



CHAPTER 1

Overview of the Cisco RAN Service Module

The Cisco ONS 15454 RAN Service Module implements the aggregation node functionality with the Cisco RAN-O solution. Installed in the Cisco ONS 15454, the Cisco RAN Service Module transmits and receives E1 data streams (for Abis) and OC-3 data streams (for UMTS) via the cross-connect cards.

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Introduction

Cisco IOS 12.2(29)SM introduces support for GSM and UMTS Radio Access Network (RAN) Optimization for mobile wireless service providers for the RAN Service Module (ONS-RAN-SVC) on a Cisco ONS 15454 platform. Cisco IOS 12.2(29)SM provides GSM and UMTS RAN Optimization (RAN-O) technology that can extend an IP network to every base station site in the mobile network with a shared backhaul transport, plus optimization to reduce bandwidth requirements.

In RAN Optimization (RAN-O), the Cisco MWR 1941-DC-A router extends IP connectivity to the cell site and the BTS/Node B. The router provides bandwidth-efficient IP transport of GSM and UMTS voice and data bearer traffic, as well as maintenance, control, and signaling traffic, over the leased line backhaul network between the BTS/Node B and leased line termination and the Cisco ONS 15454 aggregation node via compression (cRTP/cUDP) and packet multiplexing (Multilink PPP).

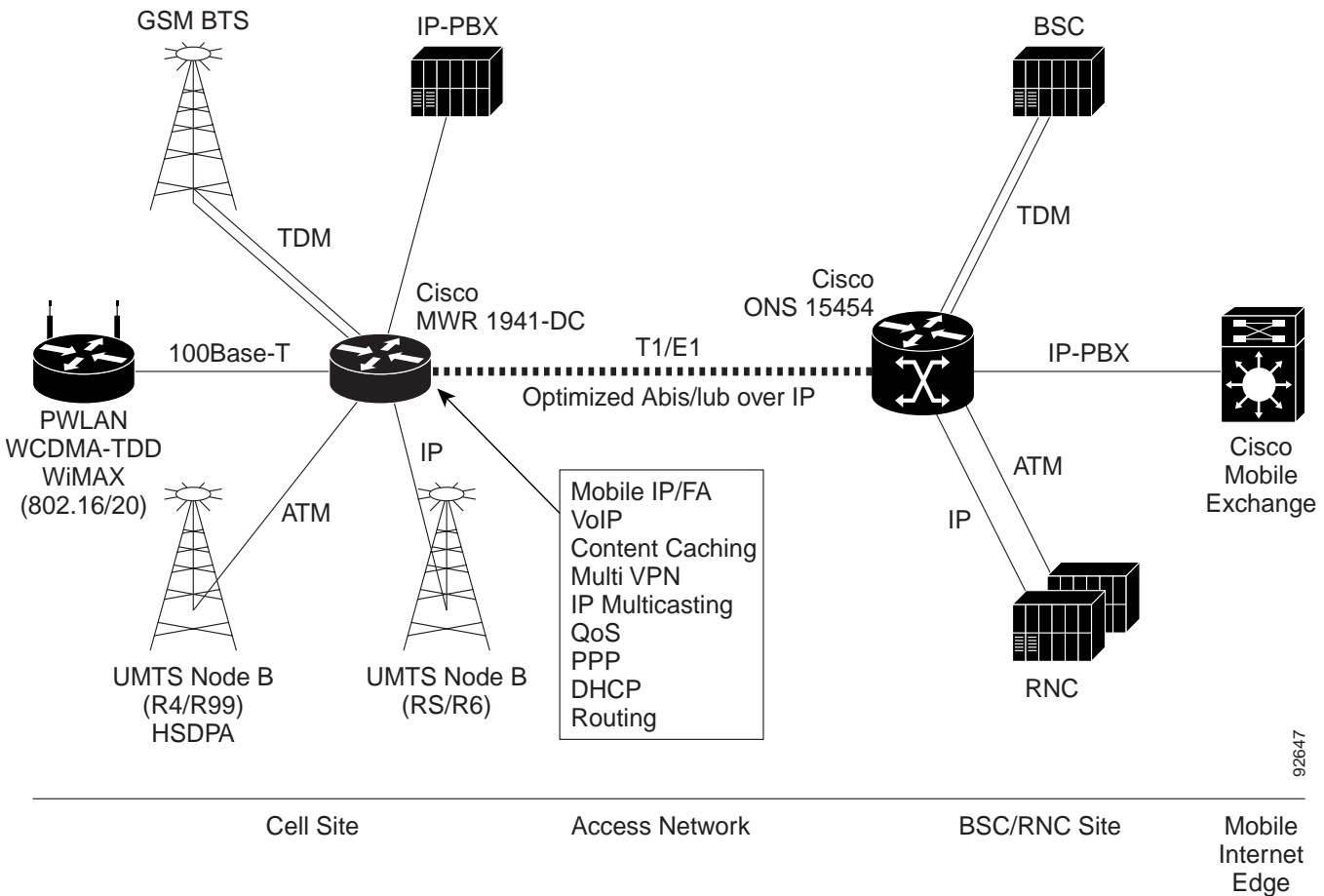
Residing in a Cisco ONS 15454, the Cisco RAN Service Module provides aggregation for traffic originating from multiple MWR cell site routers. The RAN Service Module transmits and receives short haul DS0 level data streams (for GSM applications) and shorthaul VC-4 level data streams (for UMTS applications) through ONS 15454 cross-connect cards. DS0 level channel cards connect both the long haul to the remote cell site and the short haul to GSM BSC. Clear channel VC-4 level interface cards are used on the Cisco ONS 15454 to provide the interface from the UMTS RNC to the ONS RAN Service Module.

The Cisco RAN Service Module consists of four independent IOS processors. Each Cisco RAN Service Module has four 10/100/1000 Gigabit Ethernet (RJ-45) ports with one port connected to each IOS processor. The Cisco RAN Service Module is also equipped with four VC-4 level Packet over SONET (POS) interfaces and four VC-4 level ATM interfaces. The DS0 are mapped with a maximum of 126 DS0/E1 interfaces that are distributed among the traffic CPUs for backhaul and shorthaul interfaces depending upon the application. We support a maximum of 96 for GSM-ABIS shorthaul interfaces and a maximum of 48 HDLC/PPP/backhaul interfaces

One IOS processor is dedicated as a service processor while the remaining three IOS processors are dedicated as traffic processors. The Cisco ONS RAN Service Module also includes two RJ-45 ports, one used as a DCE console (labeled Console) and the other used as a debug port (covered with a tab plate).

The Cisco ONS 15454 shelf assembly has 17 card slots that are numbered sequentially from left to right. Slots 1 – 4 and 14 – 17 are multispeed slots. Slots 5, 6, 12 and 13 are high-speed slots. Slots 7 and 11 are dedicated to TCC-I cards. Slots 8 and 10 are dedicated to cross-connect (XC10G) cards. Slot 9 is dedicated to the AIC card. The Cisco ONS RAN Service Module can be installed in Slots 1 through 6 or 12 through 17 depending on the application and line card configuration.

Figure 1 Example of Cisco MWR 1941-DC-A and Cisco ONS 15454 in a Cell Site POP



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Features of IOS Release 12.2(29)SM for the RAN Service Module

The following support features are provided by Cisco IOS Release 12.2(29)SM:

- Support for 1:N protection
- Support for SNMP versions 1 and 2c
- Support for standard ONS MIBS and IOS MIBS
- Support for the CISCO-IP-RAN-Backhaul_MIB
- Support for GSM and UMTS RAN Optimization

Limitations, Restrictions, and Important Notes

Unsupported Cisco IOS Software Features

The Cisco ONS RAN Service Module requires a special version of Cisco IOS software. Not all Cisco IOS software features can be used as the core routing is handled by the network processor. The following standard Cisco IOS software features are not supported:

- MPLS
- 802.1Q VLANs
- Frame Relay (FR)

Management Software

To manage the Cisco RAN Service Module with network management software, an IP address must be configured on the GigE port associated with the service CPU of the RAN Service Module so that this IP address can be reached by the network management server.

Redundancy Support

There is no IOS configuration to be configured on the Cisco RAN Service Module. The redundancy support for the RAN Service Module 1:N, and it is configured from CTC. The configuration on the CTC can have either one protection group with one protect card and up to seven working cards, or it can have two protection groups with one protect card and up to four working cards in each group. The revertive timer can be disabled for the Cisco RAN Service Module so a user can manually switch back during a maintenance window.

The IOS configuration on the protect card should not be modified because the protect card needs to have a clean configuration to be ready to pick up the configuration from any of the working cards in the protection group when needed.

