January 30, 2004

Type of change:
This network disclosure is primarily associated with Verizon Optical Networking (VON) services, which were formerly called IntelliLight® Flexible Optical Networking (IFON) services. A previous disclosure under the IFON service name included private line (point-to-point) Ethernet, Fast Ethernet, and Gigabit Ethernet (partial-rate and full-rate) channels transported over Verizon’s SONET infrastructure. This disclosure updates a previous VON disclosure posted on July 30, 2003.

Ethernet, Fast Ethernet, and Gigabit Ethernet data from customer equipment would be mapped into SONET payloads or virtual tributaries using various mappings listed below. Similarly, Fibre Channel and FICON data from customer equipment would be mapped into SONET payloads as listed below. Conversely, Ethernet, Fast Ethernet, Gigabit Ethernet, FICON, and Fibre Channel data would be extracted from SONET payloads and virtual tributaries and sent to customer equipment. Multiple SONET payloads/tributaries containing the data types listed above or other types of data may be multiplexed together into larger SONET payloads. SONET payloads/tributaries are in turn multiplexed onto and off of SONET transmission systems.

This disclosure includes the SONET mappings listed in the table below.

<table>
<thead>
<tr>
<th>Data Type</th>
<th>Data Specification</th>
<th>SONET Payload /Tributary</th>
<th>Mapping Standard</th>
<th>Data Rate (Approx.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethernet</td>
<td>ANSI/IEEE 802.3</td>
<td>VT-1.5</td>
<td>ITU-T G.7041 or IETF RFC 2615</td>
<td>1.5 Mb/s</td>
</tr>
<tr>
<td>Ethernet</td>
<td>ANSI/IEEE 802.3</td>
<td>VT-1.5-2v</td>
<td>ITU-T G.707, ITU-T G.7041</td>
<td>3 Mb/s</td>
</tr>
<tr>
<td>Ethernet</td>
<td>ANSI/IEEE 802.3</td>
<td>VT-1.5-4v</td>
<td>ITU-T G.707, ITU-T G.7041</td>
<td>6 Mb/s</td>
</tr>
<tr>
<td>Ethernet</td>
<td>ANSI/IEEE 802.3</td>
<td>VT-1.5-7v</td>
<td>ITU-T G.707, ITU-T G.7041</td>
<td>10 Mb/s</td>
</tr>
<tr>
<td>Ethernet</td>
<td>ANSI/IEEE 802.3</td>
<td>STS-1</td>
<td>ITU-T G.7041 or IETF RFC 2615</td>
<td>10 Mb/s</td>
</tr>
<tr>
<td>Ethernet</td>
<td>ANSI/IEEE 802.3</td>
<td>STS-1-1v</td>
<td>ITU-T G.707, ITU-T G.7041</td>
<td>10 Mb/s</td>
</tr>
<tr>
<td>Fast Ethernet</td>
<td>ANSI/IEEE 802.3u</td>
<td>VT-1.5-2v</td>
<td>ITU-T G.707, ITU-T G.7041</td>
<td>3 Mb/s</td>
</tr>
<tr>
<td>Fast Ethernet</td>
<td>ANSI/IEEE 802.3u</td>
<td>VT-1.5-4v</td>
<td>ITU-T G.707, ITU-T G.7041</td>
<td>6 Mb/s</td>
</tr>
<tr>
<td>Fast Ethernet</td>
<td>ANSI/IEEE 802.3u</td>
<td>VT-1.5-7v</td>
<td>ITU-T G.707, ITU-T G.7041</td>
<td>10 Mb/s</td>
</tr>
<tr>
<td>Fast Ethernet</td>
<td>ANSI/IEEE 802.3u</td>
<td>VT-1.5-16v</td>
<td>ITU-T G.707, ITU-T G.7041</td>
<td>25 Mb/s</td>
</tr>
<tr>
<td>Fast Ethernet</td>
<td>ANSI/IEEE 802.3u</td>
<td>VT-1.5-32v</td>
<td>ITU-T G.707, ITU-T G.7041</td>
<td>50 Mb/s</td>
</tr>
<tr>
<td>Fast Ethernet</td>
<td>ANSI/IEEE 802.3u</td>
<td>STS-1</td>
<td>ITU-T G.7041 or IETF RFC 2615</td>
<td>50 Mb/s</td>
</tr>
<tr>
<td>Fast Ethernet</td>
<td>ANSI/IEEE 802.3u</td>
<td>STS-1-1v</td>
<td>ITU-T G.707, ITU-T G.7041</td>
<td>50 Mb/s</td>
</tr>
<tr>
<td>Fast Ethernet</td>
<td>ANSI/IEEE 802.3u</td>
<td>STS-1-2v</td>
<td>ITU-T G.707, ITU-T G.7041</td>
<td>100 Mb/s</td>
</tr>
<tr>
<td>Fast Ethernet</td>
<td>ANSI/IEEE 802.3u</td>
<td>STS-3c</td>
<td>ITU-T G.7041 or IETF RFC 2615</td>
<td>100 Mb/s</td>
</tr>
<tr>
<td>Gigabit Ethernet</td>
<td>ANSI/IEEE 802.3z</td>
<td>STS-1</td>
<td>ITU-T G.7041 or IETF RFC 2615</td>
<td>50 Mb/s</td>
</tr>
<tr>
<td>Gigabit Ethernet</td>
<td>ANSI/IEEE 802.3z</td>
<td>STS-1-1v</td>
<td>ITU-T G.707, ITU-T G.7041</td>
<td>50 Mb/s</td>
</tr>
<tr>
<td>Gigabit Ethernet</td>
<td>ANSI/IEEE 802.3z</td>
<td>STS-1-2v</td>
<td>ITU-T G.707, ITU-T G.7041</td>
<td>100 Mb/s</td>
</tr>
<tr>
<td>Gigabit Ethernet</td>
<td>ANSI/IEEE 802.3z</td>
<td>STS-3c</td>
<td>ITU-T G.7041 or IETF RFC 2615</td>
<td>150 Mb/s</td>
</tr>
</tbody>
</table>
This disclosure also includes the following native mode interfaces that will be supported by Verizon:

**Fiber CONnection (FiCON)** provides full duplex, serial bit transmission at a link rate of 1.0625 Gb/s and 2.125 Gb/s among mainframes, storage devices, and peripherals. Multiple concurrent input/output (I/O) interfaces can occur on a single FICON channel. FICON is defined by IBM specifications SG24-6266-01 and SG24-5169-00.

**Fibre Channel** provides full duplex, serial bit transmission at a link rate of 133 Mb/s, 266 Mb/s, 531 Mb/s, 1.0625 Gb/s, and 2.125 Gb/s among mainframes, storage devices, and peripherals on a single channel. Fibre Channel is defined by ANSI STD X.3.303.

**Intersystem Channel – 1 (ISC-1)** provides serial bit transmission (531 Mb/s and 1.0625 Gbps line rate) point-to-point transmission between servers in a Parallel Sysplex environment (SG24-5637-00 and SG24-5638-00). ISC-1 is defined by IBM specification SA23-0395.

**Intersystem Channel – 2 (ISC-2)** provides serial bit transmission (531 Mb/s and 1.0625 Gb/s line rate) point-to-point transmission between servers in a Parallel Sysplex environment. ISC-2 is defined by IBM specification SA23-0395.

**Intersystem Channel – 3 (ISC-3)** provides serial bit transmission (1.0625 Gb/s and 2.125 Gb/s line rate) point-to-point transmission between servers in a Parallel Sysplex environment. ISC-3 is defined by IBM specification SA23-0395.

**External Timing Reference/Control Link Oscillator (ETR/CLO)** – The External Time Reference (ETR) facilitates the synchronization of time-of-day (TOD) clocks to ensure consistent time stamp data in an installation with multiple coupled systems. The Control Link Oscillator (CLO) allows two ETRs in an expanded availability configuration to maintain synchronization. ETR/CLO has line rates of 8 Mb/s and 16 Mb/s line rate. ETR and CLO are defined by IBM specification SG24-2070-00.

**10 Gigabit Ethernet** – 10 Gigabit Ethernet uses the Ethernet MAC protocol and frame formats that are similar to Ethernet, Fast Ethernet, and Gigabit Ethernet formats. 10 Gigabit Ethernet is specified by ANSI/IEEE Std 802.3ae, which defines two physical (PHY) layer interface classifications, WAN PHY (which includes 10G-Base-SW, 10G-Base-LW, and 10G-Base-EW) and LAN PHY (which includes 10G-Base-SR, 10G-Base-LR, and 10G-Base-ER).
These services will conform to the following technical references (or subsequent versions):

**Telcordia Technologies:**

**American National Standards Institute (ANSI):**

**Institute of Electrical and Electronic Engineers (IEEE):**
IEEE 802.3-2002 Information Technology - Telecommunication & Information Exchange Between Systems - LAN/MAN - Specific Requirements - Part 3: Carrier Sense Multiple Access with Collision Detection (CSMA/CD) Access Method and Physical Layer Specifications 2002. This standard includes specifications for Ethernet (802.3), Fast Ethernet (802.3u), Gigabit Ethernet (802.3z).

**International Telecommunications Union (ITU):**

**Internet Engineering Task Force (IETF):**

**International Business Machines (IBM) Publications:**

To obtain documents contact:

Telcordia Customer Service
8 Corporate Place, Room 3A184
Piscataway, NJ 08854-4156
1-800-521-CORE (USA and Canada)
908-699-5800 (all others)
http://www.Telcordia.com

American National Standard Institute (ANSI)
Customer Service
11 West 42nd Street
New York, NY 10036
212-642-4900
http://www.ANSI.org
Dates changes are to occur:
Verizon began offering a limited set of Ethernet over SONET services in July 2003. Verizon plans to offer the additional services described in this disclosure beginning in May of 2004. To confirm the scheduled deployment dates, contact the Offer Manager listed below.

Location changes are to occur:
VON services described in this disclosure will be available throughout the Verizon region where suitable facilities and capacities are available.

Impact of changes:
Customers interested in ordering VON services will need to utilize customer provided equipment (CPE) that meets the interface requirements listed above or listed in previous disclosures. Currently, a number of standards apply to EoS mappings. To interoperate, network elements on both ends of the network must implement the same mappings.

Verizon Contact:
For more specific information regarding geographic availability, pricing, or technical information, contact:

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VON Offer Manager
700 Hidden Ridge
Irving, TX 75038
972-719-7422