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RESOLUTION NO. T-11070

EVALUATION AND COMPLIANCE
DIVISION
DATE: November 5, 1986

R E S O L U T I O N

_____Director
_____Numerical File
_____Alphabetical File
_____Accounting Officer

SUBJECT: Pacific Bell. Order authorizing the establishment of an IntraLATA Public Packet Switching Service on a provisional basis. Resolution No. T-11070.

WHEREAS: PACIFIC BELL, by Advice Letter No. 15154 filed September 8, 1986, and First, Second and Third Supplements filed September 12, October 16 and 31, 1986, respectively, requests authority under Section 454 of the Public Utilities Code to make effective the following tariff revisions:

To establish a tariff schedule for the implementation of an IntraLATA Public Packet Switching (PPS) Service on a 24 month provisional basis to expire November 6, 1988.

Packet switching of data records has been performed on government and private data networks since the late 1960's. Packet switching is a technique for sending data information in discrete groups or "packets", usually in sizes of 128 or 256 characters per packet. In addition to the information stored in a packet, there are also embedded source and destination address codes and elaborate error checking and signalling parameters. It has been demonstrated to be an efficient and highly reliable method, where large volumes of data can be transmitted easily with zero error. Network pricing is usage sensitive, and charges are based on quantity of information (packets) transmitted and not the time or distance involved. Additionally, there are connection charges for users at points where packet switches or access concentrators are located and available for user entry and exit to the network.

Commercial packet switching networks have heretofore been interstate in scope, and are tariffed by the Federal Communications Commission (FCC). Telenet, Tymnet, and AT&T are among firms that have extensive interstate packet switched networks. Since divestiture from AT&T, the regional Bell Operating Companies (BOCs) have implemented local area data transport networks to handle packet switched data communications within the LATAs.

Initial customers of Pacific's basic Packet Switching Service
will most likely be firms with large traffic volumes desiring
dedicated connections to the network. When Pacific receives
full protocol conversion approval, many end users will be able
to use these networks for casual information transmittals to
banks, stores, databases, and other information providers.

Access to the packet switched network will be through tariffed public
switched telephone network access rates, or via private leased lines
at Schedule B1 rates.

The rates for basic Public Packet Switching Service have been based
on, for the most part, forecasted demand. Pacific may not have
accurately predicted the cost, revenue, and profitability of this
new offering. Therefore, we shall reserve judgement on the
permanent approval of this service and shall authorize a provisional
offering to test the rate structure and to substantiate the cost,
revenue and profitability of this service. Based on the data
obtained from this trial, the basic Public Packet Switching
Service scheduled to expire on November 5, 1988, may be implemented
permanently, changed, extended or withdrawn by Pacific Bell
subject to Commission authorization. In any case it should be
clearly understood that if this service turns out not to be
profitable, the stockholders, and not the ratepayers, shall assume
all risks and be responsible for any losses.

A joint protest against Advice Letter 15154 by Telenet
Communications Corporation (Telenet) and Tymnet-McDonnell Douglas
Network Systems Company (Tymnet) was filed September 27, 1986.
Pacific Bell responded to the protest by letter on October 3,
1986. On October 7, Telenet and Tymnet filed a joint reply to
Pacific Bell's October 3 protest response, which was answered by
Pacific Bell on October 21, 1986.

In their protest of September 27, Telenet and Tymnet allege that:

1) Pacific's PPS rates are unreasonably low.

2) Pacific's PPS market demand projections are outrageously high.

3) Although Pacific claims its PPS service is intraLATA only, it
will in fact transport interLATA/interstate traffic, which
Pacific is not allowed to do.

4) Although Pacific's PPS tariff is purportedly for only "basic"
services, it is in fact providing a service data protocol
conversion that the FCC considers to be "enhanced".

6)   The protestants have not been provided with any of the cost
support material Pacific filed with its PPS proposal to the
Staff.

We have reviewed Pacific's response to the protest, and concluded
that:

1)   Pacific's rates do in general appear lower than other BOC
competitors, but in some cases its rates are as much as 13.2 times
greater.   Some of the discrepancy noted by the protestants result
from billing practices unique to Pacific such as billing by
segment rather than by packet (up to four segments).   Staff
determined that Pacific's cost support material does justify its
rates, based on the best information available.   Pacific has
agreed to offer this service as a provisional tariff and to raise
rates if its tracking reports show the rates to be
uncompensatory.   We believe Pacific's rates are not unreasonably
low.

2)   Pacific's response stated that the Staff had the same
concerns as did the protestants about Pacific's PPS market demand
forecasts used to determine unit costs.   Pacific provided Staff
with an additional Demand Sensitivity Analysis which demonstrated
rates to be above costs for demand reductions as great as 75% of
the original estimates.   We therefore believe that even if
Pacific's demand forecasts are on the high side, the rates will
still exceed the costs.

3)   Pacific agrees that its PPS network will pass interLATA/
interstate traffic, but that such traffic must exit or leave
Pacific's network at the LATA boundary through a gateway obtained
under tariff by the private user or common carrier other than
Pacific.   We agree that this would not be an interLATA or
interstate service based upon Pacific's explanation.

4)   Pacific argued that the protested protocol conversion is
basic. The staff, however, found that the FCC has not considered
this protocol conversion in its proceedings, and hence has
no ruling on whether it is "basic" or "enhanced". Accordingly,
per staff instruction Pacific filed on October 31, 1986, a Third
Supplemental to Advice Letter No. 15154 removing the protested
data protocol conversion from the tariff.

5)   We agree with Pacific's argument that Pacific's cost support
material for the PPS Tariff Proposal does contain details of
network organization, demand target strategies, and other
marketing plans which could be of use to Telenet and Tymnet, who
are competitors of Pacific in this service.   We believe
such submittals are proprietary and be should be treated
appropriately under the Commission's General Order No. 66.

The Commission finds that the rates, charges and conditions authorized in this Resolution are just and reasonable and rates, charges and conditions, as they differ from the rates, charges and conditions authorized in this Resolution are for the future unjust and unreasonable; and good cause appearing,

IT IS ORDERED that:

(1) Authority is granted to make the above revisions effective on November 6, 1986.

(2) Pacific Bell shall file a tracking report on the results of its Public Packet Switching Service with the Telecommunications Branch of the Evaluation and Compliance Division of the Public Utilities Commission by May 30, 1987, and each 6 month anniversary thereafter, until completion of the trial. If these reports indicate that the service is not profitable, Pacific will file revised rates accordingly and will not wait until the trial end to do so.

(3) All sheets in Schedules Cal. P.U.C. No. A2, B, B11, and 175-T shall be marked to show that such sheets were authorized by Resolution of the Public Utilities Commission No. T-11070.

The effective date of this Resolution is today.

I hereby certify that the foregoing Resolution was duly introduced, passed and adopted at a regular meeting of the Public Utilities Commission of the State of California, held on November 5, 1986, the following Commissioners voting favorably thereon:

_____
Executive Director

DONALD VIAL
President
VICTOR CALVO
FREDERICK R. DUDA
STANLEY W. HULETT
Commissioners

APPENDIX A

Packet Switching Description

Packet switching of data records has been performed on government
and private data networks since the late 1960's. Packet switching
is a technique for sending information coded as alpha-numeric
characters in discrete groups or "packets", usually in sizes of
128 or 256 characters per packet. In addition to the information
stored in a packet, there are also embedded source and
destination address codes and elaborate error checking and sig-
naling parameters. It has been demonstrated to be an efficient
and highly reliable method, where large volumes of data can be
transmitted easily with zero error. Network pricing is usage
sensitive, and charges are based on quantity of information
(packets) transmitted and not the time or distance involved,
other than connection charges for users at network nodes. Nodes
are the network points where packet switches or access
concentrators are located, and ports are available for user entry
and exit to the network.

Commercial packet switching networks have heretofore been
interstate in scope, and are tariffed by the Federal
Communications Commission (FCC); Telenet, Tymnet, and AT&T are
among firms that have extensive interstate packet switched
networks. Since divestiture from AT&T, the regional Bell
Operating Companies (BOCs) have implemented local area data
transport networks to handle packet switched data communications
within the LATAs.

Early customers of Pacific's basic Packet Switching Service will
most likely be firms desiring dedicated connections to the
network and having large traffic volumes. When Pacific receives
full protocol conversion approval, as we discuss in detail below,
many end users will be able to use these networks for casual
information transmittals to banks, stores, databases, and other
information providers.

The packet networks use a standard synchronous traffic
communications protocol, the International Telegraph and
Telephone Consultative Committee (CCITT) standard called X.25.
Protocols in data communications ensure consistent and orderly
information exchange by defining the physical, electrical, and
functional characteristics of the communications link.
Synchronous data communications have system clock timing
information embedded in the data stream. This is different from
asynchronous protocol systems where receiver and transmitter
clocks need not be synchronized; rather, special start and stop
coding is required to be sent with each individual character
transmitted. Synchronous protocols, however, can send data in
packets of characters instead of as individual characters. This
enables synchronous information "throughput" to be much greater
than that possible with asynchronous protocols, which means it
can deliver a higher volume of information in a given period of
time. It is therefore more efficient.

To enter or leave a network generally requires a conversion to a

different communications protocol; a CCITT X.75 synchronous gateway to other networks, or an asynchronous (asynch) port to enter from popular "dumb" terminals or Personal Computer serial interfaces. The asynchronous to X.25, and X.25 to X.75 protocol conversions are included in FCC Computer II Rules (47 CFR 702(a)) as "enhanced services", which require BOCs to establish structurally separate affiliates to offer the service. All communications channels necessary to provide enhanced services must therefore be acquired by its affiliates under tariff.

The BOCs seek to offer protocol conversion by their own operating company facilities, claiming they will be able to offer inexpensive data transport services to many customers who do not currently have access to or cannot afford the services of other "value added network" (VAN) service providers providing these same protocol conversions. The BOCs, including Pacific Bell, have sought waivers from the Computer II separation requirements from the FCC for these protocol conversions.

The FCC has granted (100 FCC2d 1057) BOC separate subsidiary waiver requests for X.25 to X.75 and X.75 to X.25 protocol conversion for internetworking interfaces. Co-located asynch to X.25 and X.25 to asynch protocol conversion was given conditional approval, subject to the BOCs satisfying the following three conditions:

1) That the BOCs charge their own packet service operations the same rates for interoffice channels as competing value-added networks (VANs) are required to pay for the same facilities.

2) That the asynch/X.25 conversion be priced separately in the form of a surcharge on the price for unconverted packet switched communications service, and on the basis thereof establish a tariffed "Network Utilization Rate Element" (NURE) to be additive to the tariff charges for transmitting basic unconverted packets.

3) That each BOC offer its customers access to competing VAN packet networks on a basis no less favorable than for access to its own packet network, i.e., without discrimination.

In Advice Letter 15154 and Supplements, Pacific has filed its tariff for basic Public Packet Switching Service (X.25 to X.25, X.25 to X.75, X.75 to X.25, and asynchronous to asynchronous) without asynchronous to X.25 or X.25 to asynchronous net protocol conversion.

Access to the network will be via public/private dial ports accessible through tariffed public switched telephone network access rates, or via private leased lines at Schedule B1 rates.

If Pacific's asynchronous to X.25/X.25 to asynchronous protocol conversion waiver request is given final approval by the FCC, Pacific may file a tariff proposal to provide such access along with cost support material for the NURE charge.

Pacific may submit tariff proposals to offer PPS network access over the public switched telephone network on an equal basis to its customers and those of competing VANs.

2

The rates for basic Public Packet Switching Service have been based on, for the most part, forecasted demand. Pacific may not have accurately predicted the cost, revenue, and profitability of this new offering. Therefore, we shall reserve judgment on the permanent approval of this service and shall authorize a provisional offering to test the rate structure and to substantiate the cost, revenue and profitability of this service. Based on the data obtained from the trial results, the basic Public Packet Switching Service schedule to expire on November 5, 1988, may be implemented permanently, changed, extended or withdrawn by Pacific Bell pending Commission authorization.

Protest Summary

A joint protest against Advice Letter 15154 by Telenet Communications Corporation (Telenet) and Tymnet-McDonnell Douglas Network Systems Company (Tymnet) was filed September 27, 1986. Pacific Bell responded to the protest by letter on October 3, 1986. On October 7, Telenet and Tymnet filed a joint reply to Pacific Bell's October 3 response to the protest, which was answered by Pacific Bell on October 21, 1986.

We recommend that Telenet and Tymnet's protest be denied except as noted below in the Discussion on provision of "enhanced" asynchronous to X.75 protocol conversion services; Pacific should be instructed to delete any reference to provision of asynchronous to X.75 protocol conversion in this "basic" Public Packet Switching Service tariff.

In its protest of September 27th, Telenet and Tymnet allege that:

1) Pacific's PPS rates are unreasonably low - that they are dramatically lower than those proposed by any other Bell Operating Company (BOC).

2) Pacific's market demand projections - from which its costs are derived - are outrageously high.

3) That although Pacific's service claims to be intraLATA only and should not deliver traffic outside a LATA, it will by virtue of its tariffed X.75 interfaces handle data traffic that is interLATA and interstate as well.

4) That although Pacific's filing is for only "basic" (i.e., no net protocol conversion) PPS, it is a "foundation for its offering of an enhanced (i.e., protocol-converted) packet service... The PPS tariff improperly classifies "asynchronous to X.75" service as "basic"... In fact, such conversions are as enhanced as the asynchronous to X.25 conversions covered by the March 1985 Waiver Order. Thus, to the extent that Pacific Bell proposes to offer this enhanced service under tariff as a "basic" service, it is unlawful and must be rejected."

5) Pacific has not provided the Protestants with any of the cost support material supplied Commission Staff to justify demand estimates, cost calculations, and rate element determinations.

Pacific Bell responded to Telenet and Tymnet's protest on October 3, 1986, arguing that:

1) "The pricing structure of other BOCs' packet switching services are so different that a comparison of their rates to Pacific's is irrelevant to the determination of whether Pacific's rates are above costs."

2) "The (Commission) Staff thoroughly investigated Pacific's estimates of the quantities of demand and usage of PPS, and Pacific's estimates of the revenues to be received from PPS, and found them to be reasonable."

3) "Pacific's packet switching network will carry traffic between points in a single LATA; it will not provide connections from its packet switching network to an interexchange carrier's Point of Presence ("POP"). All traffic on the PPS network must terminate on a port to which an intraLATA customer has obtained a direct ... connection... The terminating port may be an X.75 gate to which a VAN has subscribed. Once the VAN receives the traffic at the port, Pacific has no further control over it; the VAN can deliver that traffic to a point in or outside the LATA or outside the State... Pacific's PPS Service "ends" at the X.75 gateway."

4) "The determination as to whether a certain protocol conversion is basic or enhanced has been set forth in decisions of the FCC. Contrary to the Protestants' assertion (Protest, p.11, fn 8), asynchronous to X.75 protocol conversion is considered to be a basic service by the FCC."

5) "Pacific Bell should not provide proprietary cost support information to competitors such as Tymnet and Telenet ..."

"The Packet Switching cost support information requested by Telenet and Tymnet is trade secret..."

"The Commission has in the past protected and should continue to protect Pacific's trade secrets ..."

"Tymnet and Telenet are direct and actual competitors of Pacific Bell in the California public packet switching market and as such, should not have access to Pacific's proprietary information..."

Protest Discussion

1. Pacific's Unreasonably Low Rates

The Protestants allege that Pacific's rates are unreasonably low compared to their own and even those of other BOCs offering similar services.

Staff noted that the BOC rates in general are lower than those of the Protestants, but that in some cases Pacific's rates are even greater than those of the other BOCs. The discrepancy noted by the Protestants could result from the billing practice by Pacific in charging by segment (128 characters) rather than by packet (up to 4 segments, or 512 characters of information).

Protestants stated that the average packet user transport per hour is 1000 packets (not segments); in effect the charges made by Pacific could range from a minimum of $0.609 as computed by the Protestants, to $1.659 per hour as shown below.

		min	max
Call Set-up	5 calls x .005	$.025	$.025
Initial Min.	5 calls x .0071	.036	.036
Add'l Min.	55 x .0036	.198	.198
Segments (min 1000, max 4000)x.00035		.350	1.400
Total Rate for one hour		$0.609	$1.659

The latter figure ($1.659) is in the same range as those quoted by the Protestants for comparable charges on other Bell System Public Packet Networks.

Pacific notes in its response, too, that the rates among the BOCs for various portions of the total access charge (i.e., the call set-up, initial minute, additional minute, and segment transport portions) differ significantly with Pacific being .5c/.038c = 13.2 times the call set-up rate charged by New Jersey Bell. Similarly, Pacific's $75 monthly charge for an asynchronous 1.2 Kbps dedicated port is 6.25 times Indiana Bell's charge of $12.00.

For a realistic appraisal of the compensatory nature of the PPS rate element structure, only a review of the cost calculation by Pacific for each element can suffice.

2. Outrageously High Pacific Bell Market Share

The Protestants raised concerns about overly optimistic demand figures forecast by Pacific which lower the costs Pacific computes for the service, enabling Pacific to charge lower rates.

Staff had the same concerns about demand projections forecasted by Pacific for its Public Packet Switching Service. Staff requested Pacific to submit a demand sensitivity analysis and to compute the change in costs for a change in demand of -50% at the same 100% investment for the service. As part of the results of Pacific's analysis, we noted that even at the investment level made by Pacific to support its 100% demand case, the dedicated

segment transport cost increases by less than 20%, and is still less than the customer price; only below 25% of the original demand does the cost exceed the tariffed price. Moreover, at levels of investment less than the original 100%, the computed cost falls even lower below the tariffed rate for reduced demand levels.

Pacific has furthermore agreed to track all costs and revenues for the PPS service and to report them to the Commission Staff periodically. Pacific has agreed to change its rates as required to ensure that all rate elements of PPS are compensatory and are not subsidized by other services and subscribers.

3.   IntraLATA vs. InterLATA Service Provision

The Protestants note that Pacific will be competing with their own Packet Switched Networks which are both intra- and inter-LATA in nature. All packet switched traffic originating on Pacific's PPS Network must terminate at a port in one of Pacific's packet switches in the same LATA, or it must be handed off via an X.75 gateway at Pacific's switch to a different interLATA packet switched network (such as those of the Protestants) or to some other interexchange common carrier or private carrier with the appropriate X.75 interface to Pacific's PPS network.

Pacific's X.75 interface access is tariffed in both its FCC Interstate Tariff No. 128 and CPUC Tariff No. B11 filed herewith, September 8, 1986. The Protestants and other competing data networks are all free to buy at the same tariffed rates to transport packets into and out of Pacific's PPS network in each LATA. Direct connection via Dedicated Digital Interfaces with X.75 Protocol Option (USOC LADP7) is all that is required.

4.   "Basic" vs "Enhanced" Services

The BOCs were prohibited by the FCC from providing "enhanced" services except by separate subsidiary. The FCC has ruled that some packet switched data protocol conversions are "basic" and others are "enhanced", as indicated in the following Table:

"Basic" Protocol Conversions	"Enhanced" Protocol Conversions
X.25 to X.75	Asynchronous to X.25
X.75 to X.25	X.25 to Asynchronous

Pacific and other RBOCs have requested waivers from Computer II separate subsidiary requirements, and have been granted conditioned (not final) approval to perform the enhanced protocol conversions in the above list; final approval will come only after compliance by Pacific with three conditions specified by the FCC; the FCC has not decided upon Pacific's compliance with those conditions at this time. Moreover, as stated to the Staff by Mr. John Cimko, Chief, Tariff Branch, Common Carrier Bureau, FCC, the FCC has never considered asynchronous to X.75 or X.75 to

asynchronous protocol conversions, has made no decision on the enhanced or basic nature of these conversions, and has no immediate plans to do so. Therefore, the Staff concludes that Pacific has not been given authority by the FCC to perform asynchronous to X.75 or X.75 to asynchronous protocol conversion in its co-located facilities; any such conversions must be performed by Pacific Bell through the operations of a separate subsidiary, and is not to be tariffed by this Commission.

Accordingly, for the Commission's Resolution, we requested Pacific to delete any provisions from its Public Packet Switching Service tariff of any offering pertaining to asynchronous to X.75 and X.75 to asynchronous protocol conversion, which it did on October 31, 1986 with a filed Supplement to Advice Letter 15154.

5. Company Proprietary Nature of Pacific's Cost Support Material for its PPS Proposal.

Staff agrees with Pacific that the Cost Support Package and subsequent Data Request Responses submitted by Pacific for its Public Packet Switching Proposal No. 85143 contain details of network organization, demand target strategies, and other marketing plans which could be of competitive use to the Protestants. Staff recommends that such submittals remain Company Proprietary and be treated as appropriate under the Commission's General Order No. 66.

Conclusion

Telenet and Tymnet's protest should be denied, except in part. Pacific Bell should be instructed to delete any provision for asynchronous to X.75 protocol conversion from its Public Packet Switching tariff. The PPS tariff will be effective for a 24 month provisional basis, and Pacific will be required to track and report to the Staff on a 6 month basis the cost, revenue, and profitability of the service. Pacific will file revised rates, accordingly, if the service is not compensatory, and will not wait until the trial end to do so.

Based on Pacific's reports to the Staff, the basic Public Packet Switching Service Schedule to expire on November 5, 1988, may be implemented permanently, changed, extended, or withdrawn by Pacific Bell pending Commission authorization.