BEFORE THE ARIZONA CORPORATION COMMISSION

WILLIAM A. MUNDELL
CHAIRMAN

JIM IRVIN
COMMISSIONER

MARC SPITZER
COMMISSIONER

In the Matter of Investigation into
US West Communications, Inc.'s
Compliance with Certain Wholesale
Pricing Requirements for Unbundled
Network Elements and Resale
Discounts

Docket No: T-00000A-00-0194
Phase II A

WORLDCOM INC.'S CLOSING BRIEF

To effectively compete in the local exchange market, especially the residential
market, WorldCom must collocate with Qwest in remote terminals and route directory
assistance and operator services calls in a cost-effective, technically efficient manner.
Qwest's remote collocation and custom routing proposals do neither. Qwest's prices are
inflated and Qwest refuses to allow the most efficient technology. WorldCom, Inc., on
behalf of its operating companies (collectively "WorldCom") submits this closing brief in
support of cost-effective, technically efficient remote collocation and custom routing that
will enhance local competition. Worldcom also supports the positions taken by AT&T
Communications and XO Arizona in their closing brief.
I. REMOTE COLLOCATION

Remote terminal ("RT") collocation is critical if consumers are to have a choice of advanced communication services. RT collocation will allow for the maximum penetration of advanced services to all consumers in Arizona.

RT collocation offers space in remote cabinets thereby eliminating the central office to customer premises distance constraints on Digital Subscriber Line ("DSL") providers. Field electronics are located in the RTs for use by collocators to access DSL customers. RT collocation provides access to a layer of customers that is not accessible from the central office. These DSL customers are typically beyond the restrictive 18Kft. “boundary” of the central office. By having access to customers at RT locations the CLEC has access to the same universe of customers available to the ILEC.

A. The Remote Collocation Proposed by Qwest is Difficult and Costly

Early indications are that collocating at a Qwest RT, or adjacent to a Qwest RT, will be nearly as expensive (if not more) than collocating in a Qwest central office. The reason for this is that fewer customers are available from the RT as compared to the central office so that there are reduced economies of scale. Also high-density equipment is available for use in central office environments that is more cost-effective. Central

---

1 DSL technologies are transmission technologies used on circuits that run between the central office and a customer’s premises. Historically xDSL technologies have been provided on loops that are exclusively copper. New DSL network technology can be deployed on hybrid loops that are fiber optic from the central office to a field location utilizing remote terminal technology and then copper cable pairs to the customer premise.

2 As discussed later in this brief, new technologies are addressing this technological limitation – distance from the central office – on the availability of xDSL services.
office collocated equipment has the advantage of access to a greater universe of outside
plant facilities and customers making it more efficient in delivering service. Additional
support in the form of AC/DC power, HVAC and security for collocation are more
efficiently available in the central office environment. Rebuttal Testimony of Sidney
Morrison ("Morrison Rebuttal"), pp. 6 - 7.

The greatest disadvantage with RT collocation, however, is the potential lack of
space at the RT. When space is not available in the RT cabinet, or even adjacent to it, the
ILEC refuses the CLEC access to the RT for collocation. The additional expenses and
time associated with gaining new space (or expanding an existing structure) further
reduces the likelihood that this type of network will provide an immediate, or sustainable,
competitive advanced service alternative for the majority of residential or small business
customers. Morrison Rebuttal, pp. 7-8.

Refusing to allow a CLEC to collocate at the RT (or making such collocation
unreasonably difficult or expensive) ultimately means the CLEC is denied the ability to
compete in the area served by the RT. The CLEC is consequently relegated to the position
of a second-class competitor being denied access to customers by the ILECs because of
unavailability of space at the RT with no cost-effective alternative available. At the same
time, the ILEC and its competitive affiliates have access to the loop network without
competitors.
The fact that only two RT collocations have been ordered by CLEC’s in Arizona demonstrates that RT collocation is too costly and difficult to implement as currently offered by Qwest. Transcript, p. 387:2-8.*

B. Qwest Should Provide a Cost Study to Support a Rate for Line Card Collocation Because Line Cards are Vital to Effective Advanced Services Competition

There are no technical limitations that prevent ILECs from allowing CELCs to provide advanced services over digital loop carrier (“DLC”) equipment. Much of this equipment is designed to provide voice, data, and combined voice/data products over a single network platform for use by ILEC data affiliates and retail customers. This same platform should provide similar functionality for CLECs. Morrison Rebuttal, pp. 8-9.

It is technically feasible for the ILEC to allow CLECs to virtually collocate line cards within Next Generation Digital Loop Carrier (“NGDLC”) remote terminals. For example, it is possible to collocate the Litespan 2000 ADLU card, which can provide both

---

3 A digital loop carrier (“DLC”) system allows a company to replace the end-to-end copper circuit that historically comprised a telephone access line (or a “loop”) with a combination of high-capacity fiber optic feeder cable and copper distribution cable. The DLC system itself is generally comprised of some form of electronic equipment in the central office (generally referred to as a “central office terminal” or “COT”) that connects the fiber optic feeder cable to an accompanying electronic device in the field wherein the fiber optic feeder cable and copper distribution cable meet (generally referred to as a “remote digital terminal” or an “RDT”).

4 The use of NGDLC devices allows Qwest to push fiber optic facilities closer to its customer’s homes or businesses which should allow more customers to avail themselves of high-speed, packet switched digital services and enhance the speed and quality that customers can expect from those services.

5 “ADLU” stands for ”ADSL Digital Line Unit.” These units can perform both the line splitting and DSLAM functionalities.

* “Transcript” refers to the Reporter’s Transcript of Proceedings.
voice and data services over a shared copper loop extending from the remote terminal to a customer’s premises. The inherent DSL capabilities of the ADLU card in this respect negate the need to collocate a bulky and expensive DSLAM within the RT enclosure (or in an adjacent structure). Further, the ADLU card (or similar types of cards with unique service features) is in many ways the intelligence focal point of the service being provided. By programming the card and the RT to accommodate new, innovative services, CLECs can differentiate their products from those produced by the ILEC. Further, the cost savings associated with using the inherent functionality of the ADLU card in this respect are substantial. Accessing such functionality is technically feasible as evidenced by the fact that both the Illinois and Texas commissions have required SBC to make such access available.6 Morrison Rebuttal, pp. 9-10.

Qwest maintains that use of line cards is almost impossible. To the contrary, manufacturers of DLC equipment have, over the last five years since the federal Telecommunications Act, actively designed their equipment to accommodate a multi-carrier environment and the provisioning of unbundled loops. Transcript, p. 387:14–22.

On the other hand, WorldCom is concerned that Qwest, being a very large purchaser of

---

It is technically feasible for Qwest to permit WorldCom or any other CLEC to
specify, at each individual remote terminal, the line card(s) to be placed in the DLC
equipment for use in providing service to the CLEC's customers. The following line card
options are all technically feasible:

1. CLEC specifies the type and quantity of the line card(s) that ILEC will
   obtain, own, and install in the DLC system located in an ILEC remote
terminal;

2. CLEC obtains the desired line card(s) and transfers ownership of the card(s)
   to the ILEC (for a nominal fee). ILEC then installs the card(s) in the DLC
   system located in a remote terminal. Upon request of CLEC, ILEC removes
   the card(s), returns the card(s) to CLEC, and transfers ownership of the
   card(s) to CLEC for the nominal fee; or

3. CLEC obtains, owns and installs the line card(s) in the DLC system located
   in an ILEC's remote terminal.

It is also technically feasible, and advisable, for Qwest to promptly provide to
CLECs copies, both paper and electronic, of all technical specifications and network
architecture data relevant to the development by any potential vendor of plug-in DLC line
cards that will support the CLEC's high bandwidth services. In general, this Commission
should encourage an open development platform wherein Qwest and CLECs alike are able
to design, engineer and provision multiple services using the enormous capabilities of the
NGDLC architecture. This type of open platform will speed advanced services
competition to Arizona customers and will provide a wide array of advanced services innovation. Morrison Rebuttal, pp. 10-11.

Finally, it is technically feasible and advisable for Qwest to provide the CLECs with six months’ advance notification of software upgrades of, at a minimum, Qwest’s COTs, remote terminals, ATM switch/OCD, DLC equipment, and CPE. In addition, if Qwest chooses to upgrade any of the above software, then it is technically feasible and advisable, indeed practical, for Qwest to ensure with its vendor, backward compatibility for at least 12 months after the upgrade is installed. Again, these are all fundamental building blocks of an open NGDLC architecture capable of providing the largest benefits possible to customers and the marketplace alike. Morrison Rebuttal, p. 11.

Allowing CLECs to collocate their own line cards will not only favorably impact the economic viability of competition for advanced services by reducing the barriers to entry erected by enormous stand-alone collocation costs, it will also spark innovation in the provision of high-capacity services. Allowing carriers to collocate line cards with different capabilities than that perhaps chosen by Qwest will provide customers with real choices for new and different types of service.

C. **Remote Collocation Should be Priced on a Monthly Recurring Basis**

In a review of the cost study for RT Collocation, Qwest makes the following statement on the space cost element:

**Space** (per standard mounting unit; 1.75 vertical inches)
This non-recurring rate is associated with the cabinet space and includes the cost of
the cabinet and all of the work and materials associated with placement of the
cabinet. The recurring rate associated with the Space recovers the maintenance of
the materials and equipment associated with the cabinet along with a portion of the
costs required for the power pedestal.

Essentially, what Qwest is attempting to do is to recover its investment up front in a
non-recurring charge rather than through reasonable monthly recurring charges.
Moreover, what Qwest seeks to recover in its monthly recurring rate — maintenance —
should be recovered through the maintenance portion of an annual charge factor that is
applied to the investment and then recovered on a monthly basis with the remainder of the
investment.

If Qwest were to apply the same methodology to switch ports, loops, or a square
foot of central office collocation floor space, then competitors would be asked to pay up
front for the entire loop, port or square foot. In other words, a competitor might have to
pay several hundred dollars for each loop and then pay for maintenance as they go. This
methodology, whether applied to RT collocation space, loops, or ports, has one stifling
effect — it is an enormous financial barrier for new competitors that indeed may be
insurmountable. Yet another drawback to the rate structure proposed by Qwest pertains to
customer turnover. Under Qwest’s proposed structure, the competitor pays a very large up
front non-recurring charge. If after paying this charge the competition should somehow
lose the customer, the competitor is stuck with RT collocation space that it may no longer
need, yet that competitor has paid a huge up front charge that it cannot recoup.
The Commission should require Qwest to offer RT collocation space on an unbundled basis, and the rate for that offering should be determined on a monthly recurring basis, rather than predominately on a non-recurring basis.

Qwest maintains that a recurring charge is inappropriate because the remote collocation space cannot be reused by Qwest. However, during the hearing, Qwest witness Brigham admits that Qwest could reuse this space. Transcript, p. 128:13 – 21. Qwest also admits that another CLEC may reuse this space. Transcript, p. 129:4 – 9 and 12 – 30.

D. **Qwest Cost Studies Contain Unreasonably High Costs**

There are three primary concerns.

First, once Qwest develops its RT collocation investment, it applies factors to recover directly assigned, directly attributable, and common costs. Qwest directly assigns product management, sales, and business fees to the RT collocation investment. Together these loadings add nearly $1,000.00 to the RT collocation investment. In total, Qwest adds 28% in overhead costs that are based on general interconnection expense factors and not on any evidence that RT collocation caused these costs. See WorldCom Hearing Exhibit 2. Hearing Transcript, p. 149:4 – 17, and discussion below in Section II(D).

Second, in developing the RT collocation non-recurring cost, Qwest uses costs from two vendors and then weights them together. One vendor is substantially more expensive than the other (even after one considers that the SMU capacities are different). For instance, vendor B’s cost for a 40” cabinet is more than three times higher than vendor
FCC rules require that the TELRIC of an element should be measured based on the use of the most efficient telecommunications technology currently available and the lowest cost network configuration. This principle should be applied to the Qwest RT collocation cost study.

Third, once Qwest has developed its fully loaded and weighted investment for RT collocation equipment, it applies a very low utilization rate or fill factor to that investment. See WorldCom Hearing Exhibit 3. No support exists for this utilization rate in the cost study. Transcript, p. 140:25 – 141:3. Qwest should be required to use the more appropriate utilization level recommended by Staff.

These remote collocation prices are further inflated by a number of additional unspecified charges that are not included in the proposed rates. Hearing Transcript, pp. 138:7 – 139:7. WorldCom Hearing Exhibit 3.

The Commission should require Qwest to modify its rates or rate structure as discussed above and then provide updated and complete cost support for the new rates.

II. CUSTOM ROUTING

A. The Importance of Custom Routing

Custom routing is a software function of the Qwest switch that allows a CLEC’s customer’s call to be switched to a trunk that will carry the call to WorldCom’s directory assistance and operator services provider. Custom routing is essential if CLECs such as
WorldCom are to provide directory assistance and operator services and not be dependent on the ILEC for such services.

B. WorldCom Should not be Forced to Purchase Dedicated Trunks as a Condition for Purchasing Custom Routing

On page 23 of his August 31, 2001 testimony, Mr. Brigham states that Custom Routing combines End Office ("EO") switching with dedicated trunks to allow CLECs the ability to request specific traffic routing direction by class of service via a unique Line Class Code ("LCC"). Mr. Brigham is mistaken in his characterization that dedicated trunks must be employed in order for Qwest to provide Custom Routing. Dedicated trunks are not required. WorldCom can (and does) route its operator services and directory assistance traffic to existing, shared access, Feature Group D trunks between the Qwest and MCI Long Distance networks. Caputo Rebuttal, p. 3. As the carrier requesting custom routing, WorldCom is entitled to designate the particular outgoing trunks associated with unbundled switching provided by Qwest that will carry certain classes of traffic originating from the requesting providers' customers. This will allow WorldCom to provide operator services and directory assistance to its customers using its own operators. Caputo Rebuttal, p.4.

In Section B, Description Of Service on page 3 of the Cost Study (WorldCom Hearing Exhibit 2), Qwest again states that Custom Routing will combine EO switching

with dedicated trunks to allow Co-Providers the ability to request specific traffic routing direction by class of service via a unique LCC. This definition suffers from the same defect described above relating to Mr. Brigham’s testimony.

Using existing trunks is important because it allows WorldCom to use a cost-efficient system of routing traffic rather than purchasing an individual trunk between Qwest’s switch and the WorldCom network just to handle operator and directory assistance traffic. It allows WorldCom to route that traffic across trunks that WorldCom already shares with Qwest. It is vital for competition that WorldCom be able to provide operator and directory assistance services directly to its own customers using its own operators. Transcript, pp. 416:10 – 417:10.

It is technically feasible to route both operator and directory assistance calls across shared access Feature Group D trunk. WorldCom has been doing it on its own facilities since 1997 and has provided documentation to certain ILECs describing how the lucent 5-ESS switch, the Nortel DMS-100 or 500 switch and Siemens switches support that type of routing. Transcript, pp. 417:18 – 418:7.

WorldCom has actually performed that type of customized routing in its own labs and had conducted technical trials with Pacific Bell that demonstrate it can be done. Transcript, p. 418:8 – 15.

Qwest seeks to substantially increase WorldCom’s expense in providing this service by requiring a separate trunk for directory assistance and another separate trunk for operator services. Transcript, p. 211:6 – 14.
C. **Qwest’s Direct Costs are Excessive**

Qwest’s direct costs for custom routing are, on their face, excessive and unreasonable. For instance, Qwest charges $315.87 each time it assigns a code to a particular switch. See WorldCom Hearing Exhibit 2. Qwest proposes to charge CLECs for four hours of time to select a line code from a list of line codes. Transcript, p. 120:19 - 25. Likewise, Qwest proposes to charge for four hours of time inputing the line class code, using computers, into the switch each time the code is installed in a particular switch. Hearing Transcript, pp. 123:20 -124:5.

D. **Qwest’s 28% “Overhead” Cost is Excessive**

Qwest lists “Commercial Marketing” as one of the cost factors included in the custom routing rate. WorldCom Hearing Exhibit 2, Section C, p. 4. WorldCom does not believe that this factor is justifiable. WorldCom is not aware of any marketing related activities that Qwest has performed with respect to the development or sale of custom routing associated with unbundled switching. WorldCom has not been contacted by Qwest and been informed that custom routing is available, nor has Qwest provided WorldCom with any collateral marketing materials such as brochures or descriptions for this service. In fact, Qwest has made no serious effort to even provide custom routing. Caputo Rebuttal, p. 4. Any and all expense factors associated with Qwest’s “marketing” of this service should be eliminated.

Qwest also includes “Sales Expense” as a cost factor in the custom routing rate. WorldCom Hearing Exhibit 2, Section G, pp. 3 and 5. WorldCom objects to the inclusion of any and all expense factors associated with Qwest’s “sales” of this service. Qwest is not performing any sales activity associated with this function. Caputo Rebuttal, p. 5.
In total, Qwest proposes to add on a 28% charge factor that is a combination of what Qwest calls directly assigned, directly attributable and common costs. These categories include items such as product management expense, general purpose computer expense and legal expense. WorldCom Hearing Exhibit 2, Section G. All these expenses that add 28% to the price of service, even the directly assigned and directly attributable expenses, are not based on any studies showing how much expense is legitimately related to a particular service. Instead, these amounts are based on general expense factors developed for all interconnection services. Transcript, pp. 113:24 – 114:23 and p. 115:12.

III. CONCLUSION

WorldCom respectfully requests that the Commission do the following:

1. Require Qwest to allow CLECs to virtually collocate line cards in remote terminals.
2. Reduce the 28% remote collocation “overhead” factor to 15%.
3. Reduce the remote collocation direct costs by increasing the fill factor to be consistent with the Staff’s proposal and by using the lower of the two vendor prices.
4. Require Qwest to change the definition of custom routing to eliminate the requirement that dedicated trunks be used.
5. Reduce the 28% custom routing overhead figure to 15%.
6. Reduce the custom routing direct cost by a reasonable factor.
RESPECTFULLY SUBMITTED this 19th day of December, 2001.

LEWIS AND ROCA LLP

Thomas H. Campbell
40 N. Central Avenue
Phoenix, Arizona 85007
(602) 262-5723

AND

Thomas F. Dixon
707 -17th Street, #3900
Denver, Colorado 80202
(303) 390-6206

Attorneys for WorldCom, Inc.

ORIGINAL AND ten (10) copies
of the foregoing hand-delivered this
19th day of December, 2001, to:

Arizona Corporation Commission
Utilities Division – Docket Control
1200 W. Washington Street
Phoenix, Arizona 85007

COPY of the foregoing hand-delivered
this 19th day of December, 2001,
to:

Ernest Johnson, Director
Utilities Division
Arizona Corporation Commission
1200 W. Washington Street
Phoenix, Arizona 85007
COPY of the foregoing mailed
to:

12 Thomas M. Dethlefs, Senior Attorney
   US West, Inc.
   1801 California Avenue
   Suite 5100
   Denver, Colorado 80203

15 Timothy Berg
   Fennemore Craig, P.C.
   3003 N. Central Avenue
   Suite 2600
   Phoenix, Arizona 85012

18 Peter A. Rohrback
   Mace J. Rosenstein

19 Yaron Dori
   Hogan & Hartson, LLP
   555 Thirteenth Street, NW
   Washington, DC 20004-1009

21 Raymond Heyman

22 Michael Patten
   Roshka Heyman & DeWulf

23 400 N. Fifth Street
   Suite 1000
   Phoenix, Arizona 85004-3906

25 Attorneys for Cox Arizona Telcom, Inc., Z-tel
   Communications and McCleod USA Telecommunication
   Services

26
1. Joan S. Burke
   Osborn Maledon, P.A.
   2929 N. Central Avenue
   12th Floor
   P.O. Box 36379
   Phoenix, Arizona 85067-6379

2. Richard S. Wolters
   AT&T
   1875 Lawrence Street
   Suite 1575
   Denver, CO 80202

   Sprint Communications
   100 Spear Street, Suite 930
   San Francisco, California 94105

4. Scott Wakefield, Chief Counsel
   Residential Utility Consumer Office
   2828 N. Central Avenue
   Suite 1200
   Phoenix, Arizona 85004

5. John M. Devaney
   Perkins Coie L.L.P.
   607 Fourteenth Street NW
   Washington, DC 2005-2011

6. Michael Grant
   Gallagher & Kennedy
   2575 E. Camelback Road
   Phoenix, Arizona 85016-9225
   Attorneys for Electric Lightwave, Inc., COVAD
   Communications, Inc. and New Edge Networks

7. Mary E. Steele
   Davis Wright Tremaine LLP
   2600 Century Square
   1501 Fourth Avenue
   Seattle, Washington 98101-1688
   Attorneys for Nextlink Arizona, Inc.,
   Advanced Telecom Group, Inc. and
   AT&T Communications of the Mountain States

8. Maureen Arnold
   Qwest Corporation
   3033 N. Third Street
   Room 1010
   Phoenix, AZ 85004
<table>
<thead>
<tr>
<th></th>
<th>Name</th>
<th>Company/Position</th>
<th>Address</th>
<th>City, State, Zip</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Thomas W. Hartman</td>
<td>SBC Telcom</td>
<td>175 E. Houston Street, Room 1256</td>
<td>San Antonio, TX 78205</td>
</tr>
<tr>
<td>2</td>
<td>Penny Bewick</td>
<td>New Edge Networks, Inc.</td>
<td>P.O. Box 5159, 3000 Columbia House Blvd. Suite 106</td>
<td>Vancouver, WA 98668</td>
</tr>
<tr>
<td>3</td>
<td>W. Clay Deanhardt</td>
<td>Covad Communications</td>
<td>2330 Central Expressway</td>
<td>Santa Clara, CA 95050</td>
</tr>
<tr>
<td>4</td>
<td>Jeffrey W. Crockett</td>
<td>Jeffrey B. Guldner</td>
<td>Snell &amp; Wilmer LLP One Arizona Center</td>
<td>Phoenix, Arizona 85004-2202</td>
</tr>
<tr>
<td>5</td>
<td>Jon Poston</td>
<td>Arizonans for Competition in Telephone Service</td>
<td>6733 E. Dale Lane</td>
<td>Cave Creek, Arizona 85331-6561</td>
</tr>
<tr>
<td>6</td>
<td>Brian Thomas</td>
<td>Time Warner Telecom, Inc.</td>
<td>520 S W 6th Avenue Suite 300</td>
<td>Portland, OR 97204</td>
</tr>
<tr>
<td>7</td>
<td>Gary L. Lane</td>
<td></td>
<td>6902 E. First Street Suite 201</td>
<td>Scottsdale, Arizona 85251</td>
</tr>
<tr>
<td>8</td>
<td>Marti Allbright, Esq.</td>
<td>Mpower Communications Corp.</td>
<td>5711 South Benton Circle</td>
<td>Littleton, Colorado 80123</td>
</tr>
<tr>
<td>9</td>
<td>Janet Livengood</td>
<td>Z-Tel</td>
<td>601 S. Harbour Is. Boulevard</td>
<td>Tampa, Florida 33602</td>
</tr>
<tr>
<td>10</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
1 Michael B. Hazzard  
   Kelley Drye & Warren, LLP  
   1200 19th Street, N.W.  
   Fifth Floor  
   Washington, DC 20036  

2 Steven J. Duffy  
   Ridge & Isaacson, P.C.  
   3101 N. Central Avenue  
   Suite 1090  
   Phoenix, Arizona 85012-2638  

3 Andrea Harris  
   Allegiance Telecom, Inc. of Arizona  
   2101 Webster, Suite 1580  
   Oakland, California 94612  

4 Dennis Ahlers  
   Eschelon Telecom, Inc.  
   730 Second Avenue South  
   Suite 1200  
   Minneapolis, MN 55402  

5

6

7

8

9

10

11

12

13

14

15

16

17

18

19

20

21

22

23

24

25

26