

filed rate or be the first to market with a new service offering even before U S WEST's tariff becomes effective. Further, as a dominant carrier, U S WEST also is prohibited from responding to competition by charging deaveraged rates within the study area. If anything the social costs of dominant carrier regulation are compounded by the fact that U S WEST is prohibited from responding to competitive providers' bundled offerings, which may include interLATA voice and data services.¹³³

Moreover, continuing to regulate U S WEST as a dominant carrier in a competitive market results in "umbrella" pricing, where competitors argue that U S WEST's proposed tariff rates are unlawfully low while pricing their own services below U S WEST's tariffed rates. The Commission has recognized that requiring tariff filings may facilitate tacit collusion by enabling carriers to "ascertain competitors' prices and any changes to rates, which might encourage carriers to maintain rates at an artificially high level."¹³⁴ In comparison, forbearance of the tariff filing requirements "will foster competition which will expand the consumer benefits of a competitive marketplace."¹³⁵ Thus, dominant carrier regulation reduces the incentive of all competitors to initiate price reductions and new services, and adversely affects U S WEST's ability to respond

¹³³ Id. Kahn and Tardiff observe that, ironically, the incumbent LECs' Section 271 applications are being held-up pending demonstration that local markets are sufficiently open to competition. Id.

¹³⁴ Implementation of Sections 3(n) and 332 of the Communications Act, Regulatory Treatment of Mobile Services, Second Report and Order, 9 FCC Rcd. 1411, 1479-80 (1994).

¹³⁵ Id.

quickly and creatively to competition.

Dominant carrier regulation also imposes significant compliance costs on U S WEST and administrative costs on the Commission which are unnecessary in a competitive environment. The submission of detailed cost support with each tariff filing increases the cost of implementing new services and rate structures. These regulatory costs are passed through to high capacity consumers in the form of higher rates. Because U S WEST is the only competitor in the Phoenix area market for high capacity services that is forced to incur the regulatory costs associated with dominant carrier regulation, it suffers a unique competitive disadvantage. In comparison, permissive detariffing of these services “would reduce administrative burdens on [U S WEST] and on the Commission, promote competitive market conditions, facilitate provision of new service offerings, and promote market entry.”¹³⁶

The Kahn and Tardiff Paper addresses some of the broader public interest issues at stake in this proceeding. In order to ensure the continued development and modernization of the public switched telephone network and the availability sophisticated and innovative services – both of which are the central goals of the 1996 Act – all competitors, including incumbents, must be free from restrictions and handicaps on their ability to compete in the marketplace.¹³⁷ Moreover, all competitors must be given the “full, undiluted incentives of a free market system” to

¹³⁶ PCIA Forbearance Order ¶ 64 (comparing CAP Forbearance Order, 12 FCC Rcd. at 8610-12 ¶¶ 27-32).

¹³⁷ Attachment C, Kahn and Tardiff Paper at 18.

undertake the typically risky investments needed to drive innovation.¹³⁸

Kahn and Tardiff describe two types of free market incentives. The first type is the stimulus of competition itself.¹³⁹ The strongest case for substituting competition for regulation is the superior ability of the former to exert pressure on all competitors in the Phoenix area market for high capacity services to be efficient and innovative if they are to survive, let alone prosper.¹⁴⁰ Kahn and Tardiff identify two illustrations of this effect: (1) the wholesale adoption of hub and spoke operations and the development of computerized reservation systems by the airlines after their deregulation; and (2) the widespread adoption of just-in-time inventory systems made possible only by deregulation which gave truckers the freedom to enter into bidding contracts with penalties for failure to perform according to stipulated standards.¹⁴¹

The second type is the self-interest of competitors, freed from continuing restrictions on the services and innovations they are permitted to offer.¹⁴² In order to encourage innovation, competitors must be able to retain the profits from innovations that are successful, just as they are forced to bear the full cost of innovations that are failures. This symmetry can be achieved only through genuine

¹³⁸ Id.

¹³⁹ Id. at 19.

¹⁴⁰ Id.

¹⁴¹ Id.

¹⁴² Id.

deregulation.¹⁴³

As competition continues to develop in markets previously protected by regulation, the Commission should not weaken market-based incentives in a misguided effort to stimulate competition. Kahn and Tardiff point out that attempts to micromanage the process of deregulation, as has occurred in other industries, are more likely to produce distortions than to actually encourage efficient competition.¹⁴⁴ Ultimately, the Commission's incentive system should shrink regulatory restrictions to the absolute minimum and entrust protection of the public to a deregulated, competitive marketplace.¹⁴⁵

The Commission's own experience with AT&T and the long distance industry demonstrates the public interest benefits of a free market system. At the time, the Commission's decision to reclassify AT&T as non-dominant was strongly opposed by AT&T's competitors. However, the Commission recognized that allowing AT&T to compete on equal terms with its competitors would spur increased competition in the long distance market. AT&T has continued to lose market share since it was declared non-dominant in 1995 while its competitors have thrived, indicating that the reclassification has not harmed competition.¹⁴⁶ Likewise, symmetrical regulation of U S WEST and competitive providers as non-dominant carriers would serve the public interest by promoting competitive market conditions and

¹⁴³ Id.

¹⁴⁴ Id.

¹⁴⁵ Id. at 19-20.

¹⁴⁶ Attachment C, Kahn and Tardiff Paper at 20.

facilitating the introduction of new service offerings, service enhancements, and price reductions.

IV. REGULATING U S WEST AS A NON-DOMINANT CARRIER
IN THE PROVISION OF HIGH CAPACITY SERVICES
IN PHOENIX IS NOT TOTAL DEREGULATION

U S WEST is not requesting that its high capacity services be totally deregulated – it is requesting only that the Commission exercise its Section 10 forbearance authority and regulate U S WEST as a non-dominant carrier in the Phoenix area market for high capacity services. As discussed above, like other non-dominant carriers, U S WEST will still be subject to regulation under Title II of the Communications Act of 1934, as amended. For example, non-dominant carriers are required to offer interstate services under rates, terms and conditions that are just, reasonable and not unduly discriminatory.¹⁴⁷ In addition, non-dominant carriers are subject to the Commission’s complaint process.¹⁴⁸ At this time, non-dominant carriers are also required to give notice prior to discontinuance, reduction or impairment of service.¹⁴⁹

As a non-dominant carrier, however, U S WEST would enjoy streamlined regulation equal to that of all its competitors in the Phoenix area market for high capacity services. First, U S WEST would be subject to permissive detariffing, which would allow, but not require, the filing of tariffs for interstate high capacity services on one-day’s notice with a presumption of lawfulness and without any cost

¹⁴⁷ 47 U.S.C. §§ 201(b), 202(a).

¹⁴⁸ 47 U.S.C. §§ 208(a).

¹⁴⁹ 47 U.S.C. § 214.

support. Second, U S WEST's high capacity services in the Phoenix area would be removed from price cap and rate of return regulation, which are appropriate only for dominant carrier services. Third, U S WEST would be allowed to charge deaveraged rates for high capacity services within the Phoenix MSA. The effect of granting U S WEST's Petition would be to place U S WEST on equal footing with all other competitors in the Phoenix area market for high capacity services.

V. CONCLUSION

Congress adopted Section 10 because it recognized that regulation is unnecessary, and indeed harmful, in a competitive market. Under Section 10, the Commission is required to eliminate regulations that are no longer necessary to ensure that rates and practices are just, reasonable and not unreasonably discriminatory. U S WEST has gathered substantial evidence in support of its petition demonstrating that the market for high capacity services in the Phoenix MSA is robustly competitive. In light of U S WEST's lack of market power, competition, without dominant carrier regulation, is sufficient to constrain U S WEST's ability to impose anti-competitive prices and other terms and conditions of service.

Section 10 also requires that the Commission consider whether forbearance will promote competitive market conditions. There is no question that allowing U S WEST to compete on equal footing with its competitors serves the public interest and enhances competition. Today, U S WEST is uniquely burdened by dominant carrier regulations that hamper its ability to freely compete in the Phoenix area market for high capacity services. Removing these regulatory

obstacles will allow U S WEST to initiate price reductions and new services, and respond quickly and creatively to competition.

For these reasons, the Commission should grant U S WEST's Petition and exercise its authority to forbear from regulating U S WEST as a dominant carrier in the provision of high capacity services in the Phoenix MSA.

Respectfully submitted,

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August 24, 1998

ATTACHMENT A

U S WEST
HIGH CAPACITY MARKET STUDY
PHOENIX
METROPOLITAN STATISTICAL
AREA

August 7, 1998

 **QUALITY STRATEGIES.**

WASHINGTON, D.C.

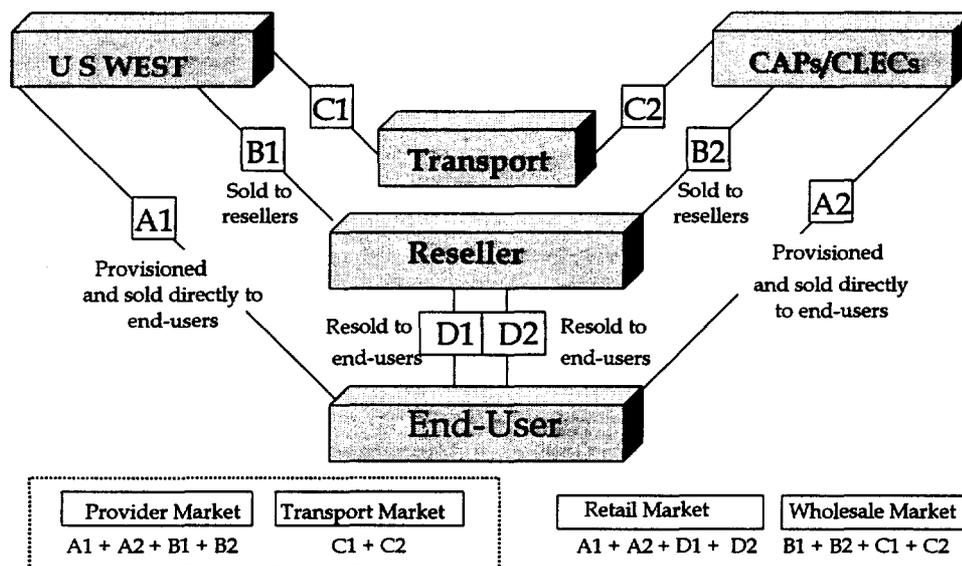
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EXECUTIVE SUMMARY

This report analyzes the state of competition in the market for high capacity telecommunications services (i.e., DS1 and above) in the Phoenix, Arizona, metropolitan area. QUALITY STRATEGIES was asked to: describe the Phoenix High Capacity Market; describe the market participants; estimate the market shares of U S WEST and the other market participants; and to estimate the capacity of competitive providers of high capacity services in Phoenix.

The Phoenix market for high capacity services can be best described as a three tier market, as illustrated below, with U S WEST and other CAP/CLEC providers selling services to end users, resellers, and other carriers for "transport" purposes. This market can be sub-divided based on who high capacity services are sold to - Retail and Wholesale Markets - versus who is actually providing the underlying facilities - the Provider and Transport Markets.



Prior to the mid-1990's U S WEST largely had the Phoenix High Capacity Market to itself. Since 1994, MCI, GST, TCG, ELI, and MFS WorldCom have all turned-up high capacity networks in Phoenix. All of these competitors are seasoned well-financed telecommunications companies. Collectively, these five competitors have installed over 800 route miles of optical fiber and have connected several hundred buildings in the Phoenix area to their networks.

The growth in alternative fiber networks is reflected in market share data. In all cases, U S WEST's market share appears to be declining at a relatively rapid rate. As of the end of 1997, only 30% of the retail customers purchased high capacity services directly from U S WEST. The other 70% purchased services from resellers and other CAPs/CLECs. The situation was reversed with respect to the actual provision of high capacity service - where U S WEST accounted for 72.1% of the Provider Market and 84.1% of the Transport Market with the other providers accounting for the remainder. Even these relatively high market shares represent a significant decrease from the end of 1994 when U S WEST serviced 94.1% of the Provider Market.

Recent data indicates that other CAPs/CLECs are capturing approximately half of the growth in high capacity services, in the rapidly growing Phoenix market. Between the second and the fourth quarters of 1997, providers other than U S WEST accounted for 54% of the growth in the Provider Market and 42% of the Transport Market. This trend is expected to continue due to the fact that U S WEST competitors in Phoenix have an enormous amount of unused capacity in their existing fiber networks. It is estimated that less than 8% of the capacity of these competitive networks would be needed to handle all of U S WEST's existing traffic.

Both U S WEST's relatively low Retail Market share and the large amount of unused capacity in competitive networks make it highly likely that U S WEST's share of the Provider and Transport Markets will continue to decline. This decline will be exacerbated, particularly in the Transport Market, by continued consolidation in the telecommunications industry (e.g., the merger of AT&T and TCG).

INTRODUCTION

BACKGROUND

Although the Telecommunications Act of 1996 formally opened the local exchange market to competition for the first time, U S WEST has been experiencing competition of another type for several years. In the early part of the 1990s, Competitive Access Providers (CAPs) began installing fiber facilities in the Phoenix Metropolitan Statistical Area (MSA) to compete directly with the incumbent local exchange carrier, U S WEST, for a portion of its market.

Primarily, the CAPs began offering high capacity (DS-1 and DS-3) circuits to end-users and carriers as a means of bypassing the local exchange carrier (U S WEST). High capacity circuits are used to transport traffic between end user premises, from end-user premises to carrier Points of Presence (POPs) or to transport traffic between POPs and Central Offices (COs) or tandems.

THE HIGH CAPACITY MARKET

The High Capacity Market can be segmented in several ways. First, because high capacity circuits are used for two distinct purposes, two separate sub markets emerged: 1.) the Provider Market and 2.) the Transport Market. For purposes of this study, we will refer to the combination of the two as the High Capacity Market. Please refer to the graphic on page 9 for a visual description of this concept.

- Provider Market: Provider circuits are DS-1 and DS-3 circuits provisioned by a facilities-based local telecommunications provider (either U S WEST or a CAP). These circuits are ultimately purchased by end-users to transmit voice and data traffic from the end user's premise to a POP or CAP switching center. The provider does not always sell the circuit directly to the end user.
- Transport Market: Transport circuits are high capacity lines purchased by carriers to transmit voice and data traffic from one POP to another or to transmit voice and data traffic from a POP to a Central Office or tandems (for distribution). Transport circuits are purchased by one communications company from another communications company.

The overall High Capacity Market can also be viewed as consisting of a Wholesale Market and a Retail Market. Often a Local Exchange Carrier or CAP provisions a circuit, it does not necessarily maintain the account or bill for it - because it is often resold by another carrier. Because of this situation, QUALITY STRATEGIES is also providing Retail and Wholesale views of the High Capacity Market.

- Retail Market: the retail view is another method of distributing provider share. Instead of crediting the company that provisions the circuit, it credits the company that sells and bills for the circuit and maintains the relationship with the end user.
- Wholesale Market: the wholesale view consists of circuits provisioned by a local telecommunications provider (either U S WEST or a CAP) and sold to another telecommunications provider - either for resale to end users or for transport. Please refer to the graphic on page 9 for a visual description of this concept.

These distinct views became necessary as the High Capacity Market began to mature and purchasing patterns began to deviate from the typical provider - purchaser standard. From the outset, CAPs attempted to form alliances with long distance carriers to provide the private lines linking their customers to their POPs, as well as providing their transport facilities. It is from these beginnings that the concept of High Capacity resale was formed necessitating the Retail and Wholesale views to supplement Provider and Transport views. At present, many CAPs operating in the Phoenix market sell more circuits to long distance carriers than to end users. Because of this, Provider and Retail market share figures illustrate very distinct distributions, although both measure the same market.

COMPETITORS

Currently, the following five CAPs operate networks in the Phoenix MSA (Maricopa and Pinal Counties) and compete with U S WEST for Provider and Transport market share:

- MFS WorldCom
- Teleport Communications Group (TCG)
- MCI
- GST
- Electric Lightwave, Inc. (ELI)

Each of the five aforementioned competitors has invested resources to build optical fiber networks in the Phoenix area that compete directly with U S WEST. Collectively, the five competitors have installed over 800 route miles of optical fiber and connected several hundred buildings to their networks. Equipped as they are today, the CAPs could assume all of U S WEST's Provider and Transport traffic with their networks at less than 8% capacity. This would leave the other 92% to capture future growth of bandwidth demand.

Because the High Capacity (Transport and Provider) Market is very specialized, the CAPs have become niche communications providers catering to interexchange carriers and business customers in particular vertical segments (particularly financial services, health care, and information transfer). This has allowed CAPs to focus on small geographic areas when constructing fiber networks (particularly central business districts and business-intensive suburbs).

MARKET SHARE

To formulate market share estimates, QUALITY STRATEGIES considered several inputs. Results are primarily based on primary, survey market research that elicits share figures based on end user data. Additionally, QUALITY STRATEGIES analysts conducted an exhaustive competitive research analysis to gather additional information about each market examined.

As of the fourth quarter of 1997, U S WEST's share of the High Capacity Market was 77%. During this time, U S WEST share of the Provider Market was 72%. In other words, U S WEST facilities constituted 72% of circuits being used by end users for DS-1 and DS-3 high capacity services. U S WEST retained less than 30% of the Retail Market - meaning U S WEST maintained a relationship with fewer than one third of all end users in the fourth quarter of 1997. The disparity is largely the result of carrier purchases of U S WEST/CAP circuits for resale to end-users.

In the fourth quarter, U S WEST circuits constituted approximately 84% of the Phoenix Transport Market (down from 94% in the second quarter of 1997). CAPs generally install extraordinary amounts of excess capacity around long distance POPs and local COs and are capable of absorbing traffic from U S WEST facilities immediately. This is the primary reason for the significant drop in market share between the second and fourth quarters of 1997; by installing excess capacity, CAPs have facilitated a situation where traffic can be easily migrated from one carrier's facilities (U S WEST) to another's (Phoenix CAPs). U S WEST's Transport share is particularly vulnerable to competitors as long distance carriers and CAPs begin to consolidate.

In addition to the Transport Market, recent telecom mergers and consolidations are likely to impact the Wholesale Market. In the fourth quarter of 1997, U S WEST accounted for approximately 79% of the Wholesale Market, which includes circuits sold to carriers for purposes of resale or for transport. As CAPs' and carriers' relationships grow, carriers are less likely to purchase wholesale circuits from U S WEST and become more reliant on acquired subsidiaries.

The continuing trend toward a declining market share for U S WEST becomes evident through an examination of its share of market growth over the last several quarters. Between the second and fourth quarters of 1997, U S WEST accounted for 58% of Transport Market growth and 46% of Provider Market growth. Losses in market growth may not become evident in installed-base share results for several quarters as the market grows and U S WEST accounts for a smaller percentage of the total. Share of growth is the primary indicator of how a competitor's installed-base market share will look in the future - and CAP competitors in the Phoenix area have captured a majority share of market growth over the past several years.

OBJECTIVES

The primary objective of this report is to provide U S WEST with a high-level overview of the Phoenix MSA (Maricopa and Pinal Counties) High Capacity Market. The report is structured to meet this objective by providing:

- A description of the High Capacity Market and sub-markets
- A description of the High Capacity competitive landscape in the Phoenix MSA
- An estimate of the potential competitive capacity of existing fiber networks
- Market share estimates for U S WEST and its competitors

This report describes and defines the Phoenix MSA High Capacity Market, identifies the types of circuits included in the share estimates, briefly describes common high capacity applications, and identifies and describes the strengths and weaknesses of facilities based competitors in the Phoenix MSA. The competitive analysis identifies market trends, carrier consolidation, and purchaser capacity requirements.

CAPABILITIES AND EXPERIENCE

QUALITY STRATEGIES is a research and consulting firm working exclusively in the telecom industry. QUALITY STRATEGIES has provided competitive market information, including market share results and competitive market data to every RBOC and large LEC for the last decade.

QUALITY STRATEGIES maintains its own professional team of analysts, methodologists, client service personnel and calling centers focused exclusively on the telecommunications market.

QUALITY STRATEGIES believes that quantitative market share data can be coupled with qualitative competitive data to accurately describe and assess the market for high capacity circuits. The information provided in each section is designed to supplement that from the other. This analysis is based on primary and secondary market research conducted for U S WEST. Market Share estimates reflect fourth quarter, 1997 analyses. Overall Provider and Retail estimates are based on a 95% confidence interval with a $\pm 5\%$ margin of error. Wholesale and Transport market share estimates are primarily the result of extensive competitive research. (see appendix for additional information on methodology).

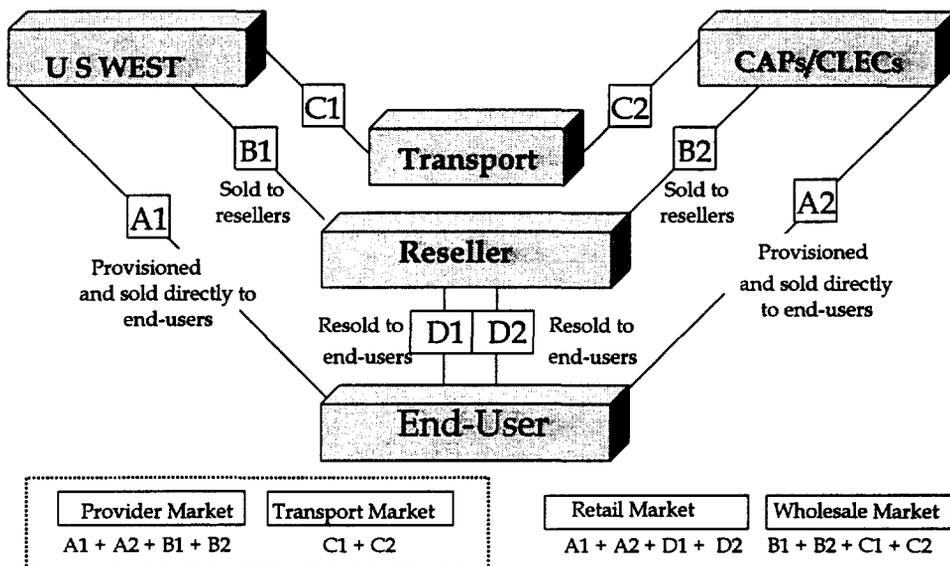
MARKET DESCRIPTION

HIGH CAPACITY MARKET

QUALITY STRATEGIES defines the High Capacity Market as the universe of DS-1 (1.544 mbps) and DS-3 (45 mbps) circuits used either for end user customer's traffic (Provider) or for carrier transport (Transport).

- End users utilize high capacity circuits to connect two business locations in the same LATA (point-to-point) or to connect to a carrier's point-of-presence (POP) (special access).
- Carriers utilize high capacity transport circuits to provide links between POPs, central offices, and tandems.

The following diagram depicts the various components of the High Capacity Market, which is represented by the sum of A1, A2, B1, B2, C1 and C2.



PROVIDER MARKET

Provider circuits are DS-1 and DS-3 circuits provisioned by a facilities-based local telecommunications provider (either U S WEST or a CAP). These circuits are ultimately purchased by end users to transmit voice and data traffic from the end user's premise to a POP or CAP switching center. The provider does not always sell the circuit directly to the end user. Referring to the visual, the Provider Market is defined as A1+A2+B1+B2.

TRANSPORT MARKET

Transport circuits are high capacity lines purchased by carriers to transmit voice and data traffic from one POP to another or to transmit voice and data traffic from a POP to a central office or tandems (for distribution). Transport circuits are purchased by one communications company from another communications company. Referring to the graphic, the Transport Market is comprised of C1+C2.

THE RETAIL MARKET

The retail view is another method of distributing Provider share. Instead of crediting the company that provisions the circuit, the Retail Market credits the company that sells and bills for the circuit and maintains the relationship with the end user. The Retail Market is defined as $A1+A2+D1+D2$ (see diagram page 9).

THE WHOLESALE MARKET

The wholesale view consists of circuits provisioned by a local telecommunications provider (either U S WEST or a CAP) and sold to another telecommunications provider - either for resale to end users or for transport. The Wholesale Market is comprised of $B1+B2+C1+C2$ (see diagram page 9).

MARKET SHARE

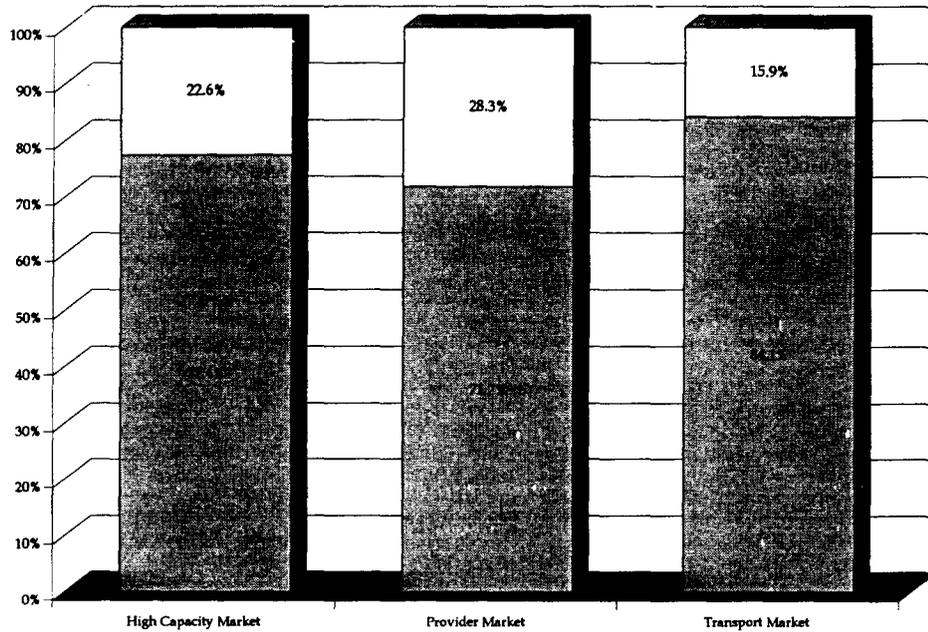
Because the Phoenix market has become increasingly competitive over the last two years, U S WEST has experienced rapid, consistent erosion of its High Capacity Market share. QUALITY STRATEGIES has been tracking U S WEST's Provider Market share since 1994 and its Transport Market share since 1997. As could be expected, U S WEST's share of each market has decreased substantially as CAPs have entered the market and expanded existing facilities.

Following are several views of the High Capacity Market. All of the charts include DS-1 and DS-3 circuit information. On some of the charts DS-0 circuit information is also included. The charts which include DS-0 circuits are clearly labeled. DS-0 circuits are included because in some views of the market the survey results included DS-0 circuits and this information cannot be extracted. Overall the DS-0 circuits when converted to DS-1 equivalents do not appreciably affect the results, accounting for approximately 3% of the market.

HIGH CAPACITY MARKET

U S WEST's market share for the fourth quarter of 1997 accounts for approximately 77% of the High Capacity Market in the greater Phoenix area. The market is comprised of the Provider Market (in which U S WEST accounts for approximately 72% of the total) and the Transport Market (in which U S WEST accounts for 84%).

PHOENIX MSA
U S WEST HIGH CAPACITY MARKET SHARE
4Q97



	<u>U S WEST</u>	<u>Competitors</u>
High Capacity	77.4%	22.6%
Provider	71.7%	28.3%
Transport	84.1%	15.9%

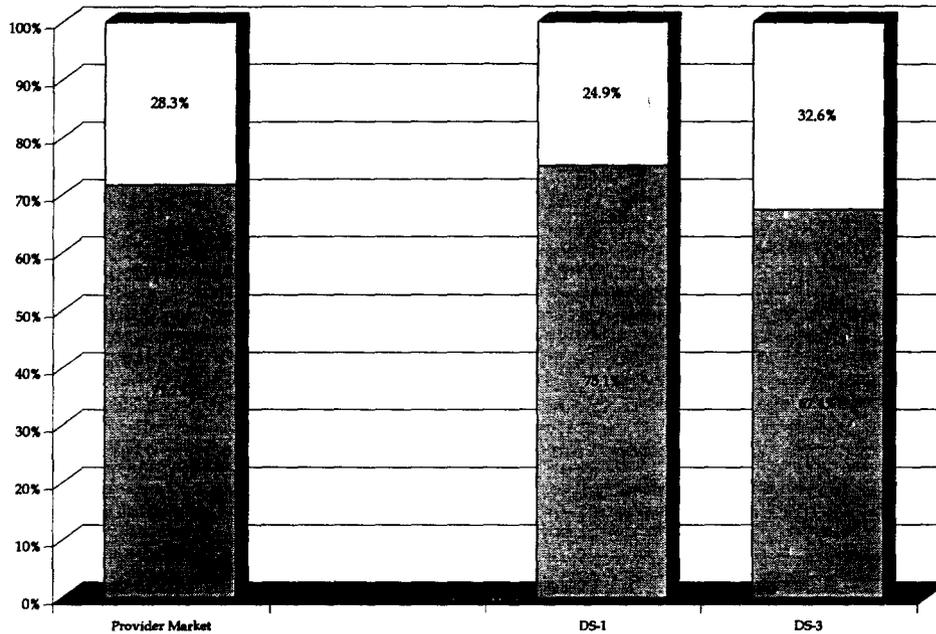
Results for Provider Market are presented at a 95% Confidence Level with a ±5% Margin of Error.

PROVIDER MARKET

To date, facilities-based competitors have captured over 28% of the Provider High Capacity Market in the Phoenix MSA. This can be attributed to recent marketing campaigns geared toward the end user and a proliferation of competitive alliances between CAPs and long distance carriers.

The High Capacity study was designed to measure U S WEST's and its competitors' share of DS-1 and DS-3 circuits. As a provider, U S WEST's share of the DS-3 market has declined more rapidly than its share of the DS-1 market. This is largely attributable to competitor's marketing strategies that attempt to secure accounts from large, bandwidth-intensive businesses. Because many of the larger businesses end users are located in Phoenix's central business district, competitors have been able to reach them on a facilities basis without investing a substantial amount of resources in infrastructure.

PHOENIX MSA
 U S WEST PROVIDER MARKET RESULTS (BY CIRCUIT SPEED)
 4Q97



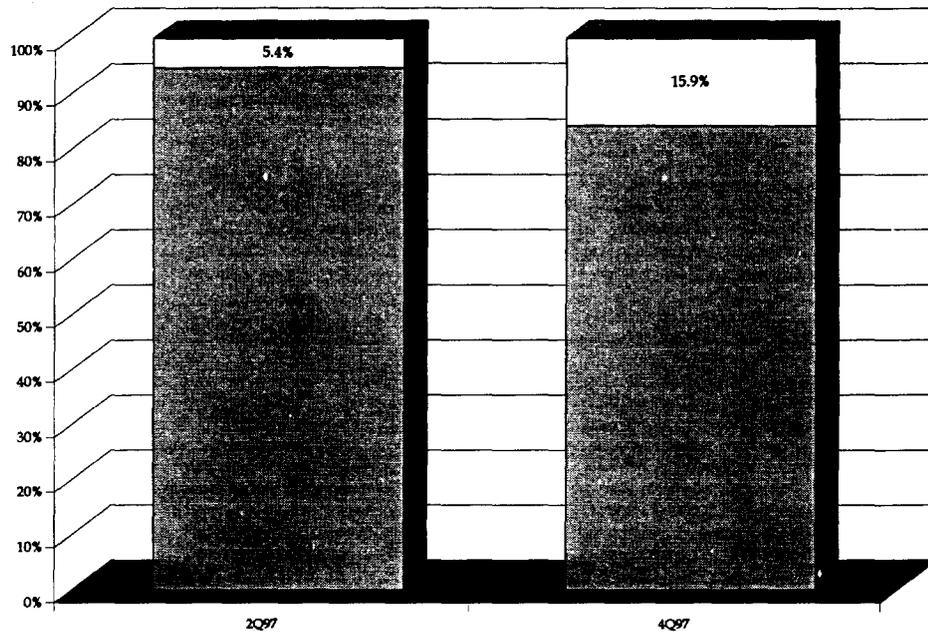
	<u>U S WEST</u>	<u>Competitors</u>
Provider Market	71.7%	28.3%
DS-1	75.1%	24.9%
DS-3	67.4%	32.6%

Results for Provider Market are presented at a 95% Confidence Level with a ±5% Margin of Error. Disaggregated Share results have higher margins of error to account for smaller sample sizes

TRANSPORT MARKET

As has been the case in the Provider Market, CAPs are beginning to capture a large percentage of the Transport Market. As of fourth quarter, 1997, competitors comprise roughly 16% of the Transport Market, up from 5% in the second quarter of 1997. This is largely the result of a desire on the part of carriers to minimize dependence on U S WEST. Additionally, CAP share of the Transport Market is likely to increase substantially as they are absorbed by interexchange carriers and other, large telecommunications companies. Although U S WEST's share of the Transport Market is higher than its share of the Provider Market, Transport Market incremental losses have been far greater recently (over 10% since second quarter 1997) as CAPs and carriers have merged and formed competitive alliances. While U S WEST's market position is vulnerable in each market, many analysts foresee the rapid erosion of RBOC Transport Market share in the near future

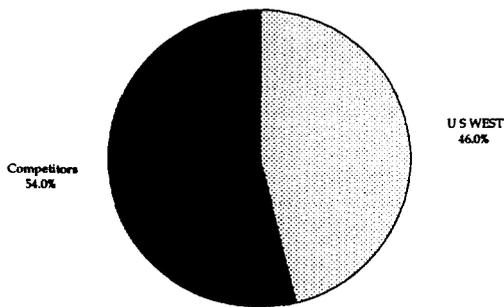
PHOENIX MSA
TRANSPORT MARKET SHARE
2Q97-4Q97



	2Q97	4Q97
U S WEST	94.6%	84.1%
Competitors	5.4%	15.9%
	100.0%	100.0%

PROVIDER MARKET GROWTH

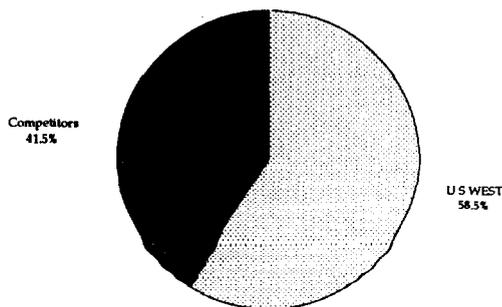
One of the key indicators of future market share in the telecommunications market is share of market growth in the present. Market growth is defined as new market growth (new subscriptions), the conversion of switched lines to high capacity facilities and competitive conversions. From the second quarter of 1997 to the fourth quarters of 1997, QUALITY STRATEGIES estimates the Provider Market grew 6.5%. Although U S WEST accounts for over 72% of Provider high capacity circuits, U S WEST accounted for roughly only 46% of the market growth. Facilities based competitors were responsible for over one half of new high capacity circuits added between June and September. At this rate, U S WEST can expect its share of the installed base to diminish to its share of market growth.



<u>2Q97 - 4Q97</u>	
U S WEST	46.0%
Competitors	54.0%
	<u>100%</u>

TRANSPORT MARKET GROWTH

Although U S WEST's share of the Transport Market growth is higher than its share of Provider Market growth, the facilities-based competitors account for a substantial percentage. Between the second and fourth quarters of 1997, U S WEST was responsible for less than 59% of new transport circuits. At this pace, U S WEST can expect its share of the installed base to continue to decline.



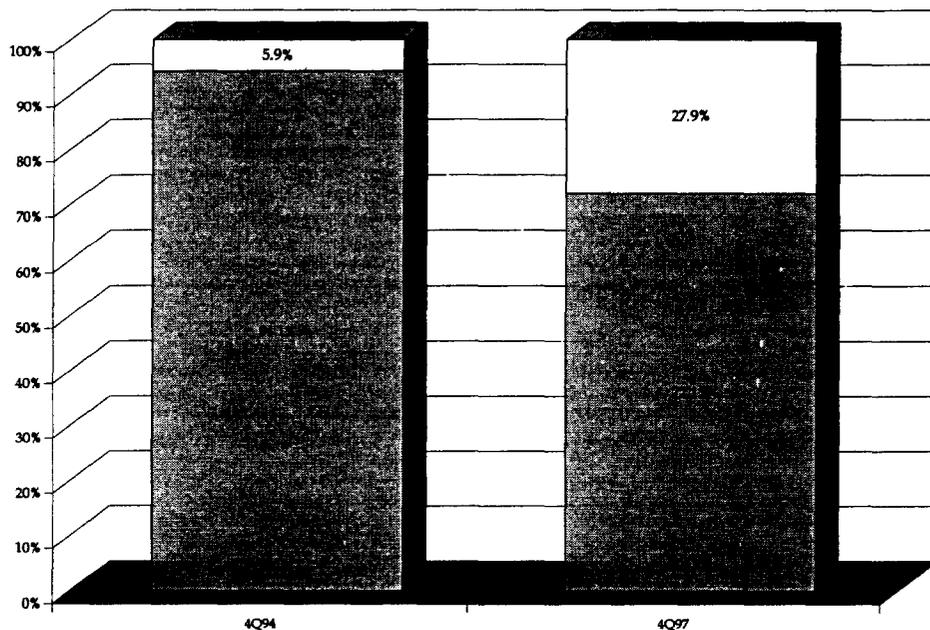
<u>2Q97 - 4Q97</u>	
U S WEST	58.5%
Competitors	41.5%
	<u>100.0%</u>

TREND

The most effective means of demonstrating U S WEST Provider Market share loss is to view its share over time. QUALITY STRATEGIES has been tracking high capacity data for U S WEST since the fourth quarter of 1994. Since that time, U S WEST has relinquished a considerable portion of the Provider Market. In 1994, TCG was the only CAP operating in the city - and its network was limited at that time. Over the next three years, the CAP presence in the Phoenix MSA grew rapidly and conversely, U S WEST's market share fell rapidly.

The following chart provides market share trend data. Trend includes DS-1, DS-3, and DS-0 circuits.

PHOENIX MSA
 PROVIDER MARKET SHARE TREND*
 4Q94-4Q97



	4Q94	4Q97	Δ 4Q 94-4Q 97
U S WEST	94.1%	72.1%	-22.0%
Competitors	5.9%	27.9%	22.0%
	100.0%	100.0%	

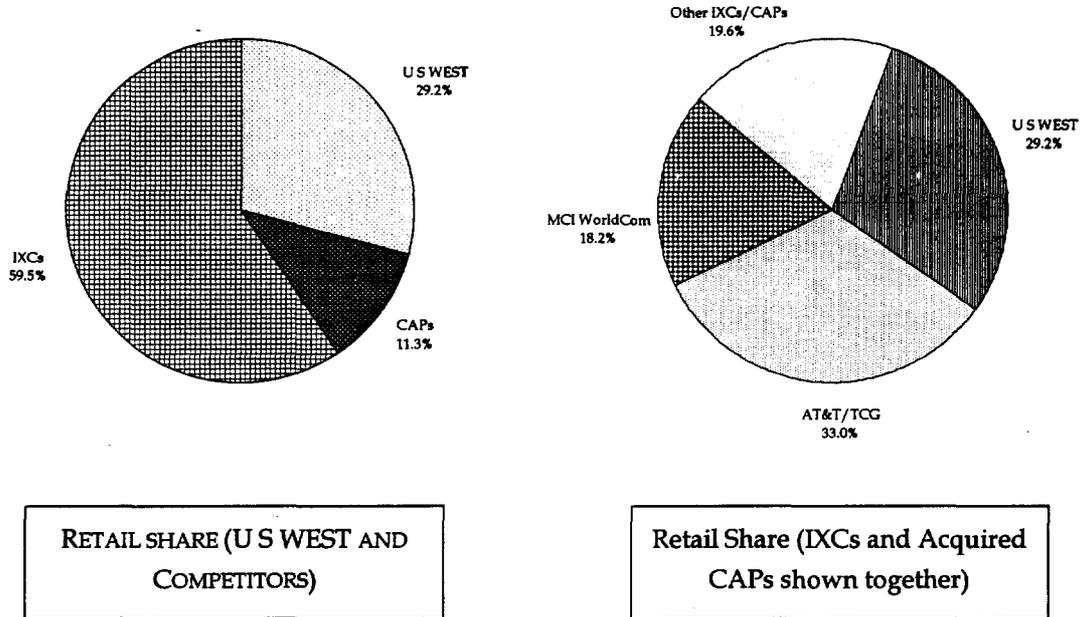
*Trend data for the Provider Market includes DS-0, DS-1, and DS-3 circuits.
 Results for the Provider Market are presented at a 95% Confidence Level with a ±5% Margin of Error.

RETAIL MARKET

As indicated previously, the High Capacity Market can also be viewed as Retail and Wholesale Markets. In the Retail Market, competitors account for approximately 70% of end user relationships. U S WEST's largest competitors are currently AT&T, MCI, and Sprint. However, the vast majority of IXC-billed high capacity circuits are resold by the carrier rather than provisioned directly. As of fourth quarter 1997, AT&T's and TCG's combined retail share accounts for a greater percentage of the total market than U S WEST. Following completion of the AT&T/TCG and WorldCom/MCI mergers, the two aforementioned providers will comprise over 50% of the Retail Market.

This Retail data includes DS-1, DS-3, and DS-0 circuits.

PHOENIX MSA
 U S WEST MARKET SHARE OF THE RETAIL MARKET*
 4Q97



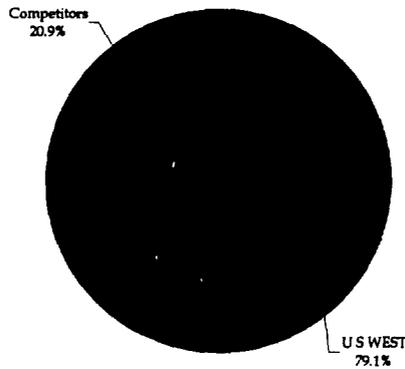
*Retail Market includes DS-0, DS-1, and DS-3 circuits. Results for the Retail Market are presented at a 95% Confidence Level with a ±5% Margin of Error. Disaggregated Share results have higher margins of error to account for smaller sample sizes.

WHOLESALE MARKET

Currently, U S WEST accounts for less than 80% of the Wholesale Market (defined as the universe of circuits sold to resellers and circuits used for transport). However, U S WEST's share is likely to decrease substantially over the next several quarters following the completion of recent mergers in the telecom industry. AT&T and MCI will begin to take advantage of having local facilities at their disposal and attempt to decrease the amount of business it conducts with the RBOCs.

Wholesale data includes DS-1, DS-3, and DS-0 circuits.

PHOENIX MSA
 U S WEST MARKET SHARE OF THE WHOLESALE MARKET*
 4Q97



	<u>4Q97</u>
U S WEST	79.1%
Competitors	20.9%
	<u>100.0%</u>

*Wholesale Market includes DS-0, DS-1, and DS-3 circuits.

COMPETITIVE LANDSCAPE

OVERVIEW

As one of the largest MSAs in the nation, Phoenix has become home to numerous communications-intensive businesses that require high capacity DS-1 and DS-3 services. Phoenix is one of the most rapidly growing areas in the United States, with demand for these high capacity services expected to escalate. Analysts project that the Phoenix area will sustain an annual immigration rate of over 50,000 people for the next 15 years. This figure does not even take into account the area's birth rate, which is also likely to be higher than the national average due to Phoenix/Maricopa County's low median age. This growth in population will demand expansion of the telecommunications infrastructure to provision these high capacity services. U S WEST and its competitors will focus on meeting this demand.

Phoenix is currently host to one of the most competitive telecommunications markets in U S WEST's territory. While competitors' facilities once focused on the central business district exclusively, investments in network build-out over the last 24 months have resulted in fiber facilities that reach the furthest-lying suburbs. Today's competitive fiber networks connect several hundred buildings in Phoenix and transmit voice and data traffic for a variety of services including local exchange, high capacity, long distance and data.

U S WEST's competitors in the greater Phoenix area include facilities based CAPs such as TCG, WorldCom, ELI, GST and MCI. These companies offer a wide array of telecommunications products and services. A brief overview of these companies and their competitive presence in the Phoenix area follows.

COMPETITORS

MFS WORLDCom

MFS WorldCom (formerly Metropolitan Fiber Systems) was established in the mid 1980s and partially financed by the Peter Keiwet construction company of Omaha, NE. In 1996, the assets of MFS were purchased by Jackson, MS-based LDDS WorldCom in an exchange of debt. MFS WorldCom operates metropolitan fiber networks in over 50 of the largest markets in the United States and is generally regarded as one of the leaders in competitive local telecommunications. In 1997, it purchased Brooks Fiber Properties and assumed its fiber networks in several tier II and tier III markets throughout the United States.

In Phoenix, MFS WorldCom's network has been operational since 1995 when it initiated service to several large end users and every major carrier in the central business district. Since then, the network has expanded to encompass a much broader geographic area.

MFS WorldCom's Phoenix network consists of four overlapping SONET rings featuring backbone speeds of OC-48. It is equipped with backup power sources and route diversity. In 1997, MFS WorldCom installed a central office switch in Phoenix that will allow it to diversify its product offering with the rollout of local exchange services. It currently operates two equipment sites in the area, one downtown and one on 44th Street. Currently, there are over 50 single and multi-tenant buildings connected to WorldCom's network in the Phoenix MSA.

Traditionally, MFS WorldCom has targeted the middle market for telecommunications services. Although many of its high capacity customers represent the large business segment, a large percentage of its local exchange customers are smaller organizations. In several markets, MFS WorldCom has purchased telecommunications providers to establish a customer base - including several Centrex resellers in California. Although MFS has worked with every major IXC over the last several years, it prefers to sell directly to the end user and maintain the account itself. This is particularly true following the LDDS/WorldCom merger.

TELEPORT COMMUNICATIONS GROUP (TCG)

Along with MFS WorldCom, TCG is a national CAP/CLEC operating fiber networks in 60 of the United States' largest markets. It has been in existence since the late 1980s when it was founded by Robert Annunziata, a former AT&T employee who was then working for Merrill Lynch in New York. Mr. Annunziata is often credited for starting the CAP movement when he installed a fiber link connecting Merrill Lynch's Manhattan headquarters to the company's teleport on Staten Island. Initially, TCG was financed by Merrill Lynch but was later spun off and financed by several leading cable companies, Sprint, and public debt offerings.

TCG was among the first entrants to the Phoenix communications market when it initiated service along its fiber network in 1994. Presently, TCG operates the largest fiber network in the greater Phoenix area; spanning over 300 route miles and connecting between 120 and 150 single and multi-tenant buildings. TCG's network is composed of 11 self-healing SONET rings and is capable of providing facilities-based service to the majority of the MSA's business-intensive localities, including: downtown Phoenix, Scottsdale, Tempe, Mesa, and Chandler. Currently, TCG operates three equipment sites in the greater Phoenix area, two within the city of Phoenix as well as one in Tempe.

In 1996, TCG was authorized by the Arizona Public Utilities Commission to offer local switched services in the Phoenix area via its Lucent 5ESS central office switch. Traditionally, TCG has marketed integrated packages of telecommunications services to the largest business end users. However, TCG has recently modified that strategy and attempted to move "down-market." This is largely the result of its local exchange product rollout and the proliferation of high capacity use among smaller and medium-sized businesses.

Since 1994, TCG has adhered to a very aggressive expansion schedule, having completed a 30 route mile, OC-48 fiber ring in the Southeastern suburb of Chandler in 1997. Before beginning the extension, however, TCG secured a high capacity contract with Motorola - which operates a large office in Chandler.

GST

GST became a player in the Phoenix high capacity market in 1997 when it purchased the rights to the Phoenix Fiber Access network (which had previously been a 50/50 joint venture between GST and the IntelCom Group). The majority of the network was installed in 1996 and is largely limited to Phoenix's central business district.

Although GST's footprint in the Phoenix market may be smaller than several of its competitors, it plans to become a force in the Arizona communications market on a statewide level. In addition to its Phoenix network, GST operates facilities in the greater Tucson area (located approximately 120 miles South of Phoenix). Its Tucson network currently consists of over 70 route miles and connects several of the area's larger buildings. In 1997, GST completed construction of long-haul facilities connecting the Phoenix and Tucson markets; allowing it to target businesses operating in both locations. It will also allow GST to accumulate wholesale revenue by leasing capacity to other telecommunications companies.

GST is headquartered in Vancouver, WA and run by industry veteran John Warta (GST's chairman and CEO). GST operates networks throughout the western United States; focusing primarily on tier II and III markets. In the Southwest, GST runs metropolitan area networks in Phoenix, Tucson, Albuquerque, and Los Angeles. To route local traffic, GST has installed a Nortel DMS 500 central office switch at its equipment site on Lincoln Street at 18th Avenue.

MCI

In its attempt to become a full-service, facilities-based telecommunications provider in the greater Phoenix area, MCI has built a small fiber network in the city's central business district to transmit voice and data traffic. In contrast with several other CAPs/CLECs in Phoenix, MCI has not invested heavily in fiber facilities to serve end users on the city's periphery or in the suburbs. Instead, it has limited the scope of its network to the city's downtown area and connected the buildings that house its largest long distance accounts (to provide facilities-based high capacity service). MCI also provides services through resale.

Traditionally, MCI has targeted the large business segment for voice and data services (long distance, high capacity, data, and local exchange). Therefore, it finds itself competing primarily with U S WEST and TCG rather than MFS WorldCom and ELI. In Phoenix, MCI is the primary long distance carrier for several Fortune 500 companies - a sales channel that it frequently leverages to win high capacity and local exchange accounts. Today's MCI offers a variety of multi-service packages that include long distance, local exchange, high capacity and internet access.

In each of its local markets, MCI builds its fiber networks according to SONET ring architecture. Its network backbones run at speeds up to OC-48 and feature route diversity and electronic redundancy. To route local exchange traffic in Phoenix, MCI installed a Nortel DMS 500 in 1996 (although it was not activated until 1997).

ELI

Having turned up its network in 1994, ELI was one of the first providers of competitive telecommunications services in the greater Phoenix area. Like MCI and MFS WorldCom, ELI originally limited the scope of its network to Phoenix's central business district. However, it decided to expand its network as the suburban demand for communications services increased. In 1997, ELI entered into a strategic alliance with the Salt River Project (SRP), an electric utility provider in the state of Arizona. Under the terms of the agreement, ELI leases substantial amounts of SRP dark fiber that traverses the entire area. The combined ELI-SRP network now encompasses over 400 route miles and is capable of delivering facilities-based service to Phoenix, Tempe, Scottsdale, Chandler, and Gilbert among others.

Historically, ELI has focused its marketing efforts on the middle market, although it has recently increased marketing campaigns directed toward Internet Service Providers (ISPs). One of its primary overall strategies is to establish several communications networks in the western United States and become a regional provider of communications services. At present, ELI operates competitive facilities in Phoenix, Salt Lake City, Las Vegas, Portland, and Seattle, enabling ELI to effectively market service to businesses operating in one or more of these markets. Additionally, ELI has established long-haul links between many of its markets and leases capacity to ISPs and other carriers.

ELI's network in Phoenix consists of multiple, overlapping SONET rings both in the city and in the suburbs. It employs a counter-rotating ring configuration in the construction of its backbone to add redundancy and protect against network failure. To ensure that fiber cuts do not result in lost traffic, ELI has built its network with route diversity and electronic redundancy to reroute traffic in milliseconds. In 1997, ELI installed a Nortel DMS 500 central office switch to route local exchange traffic.

CONSOLIDATION

Over the last two years, mergers and competitive alliances have transformed the competitive landscape of the telecommunications market. Several of these mergers involve CAPs and long distance carriers that compete directly with U S WEST and will dramatically affect its market position over the next several years.

MCI/MFS WORLD COM

The first major merger announced in 1997 (involving U S WEST competitors) was a union of MCI Communications of Washington, D.C. and WorldCom of Jackson, MS. The merger follows WorldCom's 1996 acquisition of Metropolitan Fiber Systems (a facilities-based competitor of U S WEST in the Phoenix area) and its 1997 acquisition of Brooks Fiber Properties. Additionally, MFS has already acquired national ISP UUNET in 1996 before its acquisition by WorldCom. The combined entity will have enormous market power in Phoenix and the United States as a whole. It combines the nation's second and fourth largest long distance companies, a major provider of competitive local communications services, and the two largest internet backbone operators in the world.

When the merger is complete (projected to happen in the third quarter of 1998), MCI WorldCom's sphere of influence in the Phoenix MSA will increase dramatically. The combined facilities will result in:

- Over 100 route miles of local fiber (including WorldCom's 75 route mile backbone and MCI's 20-30 miles)
- Two central office switches
- 70-100 "lit" buildings
- Several long-distance POPs and switches

With this merger MCI WorldCom will be able to decrease its reliance on U S WEST's services and facilities. Currently, U S WEST provisions hundred of high capacity circuits linking MCI long distance customers to the MCI POP in Phoenix. However, it will have the option of moving a large percentage of this traffic over to WorldCom facilities - resulting in a substantial reduction in MCI's costs. Because WorldCom has connected numerous buildings to its Phoenix-area network, MCI will have the option of providing true facilities-based service on a large-scale basis through the utilization of WorldCom facilities. MCI may also further decrease its reliance on U S WEST's facilities which supply the infrastructure used for the origination and termination of long-distance calls by migrating transport traffic from U S WEST-provisioned circuits to WorldCom's facilities, resulting in a reduction in MCI's operating costs as well as a reduction in U S WEST's access revenues.

Additionally, the two companies have an apparent synergy that will strengthen the merged carrier and allow it to impact the market quickly. Because WorldCom's traditional market consists of smaller and medium-sized businesses while MCI tends to focus on the large business market, there will be minimal overlap in sales forces and a less complicated integration of operations.

AT&T/TCG

Also in 1997, AT&T and TCG announced a merger that analysts expect to be complete by the end of the third quarter of this year. The acquisition provides AT&T with an easy, rapid entrance to the facilities-based local exchange and High Capacity Markets. TCG becomes the recipient of a well-established sales channel to increase its switched services customer base.

In a manner similar to the MCI/WorldCom merger, there is an apparent synergy between AT&T and TCG. Traditionally, TCG has directed its marketing efforts toward the large business market, and rapidly accumulated a customer list laden with Fortune 500 companies. Conversely, AT&T's recent strengths have been the small business and consumer markets. With the merger, AT&T will be poised to reassert its influence among large business customers and TCG will expand its penetration to include the small business market. TCG will also acquire additional resources from the merger to allocate for network expansion in the Phoenix MSA.

Like MCI, AT&T stands to benefit significantly from the merger in that it will undoubtedly lead to a reduction in operating costs in its core business - long distance. AT&T will be able to reduce its reliance on U S WEST for high capacity circuits to AT&T's customers, transport, and switched access, further reducing U S WEST's infrastructure revenues.

COMPETITORS AT A GLANCE

The following matrices provide summary information for high capacity facilities-based competitors in the Phoenix MSA. For additional information please refer to the appendix attached.

	WorldCom	TCG	MCI
Overall Strategy	One-stop provider for communications services, including local exchange, HICAP, data, internet, long-distance.	Leading provider of communications solutions to businesses. Service packages include local, data, long-distance, HICAP.	One-stop, single billing for businesses. Services include local, long-distance, HICAP, data.
Approximate Route Miles	75	>300	20-40
On-net Buildings	>50	>150	25-35
Central Office Switching	Nortel DMS 500	Lucent 5ESS	Nortel DMS 500
Network Establishment	2Q95	2Q94	1996
Business Target Markets	Traditional focus on the middle market. Seeks national accounts, solicits to other tenants in on-net buildings. Focus on existing WorldCom, UUNET customers.	Traditional focus on high-end users, now moving "down-market." Most TCG customers have enormous communications needs.	Traditional focus on large businesses. Relies heavily on existing L.D. customer base. Reputation for outstanding customer service.
Residential Target Markets	Not actively targeting	Not actively targeting	Not actively targeting
Geographic Areas	Phoenix's central business district, Camelback/Lincoln areas, Tempe, Scottsdale, and the Sky Harbor Airport	Area wide. Central Phoenix, Camelback, Scottsdale, Tempe, Mesa, Chandler, Glendale, Paradise Valley, Phoenix Sky Harbor Intl. Airport, Tolleson	Fiber is located in Phoenix's central business district (although MCI provides services in Mesa, Scottsdale, and Tempe via resale and use of U S WEST facilities)
Competitive Alliances	Pending merger with MCI to form MCI WorldCom	Pending merger with AT&T	Pending merger with WorldCom to form MCI WorldCom

(Continued on next page)

COMPETITORS AT A GLANCE

	ELI	GST
Overall Strategy	Provider of diversified communications services, including local, L.D., HICAP, and data services	Provider of integrated communications services - DS-0 through OC-N, data services, local exchange, ISDN
Approximate Route Miles	400	11 miles in downtown Phoenix with an additional 18 miles of right-of-way and conduit available for expansion. 300 Route miles of fiber in the state of Arizona
On-net Buildings	30-45	15-25
Central Office Switching	Nortel DMS 500	Nortel DMS 500
Network Establishment	1995	1996
Business Target Markets	Middle market and high-end users, ISPs.	All business customers, large and small.
Residential Target Markets	Not currently targeting	Not currently targeting
Geographic Areas	Throughout the metropolitan area. Central Phoenix, Tempe, Mesa, Chandler, Glendale, Paradise Valley, Tolleson, Gilbert.	Downtown Phoenix and Southern Arizona
Competitive Alliances	Partnership with Salt River Project (local utility provider) in Phoenix	Formed Phoenix Fiber Access with ICG in 1995. Purchased ICG half in 1997.

COMPETITOR CAPACITY

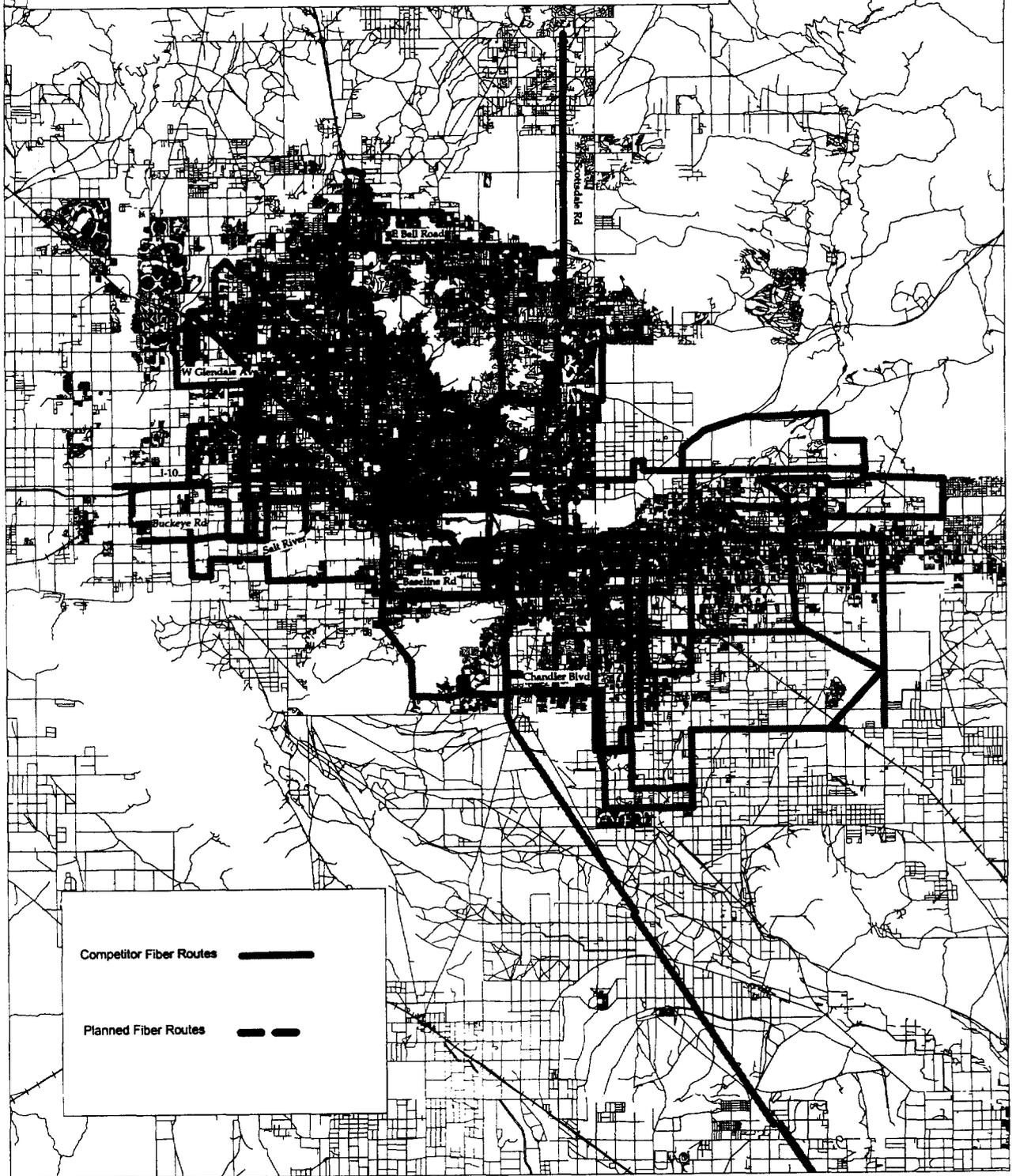
In recent years, U S WEST has become particularly vulnerable to losing additional Provider Market share due to the relative ease of switching providers (from both the wholesale and retail perspectives). During the initial infrastructure deployment, CAPs overbuilt their networks to meet the anticipated bandwidth demands of the future. Therefore, CAP networks are equipped with significantly more capacity than is currently being utilized. In fact, many industry analysts feel that several competitors are using only a small fraction of theoretical network capacity at the present time.

Two facets of CAP network construction generally contribute to their enormous capacity: 1.) the use of 144 strand optical fiber cable and 2.) adherence to SONET ring architecture. By using 144 strand cables, CAPs are capable of operating 36 "systems" across their networks (assuming a system is comprised of 4 individual fiber strands). The use of SONET ring network architecture allows CAPs to install self-healing rings that are connected, yet function independently - thereby increasing overall network capacity as rings are added to the network. Because CAPs have made several capacity allowances in the construction of their metropolitan area networks, they are able to grow and add circuits without necessitating frequent upgrades. In other words, there is a low marginal cost (from a capacity standpoint) associated with adding customers and circuits. To further facilitate the migration of traffic from RBOC facilities to competitive networks, CAPs frequently waive installation charges for new circuits.

As is the case with Provider high capacity circuits, CAPs will have little difficulty assuming Transport traffic from IXCs and other carriers. Generally, CAPs install extraordinary amounts of capacity around long distance POPs, U S WEST central offices, and competitive switching centers because of the enormous amount of traffic that originates and terminates at these facilities. In all likelihood, only a fraction of that capacity is currently being utilized and CAPs have the capability to assume Transport circuits without upgrading network capacity.

See the following page for a map of the competitor fiber routes.

Phoenix - Competitor Fiber Routes



Several factors contribute to network capacity, including the type of fiber used, transmission software, the number of SONET rings deployed, and the number of nodes in operation. The following table is designed to provide the basic competitor facilities that contribute to the overall capacity of a network. According to QUALITY STRATEGIES estimates based on U S WEST-supplied aggregate data (including DS-1, DS-3, and optical circuits used for end user traffic and transport), U S WEST currently operates approximately 85,700 DS-1 equivalents. The existing CAP networks could easily handle all U S WEST traffic (including optical circuits) by having only three systems activated in each CAP network (or less than 8% of total capacity).

In this case, we are defining a system as consisting of four individual fibers. Since CAPs generally install 144 strand fiber in their backbones, it is possible to have 36 systems under this arrangement. Assuming that each fiber ring runs at optical speeds (OC-3 through OC-48) and that all backbone rings are comprised of 144 strand fiber, the competitive networks in Phoenix (taken together) could handle all U S West traffic at less than 8% capacity. Please refer to the table below for a detailed description of CAP capacity in Phoenix.

Network capacity estimates are calculated based on the following inputs: Backbone speeds (which vary from ring to ring), and the number of SONET rings. The number of equipment sites was not taken into account for the calculation of network capacity. Please refer to the following page for a table illustrating competitive network capacity.

COMPETITOR CAPACITY

	<u>TCG</u>	<u>WorldCom</u>	<u>MCI</u>	<u>ELI</u>	<u>GST</u>	<u>Total</u>
Maximum Backbone Speed (in OC-n)	48	48	48	48	48	N/A
Approximate Percentage Operating at OC-48	75%	100%	100%	80%	75%	N/A
Other Backbone Speed (in OC-n)	12	0	0	12	12	N/A
Approximate Percentage Operating at that Speed	20%	0%	0%	20%	20%	N/A
Other Backbone Speed (in OC-n)	3	0	0	0	3	N/A
Approximate Percentage Operating at that Speed	5%	0%	0%	0%	5%	N/A
Average Backbone Speed (in OC-n)	38.55	48.00	48.00	40.80	38.55	N/A
SONET Rings operational in network	10	4	3	7	3	27
Approximate Capacity in OC-n	386	192	144	286	116	1,123
Approximate Capacity in DS-1 Equivalents*	10,794	5,376	4,032	7,997	3,238	31,437
Capacity Assuming 1 Systems	10,794	5,376	4,032	7,997	3,238	31,437
Capacity Assuming 3 Systems	32,382	16,128	12,096	23,990	9,715	94,311
Capacity Assuming 5 Systems	53,970	26,880	20,160	39,984	16,191	157,185

*Note: Approximate Capacity in DS-1 Equivalents is calculated by multiplying the above OC-n value by 28.

The average backbone speed of each competitor's network is derived by using the weighted averages of the various network speeds used in their network. The average backbone speed is then multiplied by the number of SONET rings operating in the network. The product is then multiplied by 28 to get the DS-1 equivalent. Examples of capacity are therefore provided based on the assumptions regarding the number of operational systems.

CONCLUSIONS

To date, U S WEST has lost approximately 23% of the High Capacity Market. This market includes both the Provider Market (consisting of special access and point to point circuits) and the Transport Market (consisting of circuits connecting POPs and local exchange COs).

Currently, U S WEST's share of the Provider Market is approximately 72%; down from 94% in the fourth quarter of 1994. Competitors have chipped away at U S WEST's market share through facilities buildout and alliances with interexchange carriers. Traditionally, U S WEST's facilities-based competitors have targeted its most valuable accounts - bandwidth-intensive large businesses. Because of this, CAP competitors have captured a greater percentage of the DS-3 (45 Mbps) market than the DS-1 (1.5 Mbps) market.

From a retail perspective, U S WEST maintains a billing relationship with fewer than 30% of all high capacity circuits. In other words, CAPs and IXC's maintain the end user relationship for 70% of special access high capacity circuits despite the fact that U S WEST currently provisions over 70% of these circuits.

While U S WEST's share of the Transport and Wholesale Markets are higher than its share of the Provider Market, recent incremental losses indicate that the figures may achieve parity in the near future. As of the fourth quarter of 1997, U S WEST accounts for 84% of the Transport market, down from 94% in the second quarter of the same year (six months earlier). Along the same lines, U S WEST's share of the Wholesale Market had dropped to 79% in fourth quarter 1997. Much of this share loss can be attributed to the realignment of carriers and an IXC desire to minimize the amount of business it conducts with U S WEST.

There is every indication that erosion of U S WEST's share of the Phoenix High Capacity Market will continue. Both U S WEST's relatively low Retail Market share and the enormous amount of unused capacity in competitive networks make it highly likely that U S WEST's share of the Provider and Transport Markets will continue to decline. This decline is expected to be exacerbated by continued consolidation in the telecommunications industry (e.g., the merger of AT&T and TCG).

APPENDIX

METHODOLOGY OVERVIEW

MARKET SHARE SUMMARY OVERVIEW

Market share results for Provider and Retail Market are based on actual usage obtained from surveys and invoice analyses. Market share results for this project are based on customer usage as of the fourth quarter of 1997. The following steps illustrate our process for delivering end user Provider and Retail market share results for U S WEST:

STEP 1: COMPETITOR AND INDUSTRY ANALYSES

Multiple inputs to sampling approach and sample plan, including competitor research, proprietary regional and national databases, and pre-survey screeners.

STEP 2: ESTABLISH SAMPLE PLAN AND QUOTAS

Develop preliminary market share estimates, establish quotas for appropriate strata, including high penetration and low penetration strata, and sub-strata (demographics, spending levels, etc.).

STEP 3: DEVELOP AND SELECT SAMPLE

Develop and select stratified random sample from sampling frame constructed from multiple sources, including third-party lists of businesses and proprietary databases.

STEP 4: CONDUCT FIELDWORK

Collect survey data and invoices. Based on the quotas established in the sampling plan, we conduct fieldwork to collect three inputs - short form surveys, long form surveys, and invoices - on which market share results ultimately are developed.

Achieve quotas for strata, and supplement with additional interviews for low incidence strata. Calibrate self-reported data with appropriate invoice bias factors.

STEP 5: ANALYSIS AND REPORTING

Analyze survey data and invoice data, and develop final results.

SAMPLING METHODOLOGIES

We develop our sampling plan using stratified random sampling techniques, which provide for efficient statistical estimates by designing the sampling plan based on particular strata (e.g., mix of utilization of competitors, demographic characteristics, geographic location, etc.) that we have developed and successfully applied over the past ten years. We utilize a mix of random and targeted surveys based on the stratified random sampling techniques. We use the random surveys to qualify respondents for different quotas established in our sampling plans. We also use the data obtained in the random surveys to establish weights for different strata when we reconstitute market share results.

SOURCES OF MARKET SHARE DATA

Market share results are based on data acquired from multiple sources, including surveys, customer invoices, and competitor research. We use our standard HICAP survey to collect data from business customers. QUALITY STRATEGIES surveyed business customers regarding their usage of high capacity DS-1 and DS-3 services. The survey includes questions on all competitive DS-1 and DS-3 services, including CAP fiber-based services, microwave services, satellite services, and customer-owned facilities. We also use surveys to collect demographic information, perception data, and other information not available on customer invoices.

We acquire customer invoices (RBOC, CLEC, CAP, IXC, and other competitive services) to provide market share results that are based on actual customer usage. We collect customer invoices to validate self-reported data and to calibrate reconstituted market share results based on actual customer expenditures and to correct for over- and under-reporting. On an aggregate basis, we analyze differences between survey and invoice data to develop and utilize bias estimates when calculating market share results.

STATISTICAL VALIDITY

This project is designed to provide estimates of high capacity (DS-1 and DS-3) share that are statistically valid for U S WEST's overall high capacity services compared to competitive alternatives. Sample sizes are designed to achieve statistically valid market share results for the Phoenix MSA.

High capacity (Provider and Retail) market share results for the Phoenix MSA are based on a 95% confidence level with $\pm 5\%$ margins of error. Estimates for particular types of high capacity services (i.e., disaggregated results) are likely to have a higher margin of error. Trend results are based on a consistent methodology across time periods.

COMPETITOR RESEARCH OVERVIEW

The competitive analysis is comprised of information gathered by QUALITY STRATEGIES' analysts for two separate "CAP/CLEC Network Descriptions" projects commissioned by U S WEST in the third and fourth quarters, 1997. Competitive information is gathered from numerous sources (both primary and secondary) including the following:

- Interviews with CAP/CLEC and IXC professionals, including marketing, sales, administrative, executive, and technical personnel
- Interviews with large business end users
- Interviews with equipment vendors and equipment retailers
- Secondary market research including on-line sources and public information
- QUALITY STRATEGIES' extensive, national competitor database that has been maintained and updated continuously over the last ten years

HIGH CAPACITY MARKET SHARE

High Capacity Market share is based on all end-user DS-1 and DS-3 services, including Special Access and Point-to-Point (exchange) circuits as well as transport circuits (measured in DS-1 equivalents).

Prior to 2Q97, Quality Strategies had been providing U S WEST with HICAP Track results for providers offering facilities-based service. Thus, no resellers have been included in Provider Market results. Since 2Q97, Quality Strategies has been presenting Provider results in addition to Wholesale and Retail Market results. Each set of results is clearly documented to indicate whether it encompasses facilities-based provider results, retail results that include resellers, or wholesale results.

QUALITY STRATEGIES uses DS-1 equivalents as the basis for market share estimates. Market share is provided for each service provider in terms of the percentage of DS-1 equivalents provided. Specific steps used to determine DS-1 equivalent share for each competitive category are as follows:

A. Determination of DS-1 Equivalents. High Capacity market share is provided on a DS-1 equivalent basis. All circuits are expressed in terms of 1.544 Mbps. QUALITY STRATEGIES uses the following calculations to determine DS-1 equivalent share:

- One (T-1) DS-1 Circuit = One DS-1 Equivalent
- (T-3) DS-3 Circuits: Number of DS-3 Circuits x 28 = Number of DS-1 Equivalents

B. Determination of DS-1 Equivalents Percentage Share. DS-1 equivalents are totaled, and share is presented based on the percentage of the total each carrier provides.

Retail v. Wholesale. As stated previously, retail circuits are sold to end users. Wholesale circuits are provided to CAP/CLECs and IXCs for resale to end users. For example, a U S West circuit could be sold to AT&T (and paid for by AT&T), but resold to AT&T long-distance customers for special access to the AT&T POP. In this case, the end user is billed by AT&T although the circuit is provisioned and maintained by U S West. In this scenario, U S West receives Provider and Wholesale Market share for the circuit while AT&T receives Retail Market credit. Share of the Wholesale Market includes both end-user and transport circuits.

QUALITY STRATEGIES provides market share estimates based on DS-1 equivalents. Market share is provided for each service provider in terms of percentage of DS-1 equivalents provided.