

**BEFORE THE
FEDERAL COMMUNICATIONS COMMISSION
WASHINGTON, D.C. 20554**

In the Matter of)	
)	
Review of the Section 251 Unbundling)	
Obligations of Incumbent Local Exchange)	CC Docket No. 01-338
Carriers)	
)	
Implementation of the Local Competition)	
Provisions of the Telecommunications Act)	CC Docket No. 96-98
Of 1996)	
)	
Deployment of Wireline Services Offering)	CC Docket No. 98-147
Advanced Telecommunications Capability)	

COMMENTS OF TAQUA, INC.

Thomas C. DeCanio
Vice President, Product Marketing
Taqua, Inc.
75 Attucks Lane
Hyannis, MA 02601
(508)957-4422

Dated: April 5, 2002

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Summary

Taqua is a manufacturer of the Open Compact Exchange (“OCX”) switch, which is a compact, cost-effective, advanced switching system that combines traditional end office switching services with softswitch functionality and the ability to provide consumers with next-generation services. The use of the OCX switch is an example of how investment in innovative technologies can promote local competition while also bringing the benefits of broadband deployment to consumers. It also demonstrates that technology is not a barrier to cost-effective facilities-based competition. Thus, Taqua urges the Commission in conducting this review of its unbundled network element (“UNE”) regulations and policies to ensure that its actions in this proceeding are aimed at encouraging innovation and investment in cost-efficient network equipment and broadband technologies and products.

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Taqua, Inc. (“Taqua”) hereby submits its comments in the above-referenced proceeding, pursuant to the Federal Communications Commission’s *Notice of Proposed Rulemaking* on its triennial review of the Commission’s policies on unbundled network elements (“UNEs”).¹ Taqua manufactures cost-effective Class 5 alternative switching systems that combine traditional end office switching with integrated softswitch functionality and next-generation service capabilities. As reflected in these comments, use of Taqua’s switching system in real-world applications demonstrates that technology is not the barrier to cost-effective, facilities-based competition. Taqua’s switching product is an excellent example of the technological innovation and pro-competitive benefits Congress envisioned with its passage of the Telecommunications Act of

¹ In the Matter of Review of the Section 251 Unbundling Obligations of Incumbent Local Exchange Carriers, *Notice of Proposed Rulemaking*, CC Docket Nos. 01-338, 96-98, 98-147, FCC 01-361 (rel. Dec. 20, 2001) (hereinafter “*Triennial UNE Review NPRM*”). See also CC Docket Nos., 01-338, 96-98, 98-147, *Order*, DA 02-591 (rel. Mar. 11, 2002) (extending the comment due date to April 5, 2002).

1996 (“1996 Act”).² In the Commission’s review of its regulations and policies governing UNEs, the Commission must focus on the two primary goals of the 1996 Act, which seek to promote: (1) facilities-based competition; and (2) the wide availability of broadband services to consumers. These goals can only be realized if the Commission adopts policies that are aimed at encouraging innovation and investment in cost-efficient networking equipment and broadband technologies and products.

I. DESCRIPTION OF TAQUA AND THE OCX SWITCH

Taqua was founded in 1998 for the purpose of building a compact, cost effective, next-generation advanced switching system for telecommunications companies. Taqua’s goal is to develop and provide alternatives to legacy telecommunications networks and equipment that reduce the cost of upgrading existing equipment and the cost of entry into the telecommunications market, while increasing service flexibility for telecommunications carriers.

Taqua’s primary product is the Open Compact Exchange (“OCX”). The OCX is a Class 5 alternative switching system that combines traditional end office switching with integrated softswitch functionality³ and the ability to provide next-generation subscriber services in a single 19” rack-mountable chassis. (*See* Attachment A for a more detailed discussion of the features and functions of the OCX switching system.) Taqua’s products benefit multiple carrier markets in the telecommunications industry, including rural and independent telephone operating companies (“ITOCs”), competitive local exchange carriers (“CLECs”), resellers seeking to

² Telecommunications Act of 1996, Pub. L. No. 104-104, 110 Stat. 56, codified at 47 U.S.C. §§ 251 *et seq.*

³ “Softswitches” are “central office switches built on standard computer platforms for sending voice over packet networks.” Annabel Z. Dodd, *The Essential Guide to Telecommunications*, 225-26 (3d ed. 2002). Softswitches are designed to easily interface with network-based applications. *Id.*

become facilities-based carriers, incumbent local exchange carriers (“ILECs”) seeking to replace their legacy equipment, and Internet service providers (“ISPs”) seeking to add voice services.

The following are just some examples of the multiple applications and use of the OCX system: (1) the OCX permits existing service providers, such as ILECs, to cost effectively replace their current Class 5 switch with a more advanced switching system; (2) the OCX permits resellers and new entrants in the CLEC market to provide Class 5 services directly to their customers over their own facilities at vastly lower costs than purchasing a Class 5 switch with upgrades or leasing facilities from ILECs; (3) the economical benefits and scalability of the OCX switch allows existing facilities-based CLECs and ITOCs operating primarily in larger markets to expand their facilities-based services to smaller markets; (4) ISPs seeking to become integrated communications providers with the capability of providing local exchange voice services to its existing customers can deploy an OCX and interconnect with the SS7 network; (5) the OCX also can offload congested dial-up Internet traffic from the legacy PSTN.

In sum, the OCX switch provides telecommunications carriers with a single platform capable of providing traditional end office switching, softswitch functionality, packet switching, and voice-over-ATM and voice-over-IP gateways in a cost-efficient manner. As demonstrated herein, this technological achievement is a critical step toward realizing the goals of the 1996 Act and promoting the wide availability of facilities-based, competitive telephone services and advanced broadband services to consumers. It is up to the Commission, however, to ensure that its policies governing the use of UNEs realize the full potential of these goals by encouraging the development of a telecommunications market that permits consumers to choose among a variety of basic and broadband services provided over innovative and affordable, technologically advanced networking systems.

II. TAQUA'S OCX SWITCH FURTHERS THE GOALS OF THE 1996 ACT

The basic purpose underlying the Commission's UNE regulations and policies is to implement the pro-competitive goals of the 1996 Act. As stated in its preamble, the goals of the Act are to "promote competition and reduce regulation in order to secure lower prices and higher quality services for American telecommunications consumers and encourage the rapid deployment of new telecommunications technologies."⁴ The OCX switch is a technological innovation that provides telecommunications carriers with an affordable next-generation switch. This switch permits carriers to compete effectively on a cost-efficient basis in providing both traditional voice services and advanced broadband services to consumers. As such, the OCX serves both the pro-competition and broadband goals of the Act.

In its *Triennial UNE Review NPRM*, the Commission identifies several factors that further the goals of the 1996 Act, including: (1) the rapid introduction of competition in multiple markets; (2) the promotion of facilities-based competition, investment and innovation; and (3) the reduction of regulation.⁵ As explained below, Taqua believes that its switching technology embodies each of these components. The ability of the OCX switch to provide advanced, cost-effective switching technology facilitates and promotes facilities-based competition in multiple markets, ultimately reducing the need for more regulation.

A key factor in the ability to provide facilities-based competition and broadband services is cost. The high cost of upgrading facilities to provide advanced services and the high cost of entry into the facilities-based telecommunications market has been an impediment to realizing full, facilities-based competition for local and broadband services. This cost factor has delayed

⁴ Pub. L. No. 104-104, 110 Stat. 56, codified at 47 U.S.C. §§ 251 *et seq.*

⁵ *Triennial UNE Review NPRM*, *supra* note 1, at para. 21.

the deployment of broadband services and the rapid introduction of facilities-based competition nationwide. The OCX switch overcomes this cost barrier, thereby furthering the pro-competitive goals of the 1996 Act.

Some of the primary pro-competitive benefits of the OCX facility are its flexibility to adapt to a carrier growth plan and the reduced overall cost of installation and maintenance.⁶ First, the scalability feature of the OCX switch allows facilities-based carriers to take advantage of OCX's very economical "pay-as-you-grow" architecture. The OCX architecture incorporates a complete switch on a single card, holding up to 20 cards per OCX chassis. This enables carriers to start with one card and as few as 80 subscribers and then add on cards as service demands. A single OCX can support a network of 100,000 subscribers or more.

Second, the OCX's compact dimensions allow carriers to install and operate the switch at lower costs,⁷ and significant savings can be realized from reduced expenses related to power and environmental requirements.⁸ The OCX switch also provides costs savings in the areas of ongoing operation, administration, maintenance and provisioning functions for the switch. *See* Attachment A. The lower costs, efficient size and diverse applications of the OCX allow

⁶ In a study conducted by Aberdeen Group on next generation switches, it was found that advanced switches, such as Taqua's OCX, can cost as much as \$14 million less to install and turn on than comparable legacy switches. It was also found that—given a network consisting of one hub city and seven tertiary markets—a cost savings of over \$1 million a year could be realized. Aberdeen Group, *Building a Next-Generation Voice Network*, An Executive White Paper, at 1, Feb. 2001.

⁷ The OCX is only 18 inches wide and two feet tall, and thus, uses 94 times less square footage in central office space than more traditional switches. This cost savings is particularly beneficial to carriers that must collocate their equipment in another carrier's central office because the OCX is less expensive to install and dramatically reduces collocation rental payments.

⁸ For example, the OCX switch only requires a sustained feed of 175 amps, compared to the 600 amps required of the average mid-sized legacy switch.

companies to deploy the OCX in more locations, which is particularly important for rural and independent LECs seeking to upgrade and expand their facilities in high cost areas.

Overall, the cost-benefits of the OCX are advantageous to all types of carriers, including ILECs seeking to upgrade their facilities for the provision of broadband services and CLECs seeking to overcome the high cost of entering the telecommunications market. These cost benefits allow for more efficient networking, while also providing carriers with the means for offering consumers both voice services and advanced telecommunications services. These benefits, especially those associated with the provision of Class 5 switching services, promote competition for both commercial and residential local exchange and broadband services.

III. CONCLUSION

In sum, the OCX combines the features of traditional switching systems with next generation capabilities that provide dramatically improved performance and significant cost savings. This combination not only reduces the costs associated with upgrading facilities, deploying switches in high cost areas, and entering the facilities-based market, but also provides carriers with technically superior equipment that increases service flexibility in the provision of advanced telecommunications services. Thus, the use of the OCX promotes the policy goals of increasing facilities based competition and “encouraging the provision of new services and technologies to the public.”⁹ The OCX switch is an example of how investment in innovative technologies can promote local competition while also bringing the benefits of broadband deployment to consumers. Thus, Taqua urges the Commission in conducting this review of its

⁹ *Triennial UNE Review NPRM*, *supra* note 1, at para. 22 (citing 47 U.S.C. § 157(a)).

UNE regulations and policies to ensure that its actions in this proceeding are aimed at encouraging innovation in technologically advanced products, such as the OCX, that promote facilities-based competition and the wide availability of advanced telecommunications services.

Respectfully submitted,

/s/ Thomas C. DeCanio

Thomas C. DeCanio
Vice President, Product Marketing
Taqua, Inc.
75 Attucks Lane
Hyannis, MA 02601
(508)957-4422

Dated: April 5, 2002

ATTACHMENT A

Description of the OCX Switch

Taqua's OCX switch has the following key features:

- a specialized architecture that incorporates a complete Class 5 on a single card, resulting in dramatically reduced space requirements for a platform that enables the integration of multiple advanced technologies and networks, including Time Division Multiplexing ("TDM"), Asynchronous Transfer Mode ("ATM") and Internet Protocol ("IP") access;
- traditional telephone switching with standard line and trunk interfaces and Class 5 capabilities, including custom Local Area Signal Services ("CLASS"), custom calling subscriber services, as well as BORSCHT functionality,¹⁰ which allow for interoperability with the public switch telephone network;
- direct interconnection to the incumbent local exchange carrier loop and transport unbundled network elements;
- termination of and direct access to analog and digital DS1 lines;
- DS1/DS3/OC3 multiplexing and transport, as well as public switched telephone network signaling, including dual tone multi-frequency ("DTMF"), Signaling System 7 ("SS7"), and primary-rate interface ("PRI");
- next generation capabilities for both voice and data that utilize softswitch technology to combine switching, call control and signaling, and application services within a single

¹⁰ BORSCHT is an acronym that represents the seven functions provided to an analog line from a line circuit of a digital central office switch, which are necessary for a switch to terminate analog telephone customers. These seven features include: (1) battery supply to subscriber line; (2) overvoltage protection; (3) ringing current supply; (4) supervision of subscriber terminal; (5) coder and decoder; (6) hybrid (2-wire/4-wire conversion); and (7) test.

platform. The result is a “Next Generation End Office” that provides interfaces and access to packet based services, including ATM and IP;

- bandwidth economies via converged transport and compression technologies.
- Advanced Intelligent Network (“AIN”), Open Application Programming Interfaces (“APIs”) for rapid deployment of services and multi-vendor interoperability, and Session Initiated Protocol (“SIP”) interoperability for IP application services.
- technicians can be fully trained on the switch in several days, as opposed to a full month as is typically required with legacy switches;
- new features and services can be uploaded and activated while the switch is still in service;
- repairs can be done while the switch is in service, minimizing downtime;
- provides for remote maintenance and diagnostics that enables companies to minimize services calls and truck rolls;
- significant cost savings can be realized with the enhanced features already available on the OCX; and
- permits carriers to deploy the OCX in more locations, including small end offices, ILEC collocation sites/wire centers, CLEC points of presence, campus switching hubs, large commercial buildings, and controlled environmental enclosures.