networks. In the five years to 2013, purchasing costs as a share of revenue have been on the rise.

Depreciation

Depreciation is the second largest cost, accounting for an estimated 19.5% of revenue in 2013. Depreciation is such a significant part of firms’ cost structure due to the substantial level of capital resources tied up in carriers’ networks and infrastructure. Carriers are continually upgrading their networks, with many switched carriers improving their service offerings by moving to fiber-based systems with internet protocol (IP) capabilities. As telecommunications providers continue to upgrade to newer technologies and phase out traditional copper infrastructure, depreciation expenses are anticipated to increase over the next five years.

Wages

The two most significant occupations in the industry are network maintenance and repair personnel and customer service personnel. As a proportion of revenue, wages have decreased over the past five years. This trend is occurring as
firms have shed employees associated with traditional voice telephony services in the face of weakened demand. The trend of falling wages is expected to reverse slightly over the next five years, as industry operators still rely heavily on labor for sales and customer support. As a share of revenue, wages are still expected to be below historical norms, though. In 2013, wages account for about 17.0% of revenue.

**Other**

Wired telecommunications carriers have placed an increasing emphasis on marketing over the past five years. However, this marketing approach has mainly focused on bundling traditional voice telephony services with other services and offering them at a discount. Additional expenses include rent and utilities. Industry operators have rental expenses such as business offices, telephone centers and communication towers. Telecommunications operators also own many plants, in which they house network equipment. While these plants may not always be staffed, they use large amounts of electricity for the cooling and operation of the equipment inside.
Competitive Landscape

Basis of Competition

Internal competition
Price is a major basis of competition because it is often difficult for consumers to differentiate products (i.e. the quality of a wired phone call). In many instances, industry operators offer similar coverage with similar services. Price is affected by service providers’ cost structures and reflects access charges or line rental and call costs. Following the move to deregulate the industry in 1996, price was initially the key basis of competition. The influx of new entrants resulted in fierce price competition, which was exacerbated by similar developments within other segments of the telecommunications industry. Call charges for local, long distance and international calls all dropped substantially, with prices for long distance and international calls decreasing the most. Even so, the scale of price declines has meant that price is a necessary, but insufficient, means for maintaining a competitive position within the industry.

Service quality is important for consumers and businesses alike. Consumers have high expectations for service quality and expect calls not to drop out. One key differentiating factor between wireline calls and competing VoIP services is that the latter has been known to have quality issues. This factor has prevented a number of businesses from switching to VoIP services, given that cost savings may not be worth losing business or irritating customers due to a dropped call. As the quality of VoIP services continues to improve, however, more and more customers are migrating away from legacy voice services.

A considerable increase in the range of services offered has occurred in recent years. A large range of services can provide competitive advantages in economies of scale and scope, and is a means of adding value to a basic network connection. For example, the ability to provide internet access in conjunction with voice telephony services can lead to a de facto boost in demand for voice services as demand for internet access services increase. Because many customers prefer to receive just one invoice (as opposed to a number of invoices from a range of service providers), the ability to offer an integrated communications, information and entertainment package is of increasing significance.

Service integration has become particularly important given the speed and scale of technological advancements within the telecommunications sector and the move toward convergence. Successful telecommunications companies are offering integrated, converged solutions that blend wired, wireless, voice and data services on their networks. This factor has been critical in many companies’ efforts to differentiate themselves, as it has enabled them to deliver a swathe of media and communication services at the lowest cost, but highest quality. Service integration has mitigated the effect of the decline in traditional fixed telephony by allowing these companies to leverage their wireline networks in supporting the provision of wireless services, VoIP, internet services, virtual private network services and other data services. While such services lie outside the scope of the industry, offering them has improved the competitiveness of industry participants.

A number of other variables can also provide a competitive edge in the industry. An established customer base is a valuable competitive advantage. Incumbents benefit from selling new products to a large, established customer base. The existence of an integrated network is also a prerequisite for delivering a full suite of integrated products and services. A strong presence in the wholesale segment is also helpful, since it can be a means of using any spare network capacity and it can also increase market presence.
Competitive Landscape

External competition
External competition remains the leading challenge within this industry. Indeed, external competitive threats are the reason why the industry has declined in recent years. External competition is varied among the other telecommunications industries, but is particularly concentrated in the Wireless Telecommunications Carriers industry. Prices in the wireless space are unregulated, and competition for subscribers and market share is intense. Call and access pricing are decreasing, causing some households to use a cell phone for all of their voice telecommunications services. As a result, a subscriber shift from wired to wireless communications is occurring.

VoIP providers (mainly cable providers) are also joining the attack on wireline. They have emerged as a large threat to incumbent local exchange carriers (ILECs) and competitive local exchange carriers (CLECs) because the cost of calls made over switched facilities versus the internet is significantly higher. With service qualities improving rapidly, household and business subscribers are migrating in sizeable numbers from traditional wired telecommunications carriers to VoIP providers.

While not exerting the same degree of competitive pressure as VoIP providers and wireless carriers, telecommunications resellers present another threat to the Wired Telecommunications Carriers industry. Competition from this industry is not as intense because resellers purchase access from wireline wholesalers and must add their margin on top. Resellers typically target a particular market segment such as business, government or minority ethnic groups.

The most significant barrier to entry in the industry is the fact that demand for the industry’s core product is declining. More efficient and convenient substitutes like wireless and VoIP are depleting demand for the wired voice telephony. Moreover, the copper-wire technology of the Public Switched Telephone Network, while still sufficient for phone calls, is no longer a sufficient transport medium for the high-bandwidth data applications that consumers use today. As operators switch to new technologies for transporting data, they are discarding their traditional wireline voice divisions. As data networks are upgraded and internet reliability continues to improve, the quality gap between VoIP and traditional voice services is disappearing. The market for traditional wired voice telephony is shrinking at a rapid pace, presenting a major barrier to entry in the industry.

Moreover, despite deregulatory efforts, CLECs have struggled to gain significant traction within the market. This has been due to a number of barriers to entry that continue to hinder competition within the industry. These barriers include the persistence of moderate regulatory barriers, the high level of capital required to build telecommunications infrastructure and first-to-market advantages held by ILECs. New participants must still obtain approval from the FCC to compete in the market. Furthermore, regulations can differ

Barriers to Entry

<table>
<thead>
<tr>
<th>Barriers to Entry checklist</th>
<th>Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Competition</td>
<td>High</td>
</tr>
<tr>
<td>Concentration</td>
<td>Medium</td>
</tr>
<tr>
<td>Life Cycle Stage</td>
<td>Mature</td>
</tr>
<tr>
<td>Capital Intensity</td>
<td>High</td>
</tr>
<tr>
<td>Technology Change</td>
<td>Medium</td>
</tr>
<tr>
<td>Regulation &amp; Policy</td>
<td>Medium</td>
</tr>
<tr>
<td>Industry Assistance</td>
<td>None</td>
</tr>
</tbody>
</table>

SOURCE: WWW.IBISWORLD.COM
Competitive Landscape

Barriers to Entry continued

depending on what state a carrier operates in. Ultimately, this increases the burden of market entry. Additionally, once a new player has the relevant regulatory license, they must plan, build and maintain an access network, which is extremely capital intensive. This poses a significant barrier to entry. If a new player were to successfully build an access network, the CLEC would then have to compete with the entrenched ILEC. These players, the most dominant of which are the top three major players, have a high share of total access lines and industry revenue.

Industry Globalization

The US Wired Telecommunications Carriers industry has a low level of globalization; the top players are all domestically owned enterprises. These operators generate the majority of their revenue in the United States and have invested significant capital in wired infrastructures throughout the country. Furthermore, the international reach of industry services is expected to shrink. VoIP services, which use the internet to facilitate communication, is expected to grow in popularity for international calls, as international VoIP calls cost less for consumers.
AT&T Inc. is a Dallas-based telecommunications company and one of the largest telecommunication service providers in the world. The company has about 242,000 employees and operates under three business segments: wireless, wireline and other. The wireless segments consists of AT&T Mobility and offers nationwide wireless voice and data communications services. The wireline subsidiary provides retail and wholesale communication services domestically and internationally and divides its services into three categories: data, voice and other. The voice division of the wireline segment includes traditional local and long-distance services provided to retail customers, as well as wholesale access to AT&T’s network. AT&T provides these services through about 16.0 million retail consumer access lines, 14.0 million retail business access lines and 2.0 million wholesale access lines. This division also includes value-added voice services such as caller ID, call waiting and voice mail.

The wireline segment accounts for about 47.0% of AT&T’s aggregate revenue. Over the past five years, AT&T has introduced its own fiber-optic network that integrates digital television, high-speed internet and VoIP services. Unlike rival Verizon’s network, AT&T only extends fiber cabling to a subscriber’s neighborhood and uses traditional copper wiring for the “last mile” connection (the connection directly to a subscriber’s home or office). However, this last mile copper wiring has limited the ultimate speeds AT&T is able to offer and will likely be replaced over the next five years.

**Financial performance**
Over the five years to 2013, IBISWorld estimates that AT&T’s industry-specific revenue declined at an annualized rate of 3.8% to $52.4 billion. Customers and business customers have been reducing the usage or disconnecting traditional services.
landline services, and migrating to alternative technologies such as wireless and VoIP. The largest decline came in 2009, when the weak economy caused customers to terminate their phone service as individuals lost their jobs and businesses closed or scaled back their operations. In an effort to offset decreasing voice services revenue, AT&T has been expanding its U-verse fiber-optic service and aggressively marketing its wireless offerings. In line with the industry as a whole, AT&T is moving investment and focus away from its traditional legacy copper wire voice services toward IP-based networks.

Verizon Communications Inc. is a New York-based telecommunications company that operates throughout the United States and in more than 150 countries. The company provides about 30.0 million wired landline customers with local and long-distance telephone services, internet access and digital TV services. These services are marketed to residential, corporate and government clients and on a wholesale basis. Employing about 183,400 workers, Verizon operates under two business segments: Verizon wireless and wireline. Industry-specific activities are included in the wireline segment.

Verizon wireless provides communications products and services including wireless voice and data services and equipment. Wireline’s voice, data and video communications products and enhanced services include local and long distance voice, broadband Internet access and video, corporate networking solutions, data center and cloud services, and security and managed network services. This segment operates through four divisions organized according to the targeted market: mass markets, global enterprise, global wholesale and other. Both global enterprise and global wholesale services offer voice services, contributing to industry-relevant revenue.

Over the past five years, Verizon has shifted investment away from traditional wired voice services. In July 2010, Verizon finalized a merger agreement with Frontier Communications, selling off about 5,000,000 access lines in rural areas used for local and long-distance phone services. The company has also placed a high priority on shifting away

<table>
<thead>
<tr>
<th>Year</th>
<th>Revenue ($ million)</th>
<th>(% change)</th>
<th>Operating Income ($ million)</th>
<th>(% change)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
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<td>4.3</td>
<td>5,200.4</td>
<td>1.3</td>
</tr>
</tbody>
</table>

*Estimates

SOURCE: ANNUAL REPORT AND IBISWORLD
Major Companies

Player Performance continued

from legacy copper cabling toward its FiOS fiber-optic network; over the past five years, Verizon has invested more than $20.0 billion in its fiber-to-the-premises (FTTP) network. FTTP brings fiber-optic cabling directly to subscribers’ homes, offering voice, video and broadband services at speeds up to 300 megabytes-per-second (Mbps).

Financial performance
Over the five years to 2013, IBISWorld estimates that Verizon’s industry-specific revenue declined at an annualized rate of 3.5% to about $41.5 billion. Verizon has seen a sharp dive in its voice services segment as its customers disconnected primary and secondary lines and found alternative technologies. Consumers have steadily switched to wireless or internet substitutes, lessening demand for the wired services. Growth in Verizon’s internet services has partially offset the decline in voice services, with consumers increasingly flocking to its FiOS fiber-optic network. Consumers have shown an increased willingness to pay for faster internet, boosting demand for Verizon’s high-speed network and stimulating the growth of 4G networks.

Player Performance

CenturyLink Inc.
Market share: 13.9%

Louisiana-based CenturyLink is a regional phone provider and the third-largest telecommunications company in the United States. The company’s access lines are primarily concentrated in the western region of the United States, but it serves as the incumbent local exchange carrier in 37 states. It also operates 54 data centers throughout North America, Europe and Asia. The company divides its business into four operating segments: regional markets, wholesale markets, enterprise markets-network and enterprise markets-data hosting. CenturyLink’s legacy services offered through regional markets and enterprise markets-network are applicable to this industry, as is revenue from wholesale markets.

CenturyLink’s legacy services include traditional local and long-distance services. The wholesale markets segment consists of providing strategic and legacy products to other service providers. Strategic services mainly encompass private-line access and multi-protocol label switching (MPLS). Private line access establishes a direct high-speed connection between a customer’s premise and a telecommunications operator’s main network, allowing for high-speed, bandwidth-intensive applications. MPLS technology provides an efficient way to manage and speed up network traffic flow using different transmission protocols. Legacy services within the wholesale market include unbundled network elements, which allow customers to use CenturyLink’s network, in combination with their own, to provide voice and data services.

CenturyLink has significantly increased its size and scope through several acquisitions over the past five years. In 2009, the firm acquired Embarq, the former wired phone operations of SprintNextel, for about $1.3 billion. In April 2011, the FCC approved CenturyLink’s merger with Qwest Communications, which had previously been the third-largest phone provider in the US. Through these deals, CenturyLink acquired about 15.0 million new access lines and about five million new subscribers. These events highlight a trend of consolidation among telecommunications providers that have struggled to compete in a sector with rapid technological change and fierce competition.
Major Companies

Player Performance continued

Financial performance
CenturyLink’s acquisition spree quickly catapulted it into position as the third-largest telecommunications company in the United States; the acquisition of Qwest more than doubled operating revenue in 2011. As a result, the company’s industry-specific revenue is estimated to have grown at an annualized rate of 47.4% to about $18.1 billion over the five years to 2013. These acquisitions have helped the company quickly expand its customer base and benefit from cross selling new customers with additional services. However, throughout the industry, traditional wired services have been on the decline. CenturyLink is orienting its business toward broadband and other data services and away from traditional voice services. Strategic partnerships with Verizon Wireless and DirecTV already allow CenturyLink to offer digital television and wireless services to its customer base. As demand for these services increases, the company will continue to shift focus away from traditional voice services over the next five years.

CenturyLink Inc. – financial performance*

<table>
<thead>
<tr>
<th>Year</th>
<th>Revenue ($ million)</th>
<th>(% change)</th>
<th>Operating Income ($ million)</th>
<th>(% change)</th>
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<td>2008</td>
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<tr>
<td>2011</td>
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<td>118</td>
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</tr>
<tr>
<td>2012</td>
<td>18,376</td>
<td>19.7</td>
<td>2,713</td>
<td>34.0</td>
</tr>
<tr>
<td>2013</td>
<td>18,120</td>
<td>-1.4</td>
<td>2,533</td>
<td>-6.6</td>
</tr>
</tbody>
</table>

*Estimates

SOURCE: ANNUAL REPORT AND IBISWORLD

Other Companies

There are a number of medium-size players in the wired telecommunications market that cater to regional markets. These companies have been downsizing their activities in this industry, as demand has waned. Furthermore, many smaller, regional players do not solely own and operate infrastructure. Instead, they purchase wholesale network access from one of the three major players and use it in combination with their own network. Consequently, these smaller regional operators are subject to performance changes and trends that hurt or help the industry’s major players. The high investment required to operate and maintain a network, combined with the industry’s rapidly shrinking customer base, will make it difficult for smaller players to increase their market share over the next five years.
Operating Conditions

Capital Intensity | Technology & Systems | Revenue Volatility | Regulation & Policy | Industry Assistance

Capital Intensity

The Wired Telecommunications Carriers industry exhibits a high level of capital intensity. Using wages as a proxy for labor and depreciation as a proxy for capital, IBISWorld estimates that for every dollar spent on labor in the industry, $1.15 will be spent on capital. This is an increase from 2008 when operators spent $1.02 on capital for every dollar spent on labor. Capital intensity has increased as operators have invested in network expansion and improvement.

Network expansions require a large upfront investment and looming overall depreciation costs. With both the recession and declining utility of traditional voice services have put downward pressure on the price of services offered, telecommunications operators have not been able to pass these large fixed costs on to consumers in the form of higher prices. Consequently,

Tools of the Trade: Growth Strategies for Success

New Age Economy
Recreation, Personal Services, Health and Education. Firms benefit from personal wealth so stable macroeconomic conditions are imperative. Brand awareness and niche labor skills are key to product differentiation.

Traditional Service Economy
Wholesale and Retail. Reliant on labor rather than capital to sell goods. Functions cannot be outsourced therefore firms must use new technology or improve staff training to increase revenue growth.

Investment Economy
Information, Communications, Mining, Finance and Real Estate. To increase revenue firms need superior debt management, a stable macroeconomic environment and a sound investment plan.

Old Economy
Agriculture and Manufacturing. Traded goods can be produced using cheap labor abroad. To expand firms must merge or acquire others to exploit economies of scale, or specialize in niche, high-value products.
Operating Conditions

Capital Intensity continued

the industry has exhibited reluctance toward network expansions, preferring instead to upgrade existing products and services. For example, the upgrading of traditional switched networks to internet protocol-based (IP) networks has allowed for more efficient traffic flow and decreased the cost of providing voice services. This technology switch is siphoning revenue away from the Wired Telecommunications Carriers industry and into the VoIP industry.

Even so, recent advances in competing technologies are necessitating network upgrades. Cable operators are able to offer faster digital voice, video and data services over their networks than traditional copper wire networks can, and VoIP services are rapidly eating away at industry revenue. As such, major players like Verizon and AT&T have developed fiber-optic networks to compete. While fiber offers greater call-carrying capacity, it is more expensive than traditional copper wiring and has increased the cost of network expansion along with associated depreciation costs. Consequently, IBISWorld expects the capital intensity of the industry to increase over the next five years.

Technology & Systems

Level
The level of Technology Change is Medium

The key to understanding the changing landscape of the telecommunications sector lies in understanding the underlying technology that companies use and how that technology differs among operators and among methods of transmission. The traditional infrastructure used to provide telephony services throughout the United States is more than a century old. While telecommunications companies in the United States have been continuously improving upon this infrastructure, it is only recently that they have moved toward creating a new one altogether.

Transmission media
Wires and cables constitute the medium through which telecommunications companies transmit information to and from customers. Unshielded twisted pair (UTP) cabling is the most popular network cabling and has been used in US telecommunications infrastructure since the inception of the telephone. UTPs typically consist of a varying number of pairs of copper wire inside a jacket. Each pair is twisted to eliminate outside interference; the tighter the twisting, the higher the supported transmission rate and the greater the cost per foot. Notably, copper wires also carry an electrical charge with them, which powers a user’s telephone. Hence, even when power to a home goes out, the telephone still works. UTP cabling is low cost and has benefited in the past from being ubiquitous; since the telephone was first invented, more than 1 billion UTP telephone subscriber lines have been deployed. However, the limited data transfer rates of copper UTPs leave them unable to effectively support high bandwidth applications like high-definition streaming video. While these applications are not relevant to the Wired Telecommunications Carriers industry, the telecommunications sector has integrated so many different technologies into the same infrastructure that a changing need for one technology often necessitates a change in the entire network. Fiber-optic cabling transmits light rather than electronic signals, eliminating electrical interference problems and allowing for the transmission of signals over much longer distances and at much greater speeds. However, fiber-optic cables do not carry power with them, leaving phone service susceptible to power outages. While fiber-optic networks have emerged as the leading transmission media capable of
Operating Conditions

Technology & Systems continued

Supporting the high-bandwidth applications of the future, fiber-optic cabling has also traditionally been used as a means of transmitting long-distance voice communications due to its speed and distance capabilities.

Public switched telephone network (PSTN)
The PSTN is the extensive network of the world’s circuit-switched telephone networks that allows any one telephone in the world to communicate with another. When an end-user makes a call, that call is routed through different switches that operate on a regional, national or international level until a connection is established between the two phones. This connection is referred to as a circuit. When a user places a call using the present-day PSTN, their voice is sent, along with many others, to their phone company’s office. Depending on a user’s location (i.e. rural, suburban, urban) their voice may pass through a variety of different transmission media on the way to this office. From this point, the path a user’s voice takes depends on where they are calling. If the call is local and the intended recipient is connected to the same local phone office, the office creates a circuit between the user’s phone and the person they are calling. However, if the call is a regional or long distance call, the switch in the local office accesses a database that has a primary interchange carrier (PIC) code. The PIC code specifies which long-distance carrier an end user has chosen. Once the switch has a user’s PIC, it connects to another switch for the user’s long distance carrier, which in turn routes the call to the local office of the intended recipient, which completes the call. The present-day PSTN uses fiber-optic cables, satellites, and microwave transmissions to connect various local, regional, national and international carriers. A user placing a single international phone call may use billions of dollars worth of cable, computers and switches in the five to 10 seconds it takes for that call to be answered.

Revenue Volatility

Over the past five years, external competition and new technologies have steadily increased demand for alternative communication platforms such as wireless, cable and VoIP. The orderly nature of the shift away from

<table>
<thead>
<tr>
<th>Volatility vs Growth</th>
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</thead>
<tbody>
<tr>
<td>Revenue volatility (%)</td>
</tr>
<tr>
<td>1000 Hazardous</td>
</tr>
<tr>
<td>100</td>
</tr>
<tr>
<td>10</td>
</tr>
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<td>1</td>
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</tr>
<tr>
<td>30</td>
</tr>
<tr>
<td>50</td>
</tr>
<tr>
<td>70</td>
</tr>
<tr>
<td>Wired Telecommunications Carriers</td>
</tr>
</tbody>
</table>

A higher level of revenue volatility implies greater industry risk. Volatility can negatively affect long-term strategic decisions, such as the time frame for capital investment. When a firm makes poor investment decisions it may face underutilized capacity if demand suddenly falls, or capacity constraints if it rises quickly.

* Axis is in logarithmic scale

SOURCE: WWW.IBISWORLD.COM
As with most telecommunication industries across the globe, US wired or wireline telecommunications carriers are subject to considerable governmental regulation, at both the state and federal level. Regulation has been prominent in this industry since its inception. National regulation of the industry first commenced in 1934 via the Communications Act which formed the basis of US telecommunications regulations up until the mid 1990s. The act also led to the creation of the Federal Communications Commission (FCC), which became responsible for interstate and international telecommunication services. Other regulatory bodies that influence the operating environment of US wired telecommunication carriers include the National Telecommunications and Information Administration, the Department of State, the Department of Justice and the Federal Trade Commission.

The long-distance network first faced competition in the 1960s and 1970s. Of key importance in this process was the Modified Final Judgment (MFJ) of 1982, which led to the industry’s restructuring, by separating the competitive services from the natural monopoly services. The outcome was the divestiture of AT&T, whereby AT&T’s local operating companies were re-organized into seven regional holding companies known as regional bell operating companies (RBOCs) or “baby bells”. These baby bells were then allowed to only offer basic local monopoly services within designated local access transport areas (LATAs) while AT&T retained and was restricted to its long distance services. RBOCs remained under the regulatory control of the state commissions, while the FCC regulated inter-LATA and international telecommunication services.

The Telecommunications Act of 1996 brought about a fundamental change in US telecommunication regulatory policies. The act was “to provide for a pro-competitive, de-regulatory national policy framework designed to rapidly accelerate private sector deployment of advanced telecommunications and information technologies and services to all Americans by opening all telecommunications markets to competition.” In particular, three key markets were deregulated, which include long-distance telephone service, local

wired services has meant revenue volatility has been low.
Because many different technologies are integrated into the same wired infrastructure, a shift away from using such infrastructure depends on the decline of all these technologies. For example, direct subscriber line (DSL) internet access uses the same infrastructure as circuit-switched telephony does. Moreover, many telecommunications services are marketed and sold in bundles (i.e. multiple services for one monthly price). Thus, while traditional voice telephony has declined over the past five years, it has declined more slowly in areas where DSL internet access is still competitive and consumers receive their telephony services as part of a bundle.
Unfortunately for the industry, the rapid increase in demand for bandwidth over the past five years has highlighted the fact that most of the United States’ copper infrastructure is an insufficient medium of transportation for high-bandwidth applications. As industry players step up the phasing out of copper infrastructure in favor of the higher bandwidth offered by fiber-optics, the number of switched access lines will decline at a more rapid pace.

Revenue Volatility continued
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Regulation & Policy

Level & Trend
The level of Regulation is Medium and the trend is Steady
Operating Conditions

The Wired Telecommunications Carriers industry does not receive any direct government assistance and is heavily regulated. Under the General Agreement in Trade in Services, governments must ensure that foreign service suppliers are given access to the public telecommunications networks without discrimination. Therefore, there are no foreign ownership restrictions for wireline common carriers.

The Telecommunications Industry Association is the leading trade association representing the global information and communications technology industry in the United States. It supports the industry through standards development, policy initiatives, business opportunities, market intelligence and networking events. The association counts hundreds of companies among its membership, enhancing the business environment for companies involved in all forms of telecommunications.

Regulatory policies that relate to pricing are of key importance. State regulatory commissions and legislatures establish maximum prices that can be charged for certain wireline telecommunications services. Guiding these policies is the FCC’s Total Element Long Run Incremental Cost policy that assumes a “hypothetical, least cost, most efficient network for purposes of establishing prices for elements.” In addition, the FCC regulates interstate prices via a price cap plan, which limits aggregate price changes to the rate of inflation, minus productivity offset, plus or minus other cost changes recognized by the FCC.

Industry Assistance

The level of Industry Assistance is None and the trend is Steady.
### Key Statistics

#### Industry Data

<table>
<thead>
<tr>
<th>Year</th>
<th>Revenue ($m)</th>
<th>Industry Value Added ($m)</th>
<th>Establishments</th>
<th>Enterprises</th>
<th>Employment</th>
<th>Exports</th>
<th>Imports</th>
<th>Wages ($m)</th>
<th>Domestic Demand (Mls)</th>
<th>Number of broadband connections</th>
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</thead>
<tbody>
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#### Annual Change

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<th>Year</th>
<th>Revenue (%)</th>
<th>Industry Value Added (%)</th>
<th>Establishments (%)</th>
<th>Enterprises (%)</th>
<th>Employment (%)</th>
<th>Exports (%)</th>
<th>Imports (%)</th>
<th>Wages (%)</th>
<th>Domestic Demand (%)</th>
<th>Number of broadband connections (%)</th>
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#### Key Ratios

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<th>Year</th>
<th>IVA/Revenue (%)</th>
<th>Imports/Demand (%)</th>
<th>Exports/Revenue (%)</th>
<th>Revenue per Employee ($1,000)</th>
<th>Wages/Revenue (%)</th>
<th>Employees per Est.</th>
<th>Average Wage (%)</th>
<th>Share of the Economy (%)</th>
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Figures are inflation-adjusted 2013 dollars. Rank refers to 2013 data. SOURCE: WWW.IBISWORLD.COM
**Jargon & Glossary**

**Industry Jargon**

**ACCESS LINE** A wire (or series of wires) that forms a direct connection between a customer and the local telephone exchange.

**COMPETITIVE LOCAL EXCHANGE CARRIER** A telecommunications carrier that competes with the already established incumbent local exchange carriers (ILECs).

**CORE NETWORK** The central part of a telecommunications network that encompasses the principal transfer routes of information to and from subnetworks.

**INCUMBENT LOCAL EXCHANGE CARRIER (ILEC)** The original, monopoly local exchange carrier in a given area; ILECs receive different regulatory treatment than the newer CLECs.

**BARRIERS TO ENTRY** High barriers to entry mean that new companies struggle to enter an industry, while low barriers mean it is easy for new companies to enter an industry.

**CAPITAL INTENSITY** Compares the amount of money spent on capital (plant, machinery and equipment) with that spent on labor. IBISWorld uses the ratio of depreciation to wages as a proxy for capital intensity. High capital intensity is more than $0.333 of capital to $1 of labor; medium is $0.125 to $0.333 of capital to $1 of labor; low is less than $0.125 of capital for every $1 of labor.

**CONSTANT PRICES** The dollar figures in the Key Statistics table, including forecasts, are adjusted for inflation using the current year (i.e. year published) as the base year. This removes the impact of changes in the purchasing power of the dollar, leaving only the “real” growth or decline in industry metrics. The inflation adjustments in IBISWorld’s reports are made using the US Bureau of Economic Analysis’ implicit GDP price deflator.

**DOMESTIC DEMAND** Spending on industry goods and services within the United States, regardless of their country of origin. It is derived by adding imports to industry revenue, and then subtracting exports.

**EMPLOYMENT** The number of permanent, part-time, temporary and seasonal employees, working proprietors, partners, managers and executives within the industry.

**ENTERPRISE** A division that is separately managed and keeps management accounts. Each enterprise consists of one or more establishments that are under common ownership or control.

**ESTABLISHMENT** The smallest type of accounting unit within an enterprise, an establishment is a single physical location where business is conducted or where services or industrial operations are performed. Multiple establishments under common control make up an enterprise.

**INTEGRATED SERVICES DIGITAL NETWORK** A set of communications standards that allows for the simultaneous transmission of data, voice and video services over the public switched telephone network.

**LOCAL ACCESS AND TRANSPORT AREA (LATA)** A region that differentiates between local and long distance calls. Intra-LATA calls are handled by local exchange carriers, while calls between LATAs are handled by long-distance carriers.

**PUBLIC SWITCHED TELEPHONE NETWORK** The network of the world’s public circuit-switched telephone networks, consisting of a variety of transmission technologies all inter-connected by switching centers.

**IBISWorld Glossary**

**EXPORTS** Total value of industry goods and services sold by US companies to customers abroad.

**IMPORTS** Total value of industry goods and services brought in from foreign countries to be sold in the United States.

**INDUSTRY CONCENTRATION** An indicator of the dominance of the top four players in an industry. Concentration is considered high if the top players account for more than 70% of industry revenue. Medium is 40% to 70% of industry revenue. Low is less than 40%.

**INDUSTRY REVENUE** The total sales of industry goods and services (exclusive of excise and sales tax); subsidies on production; all other operating income from outside the firm (such as commission income, repair and service income, and rent, leasing and hiring income); and capital work done by rental or lease. Receipts from interest royalties, dividends and the sale of fixed tangible assets are excluded.

**INDUSTRY VALUE ADDED (IVA)** The market value of goods and services produced by the industry minus the cost of goods and services used in production. IVA is also described as the industry’s contribution to GDP, or profit plus wages and depreciation.

**INTERNATIONAL TRADE** The level of international trade is determined by ratios of exports to revenue and imports to domestic demand. For exports/revenue: low is less than 5%, medium is 5% to 20%, and high is more than 20%. Imports/domestic demand: low is less than 5%, medium is 5% to 35%, and high is more than 35%.

**LIFE CYCLE** All industries go through periods of growth, maturity and decline. IBISWorld determines an industry’s life cycle by considering its growth rate (measured by IVA) compared with GDP: the growth rate of the number of establishments; the amount of change the industry’s products are undergoing; the rate of technological change; and the level of customer acceptance of industry products and services.
Jargon & Glossary

**IBISWorld Glossary continued**

**NONEMPLOYING ESTABLISHMENT** Businesses with no paid employment or payroll, also known as nonemployers. These are mostly set up by self-employed individuals.

**PROFIT** IBISWorld uses earnings before interest and tax (EBIT) as an indicator of a company’s profitability. It is calculated as revenue minus expenses, excluding interest and tax.

**VOLATILITY** The level of volatility is determined by averaging the absolute change in revenue in each of the past five years. Volatility levels: very high is more than ±20%; high volatility is ±10% to ±20%; moderate volatility is ±3% to ±10%; and low volatility is less than ±3%.

**WAGES** The gross total wages and salaries of all employees in the industry. The cost of benefits is also included in this figure.
At IBISWorld we know that industry intelligence is more than assembling facts
It is combining data with analysis to answer the questions that successful businesses ask

Identify high growth, emerging & shrinking markets
Arm yourself with the latest industry intelligence
Assess competitive threats from existing & new entrants
Benchmark your performance against the competition
Make speedy market-ready, profit-maximizing decisions

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