ORIGINAL

BEFORE THE
FLORIDA PUBLIC SERVICE COMMISSION

In re: Petition of Neutral Tandem, Inc. and Neutral Tandem-Florida, LLC for Resolution of Interconnection Dispute with Level 3 Communications, LLC, and Request for Expedited Resolution	)))))	Docket No. 070408-TP Filed: July 11, 2007

Pre-Filed Direct Testimony
of Surendra Saboo
On Behalf of
Neutral Tandem, Inc.
and Neutral Tandem-Florida, LLC

July11, 2007

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BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

DIRECT TESTIMONY OF

SURENDRA SABOO

ON BEHALF OF

NEUTRAL TANDEM, INC.

AND NEUTRAL TANDEM-FLORIDA, LLC

DATE OF FILING: July 11, 2007

Q. DR. SABOO, PLEASE STATE YOUR NAME, EMPLOYER, AND TITLE.

A. My name is Surendra Saboo. I am employed by Neutral Tandem, Inc. ("Neutral Tandem") as Chief Operating Officer and Executive Vice President.

Q. PLEASE SUMMARIZE YOUR EDUCATIONAL AND PROFESSIONAL EXPERIENCE.

A. I have over 20 years of executive management experience in the telecommunications industry. I hold a B.S. degree in Mechanical Engineering from the Birla Institute of Technology in India, and a masters in Industrial and Systems Engineering and a Ph.D in Operations Research from Ohio State University. I have also completed the Advanced Management Program at Hawaii University.

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A. The purpose of my testimony is to: (1) explain why Level 3's disconnection of its existing interconnections with Neutral Tandem will disrupt the operations of carriers

utilizing Neutral Tandem's services; and (2) explain how continued interconnection between Level 3 and Neutral Tandem is in the public interest and serves significant public policy concerns.

I. THE IMPACT OF LEVEL 3'S DISCONNECTION ON THIRD PARTY CARRIERS.

Q. WHO WOULD BE AFFECTED BY LEVEL 3'S REFUSAL TO ACCEPT TRANSIT TRAFFIC DELIVERED BY NEUTRAL TANDEM ON BEHALF OF OTHER CARRIERS?

A. If Level 3 is permitted to cease accepting traffic delivered by Neutral Tandem on behalf of other carriers, the service disruption will cause substantial injury to Neutral Tandem, to third party carriers and those carriers' end-users, to Neutral Tandem's other customers, and to the PSTN at large.

Q. HOW WOULD LEVEL 3'S REFUSAL TO ACCEPT TRAFFIC DELIVERED BY NEUTRAL TANDEM ON BEHALF OF OTHER CARRIERS IMPACT THIRD PARTY CARRIERS?

A. The disconnection of the successfully operating direct connections already in place between Neutral Tandem and Level 3 will increase third party carriers' costs for call completion, reduce their network diversity and reliability, and disrupt their operations.

Q. HOW MANY THIRD PARTY CARRIERS IN FLORIDA WOULD BE IMPACTED?

A. Approximately a dozen third party carriers utilize Neutral Tandem's service in the Florida market, utilizing at least 85 switches, each of which routes traffic to Level 3. Neutral Tandem sends approximately 64 million minutes of traffic per month to Level 3, and its subsidiary Broadwing, in Florida on behalf of Neutral Tandem's carrier customers. Neutral Tandem uses approximately 10 different transport providers in Florida.

Q. WHY WOULD LEVEL 3's REFUSAL TO ACCEPT TRANSIT TRAFFIC FROM NEUTRAL TANDEM HAVE AN INCREASED CALL COMPLETION COST TO THIRD PARTY CARRIERS?

A. Third party carriers would be forced to pay higher rates to the incumbent LECs for terminating traffic to Level 3 via the incumbents' tandem switches and pay for additional transport cost for augmenting their trunk capacity to incumbent LEC's tandems.

Q. WHY WOULD LEVEL 3'S REFUSAL TO ACCEPT TRANSIT TRAFFIC FROM NEUTRAL TANDEM HAVE THE EFFECT OF DISRUPTING THIRD PARTY CARRIER'S OPERATIONS?

A. If these direct connections to Level 3 are removed, third party carriers would have to augment their interconnection trunks (and incur new, additional expenses) with the incumbent LECs in order to seek to terminate this traffic indirectly to Level 3. These alternative routes do not necessarily have sufficient capacity to send all of the blocked traffic. This capacity shortage could result in the blockage of traffic destined for

termination to Level 3 end-users. In other words, some calls to Level 3 end-users from third party carriers may be blocked and receive a fast busy signal due to lack of trunk capacity. This could potentially result in call blocking for ILEC end-users attempting to reach Level 3 end-users through the ILEC tandems.

Q. COULD THE OPERATIONAL DISRUPTION BE AVOIDED IF THE THIRD PARTY CARRIERS AUGMENTED THEIR TRUNK CAPACITIES?

A. There is no assurance that tandem capacity will be available in the serving incumbent LECs' tandems. In addition, even if third party carriers were able to augment their trunk capacity, Level 3 may not have sufficient capacity to the ILEC tandem to receive the traffic by that route. Tandem exhaustion is a recurring problem in several states. Several carriers have asked Neutral Tandem to accept overflow traffic to the ILECs because the carriers cannot obtain sufficient trunk capacity to the tandem designated in the LERG. Thus, the incumbent LECs may not have the necessary excess capacity available to absorb additional Level 3 traffic.

Q. IN YOUR EXPERIENCE, HAS CALL BLOCKING EVER OCCURRED DUE TO TANDEM EXHAUST?

A. Yes. For example, in the second quarter of 2006, Level 3 ran out of capacity to the ILEC tandem in the Chicago Market. Level 3 was unable to handle traffic from AT&T after SBC bought AT&T and moved AT&T's traffic to the SBC (Ameritech) tandem. As a result, traffic to Level 3 effectively was blocked. Neutral Tandem worked with AT&T and Level 3 to move the traffic back to Neutral Tandem's switches until Level 3 had the time to

augment their trunks with SBC. It took Level 3 approximately four months to augment its trunks to finally be able to receive the AT&T traffic from SBC.

Q. DO YOU HAVE REASON TO BELIEVE LEVEL 3 WILL FOLLOW THROUGH ON ITS THREATS TO STOP RECEIVING TRAFFIC FROM NEUTRAL TANDEM?

A. Yes, Level 3 has shown in the past that it will follow-through on threats to disrupt service to other carriers' end-users. For example, in October 2005, Level 3 apparently blocked internet users of Cogent Communications from accessing the internet for three days during a compensation dispute between the parties. As a result of Level 3's conduct in that dispute, its President apologized to both Level 3's and Cogent's customers.

Q. HOW ELSE WILL THE DISCONNECTION OF THE DIRECT CONNECTIONS BETWEEN NEUTRAL TANDEM AND LEVEL 3 AFFECT THE OPERATIONS OF THIRD PARTY CARRIERS?

A. Should disconnection of the existing direct connections occur, third party carriers utilizing Neutral Tandem's network will be required to reprogram all of their switches to re-route traffic to the incumbent LECs' tandems in order to terminate traffic to Level 3. This will cause these carriers significant time and resources.

Q. IN YOUR EXPERIENCE, HOW LONG WOULD IT TAKE THIRD PARTY CARRIERS TO REARRANGE THEIR NETWORK?

A. In my experience, the third party carriers, with a total of at least 85 switches, could require up to six months to rearrange the additional transport capacity needed and to make the individual switch programming changes required in their switches for routing traffic through the multiple incumbent LEC tandems.

Q. WHY WOULD THE THIRD PARTY CARRIERS REQUIRE SIX MONTHS TO RE-CONFIGURE THEIR NETWORKS?

A. The third party carriers might need six months just to coordinate a complete move of all Level 3 traffic. The bulk of this time would be spent augmenting capacity of both the third party carriers and Level 3 with the incumbent LECs, such as BellSouth. Indeed, Level 3 must first augment its capacity with the incumbent LECs, before any of the carriers can route their traffic through the ILECs' tandems. After the capacity augments have been made, the third party carriers would have to implement routing changes in their switches so as to direct their traffic to the ILECs' tandem. This would necessitate that all of the switches of the approximately 12 third party carriers be carefully re-programmed to update its internal routing translations tables for re-routing traffic to the multiple ILECs tandems. Moreover, for the volumes of traffic involved here, a collocation alternative point of termination ("APOT") augment to the ILEC tandems likely is required. This quantity of trunks will require a project status by the incumbent LECs.

Q. WOULD IT BE EFFICIENT FOR NEUTRAL TANDEM TO CONTINUE TO DELIVER TRAFFIC TO LEVEL 3 THROUGH THE INCUMBENT LECS' TANDEMS, AS LEVEL 3 HAS SUGGESTED IN OTHER STATES?

A. Routing traffic through two tandems for normal calling transport is a waste of tandem switching capacity and negates the benefits of network survivability and redundancy, as discussed below. Moreover, forcing Neutral Tandem to deliver traffic through the incumbent LEC's tandem would negate the purpose for which its connection with the ILEC was created. Neutral Tandem connects with the incumbent LECs solely to provide its customers with diverse and reliable facilities and routings in case one of the customer's connections with Neutral Tandem is temporarily cut. Neutral Tandem has used its connections with the incumbent LECs for this purpose only to provide third party carriers using its tandem transit services with a highly reliable service to end-user customers, and to promote its ability to respond to disaster recovery. The connection therefore is not sized to handle the massive amounts of day-to-day traffic that Neutral Tandem terminates to Level 3 on behalf of third party carriers. Routing through ILECs destroys the redundancy benefits provided by Neutral Tandem as well as the competitive benefits.

Q. WOULD COMPETITIVE CARRIERS BE HARMED IF REQUIRED TO RE-ROUTE TRAFFIC THROUGH THE INCUMBENT LECS' TANDEM?

A. Yes. As noted above in more detail, the third party carriers would be required to spend significant time and resources to re-direct their traffic away from Neutral Tandem and towards the tandem switches of the incumbent LECs. Moreover, the third party carriers would be forced to pay higher costs to the incumbent LECs for transiting traffic to Level 3

via the incumbent LECs' tandem switches and pay for additional transport costs for augmenting their trunk capacity to the incumbent LECs' tandems.

II. THE SUBSTANTIAL PUBLIC BENEFITS OF NEUTRAL TANDEM'S SERVICES.

Q. HOW WILL THE DISCONNECTION OF THE DIRECT CONNECTIONS BETWEEN NEUTRAL TANDEM AND LEVEL 3 IMPACT THE PSTN?

A. Disconnecting the parties' existing interconnections would have the effect of disrupting the communications of the PSTN, including all customers and their subscribers that use Neutral Tandem to terminate traffic to Level 3 customers in these markets. Moreover, disconnection of the direct connections between Neutral Tandem and Level 3 will increase traffic to those tandems by millions of minutes per month. As such, exhaustion in the above-referenced tandems will be significantly exacerbated by the disconnection of Neutral Tandem's direct connections with Level 3, potentially triggering call blocking by end-users utilizing the incumbent LECs' tandems.

Q. WILL THE DISCONNECTION OF THE DIRECT CONNECTIONS BETWEEN NEUTRAL TANDEM AND LEVEL 3 IMPACT NETWORK REDUNDANCY?

A. Yes. The loss of network redundancy that could result from Level 3's disconnection of its existing interconnections with Neutral Tandem could have a particularly severe impact on the telecommunication infrastructure of Florida. A redundant network not only brings about resiliency, reliability, and survivability, but it decreases the substantial risks associated with the potential "single point-of-failure." Even carriers that only receive traffic transited through Neutral Tandem receive substantial benefits, because Neutral

Tandem can use alternative routing arrangements to ensure that traffic is delivered to those carriers, even if there is a disruption in the direct connection between Neutral Tandem and the terminating carrier.

Q. WHEN YOU REFER TO THE TERMS RESILIENCY, RELIABILITY, AND SURVIVABILITY OF THE NETWORK, WHAT DO YOU MEAN?

A. These three characteristics are the backbone of a strong telecommunications network. A reliable network is able to carry and complete its normal volume of traffic during normal hours, including anticipated surges during certain days and times when traffic is higher than normal, such as Christmas. Survivability measures the ability of the network to respond to an emergency by: (1) providing emergency telecommunications services for emergency responders such as firefighters, police, and medical personnel; (2) providing network customers with valid network status announcements and message updates; and (3) during the emergency, being capable of carrying some level of non-emergency traffic over the network. After a disaster or emergency ends, a resilient network rebounds back to a reliable network, as defined above, in the shortest period of time.

Q. HOW DO THE PRINCIPLES OF RELIABILITY, SURVIVABILITY, AND RESILIENCY RELATE TO THE REDUNDANCY OF THE PSTN?

A. A redundant network contains duplicate elements so in the event of a single network disruption, the network as a whole is able to continue to provide reliable, resilient services to consumers.

Q. HOW DOES A REDUNDANT NETWORK IMPACT THE RISK OF A "SINGLE-POINT-OF-FAILURE?"

A. Prior to Neutral Tandem's entry into the telecommunications industry, carriers had one alternative available to deliver traffic indirectly to other competitive carriers: the incumbent LECs' tandems. This one single route therefore has been used to connect the networks of multiple competitive carriers; creating a critical bottleneck in our nation's telecommunications infrastructure. The PSTN's dependency on this single route creates the real potential for internetworking failures, whether they are caused by a natural disaster, such as Hurricane Katrina or an earthquake, or a man-made disaster, such as a terrorist attack like September 11, 2001 or the Oklahoma City bombing.

Q. TO YOUR KNOWLEDGE, HAS THE "SINGLE-POINT-OF FAILURE" RISK EVER LED TO INTERCONNECTING FAILURES?

A. Yes. In a special report entitled "The Vulnerability of Networks," written in the aftermath of the September 11, 2001 terrorist attacks, John Wohlstetter, a Senior Fellow - Technology and Democracy at the Discovery Institute, concluded as follows: "in an effort to build systems that are easy to use, readily accessible, and have broad activity, telecommunications companies (under the jurisdiction of federal regulatory agencies) have built systems that are vulnerable to deliberate attack. To decrease that vulnerability, significant changes must be made to both systems hardware and software.... Network plant vulnerabilities primarily arise out of physical proximity. Switching and routing equipment that provide the telecommunications backbone for a geographic area often are located in just a few buildings, making an easy target for attack. That fact was underscored

on September 11th when the World Trade Center collapse knocked out a telecommunications facility in Lower Manhattan that supplied 80 percent of the New York Stock Exchange's communications capacity.... As for Bell's [the ILEC] rivals, one study shows that less than 10 percent of competing carriers have facilities fully separate from Bell networks."

Q. WERE SIMILAR CONCERNS RAISED FOLLOWING HURRICANE KATRINA?

A. Yes, the FCC recently issued a report regarding the impact Hurricane Katrina had on various types of telecommunications networks. The FCC found that Hurricane Katrina highlighted the dependence within our nation's telecommunications infrastructure on tandem switches: "...more than 3 million customer phone lines were knocked out in the Louisiana, Mississippi, and Alabama area following Hurricane Katrina. The wireline telephone network sustained significant damage both to the switching centers that route calls and to the lines used to connect buildings and customers on the network. *Katrina highlighted the dependence on tandems and tandem access to SS7 switches.* The high volume routes from tandem switches, especially in and around New Orleans, were especially critical and vulnerable. *Katrina highlighted the need for diversity of call routing and avoiding strict reliance upon a single routing solution....* The switches that failed, especially tandems, had widespread effects on a broad variety of communications in and out of the Katrina region. As an example, a major tandem switch in New Orleans was isolated, which meant that no communications from parts of New Orleans to outside the region could occur."

Q. DID ANY FCC COMMISSIONER REACT TO THE FCC REPORT ON THE IMPACT OF HURRICANE KATRINA?

A. Yes, Commissioner Michael J. Copps reacted as follows: "measured in these terms, this report is a shocking indictment of the disaster readiness of our existing communications networks.... In light of these sobering conclusions, I think *the central question raised by the report is how – and not whether – the communications industry should begin to incorporate more rigorous standards into how it constructs and maintains networks."*

Q. HAS THE "SINGLE-POINT-OF-FAILURE" RISK BEEN ACKNOWLEDGED BY ANY EXPERTS IN THE TELECOMMUNICATIONS FIELD?

A. Yes. In November 2006, John Colarco and Ellen Craig prepared a network reliability white paper entitled "A Homeland Security Issue: Tandem Diversity and the Public Switched Telephone Network." The report found that "The PSTN was originally planned and engineered as a single network under the concepts of the regulated AT&T monopoly... This diversity of alternative routing was made possible by the integrated engineering and interconnection of the Bell System.... As the competitive landscape evolved, the LEC tandems became a natural interconnection point for the new long distance, wireless, cable telephony, and competitive local exchange carriers to exchange calls with each other (i.e., 'transit' calls). But this proliferation of diversely managed competitive switches subtended to the LEC tandems made centralized network planning and system redundancy more difficult.... Being 'single-threaded' to LEC tandems creates a single point-of-failure architecture exposing the public to significant risks. Thus, in reality, tandems act as concentrators for sparsely trafficked routes and provide an economical alternative to

uneconomical direct connections. A more effective and more rapid means to add much-needed switch and route redundancy and diversity, particularly for competitive switches, would be to have a diverse, independent second tandem network to the PSTN. This would provide immediate resiliency and alternate routing for competitive carriers." The report highlighted the nation's overdependence on the ILEC infrastructure and the homeland security issues this presents by noting "[g]iven that over half of the nation's voice traffic is now routed via competitive carriers, this dependency on legacy LEC tandems creates a critical choke point in our nation's telecommunications infrastructure, exposing the public to serious risks that have recently been identified as a homeland security issue. Hardening the country's telecommunications network by introducing independent tandem infrastructure is essential to homeland security: it reduces significantly the risk of network failure in times of national disasters and can contribute measurably to rapid disaster recovery."

Q. DOES NEUTRAL TANDEM'S PRESENCE IN FLORIDA ENHANCE THE REDUNDANCY OF THE PSTN?

A. Yes, as described above, Neutral Tandem provides its customers a second routing to complete calls. As Neutral Tandem's tandem is completely separate and diverse from the ILECs' tandems, Neutral Tandem provides route diversity and promotes survivability and resiliency between carriers, including: (a) diverse tandem switching facilities located in separate buildings from existing ILEC tandems; (b) multiple competitive access provider facilities for physically diverse transmission; (c) an alternative route for carriers to exchange local calls; (d) a comprehensive disaster recovery alternative; and (e) tandem and

diverse routing engineering services for other carriers. In addition, Neutral Tandem does not collocate with any incumbent LECs, further enhancing network reliability.

Q. DR. SABOO, DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes, it does.