

Account Name: Village of Lombard

MSA ID#: IL-229669-mbenc

SO ID#: IL-229669-mbenc-14396071

CUSTOMER INFORMATION (for notices)

Primary Contact: Kevin Goethals
 Title: IT Manager
 Address 1: 255 East Wilson Avenue
 Address 2:

City: Lombard
 State: IL
 Zip: 60148
 Allowable Contract Date:

Phone: (630) 873-4740
 Cell:
 Fax:
 Email: goethalsk@villageoflombard.org
 Contract Generated Date: 07/16/2019

SUMMARY OF CHARGES (Details on following pages)

Service Term (Months): 36

SUMMARY OF SERVICE CHARGES*

Total Ethernet Monthly Recurring Charges: \$ 750.00
 Total Trunk Services Monthly Recurring Charges: \$ 0.00
 Total Off-Net Monthly Recurring Charges: \$ 0.00
 Total Monthly Recurring Charges (all Services): \$ 750.00

SUMMARY OF STANDARD INSTALLATION FEES

Total Ethernet Standard Installation Fees*: \$ 0.00
 Total Trunk Services Standard Installation Fees: \$ 0.00
 Total Off-Net Standard Installation Fees: \$ 0.00
 Total Standard Installation Fees (all Services): \$ 0.00

SUMMARY OF CUSTOM INSTALLATION FEES

Total Custom Installation Fee: \$ 0.00
 Amortized Custom Installation Fee: \$ 0.00

SUMMARY OF EQUIPMENT FEES

Total Monthly Recurring Ethernet Equipment Fees: \$ 0.00
 Total Monthly Recurring Trunk Services Equipment Fees: \$ 0.00
 Total Monthly Recurring Equipment Fees (all Services): \$ 0.00

*Note: Charges identified in the Service Order are exclusive of maintenance and repair charges, and applicable federal, state, and local taxes, USF fees, surcharges and recoupments (however designated). Please refer to your Comcast Enterprise Services Master Services Agreement (MSA) for specific detail regarding such charges. Customer shall pay Comcast one hundred percent (100%) of the non-amortized Custom Installation Fee prior to the installation of Service.

GENERAL COMMENTS

AGREEMENT

This Comcast Enterprise Services Sales Order Form ("Sales Order") shall be effective upon acceptance by Comcast. This Sales Order is made a part of the Comcast Enterprise Services Master Services Agreement, entered between Comcast and the undersigned and is subject to the Product Specific Attachment for the Service(s) ordered herein, located at <https://business.comcast.com/terms-conditions-ent>, (the "Agreement"). Unless otherwise indicated herein, capitalized words shall have the same meaning as in the Agreement.

E911 NOTICE


Comcast Business Class Trunking Service may have the E911 limitations specified below.

- The National Emergency Number Association (NENA), a 911 industry organization that makes recommendations for standardized services relating to E911, has issued guidelines that state "The PBX owner is responsible for creating customer records, preferably in NENA standard format, that identify caller locations." To facilitate Customer's compliance with these guidelines and with associated state and local requirements related to provision of Automatic Location Information (ALI) for E911 services, Comcast offers two options:
 - Comcast will send to the ALI database or Subscriber Location Database (SLDB) the main billing telephone number and the main address provided by Customer; or
 - Customer may choose to sign up for up to 10 Emergency Location Information Numbers (ELINs) that Customer could assign to zones within Customer's premises that would be separately identified to the E911 call taker. The location information, such as a specific floor, side of a building, or other identifying information, could assist emergency responders to more quickly reach the appropriate location. Customer is solely responsible for programming its PBX system to map each station to one of these numbers, and for updating the system as necessary to reflect moves or additions of stations within the premises. Comcast will send the assigned ELINs to the ALI or SLDB database, as is appropriate.
- Many jurisdictions require businesses using multi-line telephone systems to program their systems to transmit specific location information for 911 calls. Customer bears sole responsibility to ensure that it identifies and complies with all such requirements. In any event, if Customer does not maintain E911 records in a timely and accurate manner, the E911 call taker may not receive proper location information, and emergency responders may be delayed or even prevented from timely reaching the caller's location.
- Battery Back Up - The Integrated Access Device (IAD) provided by Comcast is not equipped with battery backup. It is Customer's responsibility to ensure adequate back-up power is provided to ensure service continuity during a power outage, as employees would otherwise be unable to use the Services, including dialing 9-1-1, when power is unavailable.
- Calls using the Service, including calls to 911, may not be completed if there is a problem with network facilities, including network congestion, network/equipment/power failure, or another technical problem.
- All questions should be directed to 1-800-391-3000. E911 Service, Private Branch Exchange, and Direct Inward Dial Service.

By signing below, Customer acknowledges, agrees to and accepts the terms and conditions of this Sales Order.

CUSTOMER USE ONLY (by authorized representative)

COMCAST USE ONLY (by authorized representative)

Signature: 	Signature:	Sales Rep: Brian Carty
Name: Keith Giagnorio	Name:	Sales Rep E-Mail: brian_carty@cable.comcast.com
Title: Village President	Title:	Region: Chicago
Date: August 15, 2019	Date:	Division: Central

COMCAST ENTERPRISE SERVICES SALES ORDER FORM

ETHERNET SERVICES AND PRICING

Account Name:

Date:

MSA ID#:

SO ID#:

Short Description of Service:

Service Term (Months):

Solution Charges

Line	Request	Action	Service(s)	Description	Service Location A*	Service Location Z†	Comcast Metro	Performance Tier**	Tax Jurisdiction	Monthly	One-Time
1	New	Add	EDI-ENI-10100	Port	235 E WILSON AVE-Village of Lombard					\$ 0.00	\$ 0.00
2	New	Add	EDI-100	100 Mbps	235 E WILSON AVE-Village of Lombard				Interstate	\$ 720.00	\$ 0.00
3	New	Add	IPv4 Static Address Block /28 (14)	Static IP Block	235 E WILSON AVE-Village of Lombard					\$ 30.00	\$ 0.00
4	New	Add	EQP FEE	Equipment Fee	235 E WILSON AVE-Village of Lombard					\$ 0.00	\$ 0.00
* Services Location Details attached **Performance Tier Matrix Attached (For On-Net to On-Net or On-Net to Off-Net)						Total				Service Charges: \$ 750.00 Equipment Fees: \$ 0.00	\$ 0.00

COMCAST BUSINESS

COMCAST ENTERPRISE SERVICES SALES ORDER FORM

SERVICE LOCATION DETAIL INFORMATION

Account Name: Village of Lombard

MSA ID#: IL-229669-mbenc

SO ID#: IL-229669-mbenc-14396071

Date: July 16, 2019

Line	Location Name / Site ID	Address 1	Address 2	City	State	Zip Code	DeMarc Location	Extend to DeMarc (Yes/No)	Inside Wiring (Yes/NO)	Technical / Local Contact Name	Technical / Local Contact Phone #	Technical / Local Contact Email Address	Technical Contact On Site (Yes/No)	Satellite Location (Y/N)
1	235 E WILSON AVE-Village of Lombard	235 E WILSON AVE		LOMBARD	IL	60148				Kevin Goethals	(630) 873-4740	goethalsk@villageoflombard.org	Yes	No

Comcast Enterprise Services Sales Order Form
Ethernet Transport Services
Performance Tier (PT) Matrix

Metro	AUG	PA	CAR	CNM	CGA	CO	DAL	ETH	FPA	ATL	BOS	CHI	PHI	HOU	INDP	IND	JAC	MI	MAT	ETH	MIN	NAL	NCA	OR	SFL	SCA	STM	SWF	SWT	UT	WA	WNE	
Aegleia GA (AUG)	PT1	PT3	PT3	PT4	PT2	PT3	PT3	PT3	PT3	PT2	PT3	PT3	PT3	PT3	PT3	PT2	PT3	PT3	PT3	PT2	PT3	PT2	PT3	PT4	PT4	PT2	PT3	PT2	PT2	PT3	PT4	PT3	
Central & Western PA (PA)	PT3	PT1	PT3	PT3	PT3	PT3	PT3	PT3	PT3	PT2	PT2	PT2	PT2	PT3	PT3	PT2	PT3	PT2	PT2	PT2	PT3	PT3	PT4	PT4	PT3	PT4	PT2	PT3	PT3	PT3	PT4	PT2	
Central Arkansas (CAR)	PT3	PT3	PT1	PT3	PT2	PT2	PT2	PT3	PT3	PT2	PT3	PT3	PT3	PT2	PT3	PT3	PT3	PT3	PT3	PT3	PT2	PT3	PT3	PT3	PT3	PT2	PT3	PT2	PT3	PT3	PT3		
Central New Mexico (CNM)	PT4	PT3	PT3	PT1	PT3	PT2	PT2	PT4	PT3	PT3	PT4	PT3	PT3	PT3	PT3	PT3	PT3	PT3	PT3	PT3	PT3	PT3	PT3	PT3	PT3	PT3	PT3	PT3	PT3	PT3	PT4		
Coastal Georgia (CGA)	PT2	PT3	PT2	PT3	PT1	PT3	PT3	PT3	PT2	PT2	PT3	PT3	PT3	PT3	PT3	PT3	PT1	PT3	PT3	PT3	PT3	PT3	PT2	PT4	PT4	PT2	PT4	PT2	PT2	PT2	PT3	PT4	PT3
Colorado (CO)	PT3	PT3	PT2	PT2	PT3	PT1	PT2	PT4	PT3	PT3	PT3	PT2	PT3	PT2	PT2	PT2	PT3	PT3	PT3	PT2	PT3	PT3	PT2	PT3	PT3	PT2	PT3	PT3	PT3	PT3	PT2	PT3	PT3
Dallas (DAL)	PT3	PT3	PT2	PT2	PT3	PT2	PT1	PT3	PT2	PT2	PT3	PT3	PT3	PT2	PT2	PT3	PT3	PT3	PT3	PT3	PT2	PT3	PT2	PT3	PT3	PT3	PT2	PT3	PT3	PT3	PT3	PT3	PT3
Eastern Tennessee (ETH)	PT3	PT3	PT3	PT4	PT3	PT4	PT3	PT1	PT3	PT2	PT4	PT3	PT3	PT3	PT3	PT3	PT3	PT3	PT3	PT3	PT2	PT3	PT2	PT4	PT4	PT3	PT4	PT2	PT3	PT3	PT4	PT4	PT4
Florida Panhandle (FPA)	PT3	PT3	PT3	PT3	PT2	PT3	PT2	PT3	PT1	PT2	PT3	PT2	PT3	PT3	PT3	PT3	PT2	PT3	PT3	PT2	PT3	PT2	PT3	PT4	PT2	PT4	PT2	PT2	PT3	PT3	PT4	PT3	
Greater Atlanta (ATL)	PT2	PT2	PT2	PT3	PT2	PT3	PT2	PT2	PT2	PT1	PT3	PT2	PT2	PT2	PT3	PT2	PT2	PT2	PT2	PT2	PT2	PT2	PT3	PT2	PT3	PT3	PT2	PT3	PT2	PT2	PT3	PT3	PT3
Greater Boston (BOS)	PT3	PT2	PT3	PT4	PT3	PT3	PT3	PT4	PT3	PT3	PT1	PT2	PT2	PT3	PT3	PT2	PT3	PT2	PT2	PT2	PT3	PT3	PT4	PT4	PT3	PT4	PT3	PT3	PT3	PT4	PT4	PT1	
Greater Chicago (CHI)	PT3	PT2	PT3	PT3	PT3	PT2	PT3	PT3	PT2	PT2	PT2	PT1	PT2	PT2	PT2	PT2	PT2	PT2	PT2	PT2	PT2	PT2	PT3	PT3	PT3	PT3	PT3	PT2	PT3	PT3	PT3	PT3	PT2
Greater Phil. & New Jersey (PHL)	PT3	PT2	PT3	PT3	PT3	PT3	PT3	PT3	PT3	PT2	PT2	PT2	PT1	PT3	PT3	PT2	PT3	PT2	PT2	PT2	PT2	PT3	PT3	PT4	PT4	PT3	PT4	PT3	PT3	PT3	PT3	PT4	PT2
Houston (HOU)	PT3	PT3	PT2	PT3	PT3	PT2	PT2	PT3	PT2	PT3	PT2	PT3	PT1	PT3	PT2	PT2	PT3	PT3	PT3	PT3	PT2	PT3	PT3	PT3	PT3	PT3	PT3	PT3	PT3	PT2	PT3	PT3	PT3
Independence (INDP)	PT3	PT3	PT3	PT3	PT3	PT2	PT2	PT3	PT3	PT3	PT3	PT2	PT3	PT3	PT1	PT2	PT3	PT2	PT3	PT2	PT3	PT2	PT2	PT3	PT3	PT3	PT3	PT3	PT3	PT3	PT3	PT3	PT3
Indiana (IND)	PT3	PT2	PT3	PT3	PT3	PT2	PT3	PT3	PT3	PT2	PT2	PT2	PT2	PT2	PT2	PT2	PT1	PT2	PT2	PT2	PT2	PT2	PT3	PT3	PT3	PT3	PT3	PT3	PT3	PT3	PT3	PT3	PT2
Jacksonville (JAC)	PT2	PT3	PT3	PT3	PT1	PT3	PT3	PT3	PT2	PT2	PT3	PT2	PT3	PT2	PT3	PT2	PT1	PT3	PT3	PT2	PT3	PT2	PT4	PT4	PT2	PT4	PT3	PT2	PT3	PT3	PT4	PT3	
Michigan (MI)	PT3	PT2	PT3	PT3	PT3	PT2	PT3	PT3	PT3	PT2	PT2	PT2	PT2	PT3	PT2	PT2	PT3	PT1	PT2	PT2	PT2	PT3	PT3	PT3	PT3	PT3	PT3	PT3	PT3	PT3	PT3	PT3	PT2
Mid-Atlantic (MAT)	PT3	PT2	PT3	PT3	PT3	PT3	PT3	PT3	PT3	PT2	PT2	PT2	PT2	PT3	PT3	PT2	PT3	PT2	PT1	PT2	PT3	PT3	PT4	PT4	PT3	PT4	PT3	PT3	PT3	PT4	PT2		
Middle Tennessee (MTN)	PT2	PT2	PT2	PT3	PT3	PT3	PT2	PT2	PT2	PT2	PT3	PT2	PT2	PT2	PT2	PT2	PT2	PT2	PT2	PT2	PT2	PT2	PT3	PT3	PT2	PT3	PT1	PT3	PT3	PT3	PT3	PT3	
Minnesota (MN)	PT3	PT3	PT3	PT3	PT3	PT2	PT3	PT3	PT3	PT3	PT3	PT2	PT3	PT3	PT2	PT2	PT3	PT2	PT3	PT2	PT3	PT3	PT3	PT3	PT3	PT3	PT3	PT3	PT3	PT3	PT3	PT3	PT3
Northern AL (NAL)	PT2	PT3	PT2	PT3	PT2	PT3	PT2	PT2	PT2	PT2	PT3	PT3	PT3	PT3	PT3	PT3	PT2	PT3	PT3	PT2	PT3	PT3	PT4	PT4	PT3	PT4	PT2	PT2	PT2	PT3	PT4	PT3	
Northern CA (NCA)	PT4	PT4	PT3	PT3	PT4	PT2	PT3	PT4	PT3	PT3	PT4	PT3	PT4	PT3	PT3	PT4	PT3	PT4	PT3	PT4	PT3	PT4	PT3	PT4	PT1	PT2	PT4	PT2	PT4	PT3	PT2	PT4	
Oregon & S/W Washington (OR)	PT4	PT4	PT3	PT3	PT4	PT3	PT3	PT4	PT4	PT3	PT4	PT3	PT4	PT3	PT3	PT3	PT4	PT3	PT4	PT3	PT4	PT3	PT4	PT2	PT1	PT4	PT2	PT4	PT4	PT3	PT2	PT4	
South Florida (SFL)	PT2	PT3	PT3	PT3	PT2	PT3	PT3	PT3	PT2	PT2	PT3	PT3	PT3	PT2	PT3	PT3	PT2	PT3	PT3	PT2	PT3	PT3	PT4	PT4	PT1	PT4	PT3	PT2	PT3	PT3	PT3	PT3	
Southern California (SCA)	PT3	PT4	PT3	PT3	PT4	PT2	PT3	PT4	PT4	PT3	PT4	PT3	PT4	PT3	PT3	PT3	PT4	PT3	PT4	PT3	PT4	PT3	PT4	PT2	PT2	PT4	PT1	PT4	PT4	PT3	PT2	PT4	
Southern TN & North GA (STM)	PT2	PT2	PT2	PT3	PT2	PT3	PT2	PT2	PT2	PT2	PT3	PT2	PT3	PT3	PT3	PT3	PT3	PT3	PT3	PT1	PT3	PT2	PT4	PT4	PT3	PT4	PT1	PT3	PT2	PT3	PT4	PT3	
Southwest Florida (SWF)	PT2	PT3	PT3	PT3	PT2	PT3	PT3	PT3	PT2	PT2	PT3	PT3	PT3	PT3	PT3	PT3	PT2	PT3	PT3	PT3	PT3	PT3	PT2	PT4	PT4	PT2	PT4	PT3	PT3	PT3	PT4	PT3	
SW TN & Northern MS (SWT)	PT3	PT3	PT2	PT3	PT2	PT3	PT2	PT3	PT3	PT2	PT3	PT3	PT3	PT2	PT3	PT3	PT3	PT3	PT3	PT3	PT3	PT3	PT2	PT3	PT3	PT3	PT3	PT2	PT3	PT1	PT3	PT3	PT3
Utah (UT)	PT4	PT3	PT3	PT3	PT3	PT2	PT3	PT4	PT3	PT3	PT4	PT3	PT3	PT3	PT3	PT3	PT3	PT3	PT3	PT3	PT3	PT3	PT3	PT3	PT3	PT3	PT2	PT2	PT3	PT2	PT3	PT4	
Washington (WA)	PT3	PT4	PT3	PT3	PT4	PT3	PT3	PT4	PT4	PT3	PT4	PT3	PT4	PT3	PT3	PT3	PT4	PT3	PT4	PT3	PT3	PT4	PT2	PT2	PT4	PT2	PT4	PT4	PT3	PT2	PT1	PT4	
Western New England (WNE)	PT3	PT2	PT3	PT4	PT3	PT3	PT3	PT4	PT3	PT3	PT1	PT2	PT2	PT3	PT2	PT3	PT2	PT2	PT2	PT3	PT3	PT3	PT4	PT4	PT3	PT4	PT3	PT3	PT4	PT4	PT1		

COMCAST ENTERPRISE SERVICES MASTER SERVICES AGREEMENT (MSA)

MSA ID#: IL-229669-mbenc	MSA Term: 36 months	Customer Name: Village of Lombard
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CUSTOMER INFORMATION

Primary Contact: Kevin Goethals	<u>Primary Contact Address Information</u>
Title: IT Manager	Address 1: 255 East Wilson Avenue
Phone: (630) 873-4740	Address 2:
Cell:	City: Lombard
Fax:	State: IL
Email: goethalsk@villageoflombard.org	Zip Code: 60148

This Master Service Agreement ("Agreement") sets forth the terms and conditions under which Comcast Cable Communications Management, LLC and its operating affiliates ("Comcast") will provide communications and other services ("Services") to the above Customer. The Agreement consists of this fully executed Master Service Agreement Cover Page ("Cover Page"), the Enterprise Services General Terms and Conditions ("General Terms and Conditions"), any written amendments to the Agreement executed by both parties ("Amendments"), the Product-Specific Attachment for the applicable Services ("PSA(s)") and each Sales Order accepted hereunder ("Sales Orders"). In the event of any inconsistency among these documents, precedence will be as follows: (1) this Cover Page, (2) General Terms and Conditions, (3) PSA(s) and (4) Sales Orders. This Agreement shall be legally binding when signed by both parties and shall continue in effect until the expiration date of any Service Term specified in a Sales Order referencing the Agreement, unless terminated earlier in accordance with the Agreement.

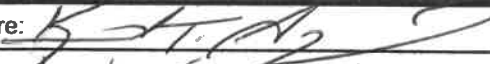
The Customer referenced above may submit Sales Orders to Comcast during the Term of this Agreement ("MSA Term"). After the expiration of the initial MSA Term, Comcast may continue to accept Sales Orders from Customer under the Agreement, or require the parties to execute a new MSA.

The Agreement shall terminate in accordance with the General Terms and Conditions. The General Terms and Conditions and PSAs are located at <https://business.comcast.com/terms-conditions-ent> (or any successor URL). Use of the Services is also subject to the High-Speed Internet for Business Acceptable Use Policy ("AUP") located at <http://business.comcast.com/customer-notifications/acceptable-use-policy> (or any successor URL), and the High-Speed Internet for Business Privacy Policy ("Privacy Policy") located at <http://business.comcast.com/customer-notifications/customer-privacy-statement> (or any successor URL). Comcast may update the General Terms and Conditions, PSAs, AUP and Privacy Policy from time to time upon posting to the Comcast website.

Services are only available to commercial customers in wired and serviceable areas in participating Comcast systems (and may not be transferred). Minimum Service Terms are required for most Services and early termination fees may apply. Service Terms are identified in each Sales Orders, and early termination fees are identified in the applicable Product Specific Attachments.

BY SIGNING BELOW, CUSTOMER AGREES TO THE TERMS AND CONDITIONS OF THIS AGREEMENT.

CUSTOMER SIGNATURE (by authorized representative)

Signature:	
Name:	Keith Giannorio
Title:	VILLAGE PRESIDENT
Date:	8-15-19

COMCAST USE ONLY (by authorized representative)

Signature:	Sales Rep: Brian Carty
Name:	Sales Rep Email: brian_carty@cable.comcast.com
Title:	Region: Chicago
Date:	Division: Central

ETHERNET DEDICATED INTERNET SERVICE TECHNICAL DESCRIPTION

Service Description

Comcast's Ethernet Dedicated Internet (EDI) Service provides a reliable, simpler, more flexible, and higher bandwidth options than T1 or SONET-based dedicated Internet access services. The service is offered with a 10Mbps, 100Mbps, 1Gbps or 10Gbps Ethernet User-to-Network Interface (UNI) in speed increments from 1Mbps to 10Gbps subject to available capacity. The service provides an Ethernet Virtual Connection (EVC) from the customer premises location to a Comcast Internet Point of Presence (POP) router.



Section 2. Monitoring, Technical Support and Maintenance

2.1 Network Monitoring. Comcast monitors all Comcast Services purchased by a customer on a 24x7x365 basis.

2.2 Technical Support. Comcast provides customers a toll-free trouble reporting telephone number to the customer Enterprise Technical Support (ETS) that operates on a 24x7x365 basis. Comcast provides technical support for service-related inquiries. Technical support will not offer consulting or advice on issues relating Customer Premise Equipment (CPE) not provided by Comcast.

2.3 Escalation. Reported troubles are escalated within the Comcast ETS to meet the standard restoration interval described in the Service Level Objectives. Troubles are escalated within the ETS as follows: Supervisor at the end of the standard interval plus one (1) hour; to the Manager at the end of the standard interval plus two (2) hours; and to the Director at the end of the standard interval plus four (4) hours.

2.4 Maintenance. Comcast's standard maintenance window is Sunday to Saturday from 12:00am to 6:00am local time. Scheduled maintenance is performed during the maintenance window and will be coordinated between Comcast and customer. Comcast provides a minimum of forty-eight (48) hour notice for non-service impacting scheduled maintenance. Comcast provides a minimum of seven (7) days notice for service impacting planned maintenance. Emergency maintenance is performed as needed.

Section 1. Technical Specifications

1.1 Ethernet User-to-Network Interface. The service provides bidirectional, full duplex transmission of Ethernet frames using a standard IEEE 802.3 Ethernet interface. Figure 1 lists the available UNI physical interfaces, their associated Committed Information Rate (CIR) bandwidth increments and the Committed Burst Sizes (CBS).

UNI Speed	UNI physical interface	CIR Increments	CBS (bytes)
10Mbps	10BaseT	1Mbps	25,000
100Mbps	100BaseT	10Mbps	250,000
1Gbps	1000BaseT or 1000BaseSX	100Mbps	2,500,000
10Gbps	10GBASE-SR or 10GBASE-LR	1000Mbps	25,000,000

Figure 1: Available UNI interface types and CBS values for different CIR Increments

1.2 Traffic Management. Comcast's network traffic-policing policies restrict traffic flows to the subscribed, Committed Information Rate (CIR). If the customer-transmitted bandwidth rate exceeds the subscription rate (CIR) and burst size (CBS), Comcast will discard the non-conformant packets. The customer's router must shape their traffic to their contracted CIR.

1.3 Maximum Frame Size. The service supports a maximum transmission unit (MTU) frame size of 1518 bytes including Layer 2 Ethernet header and FCS.

1.4 Layer 2 Control Protocol (L2CP) Processing. All L2CP frames are discarded at the UNI.

1.5 IP Address Allocation. IP address space is an essential requirement for all Internet access services. Comcast assigns eight (8) routable IPv4 addresses to each customer circuit. Customers can obtain additional IPv4 addresses if required. Customers may also request a /48 of IPv6 addresses if they would like to enable a native dual stack solution.

1.6 Domain Name Service. Comcast provides primary and secondary Domain Name Service (DNS). DNS is the basic network service that translates host and domain names into corresponding IP addresses, and vice-versa.

1.7 Border Gateway Protocol (BGP) Routing. Comcast supports BGP-4 routing as an optional service feature. BGP-4 allows customers to efficiently multi-home across multiple ISP networks. The service requires an Autonomous System Number (ASN) be assigned to a customer by the American Registry for Internet Numbers (ARIN). Customers should also be proficient in BGP routing protocol to provision and maintain the service on their router. Section 5 "Comcast BGP Policy" provides further details. Comcast supports private peering if the customer is multi-homed to Comcast's network only.

Section 3. Service Level Objectives

Comcast provides Service Level Objectives for the service, including network availability, mean time to respond, and mean time to restore. The service objectives are measured monthly from the Comcast point of demarcation.

3.1 Availability. Availability is a measurement of the percentage of total time that the service is operational when measured over a 30 day period. Service is considered "inoperative" when either of the following occurs: (i) there is a total loss of signal for the service, (ii) output signal presented to the customer by Comcast does not conform to the technical specifications in Section 1. Figure 2 lists the availability objectives for each access Ethernet access type.

On-Net Services (≤ 250 miles)	
Availability (On-Net Services delivered via Fiber)	> 99.99%
Availability (On-Net Services delivered via HFC Network)	> 99.9%
Off-Net Services	
Availability (Off-Net)	> 99.95%

Figure 2: Availability

3.2 Mean Time to Respond. Mean Time to Respond is the average time required for the ETS to begin troubleshooting a reported fault. The Mean Time to Respond objective is fifteen (15) minutes upon receipt of a fault notification or from the time a trouble ticket is opened with the ETS.

3.3 Mean Time to Restore. Mean Time to Restore is the average time required to restore service to an operational condition as defined by the technical specifications in Section 1 of this document. The Mean Time to Restore objective is four (4) hours for electronic equipment failure or six (6) hours for fiber optic facilities failure from the time a trouble ticket is opened with the ETS.

ETHERNET DEDICATED INTERNET SERVICE TECHNICAL DESCRIPTION

Section 4. Customer Responsibilities

Comcast provides CPE for provisioning its services and the delivery of the UNI. Comcast will retain ownership and management responsibility for this CPE. As a result, the CPE must only be used for delivering Comcast services. Customers are required to shape their egress traffic to the contracted CIR.

Customers have the following responsibilities related to the installation, support, and maintenance of the Service.

- 4.1 Provide an operating environment with temperatures not below fifty-five (55) or above eighty-five (85) degrees Fahrenheit. Humidity shall not exceed ninety (90) percent at eighty-five (85) degrees Fahrenheit.
- 4.2 Provide secure space sufficient for access to one (1) standard, freestanding, equipment cabinet at each of the customer facilities, no further than fifty feet from the customer router or switch interface.
- 4.3 Provide outside cable entry conduit(s), entry cable ground point, and internal building conduit to allow Comcast the ability to rod/rope a fiber optic cable to the point of demarcation.
- 4.4 Locate and mark all private underground utilities (Water, Electric, etc.) along path of new underground placement not covered by utility companies.
- 4.5 Provide a pull rope in any existing duct that Comcast is to use and ensure existing duct is serviceable for Comcast use.
- 4.6 Obtain 'right-of-way' entry easement for Comcast facilities and equipment from property owners at each customer location.
- 4.7 The customer is responsible for coring of the building's outside wall and internal walls. Upon request, Comcast can perform this activity on an 'as needed' basis for an additional one-time fee.
- 4.8 Provide UPS AC power equipment, circuit sizing to be determined, if applicable.
- 4.9 Emergency local generator backup service, if applicable.
- 4.10 Provide access to the buildings and point of demarcation at each customer location to allow Comcast and its approved Contractors to install fiber for service installation. Provide access to each location for regular (8am - 5pm) and emergency (24 hour) service and maintenance of Comcast's equipment and facilities.
- 4.11 Provide, install and maintain a device that is capable of routing network traffic between the Service and the customer's Local Area Network (LAN).
- 4.12 Customer must provide a point of contact (POC) for installation, service activation and any maintenance activities.

Section 5. Comcast BGP Policy

The following provides the routing requirements to interconnect with the Comcast network. Additional details of Comcast's BGP inbound/outbound network policy and traffic engineering is available upon request.

- 5.1 Customers must be multi-homed to run BGP, either:
 - a. multi-homed within Comcast's network
 - b. multi-homed with Comcast and another service provider

5.2 Customers must use an Autonomous System (AS) number assigned by a regional registrar American Registry for Internet Numbers (ARIN), Réseaux IP Européens (RIPE), or Asia Pacific Network Information Centre (APNIC) etc. that is registered to their organization.

- a. All customer route announcements must be registered with a regional registrar. A route object must exist for each route prefix in one of the well known global routing registries such as RADB.
- b. The customer ASN needs to be verifiable in WHOIS database.
- c. Comcast will only accept private peering when the customer is multi-homed to Comcast only.
- d. Comcast will support a 4-byte ASN starting 01/01/2010 in accordance with ARIN policy.
- e. Comcast will assign a private ASN in the range of 64512-65534 for private peering and not accept any customer provided private ASN.
- f. Comcast will strip off the private ASN when advertising to peers.

5.3 Customers must use a router that supports BGPv4.

- a. Comcast will not run BGP4 with customers connected on a link with less than 2Mbps bandwidth.
- b. Customers are responsible to ensure their peering routers have adequate CPE processing power and memory space if a full Internet table is requested.
- c. Comcast will employ all best-known practices to establish, maintain, and troubleshoot BGP4 sessions with all BGP4 compliant router vendors. However, Comcast makes no warranty that it can establish and maintain a BGP4 session with any CPE due to vendor interoperability.

5.4 Customers can specify one of the following received-prefixes options:

- a. Default-route only
- b. Comcast customer routes
- c. Comcast customer routes + default-route
- d. Full routes
- e. Full routes + default-route

5.5 Customer must be capable of configuring their BGP session with Comcast. This includes all setup of neighbor statements and all sanity checks on customer CPE.

5.6 Comcast requests the use of an MD5 authentication key for all EBGP sessions. The customer should specify the MD5 password.

5.7 Customers must prevent redistribution from their Interior Routing Protocol (IGP) into BGP. Customers should also apply restrictive filters on outbound announcements so that only the customer's intended outbound prefixes are announced to Comcast.

5.8 Comcast will assign a /30 IP address for the interfaces that connect to Comcast's network. This will be assigned from a Comcast address block publicly registered with ARIN and already advertised as part of a larger aggregate to the Internet.

5.9 Comcast will announce any portable or non-portable net block so long as this space is larger than /24, and the space is assigned to the customer via WHOIS or RWHOIS databases. If the net block does not belong to the customer and the net block is not already being announced from the customer's AS then Comcast will need to have an LOA (Letter of Agreement) from the true owner of the block stating that they are aware of, and are accepting of the fact that our customer wants to make the announcement through Comcast.

5.10 Comcast does not alter any of its BGP4 configurations, including route-maps, filter-policies, and communities, for any individual customer, but rather will dynamically alter BGP policy dependent on the customers' employment of predefined Comcast BGP communities. This ensures the Comcast network is built and maintained in a strategic, organized, and efficient fashion and reduces mean-time-to-repair for BGP related trouble.