

Corning ONE™ Wireless Platform

A Corning
MobileAccess Wireless
Solution Platform

features and benefits |

Comprehensive service support	SISO/MIMO services, Currently – CELL, PCS, LTE 700 and AWS
Flexible, configurable sectorization	Advanced capacity and coverage management for better macro offload and enhanced user experience
Broadband enabled	A range of ready-made fiber optic (and power) composite cables simplify installation at all levels; Fiber backbone unleashes unlimited RF spectrum; Easy scales to higher speed requirements
Ethernet support	Dedicated fiber link for Ethernet backhaul, enables optimal use and offload of Wi-Fi® resources
Scalable and customizable	Infrastructure can be quickly expanded to support more services or increase coverage without downtime; Integrated SISO/MIMO antenna allows for services expansion without additional footprint
Carrier-grade network management	Single-source, remote end-to-end field-upgradable platform; Ready for SON, HetNet and future network requirements

The Corning ONE™ Wireless Platform is the first all-optical converged solution that unifies cellular, Wi-Fi and Ethernet backhaul.

The Corning ONE Wireless Platform provides a flexible intrabuilding cellular and network data coverage solution based on a fiber optic transport backbone. Fiber-to-the-edge technology allows for virtually unlimited bandwidth to support today and tomorrow's growing demands of wireless users.

The fiber optic infrastructure is easily deployable via a wide range of preterminated composite cables and advanced end-to-end equipment. Easy to design, Plug & Play™ connectors, significantly reduce installation cost and deployment time.

Built-in Gigabit Ethernet support enables offload, expansion and best-use of Wi-Fi resources while the integrated antenna provides flexibility for ease and cost-effective MIMO upgrades.

The Corning ONE Wireless Platform includes advanced features such as capacity steering and femtocell listening mode for small cells, making it the ideal, scalable solution to efficiently enable all of the enterprise's wireless services with the coverage and capacity needed for high quality of service.

Configurable sectorization management allows precise service distribution control to meet changing density needs and provides further savings by enabling sharing of equipment at various levels for service providers.

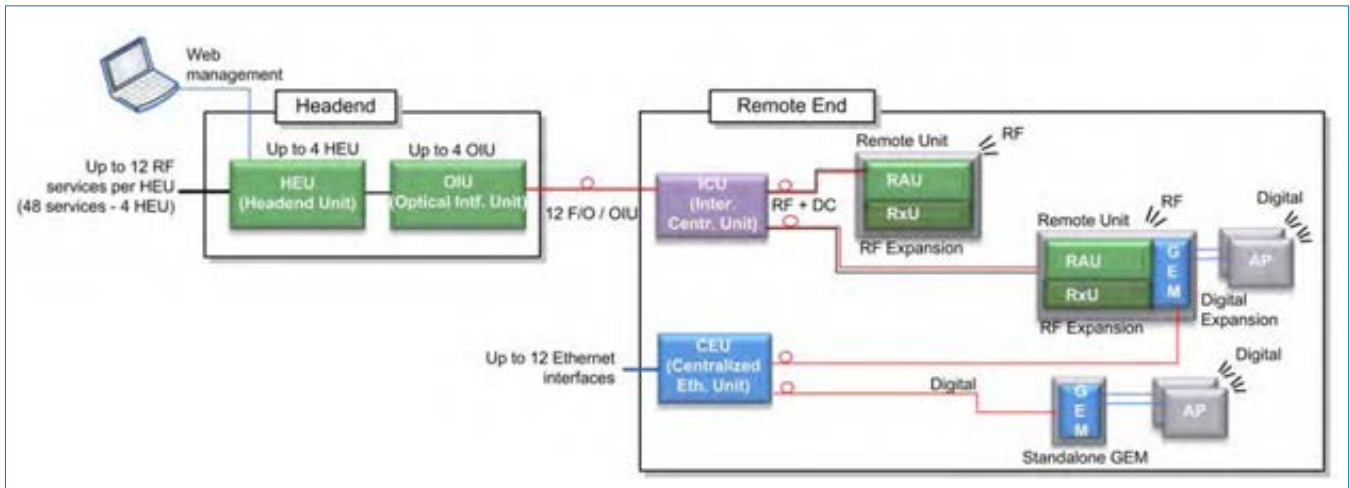
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System Architecture

Corning ONE™ Wireless Platform delivers wireless and Ethernet services over the fiber optic infrastructure:

- **RF Path:** Broadband RF distribution over fiber infrastructure via Remote Antenna Units (RAUs)
- **Digital Path:** Serves the Ethernet transport from corporate LAN over fiber to third-party equipment



Corning ONE Wireless Platform Architecture | Figure 1

Acronyms:

HEU = Headend Unit

RIM = Radio Interface Module

GEM = Gigabit Ethernet Module

GEU = Gigabit Ethernet Unit

ICU = Interconnect Unit

CEU = Central Ethernet Unit

OIU = Optical Interface Unit

OIM = Optical Interface Module

PSM = Power Supply Module

specifications |

Supported Services

Technology	Frequency Range (MHz)		
	Service/Band	Uplink (UL)	Downlink (DL)
LTE	700 MHz	698-716 777-787	728-746 746-756
CDMA/WCDMA**/ TDMA/GSM/LTE*	CELL 800	824-849	869-894
CDMA/WCDMA**/ TDMA/GSM/LTE*	PCS 1900	1850-1915	1930-1995
WCDMA**/LTE*	AWS 2100	1710-1755	2110-2155

*WCDMA service is based on 3GPP standards, LTE service may be deployed in the future due to frequencies re-farming planned by the carriers as well.

**WCDMA service is based on 3GPP2 CDMA2000 standards.

RF Parameters per Service

Service/Band	LTE 700 MHz		CELL 800 MHz		PCS 1900 MHz		AWS 2100 MHz	
	DL	UL	DL	UL	DL	UL	DL	UL
Frequency Range (MHz)	728-746 746-756	698-716 777-787	869-894	824-849	1930-1995	1850-1915	2110-2155	1710-175
Maximum Output Power Per Antenna Port	15		15		17		17	
Maximum Input Power (dBm)	0 to 37		0 to 37		0 to 37		0 to 37	
Mean Gain (dB)		-19 to 10		-19 to 15		-19 to 10		-19 to 15
Input IP3 (dBm) AGC OFF Min		-7		-7		-7		-7
Input IP3 (dBm) AGC ON Min		5		5		5		5
SFDR** (dB)		59		63		63		59
Maximum Intermod Distortion (dBm)	-13		-13		-13		-13	
UL NF* (dB)		12		12		12		12
Gain Flatness/Ripple (dB)	± 2.0		± 2.0		± 2.0		± 2.0	

*Typical for single remote antenna.

**SFDR calculated with BW of 1.23 MHz for the CELL and PCS and with 5 MHz for the LTE and AWS.

specifications | (continued)

Environmental

Operating	0° to +50°C (32° to 122°F)
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Storage	-20° to 85°C (-4° to 185°F)
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Standards and Approvals

Laser Safety	FDA/CE 21 CFR 1040.10 and 1040.11 except for deviations pursuant to laser notice no. 50 and IEC 60825-1
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EMC	CE EN 301 489, EN 55022, EN 61000, FCC 47 CFR Part 15, 22, 24, 27
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Safety	UL 60950 IEC 60825-1:2007 IEC 60825-2:2010 CAN/CSA-C22.2 No. 60950-1-03 Fire Safety UL 2043 (applicable for antenna unit only)
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Optical

Optical Output Power	< 9 dBm
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Maximum Optical Budget	5 dB
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Optical Connector	OIM: MTP® Connector; RAU: LC APC SM
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Fiber Type	Corning® SMF-28® fiber or compatible
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Wavelength	1310 ± 10 nm (@ 25°C)
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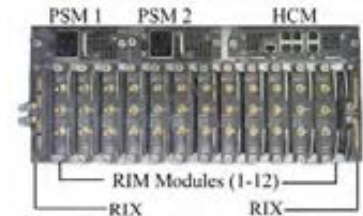
Maximum Distance (Headend to Remote)	2 km (SMF)
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specifications | (continued)

RF Path: Units/Modules Specifications Headend Unit (HEU)

HEU will host the following modules:

1. RIM – Radio interface module; RF source conditioner.
Up to 12 RIMs can be hosted by the HEU.
2. RIX – Radio interface expander ; HEU to OIU interface module
3. HCM – Headend control module; overall system management module
4. PSM – Power supply module; AC power supply



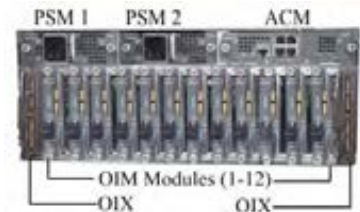
RIM	Interfaces: No. of supported bands	Three QMA RF ports – UL, DL and Duplex Single band	
RIX	Interfaces: No. of supported OIU interfaces:	Two 9-pin connectors (one per OIX) Two OIUs	
HCM	Interfaces: Remote Management: Local Management: Local Configuration: System LEDs:	To ACM four RJ-45 internal ports One RJ-45 LAN port One RJ-45 LOCAL port One CONSOLE port PWR, RUN, SYS, FAN	
PSM	Power Input: Power Consumption (Full Chassis): ON/Off Switch Optional:	AC 100-220 v 200 W Additional PSM for redundancy	
Physical Characteristics (Chassis and Modules)	Mounting: Dimensions: (H x W x D) Weight:	Rack-mount – 19 in and 4U 7 x 17.3 x 18.95 in (177.8 x 440 x 481.7 mm) Chassis: 37 lbs (16.8 kg) Per RIM: 1.9 lbs (0.9 kg) Per RIX: 1.54 lbs (0.7 kg) HCM: 2.2 lbs (1.0 kg) PSM: 1.98 lbs (0.9 kg)	

specifications | (continued)

RF Path: Units/Modules Specifications Optical Interface Unit (OIU)

OIU will host the following modules:

1. OIM – Optical interface modules; Converts the RF to three Optical links
2. OIX – Optical interface expander; OIU to HEU interface module.
3. ACM – Auxiliary control unit; manages unit domestic modules, “slave” controller to the HCM.
4. PSM – Power supply; powers the unit
5. ERFC85 – RF interface cable, 9-pin 85 cm



OIM	Interfaces:	Optical Interface: One MTP® Connector Six Kenpole connectors for 1:1 direct signal transportation, three UL and three for DL
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OIX	RF Interfaces:	Two 9-pin connectors
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ACM	Interfaces:	Four RJ-45 INTERNAL ports One RJ-45 CONSOLE port System LEDs – PWR, RUN, SYS, FAN
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PSM	(See PSM in HEU section for interfaces) Power Consumption (Full Chassis): 300 W
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Physical Characteristics (Chassis and Modules)	Mounting:	Rack-mount – 19 in and 4U
	Dimensions : (H x W x D)	Chassis: 7 x 17.3 x 18.95 in (177.8 x 440 x 481.7 mm)
	Weight: lbs (kg):	Chassis: 37 lbs (16.8 kg)
		Per OIM: 1.5lbs (0.7kg)
		Per OIX: 1.54 lbs (0.7 kg)
ACM: 2.2 lbs (1.0 kg)		
	PSM: 1.98 lbs (0.9 kg)	



specifications | (continued)

RF Path: Units/Modules Specifications (continued)

Optical Interface Unit (OIU)

OIU will host the following modules:


1. PSM-I; power supply module, up to four PSM-I modules can be installed.
2. EDGE Module – MTP® Connector to LC APC splitter. Up to two Pretium EDGE® Modules can be installed.

Chassis Interfaces	Power Input: 110-240 V AC, 50-60 Hz power Output: Eight DC ports – 57V DC, Maximum 60V (UL limit)	
Edge Module Interfaces	One MTP® SM fiber port to Six LC APC SM	
Physical Characteristics (Chassis)	Mounting: Rack-mount – 19 in and 4U Dimensions : 17 x 15 x 19.2 in (430.5 x 379.8 x 488 mm) Weight: lbs (kg): 5.5 lbs (2.5 kg) – without PSM	

Remote Antenna Unit (RAU)

RAU will host the following modules:

1. RxU; Remote expansion module, for additional LTE and AWS MIMO service. One module per RAU.
2. GEM; Gigabit Ethernet module – upgrade module for the RAU. One module per GEM.

Supported Services	SISO: CELL, PCS, AWS, 700 LTE MIMO: AWS/700 LTE (with Expansion Module – RxU)	
Supported Services	Two LC APC SM fiber connectors; UL and DL Two DC power input ports; main and secondary in case of PoE clients Two QMA RF Ports; for external cavity filter (in/out) use LTE and CELL filters One Broadband external antenna QMA connector One RJ-45 MGMT (local) connection RxU module interface – power, digital and RF GEM module interface – power and digital	
Antenna	Omnidirectional; 0 dBi (15° down from horizon)	
Management	Managed via the HCM	
Physical Characteristics (Chassis)	Mounting: Wall/ceiling (horizontal mount) Mounting bracket included in the installation kit Dimensions : 13.1 x 13.1 x 4 in (including mounting bracket) (H x W x D) (332.7 x 332.7 x 101.6 mm)	

specifications | (continued)

RF Path: Units/Modules Specifications

Remote Antenna Unit (RAU) (continued)

Physical Characteristics (Chassis and Modules)	Weight:	RAU only: 7.93 lbs (3.6 kg) RAU and RXU and GEM: 12.12 lbs (5.5 kg)
	Ambient Temperature:	Wall-mount installations: 45°C (113°F) Ceiling-mount installations: 50°C (122°F)

Remote Expansion Unit (RxU)

Services	Upgrade module supporting two services AWS MIMO and LTE 700 MIMO
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Interfaces	Three pins for integration with RAU (power, control and RF)
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Management	Management via host RAU
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Physical Characteristics	Mounting:	Installed in RAU enclosure
	Dimensions : (H x W x D)	1.09 x 12.8 x 9.8 in (27.7 x 327.5 x 250 mm)
	Weight:	3.08 lbs (1.4 kg)

Digital Path: Unit/Modules Specifications

Centralized Ethernet Unit (CEU)

CEU will host the following module:

1. CEM; centralized ethernet module; media converter, Ethernet (copper) to fiber.

Services	Centralized media converter unit – Ethernet over fiber Hosts three media converter modules (CEMs)
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Interfaces CEM (Centralized Ethernet Module)	CEM supports four 10/100/1000BASE-T RJ-45 connectors to four LC UPC fiber connectors
	Four 10/100/1000BASE-T copper ports
	Four 1000BASE-X fiber
	One USB serial port – service port



Power	Input: 110-240 VAC, 50-60 Hz
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Physical Characteristics	Mounting:	Rack-mount 19-in; 1U
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specifications | (continued)

Digital Path: Unit/Modules Specifications (continued) Gigabit Ethernet Module/Unit (GEM)

Services GEM – Media converter, Ethernet over fiber to Copper.
10/100/1000BASE-T Ethernet 1000BASE-X fiber.
Two 802.3 at compliant Power over Ethernet (PoE) PSE ports



Interfaces One LC UPC Fiber optic port
Two RJ-45 ports supporting 10/100/1000Base-T copper interface with PoE and 802.3 at PSE capability

Physical Characteristics

Mounting:	Stand-alone: GEU Add-on: RAU upgrade module
Dimensions : (H x W x D)	1.28 x 3.79 x 5.95 in (32.7 x 96.3 x 151.3 mm)
Weight:	1.1 lbs (0.5 kg)

Gigabit Ethernet Unit – Standalone (GEU-S)

CEU will host the following module:

1. GEM; Gigabit Ethernet module; media converter, Ethernet over fiber to copper.

Services Supplies power and management port for hosted modules.
When it hosts a GEM it allows it to perform media conversion services from fiber to copper and to supply PoE and PSE services



Interfaces DC PWR connector
Service port – RJ-45 (to GEM)

Physical Characteristics

Mounting:	Wall- or Ceiling-mount
Dimensions : (H x W x D)	5.01 x 10.51 x 3.26 in (including mounting bracket) (127.5 x 267 x 83 mm)
Weight:	2.64 lbs (1.2 kg)

specifications | (continued)

Optical: Cabling, Unit/Modules Specifications

Cabling

Vertical	Plug & Play™ Plenum Optical cables MTP® Fiber Connectors 12-144 fibers Two-sided or one-sided Armored, non-armored
Horizontal	Composite plenum tether assemblies Fiber: LC APC, 2-24 fibers Cu: 16 AWG, 14 AWG, 12 AWG; 2-12 Conductors Armored, non-armored



Cabling

FMU	1U: 144 fibers 2U: 288 fibers 4U: 576 fibers Plug & Play™ Modules or Splice Cassettes
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cabling ordering information |

H	R	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	U	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	F	-	<input type="checkbox"/>	<input type="checkbox"/>
		1		2		3	4	5	6		7	8		9						10	11

|1
Select connector.
00 = None
13 = MTP® Connector, SM Elite
18 = LC APC Duplex
66 = SC/APC Duplex

|4
Select cu conductor count.
0 = No conductors
2 = 2 conductors
4 = 4 conductors
6 = 6 conductors
M = 12 conductors

|7
Select jacket type.
8 = Plenum indoor
1 = Riser indoor/outdoor

|10
Select pulling grip.
P = One-sided pulling grip
N = No pulling grip

|2
Select connector.
13 = MTP® Connector, SM Elite
18 = LC APC Duplex
66 = SC APC Duplex

|5
Select cu connectors.
C = With connectors
N = No connectors
6 = 6 conductors
M = 12 conductors

|8
Select armored/non-armored.
20 = Non-armored
A1 = armored riser indoor/outdoor
A3 = Armored indoor plenum

|11
Select kit.
K = 2 strain-relief trunk holders
N = None

|3
Select cu wire gauge.
0 = No Cu Wire
F = 12 AWG
G = 14 AWG
H = 16 AWG

|6
Select fiber count.
04 = 4 fibers
06 = 6 fibers
12 = 12 fibers
24 = 24 fibers
48 = 48 fibers
72 = 72 fibers
96 = 96 fibers
E4 = 144 fibers

|9
Select cable length.
004 - 999 in ft

ordering information | (continued)

HEU Chassis and Modules

Part Number	Description
HEU	Headend Unit Assembly, support for 1-12 Radio Interface Modules (w/o RIMs)
PSM-HO	Headend/Optical Interface Unit Power Supply; Includes US plug power cords
HCM	Headend Control Module; includes two RJ-45 cables (2 m)
FAM-HO	Headend/Optical Interface Unit Fan Module; one module including four fans
RIX	Radio Interface Expander – HEU expansion module; two must be ordered
RIM-L70	Radio Interface Module for HEU chassis, LTE 700 MHz service
RIM-C85	Radio Interface Module for HEU chassis, CELL 850 MHz service
RIM-P19	Radio Interface Module for HEU chassis, PCS 1900 MHz service
RIM-A17	Radio Interface Module for HEU chassis, AWS 17000 MHz service
RIM-L70-M	Radio Interface Module for HEU chassis, LTE 700 MHz MIMO service
RIM-A17-M	Radio Interface Module for HEU chassis, AWS 1700 MHz MIMO service

OIU Chassis and Modules

Part Number	Description
OIU	Optical Interface Unit Assembly, Support for 1-12 Optical Interface Modules (without OIMs)
OIM	Optical Interface Module for OIU Chassis; three optical links
PSM-HO	Headend/Optical Interface Unit Power Supply; includes US plug power cords
ACM	Auxiliary Control Module; Includes two RJ-45 cables (2 m)
FAM-HO	Headend/Optical Interface Unit Fan Module; one module including four fans
OIX	Optical Interface Expander – OIU expansion module; two must be ordered

OIU Chassis and Modules

Part Number	Description
RAU-C85P19L70A17	CELL 850, PCS 1900, LTE 700 and AWS 1700 Remote Antenna Unit Quadservice CELL, PCS, 700 MHz LTE and AWS; SMF
RAU-G-C85P19L70A17-E	Remote Antenna Unit with assembled GEM module; support for CELL/PCS/700 MHz LTE and AWS; support for Ethernet services
RXU-L70A17-M	700 LTE/AWS MIMO Services Remote Expansion Unit for 700 MHz LTE and AWS MIMO support; SMF
RAU-R-C85P19L70A17-M	Remote Antenna Unit with assembled RxU
RAU-R-G-C85P19L70A17-M-E	Remote Antenna Unit with assembled RxU and GEM modules
ICU-1U	Intermediate Centralized Unit; hosts four PSM-I modules. US power cord included.
PSM-I	ICU Power Supply

ordering information | (continued)

Digital Path Units

Part Number	Description
GEM	Gigabit Ethernet Module
GEU	Gigabit Ethernet Unit Docking Station for GEM module (not included)
GEU-S	Gigabit Ethernet Unit Stand-alone Docking Station including assembled GEM module (for stand-alone installations without RAU)
CEU	Centralized Ethernet Unit; host up to three CEM modules
CEM	Centralized Ethernet Module includes SFP and UPC to APC adapter

Accessories

Part Number	Description
ETM	Expander Termination Module; 50 Ohm
CblTray	HEU/OIU Cable Management Tray and door sleeve; chassis sleeve for managing cables and door for covering front panel
ERFC85	Expander RF Cable; L = 85 cm; 9-pin SMP to SMP connector
ERFC60	Expander RF Cable; L = 60 cm; 9-pin SMP to SMP connector

Hardware

Part Number	Description
EDGE-01U-SP	1U Rack-mount Fiber Housing, holds 12 Pretium EDGE® modules or splice cassettes
PCH-01U	1U Rack-mount Fiber Housing, holds up to four Pretium EDGE modules or splice cassettes
PWH-02P	Wall-Mount Fiber Housing, Holds up to four Pretium EDGE Plug & Play™ modules or splice cassettes
ECM-UM12-18-89	12-Fiber LC APC Pretium EDGE PnP Module
EDGE-CS12-AF-P00RE	Pretium EDGE Splice Cassette
EDGE-CCHBKT-1	CCH Panel for holding one Pretium EDGE module or splice cassettes
EDGE-CCHBKT-2	CCH Panel for holding two Pretium EDGE module or splice cassettes
CDF-RJ12-BKT	12-in Rack Bracket for managing cables
ESM-SM12-22G-R3M	Pretium EDGE Pigtail Module

Notes |

Notes |

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Notes |

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