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29. [1] (D)

[1] Material in this section has been de-tariffed as required by the Commission upon use of the forbearance relief pursuant to FCC Memorandum Opinion and Order No. 07-180 released October 12, 2007. Terms and Conditions associated with de-tariffed services are available at www.att.com/guidebook.

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29. Dedicated SONET Ring Service

29.1 General Description

(A) Basic Service Description

Dedicated SONET Ring OC-3, OC-12 and OC-48 Service provides customers with a dedicated custom network. The network is in a ring architecture, including sub-rings or Arc sub-rings provisioned on Next Generation SONET equipment, designed to provide increased reliability and functionality by connecting multiple customer designated locations and specified Telephone Company Central Offices (COs) via self-healing network designs. Dedicated SONET Rings OC-3, OC-12 and OC-48 are available via Self-Healing Uni-Directional Path Switched Rings (UPSR); additionally, OC-48 is available via Self-Healing Bi-Directional Line Switched Rings (BLSR). The dedicated ring can connect multiple (between 2 and 16) customer-designated locations and Telephone Company COs, where SONET facilities and equipment are available. The Dedicated SONET Ring services will interface with other compatible Telephone Company-provided Special Access Services as provided by the Tariff (i.e. DS1, DS3). (N) (N)

Rates and charges for Dedicated SONET Ring Service are set forth in Section 29.4, with the exception of the services provided by the Telephone Company in the Metropolitan Statistical Areas (MSAs) in which the Telephone Company has received Phase II pricing flexibility pursuant to Subpart H of Part 69 of the Commission’s Rules. The rates and charges for the Dedicated SONET Ring Service in the MSAs that have received Phase II pricing flexibility are set forth in Section 31.

Rate elements include nodes, ports, mileage between nodes and regenerators. Rates are specified in Section 29.4, following.

(B) Service Provisioning

(1) Manner of Provisioning

All customers will be served from the nearest suitably equipped end office. Information pertaining to end offices equipped to provide Dedicated Ring Service is set forth in the National Exchange Carrier Association, Inc. (NECA) Tariff F.C.C. No. 4. Dedicated SONET Ring Service will be provided subject to the availability and limitations of the Telephone Company’s wire centers and outside plant facilities. Dedicated SONET Ring Service is only available where technical capabilities permit such facility distance and type of physical plant. Where facilities are not available, Special Construction charges may apply.

(2) Limitations

The Telephone Company does not undertake to originate data, but offers the use of its Dedicated SONET Ring Service, where available, to customers for the purpose of transporting data originated by the customer or a third party.

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29. Dedicated SONET Ring Service (Cont'd)

29.3 Rate Regulations (Cont'd)

(A) Rate Elements (Cont'd)

(1) Nodes (Cont'd)

When a customer premises node is located in the same building as a CO node, diversity between the two nodes may not be available.

If a customer collocates two customer premises nodes of the same speed, on the same dedicated ring, on the same premises, the additional node will be billed as shown in Section 29.4. This option does not provide diversity between these two collocated nodes and the rest of the ring.

(a) Sub-Ring Node

A sub-ring node is a lower speed optical extension off a main ring. It traverses one or more main ring nodes via the use of OC-N port connections on and off the main ring. The primary use of sub-ring nodes is to provide the ability to fully utilize the bandwidth around the ring when the customer requires DS1/VT1.5 circuit paths.

An optional sub-ring node is available at OC-3 and OC-12 speeds from an OC-48 main ring, and OC-3 speed from an OC-12 main ring. A sub-ring node may only connect to the main ring at the same, or an adjacent, main ring node. A sub-ring node may not connect directly to another sub-ring node.[1] (N)

Any service that enters the main ring via a port on a sub-ring node must also exit via a port on another sub-ring node (sub-ring on - sub-ring off).[1] Cascading sub-rings are not allowed off a main ring. Service circuits may not be established between sub-ring nodes connecting to the same main ring node or between a sub-ring node and a port on the same main ring node to which it connects. (N)

Each sub-ring must be implemented as an OC-M on an OC-N ring with full complement of STS-1s, STS-3s or STS-12s, depending on the bandwidth of the sub-ring, appearing together at all associated sub-ring nodes on a given sub-ring.

Two OC-N ports and associated node charges apply for each sub-ring node connected to the main ring, as well as applicable mileage for the sub-ring.

A sub-ring node which is co-located with a main ring node at the customers premises (for the same dedicated ring) will be billed as an "Additional Node" per 29.4(A), following. A sub-ring is not available with a two-node main ring configuration.

[1] This restriction does not apply for Next Generation SONET equipment. (N)

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29. Dedicated SONET Ring Service (Cont'd) (N)

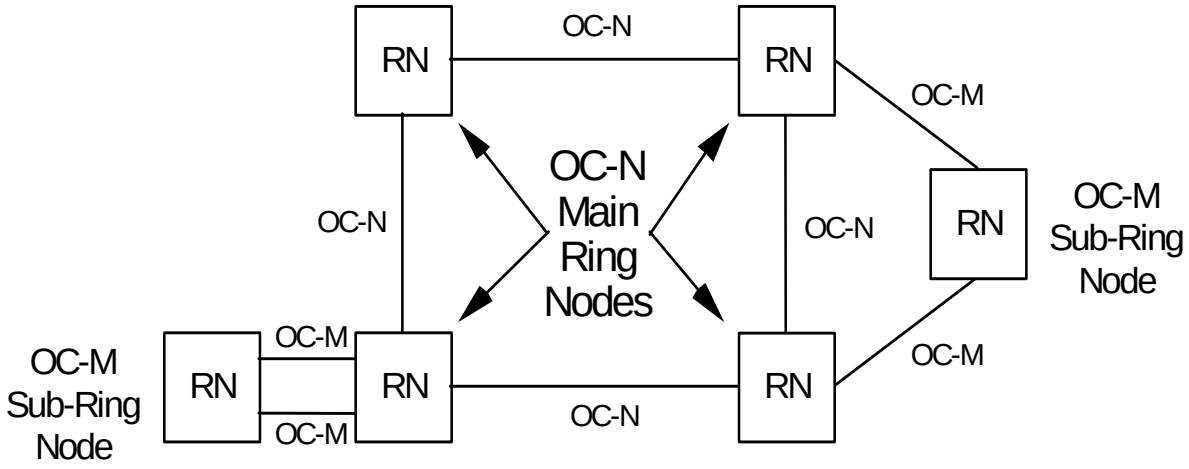
29.3 Rate Regulations (Cont'd)

(A) Rate Elements (Cont'd)

(1) Nodes (Cont'd) (N)

(a) Sub-Ring Node (Cont'd) (T)

Sub-Ring Node Diagram (M)



Sub-Ring Nodes, OC-M < OC-N (M)

(b) Arc Sub-Ring Node (N)

Arc sub-ring nodes are only available on Next Generation SONET equipment with service installed after November 2, 2007. An Arc sub-ring node is a lower speed optical extension off a main ring. It connects to one main ring node via the use of OC-N port connections from and to a main ring. The primary use of Arc sub-ring nodes is to add other locations to the ring that will utilize minimal amounts of bandwidth from the main ring.

Arc sub-rings are only available off of UPSR main rings. Arc sub-rings are only available where facilities and/or operating conditions permit, as determined by the Telephone Company.

An optical Arc sub-ring node is available at OC-3 and OC-12 speeds from an OC-48 main ring, and OC-3 speed from an OC-12 main ring. An Arc sub-ring node may connect to the main ring at any main ring node.

Cascading Arc sub-rings are not permitted off a main ring. Services entering an Arc sub-ring node cannot drop from the directly connecting main ring node (hairpinning). (N)

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29. Dedicated SONET Ring Service (Cont'd) (N)

29.3 Rate Regulations (Cont'd)

(A) Rate Elements (Cont'd)

(1) Nodes (Cont'd)

(b) Arc Sub-Ring Node (Cont'd)

More than one Arc sub-ring may be added to a main ring. Each Arc sub-ring must be implemented as an OC-M on an OC-N ring with a full compliment of STS-1s, 3s or 12s, depending on the bandwidth of the Arc sub-ring, appearing together at all associated Arc sub-ring nodes on a given Arc sub-ring.

Two OC-N ports apply for each Arc sub-ring connected to the main ring. A node charge applies for each Arc sub-ring location. Mileage charges are applicable when the sub-ring is in a different location than the main ring.

An Arc sub-ring node which is collocated in the same room with a main ring node at the customer's premises (for the same dedicated ring) will be billed as an "Additional Node."

Arc sub-rings do not reduce the bandwidth capacity of the main ring. As services are added to the main or sub-ring, only the bandwidth capacity of the service is reduced.

Arc sub-rings can be provisioned in two basic configurations:

1. Single-node, single-homed ARC
2. Multi-node, single-homed ARC

Circuit traffic can be added/dropped from an Arc sub-ring node to another Arc sub-ring node within the same Arc (known as intra-ARC), or between ARCs (known as inter-ARC). Intra-ARC circuits can only be provisioned as unprotected due to technical limitations. Circuit traffic can also originate on an Arc sub-ring node and route across and drop from a main ring node, but only when UPSR protection schemes are used. (N)

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29. Dedicated SONET Ring Service (Cont'd) (N)

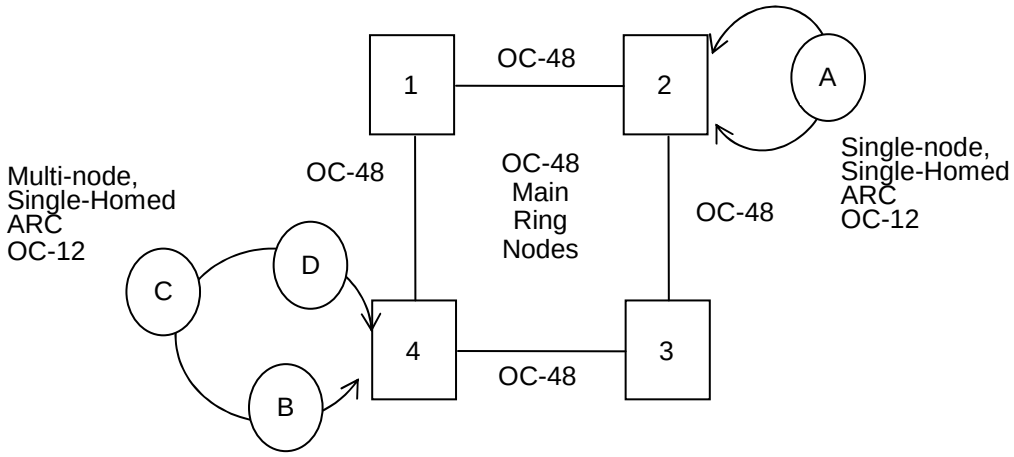
29.3 Rate Regulations (Cont'd)

(A) Rate Elements (Cont'd)

(1) Nodes (Cont'd)

(b) Arc Sub-Ring Node (Cont'd)

ARC Sub-Ring Node Diagram



ARC Sub-Ring Nodes, OC-M < OC-N

OC-48 Dedicated Ring shown as example. (N)

29. Dedicated SONET Ring Service (Cont'd)

29.3 Rate Regulations (Cont'd)

(A) Rate Elements (Cont'd)

(1) Nodes (Cont'd)

(c) Re-Map Node (T)

A Re-Map node is a ring node that is pre-equipped and dedicated to customer traffic that is re-mapped/re-routed to it by the Telephone Company (upon notification by the customer of a service outage at another customer premises node on the same dedicated ring).

Re-Map is designed as a temporary service for disaster recovery purposes only. No "normal" customer traffic will be added/dropped at the Re-Map node unless the Re-Map service is activated.

(d) Flex-Ring (T)

Flex-Ring feature provides double the standard bandwidth levels for the Dedicated Ring product. The customer has the ability to double their bandwidth without ordering the next higher ring service.

(1) Double-Rings

Double-Rings will provide the ability to place two rings on the same DSRS equipment. Nodes of the second ring must be the same as the first ring. The second OC-12 and OC-48 ring is available and will require a new TPP upon the upgrade. All nodes on the ring will be at the same level. The additional higher speed optics may contribute to slot exhaustion on the main node. The standard features and components (mileage, ports, etc.) are available as described in Section 29.3(A). The second ring will require another pair of fibers so mileage will apply to both rings. There will only be two rings available on a single SONET ring equipment. The second ring's line rate will be the same as the first ring.

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29. Dedicated SONET Ring Service (Cont'd)

29.3 Rate Regulations (Cont'd)

(A) Rate Elements (Cont'd)

(5) Optical to Electrical DS1 Add/Drop Capability [1]

This option allows an electrical DS1 to be derived from an optical OC-12 or OC-48 ring by using this capability to add/drop the electrical DS1 from an OC-3 port. The Optical-to-Electrical DS1 Add/Drop Capability charge is applied when the 85th DS-1 port is required per OC-12 node. Additional charges will apply per each subsequent increment of 84 DS-1 ports.

For SONET Rings established after 08/02/07, the Optical-to-Electrical DS-1 Add/Drop Capability charge is required when the 29th DS-1 port is ordered per OC-48 node.

(6) Dedicated SONET Ring Regenerator

Regenerators provide essential detection and retransmission of SONET Optical 155.52 Mbps, 622.08 Mbps and 2488.32 Mbps signals between nodes. Regenerators will only be provided as required by the Telephone Company when actual fiber facility distances between nodes exceed inter-nodal design limits (typically 20 to 25 miles). Regenerators will be located exclusively in Telephone Company COs, and do not allow ports to access customer service connections.

(7) Dedicated SONET Ring Connection Capacity

Maximum transport capacity of OC-3, OC-12 and OC-48 Dedicated SONET Ring Service is characterized by the total quantity of individual port-to-port connections allowed between all nodes on the ring. The DS3 Port connections shown below in this section can be exchanged with EC-1 Port connections.

For OC-3 Dedicated SONET Ring Service, the maximum ring capacity will be equal to one of the following combinations:

DS3 Port to DS3 Port Connections		DS1 Port to DS1 Port Connections
Three	and	None
Two	and	Up to 28
One	and	Up to 56
None	and	Up to 84

An OC-3 sub-ring or Arc sub-ring provided as part of OC-12 or OC-48 Dedicated SONET Ring Service has a maximum capacity equal to one of the above combinations. (N)

For OC-3 Dedicated SONET Ring Service and OC-3 sub-rings or Arc sub-rings, as part of OC-12 or OC-48 Dedicated SONET Ring Service, individual DS1 port-to-DS1 port and DS3 port-to-DS3 port connection capacities may be incrementally distributed between nodes on the ring in any manner. (N) (N)

[1] Optical to Electrical DS1 Add/Drop Capability as described in 29.3 (A)(5), following, is needed along with an OC-3 port.

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29. Dedicated SONET Ring Service (Cont'd)

29.3 Rate Regulations (Cont'd)

(A) Rate Elements (Cont'd)

(7) Dedicated SONET Ring Connection Capacity (Cont'd)

For OC-12 Dedicated SONET Ring Service, the maximum ring capacity will be equal to one of the following combinations:

DS3 Port to DS3 Port Connections		DS1 Port to DS1 Port Connections
Twelve	and	None
Eleven	and	One Group of 28
Ten	and	Two Groups of 28 (56)
Nine	and	Three Groups of 28 (84)
Eight	and	Four Groups of 28 (112)
Seven	and	Five Groups of 28 (140)
Six	and	Six Groups of 28 (168)
Five	and	Seven Groups of 28 (196)
Four	and	Eight Groups of 28 (224)
Three	and	Nine Groups of 28 (252)
Two	and	Ten Groups of 28 (280)
One	and	Eleven Groups 28 (308)
None	and	Twelve Groups of 28 (336)

An OC-12 sub-ring or Arc sub-ring provided as part of OC-48 Dedicated SONET Ring Service has a maximum capacity equal to one of the above combinations. (N)

For OC-12 Dedicated SONET Ring Service and OC-12 sub-rings or Arc sub-rings, as part of OC-48 Dedicated SONET Ring Service, individual DS1 port-to-DS1 port connection and DS3 port-to-DS3 port connection capacities may be incrementally distributed between nodes on the ring in any manner. (N) (N)

OC-12 Dedicated SONET Ring Service will also provide capability for node-to-node connection of STS-1 or STS-3c channels using OC-3 or OC-3c ports on the OC-12 ring. Each STS-1 to STS-1 channel connection or STS-1 channel to DS3 port connection requested by the customer will reduce the remaining ring capacity by the equivalent of one DS3 port-to-DS3 port connection or 28 DS1 port-to-DS1 port connections. Each STS-3c to STS-3c channel connection requested by the customer will reduce the remaining ring capacity by the equivalent of three DS3 port-to-DS3 port connections or 84 DS1 port-to-DS1 port connections.

An OC-3 Sub-ring provided as part of an OC-12 Dedicated SONET Ring Service reduces the remaining OC-12 ring capacity by the equivalent of three DS3 port-to-DS3 port connections or 84 DS1 port-to-DS1 port connections.

Depending upon the combination of drops, an Optical to Electrical DS-1 Add/Drop Capability may be required to drop the full capacity of the ring. When this occurs, the Optical to Electrical DS-1 Add/Drop Capability rate applies.

Even though the table above does not show OC-3, 10/100 Mb, and 1 Gb amounts, the maximum node to node capacity is equal to 12 STS equivalents with any combination of DS-1s, DS-3s, and OC-3s, 10/100 Mb, and 1 Gb ports.

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