

## USER'S GUIDE

### CBFTF10xx-15x

#### Slide-in-Module Media Converter

- **Copper to Fiber**
- **10/100 Bridging (2-Port)**
- **10Base-T/100Base-TX to 100Base-FX**

The CBFTF10xx-15x 2-port Ethernet/Fast Ethernet bridging Media Converter is designed to be installed in a Transition Networks *PointSystem*™ chassis and connects 10Base-T Ethernet or 100Base-TX Fast Ethernet twisted-pair copper network devices to network devices on a 100Base-FX Fast Ethernet fiber network.

| Part Number             | Port One - Copper<br>10Base-T/100Base-TX | Port Two - Duplex Fiber-Optic<br>100Base-FX                      |
|-------------------------|--|--|
| <b>CBFTF1011-150</b>    | RJ-45<br>100 m (328 ft)*                 | ST, 1300 nm multimode<br>2 km (1.2 miles)*                       |
| <b>CBFTF1013-150</b>    | RJ-45<br>100 m (328 ft)*                 | SC, 1300 nm multimode<br>2 km (1.2 miles)*                       |
| <b>CBFTF1014-150</b>    | RJ-45<br>100 m (328 ft)*                 | SC, 1310 nm singlemode<br>20 km (12.4 miles)*                    |
| <b>CBFTF1015-150</b>    | RJ-45<br>100 m (328 ft)*                 | SC, 1310 nm singlemode<br>40 km (24.8 miles)*                    |
| <b>CBFTF1018-150</b>    | RJ-45<br>100 m (328 ft)*                 | MT-RJ, 1300 nm multimode<br>2 km (1.2 miles)*                    |
| <b>CBFTF1029-150**</b>  | RJ-45<br>100 m (328 ft)*                 | SC, 1310 mn (TX)/1550 nm (RX)<br>singlemode, 20 km (12.4 miles)* |
| <b>CBFTF1029-151**</b>  | RJ-45<br>100 m (328 ft)*                 | SC, 1550 mn (TX)/1310 nm (RX)<br>singlemode, 20 km (12.4 miles)* |
| <b>CBFTF1029-152***</b> | RJ-45<br>100 m (328 ft)*                 | SC, 1310 mn (TX)/1550 nm (RX)<br>singlemode, 40 km (24.8 miles)* |
| <b>CBFTF1029-153***</b> | RJ-45<br>100 m (328 ft)*                 | SC, 1550 mn (TX)/1310 nm (RX)<br>singlemode, 40 km (24.8 miles)* |

\* Typical maximum cable distance. (Actual distance is dependent upon the physical characteristics of the network.) (TX) = transmit (RX) = receive

\*\* SBFTF1029-150 and SBFTF1029-151 are intended to be installed in the same network where one is the *local* converter and the other is the *remote* converter.

\*\*\* SBFTF1029-152 and SBFTF1029-153 are intended to be installed in the same network where one is the *local* converter and the other is the *remote* converter.

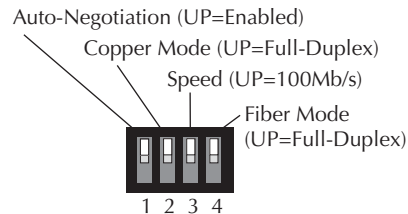
|                                   |    |
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## INSTALLATION

**CAUTION:** Wear a grounding device and observe electrostatic discharge precautions when setting the 4-position switch and the jumper(s) and when installing the Slide-in-Module. Failure to observe this caution could result in damage to, and subsequent failure of, the Media Converter.

### Set the 4-Position Switch

The 4-position switch is located on the side of the Media Converter. Use a small flatblade screwdriver or a similar device to set the recessed switches. Refer to the drawing for the locations of the four individual switches.



#### 1. Auto-Negotiation

- UP Enables Auto-Negotiation on the copper port.  
Advertises 100 Mb/s full-duplex and half duplex,  
and 10 Mb/s full-duplex and half duplex.
- DOWN Disables Auto-Negotiation on the copper port.

#### 2. Copper Mode

(Applies only if switch 1 is DOWN.)

- UP Forces full-duplex operation on the copper port.
- DOWN Forces half-duplex operation on the copper port.

#### 3. Speed

(Applies only if switch 1 is DOWN.)

- UP Forces 100 Mb/s operation on the copper port.
- DOWN Forces 10 Mb/s operation on the copper port.

#### 4. Fiber Mode

- UP Forces full-duplex operation on the fiber port.
- DOWN Forces half-duplex operation on the fiber port.

## INSTALLATION -- Continued

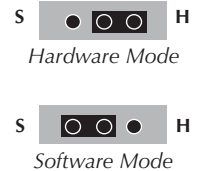
### Set the Jumpers

The jumpers are located on the Media Converter circuit board. Use small needle-nosed pliers or a similar device to set the jumper.

The **Hardware/Software** jumper is labeled “H” for hardware and “S” for software (see the drawing below).

**Hardware** The Media Converter mode is determined by the 4-position switch settings listed above.

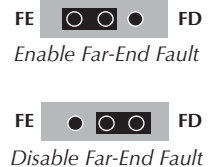
**Software** The Media Converter mode is determined by the most-recently saved, on-board microprocessor settings.



The **Far-End Fault** jumper is labeled “FE” for enable Far-End Fault and “FD” for disable Far-End Fault (see the drawing below).

**Enable** A fault on the fiber link causes the Media Converter to transmit a Far-End Fault signal.

**Disable** No Far-End Fault signal is transmitted when a fault occurs.

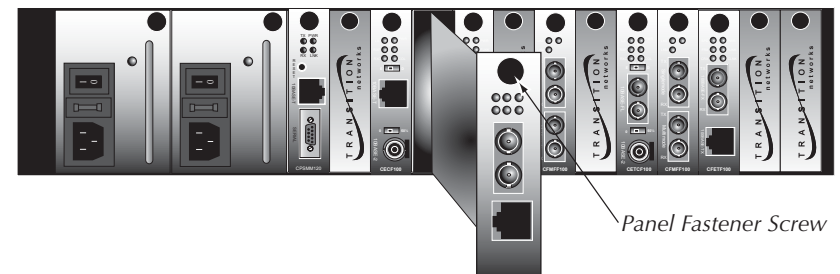


### Installing the Slide-In-Module

**CAUTION:** Slots in the *PointSystem*™ Chassis without a Slide-in-Module installed **MUST** have a protective plate covering the empty slot for Class A and/or Class B compliance.

To install the CGETF10xx-15x Media Converter Slide-in-Module:

1. Locate an empty installation slot on the *PointSystem*™ Chassis.
2. Carefully slide the Slide-in-Module into the installation slot, aligning the Slide-in-Module with the installation guides.
3. Ensure that the Slide-in-Module is firmly seated against the back of the chassis.
4. Secure the Slide-in-Module by securing the panel fastener screw (attached to the Slide-in-Module) to the chassis front.



## INSTALLATION -- Continued

### Install the Twisted-Pair Copper Cable

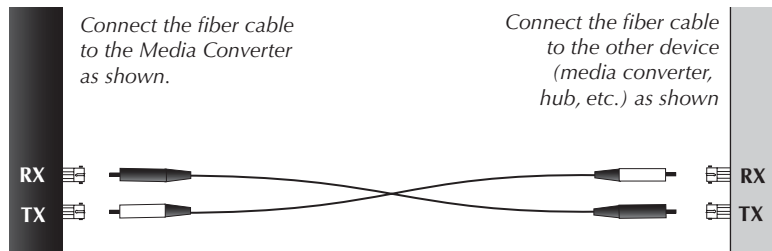
1. Locate or build IEEE 803.2™ compliant 10Base-T or 100Base-TX cables, with straight-through RJ-45 cable, and with straight-through RJ-45 connectors installed at both ends.
2. Connect the RJ-45 connector at one end of the cable to the RJ-45 port connector on the Media Converter.
3. Connect the RJ-45 connector at the other end of the cable to the RJ-45 port connector on the other device (switch, workstation, etc.).

**NOTE:** The MDI (straight-through) or MDI-X (crossover) cable connection is configured automatically, according to the network conditions.



### Install the Fiber Cable

1. Locate or build IEEE 803.2™ compliant 100Base-FX fiber cable with male, two-stranded TX to RX connectors installed at both ends.
2. Connect the fiber cables to the CBFTF10xx-15x Media Converter as described:
  - Connect the male **TX** cable connector the female **TX** connector.
  - Connect the male **RX** cable connector to the female **RX** connector.
3. Connect the fiber cables to the other device (another Media Converter, hub, etc.) as described:
  - Connect the male **TX** cable connector the female **RX** connector.
  - Connect the male **RX** cable connector to the female **TX** connector.



## INSTALLATION -- Continued

### Power the Media Converter

The CBFTF10xx-15x Slide-in-Module Media Converter is powered through the Point System™ chassis.

## OPERATION

### Status LEDs

Use the status LEDs to monitor the Media Converter and the network connections.

#### FDPX (Fiber Duplex)

ON = full-duplex fiber connection.

Blinking = half-duplex fiber connection.

#### FLNK (Fiber Link)

ON = fiber link connection.

Blinking = fiber network activity.

#### PWR (Power)

ON = connection to external AC power.

#### TSPD (Twisted-Pair Speed)

ON = 100 Mb/s.

Blinking = 10 Mb/s.

#### TDPX (Twisted-Pair Duplex)

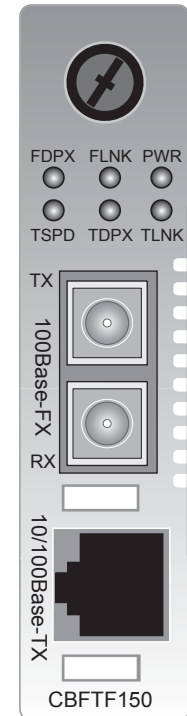
ON = full-duplex copper connection.

LED off = half-duplex copper connection.

#### TLKN(Twisted-Pair Link)

ON = copper link connection.

Blinking = copper network activity.



## OPERATION - Continued

### Product Features

#### Auto-Negotiation

The Auto-Negotiation feature allows the Media Converter to be used with 10Base-T and 100Base-TX twisted-pair ports. Using Auto-Negotiation, the Media Converter brings up the copper links in the highest speed and mode possible for all the attached network devices.

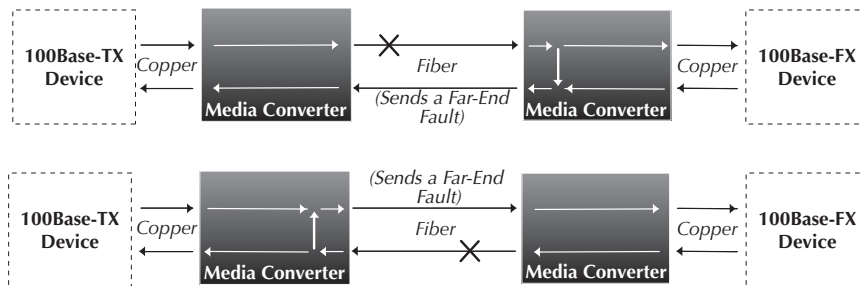
If selected, Auto-Negotiation allows a twisted-pair link to become operational only after the Auto-Negotiation function matches network speed capabilities at both ends of the twisted-pair copper segment.

#### Autocross

The *AutoCross*™ feature, when selected, allows either straight-through (MDI) or crossover (MDI-X) cables to be used when connecting to 10Base-TX or 100Base-TX devices, such as hubs, transceivers, or network interface cards (NICs). AutoCross determines the characteristics of the cable connection and automatically configures the unit to link up, regardless of the cable configuration. (This feature does not require operator intervention.)

#### Far-End Fault

When the Far-End Fault feature is activated, a fault on an incoming fiber link causes the Media Converter to transmit a Far-End Fault signal on the outgoing fiber link. In addition the Far-End Fault signal also activates the Link Pass-Through, which, in turn, disables the link on the copper portion of the network.



## OPERATION - Continued

### Product Features - Continued

#### Full-Duplex Network

In a full-duplex network, maximum cable lengths are determined by **the type of cables** that are used. See page 1 (front cover) for the cable specifications for the different **CBFTF10xx-15x** models.

The 512-Bit Rule **does not apply** in a full-duplex network.

#### Half-Duplex Network (512-Bit Rule)

In a half-duplex network, the maximum cable lengths are determined by the round trip delay limitations of each Fast Ethernet **collision domain**. (A collision domain is the longest path between any two terminal devices, e.g. a **terminal, switch, or router**.)

The 512-Bit Rule determines the maximum length of cable permitted by calculating the round-trip delay in **bit-times (BT)** of a particular collision domain. If the result is less than or equal to 512 BT, the path is good.

For more information on the 512-Bit Rule, see the white paper titled "Collision Domains" on the Transition Networks website at:

[http://www.transition.com/learning/whitepapers/collom\\_wp.htm](http://www.transition.com/learning/whitepapers/collom_wp.htm)

#### Using SNMP

See the on-line documentation that comes with Transition Networks FocalPoint™ software for applicable commands and usage.

Use SNMP at an attached terminal or at a remote location to monitor the Media Converter by monitoring:

- Media Converter power
- Copper and fiber link status
- Copper and fiber duplex mode
- Copper port speed
- Hardware switch setting

Also, use SNMP to enter network commands that:

- Enable/disable Auto-Negotiation on copper
- Force 10Mb/s or 100Mb/s on copper
- Force full-duplex or half-duplex on copper
- Force full-duplex or half-duplex on fiber
- Enable/disable Far-End Fault on fiber

## CABLE SPECIFICATIONS

The physical characteristics must meet or exceed IEEE 802.3™ specifications.

### Fiber Cable

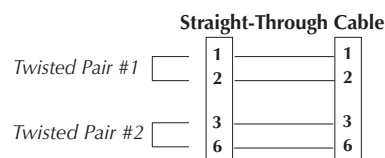
|                                     |                            |                |
|-------------------------------------|----------------------------|----------------|
| Bit Error Rate:                     | <10-9                      |                |
| Singlemode fiber (recommended):     | 9 µm                       |                |
| Multimode fiber (recommended):      | 62.5/125 µm                |                |
| Multimode fiber (optional):         | 100/140, 85/140, 50/125 µm |                |
| <b>CBFTF1011-150, CBFTF1013-150</b> | multimode                  |                |
| Fiber Optic Transmitter Power:      | min: -19.0 dBm             | max: -14.0 dBm |
| Fiber Optic Receiver Sensitivity:   | min: -30.0 dBm             | max: -14.0 dBm |
| Link Budget:                        | 11.0 dB                    |                |
| <b>CBFTF1014-150</b>                | singlemode                 |                |
| Fiber-optic Transmitter Power:      | min: -15.0 dBm             | max: -8.0 dBm  |
| Fiber-optic Receiver Sensitivity:   | min: -31.0 dBm             | max: -8.0 dBm  |
| Link Budget:                        | 16.0 dB                    |                |
| <b>CBFTF1015-150</b>                | singlemode                 |                |
| Fiber-optic Transmitter Power:      | min: -8.0 dBm              | max: -2.0 dBm  |
| Fiber-optic Receiver Sensitivity:   | min: -34.0 dBm             | max: -7.0 dBm  |
| Link Budget:                        | 26.0 dB                    |                |
| <b>CBFTF1018-150</b>                | multimode                  |                |
| Fiber-optic Transmitter Power:      | min: -19.0 dBm             | max: -14.0 dBm |
| Fiber-optic Receiver Sensitivity:   | min: -30.0 dBm             | max: -14.0 dBm |
| Link Budget:                        | 11.0 dB                    |                |
| <b>CBFTF1029-150, CBFTF1029-151</b> | singlemode                 |                |
| Fiber-optic Transmitter Power:      | min: -13.0 dBm             | max: -6.0 dBm  |
| Fiber-optic Receiver Sensitivity:   | min: -32.0 dBm             | max: -3.0 dBm  |
| Link Budget:                        | 19.0 dB                    |                |
| <b>CBFTF1029-152, CBFTF1029-153</b> | singlemode                 |                |
| Fiber-optic Transmitter Power:      | min: -8.0 dBm              | max: -3.0 dBm  |
| Fiber-optic Receiver Sensitivity:   | min: -33.0 dBm             | max: -3.0 dBm  |
| Link Budget:                        | 25.0 dB                    |                |

### Copper Cable Maximum Cable Distance: 100 meters

**Category 3:** (May be used for 10 Mb/s operation)  
 Gauge 24 to 22 AWG  
 Attenuation 11.5 dB/100m @ 5-10 MHz

**Category 5:** (REQUIRED for 100 Mb/s operation)  
 Gauge 24 to 22 AWG  
 Attenuation 22.0 dB /100m @ 100 MHz

- Straight-Through Twisted-Pair cable must be used.
- Shielded Twisted-Pair (STP) **OR** Unshielded Twisted-Pair (UTP) may be used.
- Pins 1&2 and 3&6 are the two active pairs in an Ethernet network .
- Use only dedicated wire pairs for the active pins:  
 (e.g., blue/white & white/blue, orange/white & white/orange, etc.)
- Do not use flat or silver satin wire.



## TECHNICAL SPECIFICATIONS

For use with Transition Networks Model CBFTF10xx-15x or equivalent.

|                           |  |
|---------------------------|--|
| <b>Standards</b>          | IEEE 802.3™  |
| <b>Data Rate:</b>         | 10 Mb/s, 100 Mb/s  |
| <b>Dimensions</b>         | 3.4" x 4.7" x 0.87" (86 mm x 119 mm x 22 mm)   |
| <b>Weight</b>             | 4 oz. (114 g) (approximate)  |
| <b>Power Consumption:</b> | 4.0 W  |
| <b>MTBF</b>               | 629,677 hours (MIL217F2 V5.0) (MIL-HDBK-217F)<br>1,630,181 hours (Bellcore7 V5.0)  |
| <b>Packet Size:</b>       | Unicast MAC address: 128K bytes (1 Mbit)<br>Maximum packet size: 1522 bytes<br>Memory: 1K bytes  |
| <b>Environment</b>        | Tmra*: 0 to 60°C (32 to 140°F )<br>Storage Temp: -20 to 85°C (-4 to 185°F )<br>Humidity 10-90%, non condensing<br>Altitude 0-10,000 feet |
| <b>Warranty</b>           | Lifetime   |

\*Manufacturer's rated ambient temperature: Tmra range for this Slide-In-Module depends on the physical characteristics and the installation configuration of the Transition Networks *PointSystem*™ chassis in which this Slide-In-Module will be installed.

Product is certified by the manufacturer to comply with DHHS Rule 21/CFR, Subchapter J applicable at the date of manufacture.

**CAUTION: Visible and Invisible Laser Radiation When Open. Do Not Stare Into Beam Or View Directly With Optical Instruments.**

**CAUTION: Use of controls, adjustments or the performance of procedures other than those specified herein may result in hazardous radiation exposure.**

## FAULT ISOLATION AND RECOVERY

If the Media Converter fails, isolate and correct the failure by determining the answers to the following questions and then taking the indicated action:

### 1. Is the power LED on the Media Converter illuminated?

**NO**

- Is the media converter inserted properly into the chassis?
- Is the power cord properly installed in the chassis and at the external power source and does the external power source provide power?
- Contact Technical Support: US/Canada: 1-800-260-1312, International: 00-1-952-941-7600.

**YES**

- Proceed to step 2.

### 2. Is the TLNK (twisted-pair link) LED illuminated?

**NO**

- Check the copper cables for proper connection and pin assignment.
- Contact Technical Support: US/Canada: 1-800-260-1312, International: 00-1-952-941-7600.

**YES**

- Proceed to step 3.

### 3. Is the FLNK (fiber-pair link) LED illuminated?

**NO**

- Check the fiber cables for proper connection.
- Verify that the TX and RX cables are connected to the RX and TX ports, respectively, on the 100Base-FX device.
- Contact Technical Support: US/Canada: 1-800-260-1312, International: 00-1-952-941-7600.

**YES**

- Proceed to step 4.

### 4. Is the TSPD (twisted-pair speed) LED illuminated?

**NO**

- Check the copper cables for proper connection.
- Off = The Media Converter has selected 10Mb/s operation.
- If the speed is not correct, disconnect and reconnect the twisted pair cable to restart the initialization process.
- Contact Technical Support: US/Canada: 1-800-260-1312, International: 00-1-952-941-7600.

**YES**

- On = The Media Converter has selected 100Mb/s operation.
- If the speed is not correct, disconnect and reconnect the twisted pair cable to restart the initialization process.
- Contact Technical Support: US/Canada: 1-800-260-1312, International: 00-1-952-941-7600.

## CONTACT US

### Technical Support

Technical support is available 7:00 AM - 6:00 PM CST (GMT -6:00)

US and Canada: **1-800-260-1312**

International: **00-1-952-941-7600**

### Transition Now

Chat live via the Web with Transition Networks Technical Support.

Log onto **www.transition.com** and click the **Transition Now** link.

### Web-Based Seminars

Transition Networks provides seminars via live web-based training.

Log onto **www.transition.com** and click the **Learning Center** link.

### E-Mail

Ask a question anytime by sending an e-mail to our technical support staff.


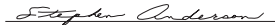
**techsupport@transition.com**

### Address

Transition Networks

6475 City West Parkway, Minneapolis, MN 55344, USA

telephone: 952-941-7600, toll free: 800-526-9267, fax: 952-941-2322

|  <b>DECLARATION OF CONFORMITY</b>                   |   |
|--|---|
| Name of Mfg:   | <b>Transition Networks</b><br>6475 City West Parkway, Minneapolis MN 55344 USA  |
| Model:   | <b>CBFTF10xx-15x Series Media Converters</b>  |
| Part Number(s):  | <b>CBFTF1011-150, CBFTF1013-150, CBFTF1014-150, CBFTF1015-150, CBFTF1018-150, CBFTF1029-150, CBFTF1029-151, CBFTF1029-152, CBFTF1029-153</b>  |
| Regulation:  | <b>EMC Directive 89/336/EEC</b>   |
| Purpose:   | To declare that the <b>CBFTF10xx-15x</b> to which this declaration refers is in conformity with the following standards.<br>EMC-CISPR 22:1985 Class A; EN 55022:1988 Class A; EN 50082-1:1992; EN 60950 A4:1997; IEC 801.2, 801.3, and 801.4; IEC 950; 22 CFR subpart J |
| <i>I, the undersigned, hereby declare that the equipment specified above conforms to the above Directive(s) and Standard(s).</i>         |   |
| <br>Stephen Anderson, Vice-President of Engineering | August 8, 2002<br>Date  |



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# COMPLIANCE INFORMATION

UL Listed

C-UL Listed (Canada)

CISPR22/EN55022 Class A

CE Mark

## FCC Regulations

This equipment has been tested and found to comply with the limits for a class A digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at the user's own expense.

## Canadian Regulations

This digital apparatus does not exceed the Class A limits for radio noise for digital apparatus set out on the radio interference regulations of the Canadian Department of Communications. Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la class A prescrites dans le Règlement sur le brouillage radioélectrique édicté par le ministère des Communications du Canada.

## European Regulations

**Warning** This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

**Achtung!** Dieses ist ein Gerät der Funkstörgrenzwertklasse A. In Wohnbereichen können bei Betrieb dieses Gerätes Rundfunkstörungen auftreten, in welchen Fällen der Benutzer für entsprechende Gegenmaßnahmen verantwortlich ist.

**Attention!** Ceci est un produit de Classe A. Dans un environnement domestique, ce produit risque de créer des interférences radioélectriques, il appartiendra alors à l'utilisateur de prendre les mesures spécifiques appropriées.



**CAUTION: RJ connectors are NOT INTENDED FOR CONNECTION TO THE PUBLIC TELEPHONE NETWORK. Failure to observe this caution could result in damage to the public telephone network.**

Der Anschluss dieses Gerätes an ein öffentliches Telekommunikationsnetz in den EG-Mitgliedstaaten verstösst gegen die jeweiligen einzelstaatlichen Gesetze zur Anwendung der Richtlinie 91/263/EWG zur Angleichung der Rechtsvorschriften der Mitgliedstaaten über Telekommunikationsendeinrichtungen einschliesslich der gegenseitigen Anerkennung ihrer Konformität.

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