



Wave Services

Overview

This guide provides detailed information about Windstream's Wave services and instructions for navigating the Wave Services ASR.

Windstream's Dense Wave Division Multiplexing (DWDM) Wavelength Service ("Wave") provides one 1Gbps, 2.5Gbps, 10Gbps, and 100Gbps bandwidths of optical wavelength circuits for dedicated transport bandwidth for the Customer's use between two points (A-Location/Z-Location). Windstream does not offer Waves in sub-rated interface bandwidths other than the four noted above.

Waves are a fully transparent Layer 1 service that supports customer Layer 2 (Ethernet) and Layer 3 (IP) service protocols, including jumbo frame support. Windstream's Wave services can terminate at either a Windstream transport network Point-of-Presence ("POP(s)") to a premise where Windstream owns the last-mile fiber to the end-user building (Premise).

Performance

Waves are provided in accordance with Telcordia GR-2918 and GR-253, where GR-2918 defines the transport mechanism of the DWDM system delivering the wavelength service, and GR-253 defines the payload to be carried by the DWDM system and/or ITU-T Standard G.709.

Serving Markets

Windstream has over 1,000 PoP locations capable of providing 10Gbps Waves and over 4,000 premises locations capable of delivering DWDM to a Premise across 35+ states and the District of Columbia. For more information on Windstream's network locations, and fiber routes, visit our Interactive Network Map located at:

www.windstreamwholesale.com/interactive-map/

Service Options

Windstream can provide customers with service interfaces in any North American Standard. Standard Customer Interface options vary by bandwidth and customer application as shown below:

Sub 10G: 1000Base-LX; 1000Base-SX; OC-48, OTU1, STM-16

10G: 10GBaseW (WAN PHY) / OC192; 10GBaseR (LAN PHY); OTU2; OTU2E (LAN PHY); STM-64

100G: 100GBASE-SR10; 100GBASE-LR4; OTU4

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Fiber Options

1310 (Single Mode Fiber)

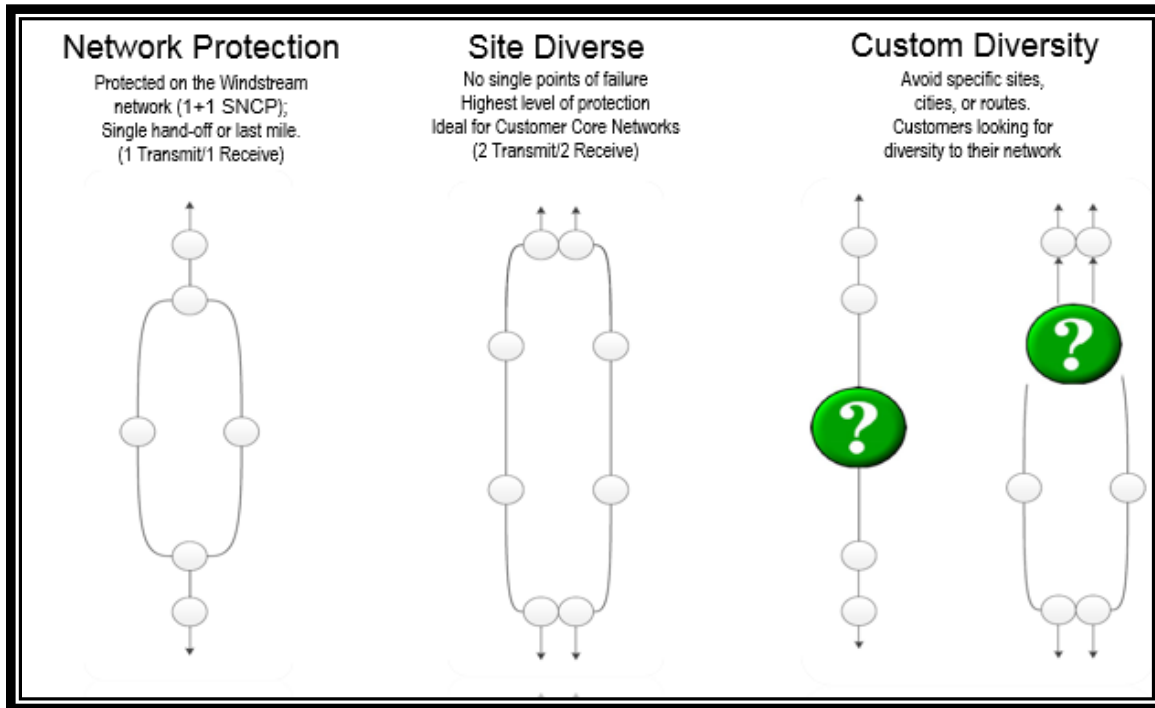
1550 (Single Mode Fiber)

850 nm (Multi-Mode Fiber) – requires engineering review due to distance limitations

Fiber Connectors: FC, LC, SC

Protection / Diversity

Below is an illustration of the types of protection / diversity schemas available.



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All customer diversity and protection requirements are **required** to be reviewed by your Windstream Solutions Engineer prior to order submission to ensure that all requirements can be met.

- Network Protection, Site Diversity, and Custom Diversity is requested through the **Remarks** field on the admin section of the ASR form.
- A *Site Diversity* request requires at least two ASR's with the **RPON** field of both ASRs cross-referencing each PON relating the two orders. The RPON field is key to identifying that the services are diverse from one another.

ASR Requirements

In order to accurately provision and bill for Wave services, Windstream requires that all fields of the ASR be completed based on the most recent Telcordia standards.

The information that follows outlines the proper use of a subset of these required fields that are necessary to process an ASR for Windstream Waves. If additional resources are needed, please contact Telcordia for formal ASR training or your Windstream Account Management team.

The following is a reference of the forms used for this service type

| Order Type | ASR | Transport | EUSA | SALI |
|----------------|-----|-----------|------|------|
| New (N) | X | X | X | X |
| Change (C) | X | X | X | X |
| Disconnect (D) | X | X | X | X |

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Access Service Request – Administrative Section

This section contains information about Windstream services that are being ordered. Associated fields on the ASR administrative screen can be found below:

| Field | Description | Populate With/Usage |
|----------------|--|--|
| CCNA | Custom Carrier Name Abbreviation - 3-alpha characters. | Required |
| PON | Purchase Order Number – Identifies the customer’s unique purchase order number for the request. 16-alpha/numeric characters. | Required |
| VER | Version Identification – Identifies the provider service center. 4-alpha/numeric characters. | Required Initial ASR request = 00; if sending SUPP then assign next number (i.e.: 01, then 02, then 03...) |
| ICSC | Interexchange Customer Service Center – Identifies the provider service center. 4-alpha/numeric characters. | Required Valid entry key: KD05 |
| D/TSENT | Date and Time Sent – Identifies the date and time that the ASR is sent by the customer. 17-alpha/numeric characters including 3-hypens. | Required System populated |

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| | | |
|----------------|---|--|
| CBD | Call Before Dispatch – Identifies site operational availability in hours | Optional |
| DDD | Desired Due Date – Identifies the customer’s desired due date. 10-alpha/numeric characters. | Required Valid entry: YYYYMMDD Standard intervals: <input type="checkbox"/> ICB, capacity needed |
| PROJECT | Project Identification – Identifies the project associated to the request. 16-alpha/numeric characters. | Optional |
| CNO | Case Number – Identifies the quotation tracking number assigned by the provider in response to a provisioning arrangement inquiry, i.e. diversity. 12-alpha/numeric characters. | Conditional Valid entry: customer to enter the quote ID provided for ICB based pricing. Note: For non-MSA products |

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| | | |
|---------------|---|--|
| REQTYP | Requisition Type and Status – Identifies the type of service being requested and the status of the request. 2-alpha characters | Required Valid entries: <input type="checkbox"/> REQTYP = SD (Special Access) <input type="checkbox"/> REQTYP = ED (End-user Request) |
| ACT | Activity – Identifies the activity involved in the service request. 1-alpha character | Required Valid entries: <input type="checkbox"/> N = New <input type="checkbox"/> D = Disconnecti on <input type="checkbox"/> C = Change or Modify existing service |
| RTR | Response Type Requested – Identifies the type of confirmation response requested by the customer. 2-alpha/numeric characters. | Required |
| EXP | Expedite – Indicates that expedited treatment is requested, and any charges generated in provisioning this request (e.g., additional engineering charges or labor charges if applicable) will be accepted. | Optional Valid Entry: Y - Yes |

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|--------------|--|--|
| QSA | Quantity Service Address Location Information – Identifies the total number of service address location information forms being sent by the customer. 2-numeric characters. | Conditional Example: 01 Note: Prohibited when EVCI = A, leave field blank Required for UNI or a NNI when not using an ACTL as the A location |
| CUST | Customer Name – Identifies the name of the customer who originated this request | Required |
| CKR | Customer Circuit Reference – Identifies the circuit number or range of circuit numbers used by the customer. | Optional |
| PIU | Percentage of Interstate Usage – Identifies the expected Interstate Usage for the access service for the request. (3-alpha/numeric characters) | Required |
| ECCKT | Exchange Company Circuit ID – Identifies the provider circuit ID or multiple circuit IDs | Optional <input type="checkbox"/> This field is required for activity “C” or “D” |
| QTY | Quantity – Identifies the quantity involved in the service request. | Required Example: 01 |

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| SPEC | Service and Product Enhancement Code – identifies a specific product or service offering. 5-alpha/numeric characters. To validate please go to https://internal.windstreamwholesale.com/transport/tools/specTool.php | Required Valid entry: ADWDM or SDWAVE |
| BAN | Billing Account Number – Identifies the billing account to which the recurring and non-recurring charges for this request will be billed. | Required Valid entry: E |
| ACTL | Access Customer Terminal Location – Identifies the CLLI code of the Customer Facility terminal location. 11-alpha/numeric characters. | Required – for the ENNI when the primary location is not an end user. Note: an ACTL will normally be provided for an ENNI order. |
| RPON | Related Purchase Order Number – Identifies the PON of a related Access Service Request. RPON and Remarks should be used to associate new ports to an existing service. | Conditional On an order for a UNI with an activity of “N”, this should contain the PON of the related UNI for the E-Line product; otherwise, optional. |
| REMARKS | Remarks – Identifies a free-form field and can be used to expand upon and clarify other data on this request. 186-alpha/numeric characters. | Optional Valid entry: Additional clarifying information |

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Access Service Request – Bill Section

The billing section of the ASR is required to ensure the accuracy of the billing data.

Note: These fields are order-specific and are not required on subsequent revisions unless changes are being made to the original request.

| Field | Description | Populate With/Usage |
|----------------|---|--------------------------------------|
| BILLNM | Billing Name – Identifies the name of the person, office, or company receiving the bill (designated by the customer). | Required |
| SBILLNM | Secondary Billing Name – Identifies the name of a department or group within the designated BILLNM entry. 25-alpha/numeric characters. | Optional |
| ACNA | Access Customer Name Abbreviation – Identifies the common language code for the customer who should receive the bill for ordered services. 3-alpha characters. | Required |
| FUSF | Federal Universal Service Fee – Identifies the service ordered on this request should be assessed or exempted from the FUSF. | Required Valid entry: E, N |
| STREET | Street Address (Bill) – Identifies the street of the billing address associated with the billing name. 25-alpha/numeric characters. | Required |

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|--------------------------|--|--|
| CITY | City (Bill) – Identifies the city, village, or township of the billing address associated with the billing name. 25-alpha/numeric characters. | Required |
| STATE | State (Bill) – Identifies the two-character postal code for the state of the billing address associated with the billing name. 2-alpha characters. | Required |
| ZIP CODE | Zip Code (Bill) – 12-alpha/numeric characters. | Required |
| BILLCON | Billing Contract (Bill) – 15-alpha/numeric characters. | Required |
| TEL NO | Telephone Number (Bill) – 17-numeric characters, including 3-hyphens. | Required |
| BILLCON EMAIL | Billing Contact Electronic Mail Address (Bill) – Identifies the electronic mail address of the billing contact when a customer profile does not already exist. | Required |
| VTA | Variable Term Agreement (Bill) – Identifies the duration, contract date, or contact identification number of any variable term agreement that may be offered by a provider. | Required Valid entry: 12, 24, 36, 48, 60, 72, 84 |

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Access Service Request – Contact Section

The Contact Section of the ASR contains relevant contact information for the person initiating the order with Windstream

| Field | Description | Populate With/Usage |
|--------------------|---|---------------------|
| INIT | Initiator – Identifies the customer's employee originating the request. 15-alpha/numeric characters. | Required |
| INIT TEL NO | Telephone Number (INIT) – Identifies the telephone number of the customer's employee originating the request. 17-alpha/numeric characters, including 3-hyphens. | Required |
| INIT FAX NO | Initiator Fax Number (INIT) – Identifies the fax number of the initiator. 12-numeric characters, including 2-preprinted hyphens. | Optional |
| INIT EMAIL | Initiator Electronic Mail Address (INIT) – Identifies the electronic mail address of the initiator. 60-alpha/numeric characters. | Required |
| DSGCON | Design/Engineering Contact Information – Identifies the employee of the customer or agent who should be contacted on design and/or engineering matters and to whom the DLR may be sent. 15-alpha/numeric characters. | Required |

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| | | |
|-------------------|--|---|
| TEL NO | Telephone Number (DSGCON) – Identifies the telephone number of the customer’s employee who should be contacted on design and/or engineering matters. 17-alpha/numeric characters, including 3-preprinted hyphens. | Required |
| DSG FAX NO | Design Fax Number (DSGCON) – Identifies the fax number on the design contact. 12-numeric character, including 2-preprinted hyphens. | Required |
| DSG EMAIL | Electronic Mail Address (DSGCON) – Identifies the email address of the DSGCON. 60-alpha/numeric characters. | Conditional Required when the DSGCON field is populated. |
| STREET | Street Address (DGSCON) – Identifies the street address for the designer and/or engineering contact. 25-alpha/numeric characters. | Conditional Required when the DSGCON field is populated. |
| CITY | City (DSGCON) – Identifies the city of the design and/or engineering contact’s address. 25-alpha/numeric characters. | Conditional Required when the STREET (DSGCON) field is populated, otherwise prohibited. |
| STATE | State (DSGCON) – Identifies the two-character postal code for the state/province of the design and/or engineering contact’s location. 2-alpha characters. | Conditional Required when the STREET (DSGCON) field is populated, otherwise prohibited. |

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| | | |
|----------------|--|-----------------|
| ZIPCODE | Zip Code (DSGCON) – Identifies the zip code or postal code of the design and/or engineering contact's address. 12-alpha/numeric characters. | Required |
| IMPCON | Implementation Contact – Identifies the customer's employee responsible for control of installation and completion. 15-alpha/numeric characters. | Required |
| TEL NO | Telephone Number (IMPCON) – Identifies the telephone number of the implementation contact. 17-numeric characters, including 3-preprinted hyphens. | Required |

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Access Service Request – Transport Request

The Special Access Request Screens must be provided for services that terminate to a common carrier PoP.

| Field | Description | Populate With/Usage |
|---------------|--|---|
| NC | Network Channel – Identifies the Network Channel (NC) code for the circuit(s) involved. The NC code describes the channel provided by Windstream from the end-user's location. 4-alpha/numeric characters. The NC also describes portions of a circuit: <ul style="list-style-type: none"><input type="checkbox"/> ACTL to HUB<input type="checkbox"/> HUB to HUB<input type="checkbox"/> HUB to End-user's Location | Required See service code section |
| NCI | Network Channel Interface Code – Identifies the electrical conditions on the circuit at the primary location. 5 to 12-alpha/numeric characters. | Required |
| SECNCI | Secondary Network Channel Interface – Identifies the electrical conditions on the circuit at the secondary ACTL or end-user's location. 5 to 12-alpha/numeric characters. | Required |

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|----------------|---|-----------------|
| CFA | Connecting Facility Assignment – Identifies the provider carrier system and channel to be used from a Wideband Analog, High-Capacity or Optical network facility when the customer has assigned control 42-alpha/numeric characters. | Optional |
| SECLOC | Secondary Location – Identifies the terminating end of the circuit, a provider end-office or first point of switching for the circuit being provided. 11-alpha/numeric characters. | Required |
| REMARKS | Remarks – Identifies a free-flowing field which can be used to expand upon and clarify other dates on this form. Up to 125-alpha/numeric characters. | Optional |

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Access Service Request – End-User Special Access (EUSA) Form

The End-User Special Access (EUSA) form must be provided for services that are premise-to-premise based.

| Field | Description | Populate With/Usage |
|---------------|--|---|
| NC | <p>Network Channel – Identifies the network channel (NC) code for the circuit(s) involved. The NC code describes the channel provided by Windstream from the end-user’s location. 4-alpha/numeric characters.</p> <p>The NC also describes portion of a circuit</p> <ul style="list-style-type: none"> <input type="checkbox"/> ACTL to HUB <input type="checkbox"/> HUB to HUB <p>HUB to End-User’s Location</p> | <p>Required</p> <p>See Service Codes section</p> |
| NCI | <p>Network Channel Interface Code – Identifies the electrical conditions on the circuit at the primary location. 5 to 12-alpha/numeric characters.</p> | <p>Required</p> <p>See Service Codes section</p> |
| SECNCI | <p>Secondary Network Channel Interface – Identifies the electrical conditions on the circuit at the secondary ACTL or end-user’s location. 5 to 12-alpha/numeric characters.</p> | <p>Required</p> |
| PRILOC | <p>Primary Location – Identifies the primary end of the circuit being provided.</p> | <p>Required</p> <p>Valid entry: E</p> |

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| | | |
|---------------|--|-----------------------------------|
| SECLOC | Secondary Location – Identifies the terminating end of the circuit, a provider end-office or first point of switching for the circuit being provided. 11-alpha/numeric characters. | Required Valid Entry: E |
|---------------|--|-----------------------------------|

Service Address Location Information Form

The Service Address Location Information Form (SALI) must be provided to accurately reflect the service address information

| Field | Description | Populate With/Usage |
|---------------|---|--|
| PI | Primary Location Indicator – Indicates the provided service address location information is a primary location. | Conditional Required when request type begins with “E” and location is the primary. Should not be used for the end-user “Z” location. Valid entry = Y (yes) |
| EUNAME | End User Name – Identifies the end user name associated with the termination location. 25-alpha/numeric characters. | Required Example: ABC Corp |

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| | | |
|-------------|---|---|
| NCON | New Construction – Indicates the service address is new construction. 1-alpha character. | Optional Valid entry: Y = Yes |
| SAPR | Address Number Prefix – Identifies the prefix for the address number of the service address. 6-alpha/numeric characters. | Optional Example: 50 W is the address number prefix for 50W 100 ½ SW Main Street NW, Floor 5, Wing 2, Suite 10A |
| SANO | Address Number – Identifies the number of the service address. 10-alpha/numeric characters. | Required Example: 100 is the address number for 50W 100 ½ SW Main Street NW, Floor 5, Wing 2, Suite 10A |
| SASF | Address Number Suffix – Identifies the suffix for the address number of the service address. 4-alpha/numeric characters. | Optional Example ½ is the address number suffix for 50W 100 ½ SW Main Street |
| SASD | Street Directional Prefix – Identifies the street directional prefix for the service address. 2-alpha characters | Optional Valid entries: N, S, E, W, NE, NW, SE, SW |
| SASN | Street Name – Identifies the street name of the service address. 60-alpha/numeric characters. | Required |
| SATH | Street Type – Identifies the thoroughfare portion of the street name of the service address. 7-alpha characters. | Optional |

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| | | |
|----------------------|--|--|
| SASS | Street Directional Suffix – Identifies the street directional suffix for the service address. 2-alpha characters. | Optional Valid entries: N, S, E, W, NE, NW, SE, SW |
| LD1, LD2, LD3 | Location Designators – Identifies additional specific information related to the service address (e.g., building, floor, room). 4-alpha characters. | Optional |
| LV1, LV2, LV3 | Location Values – Identifies the value associated with the first location designator of the service address. 10-alpha/numeric characters. | Required |
| CITY | City – Identifies the city, village, township, etc. of the service address. 32-alpha/numeric characters. | Required |
| STATE | State – Identifies the state/province of the service address. 2-alpha characters. | Required |
| ZIP | Zip/Postal Code – Identifies the ZIP code, ZIP code + extension or postal code of the service address. 12-alpha/numeric characters. | Required |
| AAI | Additional Address Information – Identifies additional location information about the service address. 150-alpha/numeric characters. | Optional Example: Specific access hours, availability, contact notification requirements, specific access requirements |

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| JS | Jack Status – Indicates whether the access service is to terminate at a new or existing registered jack or demark. 1-alpha character | Required when ACT type is “N”. Valid entry: F |
| LCON | Local Contact – Identifies the local contact name for access. 15-alpha/numeric characters. | Required |
| ACTEL | Access Telephone Number – Identifies the telephone number to be used for arranging access to the service address location for installation purposes. 14-numeric characters, excluding 3-preprinted hyphens. | Required |
| LCON EMAIL | Local Contact Email Address – Identifies the electronic mail address of the local contact. 60-alpha/numeric characters. | Conditional Required for all activities except disconnect. Prohibited for disconnect orders. |
| OFC | Optical Fiber Connector – Optional when the JS field is “D” or blank, PI field is “Y”, and the NCI field on the service specific form specifies an optical hand-off. | Conditional Valid entry: 14-alpha/ numeric characters |

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Service Codes

1GB Optical Wave Ethernet – Unprotected

| NC | Location | Permissible NCI Options | Permissible SECNCI Options |
|------|---------------------|--|--|
| KFL- | AC-AC, AC-EU, EU-EU | 02LNF.A02, 02LNF.A03, 02LNF.A04, 02LNF.A07 | 02LNF.A02, 02LNF.A03, 02LNF.A04, 02LNF.A07 |
| KFL- | AC-CO, EU-CO | 02LNF.A02, 02LNF.A03, 02LNF.A04, 02LNF.A07 | 02QBF.K02, 02QBF.K03, 02QBF.K04, 02QBF.K07 |

1GB Optical Wave Ethernet – Protected

| NC | Location | Permissible NCI Options | Permissible SECNCI Options |
|------|---------------------|--|--|
| KFLP | AC-AC, AC-EU, EU-EU | 02LNF.A02, 02LNF.A03, 02LNF.A04, 02LNF.A07 | 02LNF.A02, 02LNF.A03, 02LNF.A04, 02LNF.A07 |
| KFLP | AC-CO, EU-CO | 02LNF.A02, 02LNF.A03, 02LNF.A04, 02LNF.A07 | 02QBF.K02, 02QBF.K03, 02QBF.K04, 02QBF.K07 |

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2.5GB Optical Wave OTU1 – Unprotected

| NC | Location | Permissible NCI Options | Permissible SECNCI Options |
|------|---------------------|-------------------------|----------------------------|
| OJ-- | AC-AC, AC-EU, EU-EU | 02OTF.102, 02OTF.103 | 02OTF.102, 02OTF.103 |
| OJ-- | AC-CO, EU-CO | 02OTF.102, 02OTF.103 | 02QBF.102, 02QBF.103 |

2.5GB Optical Wave OTU1 - Protected

| NC | Location | Permissible NCI Options | Permissible SECNCI Options |
|------|---------------------|-------------------------|----------------------------|
| OJT- | AC-AC, AC-EU, EU-EU | 02OTF.102, 02OTF.103 | 02OTF.102, 02OTF.103 |
| OJT- | AC-CO, EU-CO | 02OTF.102, 02OTF.103 | 02QBF.102, 02QBF.103 |

2.5GB Optical Wave OC48 – Unprotected

| NC | Location | Permissible NCI Options | Permissible SECNCI Options |
|------|---------------------|-------------------------|----------------------------|
| OF-Z | AC-AC, AC-EU, EU-EU | 02SOF.X | 02SOF.X |
| OF-Z | AC-CO, EU-CO | 02SOF.X | 02SOF.X |

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2.5GB Optical Wave OC48 – Protected

| NC | Location | Permissible NCI Options | Permissible SECNCI Options |
|------|---------------------|-------------------------|----------------------------|
| OFTZ | AC-AC, AC-EU, EU-EU | 02SOF.X | 02SOF.X |
| OFTZ | AC-CO, EU-CO | 02SOF.X | 02SOF.X |

2.5GB Optical Wave STM16 – Unprotected¹

| NC | Location | Permissible NCI Options | Permissible SECNCI Options |
|------|---------------------|-------------------------|----------------------------|
| OV-- | AC-AC, AC-EU, EU-EU | 02SOF.X | 02SOF.X |
| OV-- | AC-CO, EU-CO | 02SOF.X | 02SOF.X |

2.5GB Optical Wave STM16 – Protected¹

| NC | Location | Permissible NCI Options | Permissible SECNCI Options |
|------|---------------------|-------------------------|----------------------------|
| OVT- | AC-AC, AC-EU, EU-EU | 02SOF.X | 02SOF.X |
| OVT- | AC-CO, EU-CO | 02SOF.X | 02SOF.X |

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Windstream Wholesale collaborates with businesses across the U.S. to drive digital transformation by delivering solutions that solve today's most complex networking and communication challenges.

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10GB Optical Wave Ethernet WAN PHY / OC192 - Unprotected

| NC | Location | Permissible NCI Options | Permissible SECNCI Options |
|------|---------------------|---|---|
| KGW- | AC-AC, AC-EU, EU-EU | 02LNF.A02, 02LNF.A03, 02LNF.A04, 02SOF.X | 02LNF.A02, 02LNF.A03, 02LNF.A04, 02SOF.X |
| KGW- | AC-CO, EU-CO | 02LNF.A02, 02LNF.A03, 02LNF.A04, 02SOF.X | 02QBF.K02, 02QBF.K03, 02QBF.K04, 02SOF.X |

10GB Optical Wave Ethernet WAN PHY / OC192 - Protected

| NC | Location | Permissible NCI Options | Permissible SECNCI Options |
|------|---------------------|---|---|
| KGWP | AC-AC, AC-EU, EU-EU | 02LNF.A02, 02LNF.A03, 02LNF.A04, 02SOF.X | 02LNF.A02, 02LNF.A03, 02LNF.A04, 02SOF.X |
| KGWP | AC-CO, EU-CO | 02LNF.A02, 02LNF.A03, 02LNF.A04, 02SOF.X | 02QBF.K02, 02QBF.K03, 02QBF.K04 |

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10GB Optical Wave Ethernet LAN PHY - Unprotected

| NC | Location | Permissible NCI Options | Permissible SECNCI Options |
|------|---------------------|---|---|
| KGL- | AC-AC, AC-EU, EU-EU | 02LNF.A02, 02LNF.A03, 02LNF.A04, 02SOF.X | 02LNF.A02, 02LNF.A03, 02LNF.A04, 02SOF.X |
| KGL- | AC-CO, EU-CO | 02LNF.A02, 02LNF.A03, 02LNF.A04, 02SOF.X | 02QBF.K02, 02QBF.K03, 02QBF.K04 |

10GB Optical Wave Ethernet LAN PHY - Protected

| NC | Location | Permissible NCI Options | Permissible SECNCI Options |
|------|---------------------|------------------------------------|------------------------------------|
| KGLP | AC-AC, AC-EU, EU-EU | 02LNF.A02, 02LNF.A03, 02LNF.A04 | 02LNF.A02, 02LNF.A03, 02LNF.A04 |
| KGLP | AC-CO, EU-CO | 02LNF.A02, 02LNF.A03, 02LNF.A04 | 02QBF.K02, 02QBF.K03, 02QBF.K04 |

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10GB Optical Wave OTU2 - Unprotected

| NC | Location | Permissible NCI Options | Permissible SECNCI Options |
|------|---------------------|-------------------------|----------------------------|
| OK-- | AC-AC, AC-EU, EU-EU | 02OTF.202, 02OTF.203 | 02OTF.202, 02OTF.203 |
| OK-- | AC-CO, EU-CO | 02OTF.202, 02OTF.203 | 02QBF.202, 02QBF.203 |

10GB Optical Wave OTU2 - Unprotected

| NC | Location | Permissible NCI Options | Permissible SECNCI Options |
|------|---------------------|-------------------------|----------------------------|
| OKT- | AC-AC, AC-EU, EU-EU | 02OTF.202, 02OTF.203 | 02OTF.202, 02OTF.203 |
| OKT- | AC-CO, EU-CO | 02OTF.202, 02OTF.203 | 02QBF.202, 02QBF.203 |

10GB Optical Wave OTU2e - Unprotected

| NC | Location | Permissible NCI Options | Permissible SECNCI Options |
|------|---------------------|-------------------------|----------------------------|
| OKD- | AC-AC, AC-EU, EU-EU | 02OTF.2E2, 02OTF.2E3 | 02OTF.2E2, 02OTF.2E3 |
| OKD- | AC-CO, EU-CO | 02OTF.2E2, 02OTF.2E3 | 02QBF.2E2, 02QBF.2E3 |

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10GB Optical Wave OTU2e - Protected

| NC | Location | Permissible NCI Options | Permissible SECNCI Options |
|------|---------------------|-------------------------|----------------------------|
| OKDP | AC-AC, AC-EU, EU-EU | 02OTF.2E2, 02OTF.2E3 | 02OTF.2E2, 02OTF.2E3 |
| OKDP | AC-CO, EU-CO | 02OTF.2E2, 02OTF.2E3 | 02QBF.2E2, 02QBF.2E3 |

10GB Optical Wave STM-64 - Unprotected

| NC | Location | Permissible NCI Options | Permissible SECNCI Options |
|------|---------------------|-------------------------|----------------------------|
| OW-Z | AC-AC, AC-EU, EU-EU | 02SOF.X | 02SOF.X |
| OW-Z | AC-CO, EU-CO | 02SOF.X | 02SOF.X |

10GB Optical Wave STM-64 – Protected¹

| NC | Location | Permissible NCI Options | Permissible SECNCI Options |
|------|---------------------|-------------------------|----------------------------|
| OWTZ | AC-AC, AC-EU, EU-EU | 02SOF.X | 02SOF.X |
| OWTZ | AC-CO, EU-CO | 02SOF.X | 02SOF.X |

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100GB Optical Wave Ethernet - Unprotected

| NC | Location | Permissible NCI Options | Permissible SECNCI Options |
|------|---------------------|-------------------------|----------------------------|
| KJL- | AC-AC, AC-EU, EU-EU | 02LNF.CSX, 02LNF.CL4 | 02LNF.CSX, 02LNF.CL4 |
| KJL- | AC-CO, EU-CO | 02LNF.CSX, 02LNF.CL4 | 02QBF.CSX, 02QBF.CL4 |

100GB Optical Wave Ethernet - Protected

| NC | Location | Permissible NCI Options | Permissible SECNCI Options |
|------|---------------------|-------------------------|----------------------------|
| KJLP | AC-AC, AC-EU, EU-EU | 02LNF.CSX, 02LNF.CL4 | 02LNF.CSX, 02LNF.CL4 |
| KJLP | AC-CO, EU-CO | 02LNF.CSX, 02LNF.CL4 | 02QBF.CSX, 02QBF.CL4 |

100GB Optical Wave OTU4 – Unprotected¹

| NC | Location | Permissible NCI Options | Permissible SECNCI Options |
|------|---------------------|---|---|
| OM-- | AC-AC, AC-EU, EU-EU | 02OTF.402, 02OTF.403 | 02OTF.402, 02OTF.403 |
| OM-- | AC-CO, EU-CO | 02OTF.402, 02QBF.402, 02OTF.403, 02QBF.403 | 02OTF.402, 02QBF.402, 02OTF.403, 02QBF.403 |

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100GB Optical Wave OTU4 – Protected¹

| NC | Location | Permissible NCI Options | Permissible SECNCI Options |
|------|---------------------|---|---|
| OMT- | AC-AC, AC-EU, EU-EU | 02OTF.402, 02OTF.403 | 02OTF.402, 02OTF.403 |
| OMT- | AC-CO, EU-CO | 02OTF.402, 02QBF.402, 02OTF.403, 02QBF.403 | 02OTF.402, 02QBF.402, 02OTF.403, 02QBF.403 |

NC Code Footnotes:

¹ – Service locations must be verified prior to ASR submission with Windstream Account team to ensure availability and firm pricing of services.

NCI/SECNCI Codes

| NCI Code 02LNF.A02 | | NCI Code 02LNF.A03 | |
|--------------------|--|--------------------|--|
| 02 | = Two conductors (2-fiber) | 02 | = Two conductors (2-fiber) |
| LN | = Local Area Network Interface | LN | = Local Area Network Interface |
| F | = Fiber | F | = Fiber |
| A02 | = 1310nm, Single-mode fiber (1000Base-LX) | A03 | = 1550nm, Single-mode fiber (1000Base-LX) |

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NCI Code 02LNF.A04

02 = Two conductors (2-fiber)

LN = Local Area Network Interface

F = Fiber

A04 = 850nm, 50-micron multi-mode fiber (1000Base-SX)

NCI Code 02LNF.A07

02 = Two conductors (2-fiber)

LN = Local Area Network Interface

F = Fiber

A07 = 850nm, 62.5-micron multi-mode fiber (1000Base-SX)

NCI Code 02QBF. K02

02 = Two conductors (2-fiber)

QB = Central Office Manual cross-connect Termination

F = Fiber

A04 = 1310nm, Single-mode fiber (1000Base-LX)

NCI Code 02QBF. K03

02 = Two conductors (2-fiber)

QB = Central Office Manual cross-connect Termination

F = Fiber

K03 = 1550nm, Single-mode fiber (1000Base-ZX)

NCI Code 02QBF. K04

02 = Two conductors (2-fiber)

QB = Central Office Manual cross-connect Termination

F = Fiber

K04 = 850nm, 50-micron multi-mode fiber (1000Base-SX)

NCI Code 02QBF. K07

02 = Two conductors (2-fiber)

QB = Central Office Manual cross-connect Termination

F = Fiber

K07 = 850nm, 62.5-micron multi-mode fiber (1000Base-SX)

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NCI Code 02OTF.202

02 = Two conductors (2-fiber)

OT = OTN Optical Interface

F = Fiber

202 = OUT with 1310nm SR

NCI Code 02OTF.203

02 = Two conductors (2-fiber)

OT = OTN Optical Interface

F = Fiber

203 = OTU2 with 1550nm IR2

NCI Code 02OTF.2E2

02 = Two conductors (2-fiber)

OT = OTN Optical Interface

F = Fiber

2E2 = OTU2e with 1310nm SR-1

NCI Code 02OTF.2E3

02 = Two conductors (2-fiber)

OT = OTN Optical Interface

F = Fiber

2E3 = OTU2e with 1550nm IR2

NCI Code 02QBF.202

02 = Two conductors (2-fiber)

QB = Central Office Manual
cross-connect Termination

F = Fiber

202 = OTU2e with 1310nm SR-1

NCI Code 02QBF.203

02 = Two conductors (2-fiber)

QB = Central Office Manual
cross-connect Termination

F = Fiber

203 = OTU2e with 1550nm IR2

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NCI Code 02OTF.2E2

02 = Two conductors (2-fiber)

QB = Central Office Manual
cross-connect Termination

F = Fiber

2E2 = OTU2e with 1310nm SR-1

NCI Code 02OTF.2E3

02 = Two conductors (2-fiber)

QB = Central Office Manual
cross-connect Termination

F = Fiber

2E3 = OTU2e with 1550nm IR2

NCI Code 02SOF.X

02 = Two conductors (2-fiber)

SO = SONET/SDH Optical Interface

F = Fiber

X = Provider Engineer Reach Factor

NCI Code 02LNF.CSX

02 = Two conductors (2-fiber)

LN = Local Area Network Interface

F = Fiber

CSX = 100GBase-SR10

NCI Code 02LNF.CL4

02 = Two conductors (2-fiber)

LN = Local Area Network Interface

F = Fiber

CL4 = 100GBase-LR4

NCI Code 02QBF.CSX

02 = Two conductors (2-fiber)

QB = Central Office Manual
cross-connect Termination

F = Fiber

CSX = 100GBase-SR10

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NCI Code 02QBF.CL4

02 = Two conductors (2-fiber)

QB = Central Office Manual
cross-connect Termination

F = Fiber

CL4 = 100GBase-LR4

NCI Code 02OTF.402

02 = Two conductors (2-fiber)

OT = OTN Optical Interface

F = Fiber

402 = OTU4 with 1310nm, Single-mode
fiber

NCI Code 01OTF.403

02 = Two conductors (2-fiber)

OT = OTN Optical Interface

F = Fiber

403 = OTU4 with 1550nm, Single-mode
fiber

NCI Code 02QBF.402

02 = Two conductors (2-fiber)

QB = Central Office Manual
cross-connect Termination

F = Fiber

402 = OTU4 with 1310nm, Single-mode
fiber

NCI Code 02QBF.403

02 = Two conductors (2-fiber)

QB = Central Office Manual
cross-connect Termination

F = Fiber

403 = OTU4 with 1550nm, Single-mode
fiber

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Contacting Windstream

Order Information and Escalations

Wholesale Access: 1-800-864-7188

*Contact assigned account management team for Wholesale-specific information.

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