DOIT MASTER AGREEMENT NUMBER:	B-03-006	DOIT APPROVAL DATE:	3/15/2006

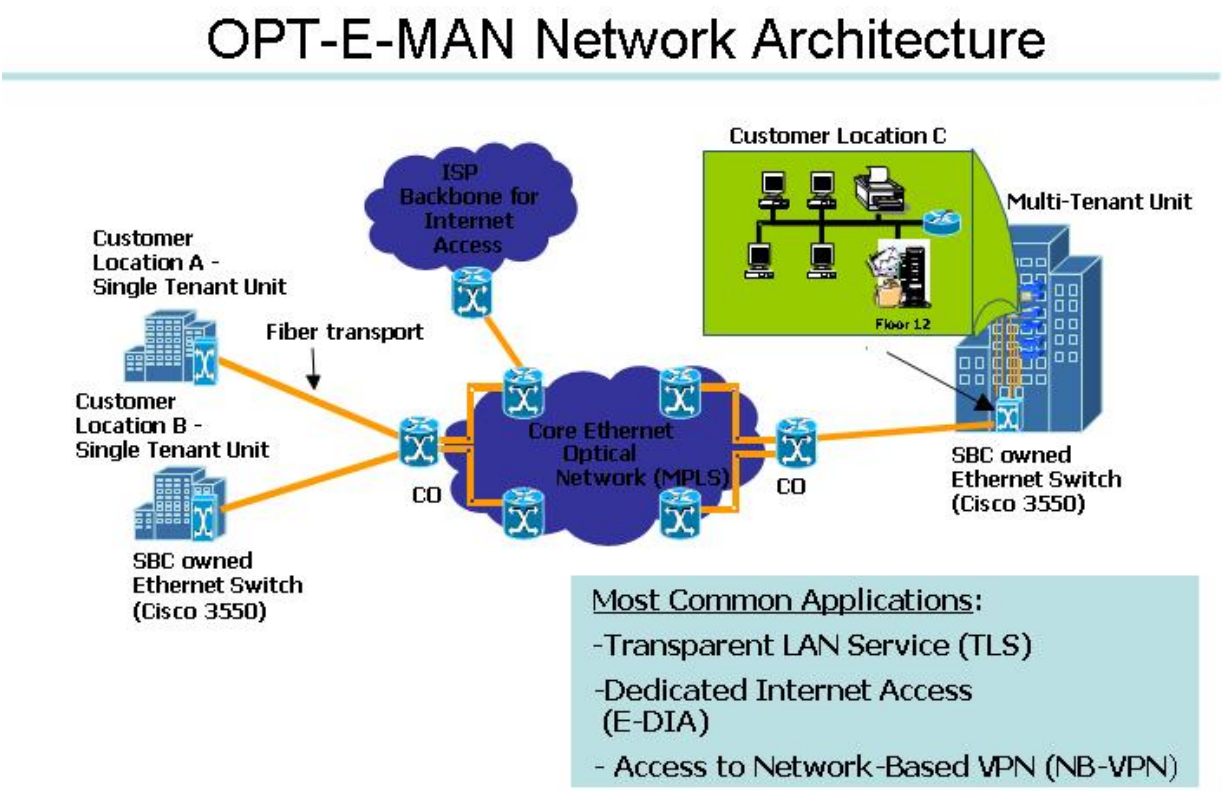
VENDOR NAME: SBC SNET	FEIN: 06-054-26-46

SERVICE/PRODUCT NAME: SWITCHED ETHERNET SERVICE: OPT-E-MAN℠

SERVICE/PRODUCT DESCRIPTION:

OPT-E-MAN is a switched Ethernet service that connects LANs within the same metropolitan area that provides a fully managed service that uses optical transport and Cisco equipment. This service provides flexible bandwidth options, from 5 Mbps to 1 Gbps, to support Ethernet applications.

OPT-E-MAN supports point to point, point-to-multipoint and multipoint-to-multipoint configurations using Ethernet Virtual Connections (EVCs) to transmit Ethernet LAN packets. The fiber transport connects to network terminating equipment (Cisco 3550 Ethernet Switch) at the customer location. Data is transported through the SBC MPLS network powered by central office based Cisco 7609s.



Components

OPT-E-MAN Service includes the connection from the customer's premise to the Ethernet network, a port on the Ethernet network, a Committed Information Rate (CIR), and Ethernet Virtual Connections (EVCs). Ethernet Virtual Connections (EVCs) are connections that establish a logical path for customer traffic between two customer locations.

A portion of the CIR is assigned to each EVC to establish bandwidth per path. CIR is inclusive of allowances for overhead within the Ethernet network. If a customer orders 1 Gbps of CIR on a single port, SBC reserves the right to use up to 10% of the bandwidth for traffic management.

Customers may connect to OPT–E–MAN Service via one of the following standard connections:

- 10/100 Base T (100Mbps)
- Gigabit Ethernet (1000 Base SX, 1000 Base LX/LH and 1000 Base ZX)

For customers who are located outside normal transmission parameters, or are served by a Serving
Wire Center that is not equipped for OPT-E-MAN Service, service can be provided using a repeater. An
engineering study will be completed to ensure transmission parameters can be met using a repeater.

Interface Options

Interface	Handoff	Bandwidth Limit	Distance Limit
10/100 Mbps Base T	Copper	100 Mbps	100 M
1000 Base SX	Fiber (multi mode)	1 Gbps	550 M
1000 Base LX/LH	Fiber (single mode)	1 Gbps	550 M-10Km
1000 Base ZX	Fiber (single mode)	1 Gbps	70 Km

Grade of Service

Bronze and Silver Grades of Service are available. Bronze is used for general data applications and Silver is used for applications requiring minimal loss and low jitter such as Voice over IP.

Bronze

- Packet Delivery Rate-99.5%
- Latency-35 ms one way

Silver

- Packet Delivery Rate-99.9%
- Latency-25 ms one way
- Jitter-15 ms

If a customer purchases the Silver Grade of Service for CIR, the initial EVC will be prioritized as Silver. Additional EVCs can be prioritized as either Silver or Bronze. However, if a customer purchases the Bronze Grade of Service for CIR, additional EVCs cannot be prioritized as Silver, but only as Bronze.

OPT-E-MAN Monitoring and Security

The service will be monitored 24 x 7 x 365 by the Enhanced Network Operations Center (ENOC) to provide an added level of security and reliability to the product. The ENOC will be the first point of contact for the customer in cases of trouble. SBC Account Teams and customers can contact the ENOC via email at ENOC@sbc.com or 1-800-644-ENOC (3662) for information on their OPT-E-MAN service.

SBC uses provider VLAN tags and MPLS tags to help segregate customer traffic. SBC provides the same level of security for traffic as with Frame/ATM by establishing a Ethernet VPN through the MPLS based network.

In addition to the security provided in the core of the network, added security measurements are implemented on the 3550 which is located at the customer premise.

- The 3550 is locked in a secure Telco space providing physical security
- Password Recovery is disabled. Should anyone attempt to recover the password, the entire configuration will be cleared.
- Port security: There is a limit on the number of MAC addresses that can be learned per port. This protects from a “MAC address Denial of Service (DOS) attack”.
- Prune VLANs (including Reserved VLANs) allow only the required VLANs.
- VLAN 1 minimization closes a possible way for malicious users to launch attacks that may affect other users connected to the same 3550.

- Control packets (including CDP) are filtered preventing DoS attacks.
- Broadcast Storm Control protects against DoS attacks caused by a station sending too many broadcasts

Environmental Requirements

Space

The customer shall provide a safe, secure, dust-free environment. This location should be free of any major EFI/RFI fields. The OPT-E-MAN® equipment cannot be closer than 3' from any primary source of power.

The Cisco WS-3550-24-SMI or WS-3550-12G will be placed in an SBC or customer provided 19" or 23" bay or cabinet approved by SBC. OSHA requires a minimum of 36" to the front and rear of the bay/cabinet. The bay/cabinet has to be securely mounted and earthquake braced by bolting to the floor.

Power

The Cisco WS-3550-24-SMI or WS-3550-12G requires one dedicated fused/breaker, 15 amp, 110V AC outlet, properly grounded with 3 prongs. This receptacle must be located within 6' of the Cisco equipment.

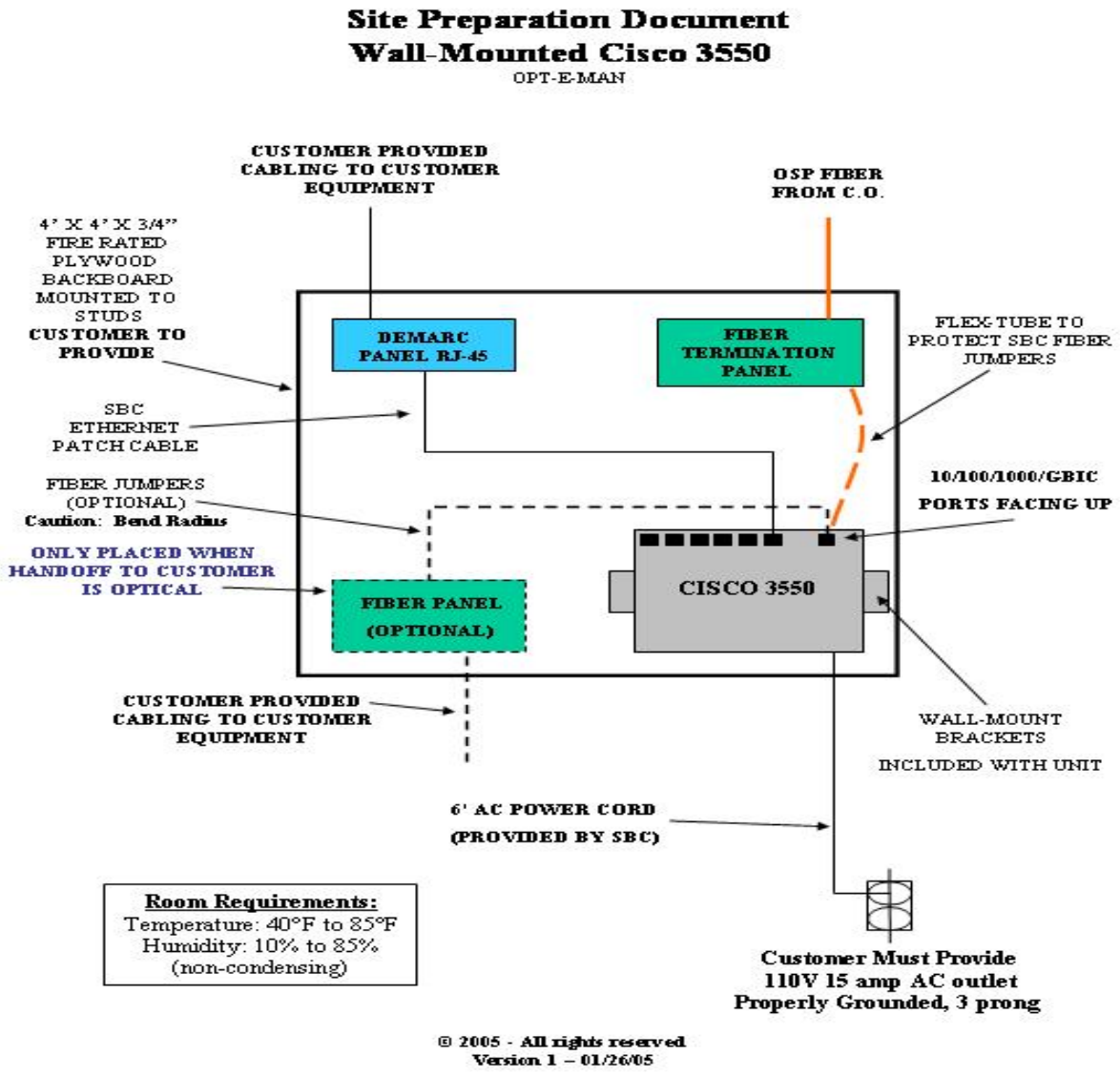
Grounding

Relay racks/cabinets must be grounded by placing an exposed #6 or larger grounding wire to the building's ground source. This ground wire will be attached to the closest ground rod (earth ground) or building bus bar available and run to the OPT-E-MAN® location in the room. In addition, the 110V, 15 amp AC outlet must be 3 prong and properly grounded.

Fiber Termination / Circuit Handoff

There are currently two (2) options available for Fiber Termination

1) Rack mounted in an SBC or customer provided 19" or 23" aluminum or steel relay rack.
2) Wall mounted on a customer provided 3/4"x 4'x 6' plywood backboard.



Special Construction

In order to bring the circuit to the customer location and meet the environmental requirements, the customer may incur additional charges. These charges are determined on an individual case basis following an Engineering Site Survey.

Conduit/Path (Property line to Minimum Point of Entry/MPOE)

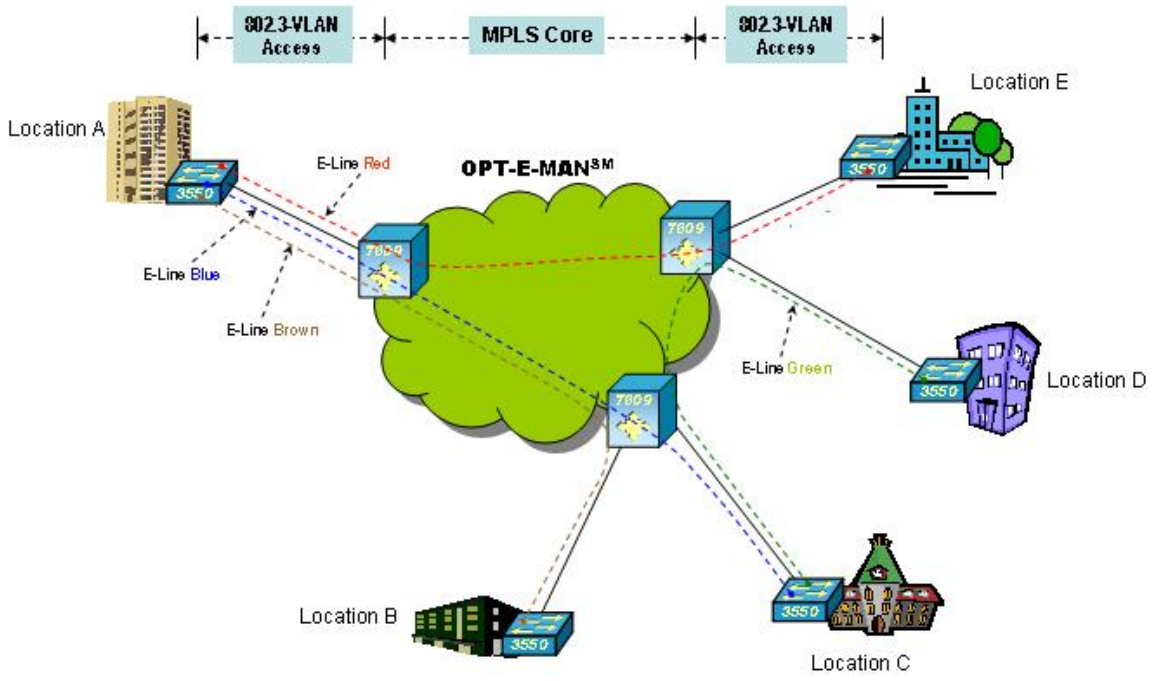
All conduits on the building's property are "subscriber conduit" and are the responsibility of the property owner to maintain and repair. SBC shall place inner duct/fiber liner within this section.

Conduit/Path (Fiber termination to OPT-E-Man location)

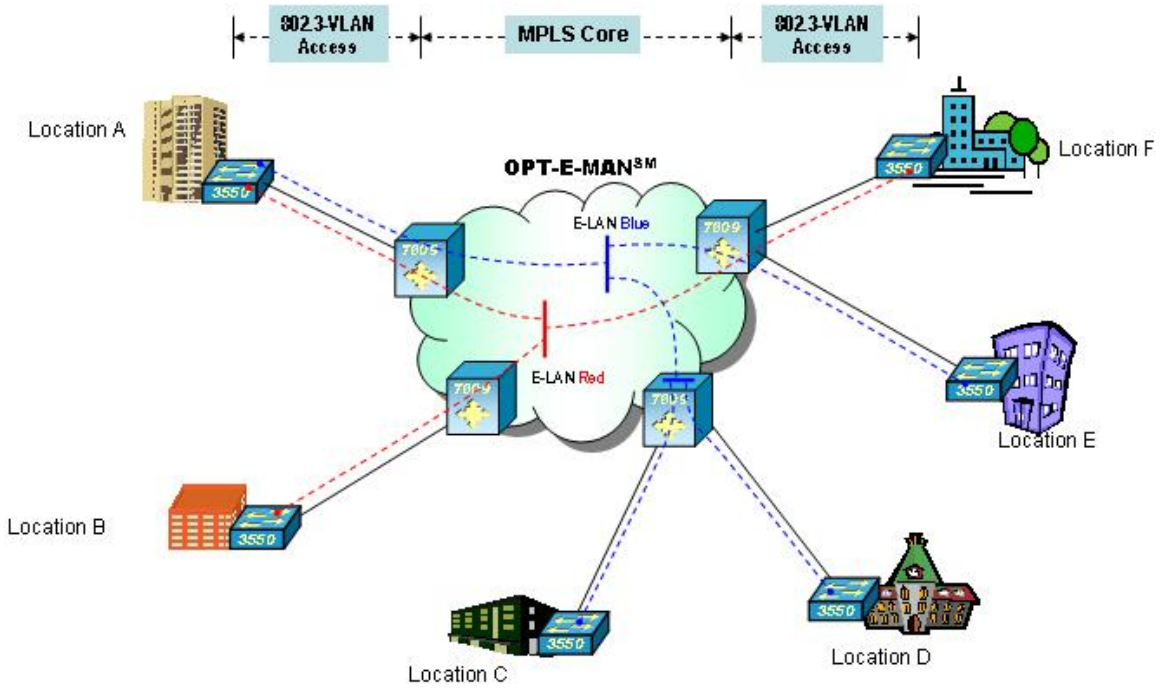
SBC requires the OPT-E-MAN® to be placed in the MPOE. If there is no space in the MPOE, or if the customer requests that the switch be placed in their suite, the customer will assume the responsibility of providing the path from the MPOE to that location. Additional charges may apply for a second demarcation point determined on an individual case basis.

The customer shall provide conduit (min. 2" EMT) and hard plastic corrugated inner duct with pull rope through which the fiber will be placed. The size of the conduit will be dependent on the future growth of the customer. Any more than 300' or 2 - 90 degree turns in the path will require a pull box (12"x12"X18" minimum).

Basic Point to Point – Logical View



Multi-point to Multi-point – Logical View



National Security Emergency Preparedness (NS/EP) Telecommunications Service Priority (TSP) System

In 1988, the Federal Communications Commission revised the Restoration Priority System with the National Security Emergency Preparedness (NSEP) TSP System. This system ensures priority treatment of restoration to telecommunication services following natural or technical disasters.

TSP assigned telecommunication services are provisioned and restored before non-TSP services. Any Federal, State and local government, private industry or foreign government with telecommunications services supporting a national security or emergency preparedness mission qualifies for TSP.

Provisioning

If SBC receives an Emergency (E) provisioning priority it must take immediate action to provide the service at the earliest possible date, including dispatching service personnel outside of normal business hours. The FCC order requires that service vendors provision Emergency (designated by an E) TSP services before any Essential (designated by a 1, 2, 3, 4, or 5) TSP service or non-TSP services. The order processing is escalated up through management as far as necessary to complete the order. Service vendors receiving service requests with an Essential provisioning priority must make their best effort to provide the TSP services by the service user's requested due date.

Restoration

When a trouble report is received, or SBC otherwise recognizes that the TSP circuit is out or unusable, it must allocate available resources to restore the service as quickly as possible. TSP services assigned restoration priorities of 1, 2, or 3 require dispatch outside normal business hours. Vendors must dispatch service personnel outside normal business hours to restore TSP service assigned a 4 or 5 priority only when the next business day is more than 24 hours away.

Sponsorship

The FCC designated the Executive Office of the President (EOP) as administrator of the TSP Program. The EOP delegated its responsibilities to the Manager of the National Communications System (NCS), which, in turn, assigned the administration and execution of the TSP Program to the Office of Priority Telecommunications (OPT) located at the NCS. The primary roles of a Federal sponsor are to:

- Review and determine whether to approve foreign, State, and local government and private industry requests for priority actions.
- Affirm that the requested priority level assignment is appropriate.

Sponsorship for TSP may be obtained from the National Communications System through the TSP Web Site at http:\\tsp.ncs.gov.

SERVICE LEVELS:

Service Level Agreements (SLAs)

Network Availability

- SLA of 99.95% per month
- Service outage credit is offered per location due to service disruption
- Network Availability of 99.95% per month, including the local loop, is provided by SBC. This equates to less than 21.6 minutes of downtime per month (based on a 30-day month), excluding maintenance windows. Network Availability is calculated as the percentage of time that the OPT-E-MAN network is capable of accepting and delivering customer data to the total time in the measurement period. The calculation for Network Availability for a given calendar month is as follows:

  Network Availability =

  [24 hours x days in month x 60 minutes x number of customer sites] – network outage time (measured in minutes)

[24 hours x days in month x 60 minutes x number of customer sites]

Grade of Service

- Bronze- Packet Delivery Rate-99.5% , Latency-35 ms one way
- Silver- Packet Delivery Rate-99.9%, Latency-25 ms one way, Jitter-15 ms
- Packet Delivery Rate (PDR), Latency and Jitter calculations are measured when the OPT-E-MAN network is available.

In case of an interruption to service, the customer shall be credited for an interruption of 10 seconds or more. The credit shall be at the rate of 10/8640 of the monthly charges for the service for each period of 5 minutes or major fraction thereof that the interruption continues. The credit allowance(s) for service interruptions shall not exceed 100% of the applicable monthly rates.

Installation Intervals

Standard

90 days or mutually agreed upon due date established on location by location basis based on fiber and equipment availability.

Expedite

If a customer desires that service be provided on a due date less than the standard installation interval, the customer may request that service be provided on an expedited basis. If SBC determines that
service can be provided on the requested expedited date and spare facilities are available, the Expedite Order Charge (per port, per location) will apply.

Cancellation

If a customer cancels service prior to installation being completed, a Service Order Cancellation Charge (per port, per location) will apply. The customer's intent to cancel service must be made in writing.

Routine Repair Intervals

Response time = Less than 1 hour
Repair Resolution time = 4 hours or less

Repair Service Level Definitions:

Repair Response is the time elapsed between when SNET receives a report of a problem or otherwise becomes aware of a problem, and the time that SNET responds to the end user or other designated contact to verify the problem.

Repair Resolution Time means the elapsed time between when the State notifies SNET of a problem, and the time that SNET restores service and such service is acceptable to the State.

SERVICE AVAILABILITY/LIMITATIONS:

See Service Availability spreadsheet

LIMITATIONS

1. OPT-E-MAN Service is provided at the option of SBC where equipment and facilities permit. If appropriate facilities are not available, Special Construction charges may apply. Charges are determined on an individual case basis.
2. If a customer connects to the OPT-E-MAN network using a bridge or switch for Layer 2 (Ethernet data linklayer) connectivity, only 50 Media Access Control (MAC) addresses can be used per Layer 2 device, per port. Any additional addresses will be assessed an additional charge, with a maximum limit of 100 MAC addresses total per port.
3. OPT-E-MAN does not allow for oversubscription. The sum total of the usage assigned to EVCs are mapped to a single port, and cannot exceed the ordered CIR.

4. For point-to-point or point-to-multipoint configurations, a total of 8 EVCs may be configured per 10/100 Base T connection, and a total of 64 EVCs may be configured per 1 Gbps connection.

For Multipoint to Multipoint, a total of 7 EVCs may be configured per 10/100 Base T connection, and a total of 63 EVCs may be configured per 1 Gbps connection.

MASTER AGREEMENT NUMBER:	B-03-006	DOIT APPROVAL DATE:	3/15/2006
VENDOR NAME:	**SBC SNET**	**VENDOR FEIN:**	**06-054-26-46**
SERVICE NAME:	**SWITCHED ETHERNET SERVICE: OPT-E-MAN**		

A 2% credit will be issued monthly against the items ordered from this Product Schedule per the SBC SNET Master Agreement

Activity (Add, Delete, Change)	Date of Vendor Request	Date Approved By DOIT	Item	Item Code	Description of Service/Equipment	Unit	Initial Conversion: Non-Recurring Unit Cost	Post-Conversion: Non-Recurring Unit Cost	Recurring Monthly Cost
Add	10/03/05	03/15/06	1	P9FEX	10/100 Base T connection	port/acc	$0.00	$0.00	$575.00
Add	10/03/05	03/15/06	2	P9FGX	Gigabit Ethernet connection	port/acc	$0.00	$0.00	$850.00
Add	10/03/05	03/15/06	3	R6EAB	5 mbps CIR (Bronze)	mbps	$0.00	$0.00	$450.00
Add	10/03/05	03/15/06	4	R6EAC	5 mbps CIR (Silver)	mbps	$0.00	$0.00	$650.00
Add	10/03/05	03/15/06	5	R6EBB	10 mbps CIR (Bronze)	mbps	$0.00	$0.00	$650.00
Add	10/03/05	03/15/06	6	R6EBC	10 mbps CIR (Silver)	mbps	$0.00	$0.00	$850.00
Add	10/03/05	03/15/06	7	R6EDB	20 mbps CIR (Bronze)	mbps	$0.00	$0.00	$900.00
Add	10/03/05	03/15/06	8	R6EDC	20 mbps CIR (Silver)	mbps	$0.00	$0.00	$1,100.00
Add	10/03/05	03/15/06	9	R6EHB	50 mbps CIR (Bronze)	mbps	$0.00	$0.00	$1,025.00
Add	10/03/05	03/15/06	10	R6EHC	50 mbps CIR (Silver)	mbps	$0.00	$0.00	$1,225.00
Add	10/03/05	03/15/06	11	R6ELB	100 mbps CIR (Bronze)	mbps	$0.00	$0.00	$1,200.00
Add	10/03/05	03/15/06	12	R6ELC	100 mbps CIR (Silver)	mbps	$0.00	$0.00	$1,400.00
Add	10/03/05	03/15/06	13	R6EQB	250 mbps CIR (Bronze)	mbps	$0.00	$0.00	$1,575.00
Add	10/03/05	03/15/06	14	R6EQC	250 mbps CIR (Silver)	mbps	$0.00	$0.00	$1,975.00
Add	10/03/05	03/15/06	15	R6ETB	500 mpbs CIR (Bronze)	mbps	$0.00	$0.00	$1,900.00
Add	10/03/05	03/15/06	16	R6ETC	500 mbps CIR (Silver)	mbps	$0.00	$0.00	$2,300.00
Add	10/03/05	03/15/06	17	R6EZB	1000 mbps CIR (Bronze)	mbps	$0.00	$0.00	$2,575.00
Add	10/03/05	03/15/06	18	R6EZC	1000 mpbs CIR (Silver)	mbps	$0.00	$0.00	$2,975.00
Add	10/03/05	03/15/06	19	M2CAX	Additional MAC add 51-100	add	$0.00	$0.00	$5.00
Add	10/03/05	03/15/06	20	VU4	Repeater	loc	$0.00	$0.00	$300.00
Add	10/03/05	03/15/06	21	NHCEO	Service order change	order	$75.00	$75.00	$0.00
Add	10/03/05	03/15/06	22	OCGEO	Service order cancellation	order	$200.00	$200.00	$0.00
Add	10/03/05	03/15/06	23	EODEO	Expedite charge	port	$300.00	$300.00	$0.00