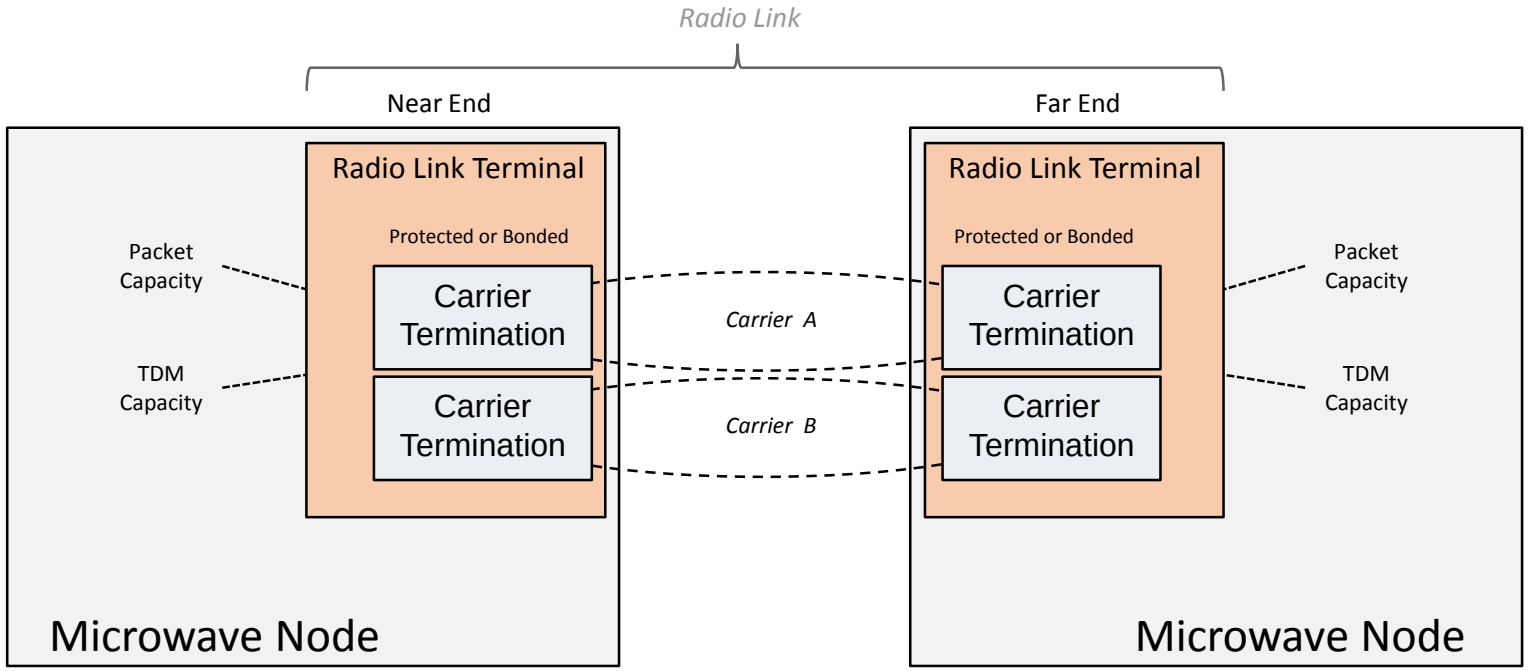
Key concepts
New NMDA Structure

draft-ietf-ccamp-mw-yang

MODEL ENTITIES

Two microwave nodes, far-end & near-end,
in a bonded 2+0 configuration



Carrier Termination:

The end-point of the carrier, including the radio transmitter & receiver.
Typically characterized by its frequency, modulation and output power.

Radio Link Terminal:

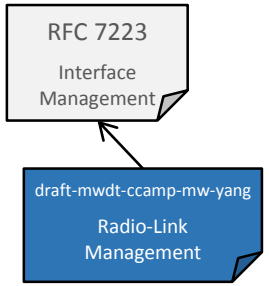
The end-point of the radio link and the interface that provides packet and/or TDM capacity that can be carried over the radio link.
It includes one or several carrier terminations and defines in what way they are used, i.e. in a protected or bonded mode.

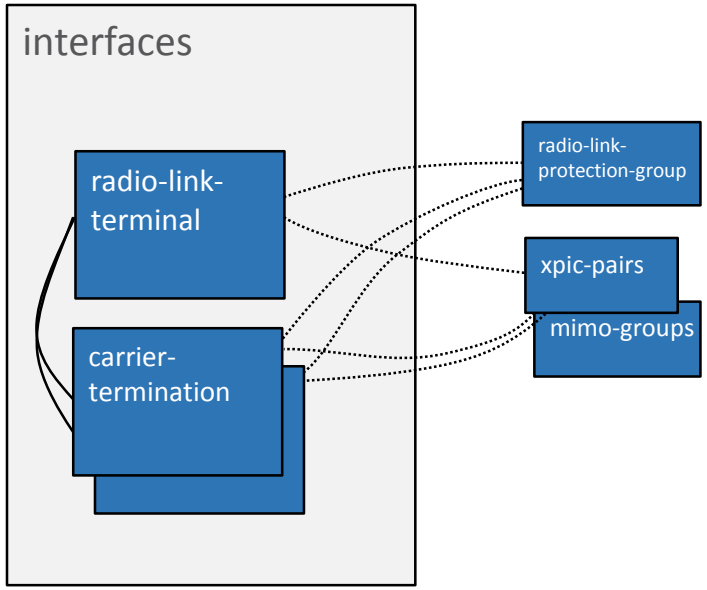
Microwave Node:

A network element containing one or several radio link terminals and carrier terminations.
Typically including other functionlity not covered by the radio link model, e.g. packet functionality and synchronization.

OVERALL MODEL STRUCTURE

The Radio Link model is an extension of the standard Interface Management Model

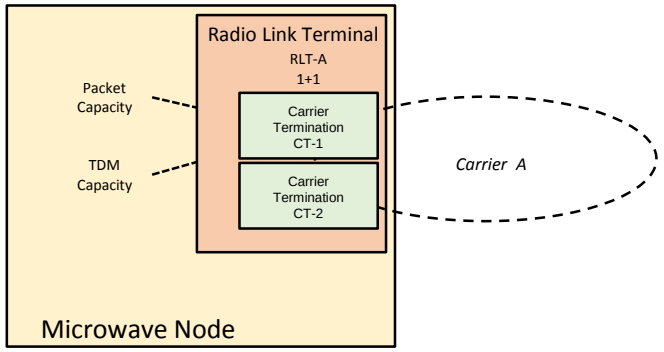


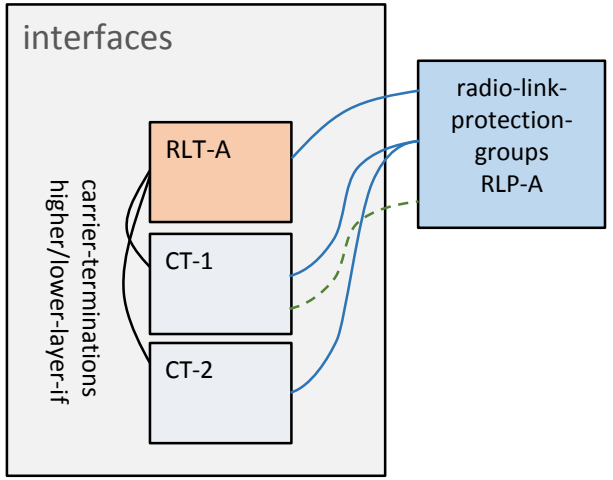


Two new interface types have been added:
- radio-link-terminal
- carrier-termination

Three new containers have been added to describe the relationship and interaction between the carrier terminations in more detail:
- radio-link-protection-groups
- xpix-pairs
- mimo-groups

1+1 - MODEL INSTANTIATION





RLT-A

RLT-Config

type = 'mrl:radio-link-terminal‘
name = 'RLT-A‘
mode = 'one-plus-one‘
carrier-terminations = interface-ref (CT-1; CT-2)
rlp-groups = leafref (RLP-A)
higher-layer-if = interface-state-ref (...)
lower-layer-if = interface-state-ref (CT-1; CT-2)

CT-1

CT-Config

type = 'mrl:carrier-termination‘
name = 'CT-1‘
carrier-id = 'A‘
higher-layer-if = interface-state-ref (RLT-A)
tx-oper-status = ‘on’

CT-2

CT-Config

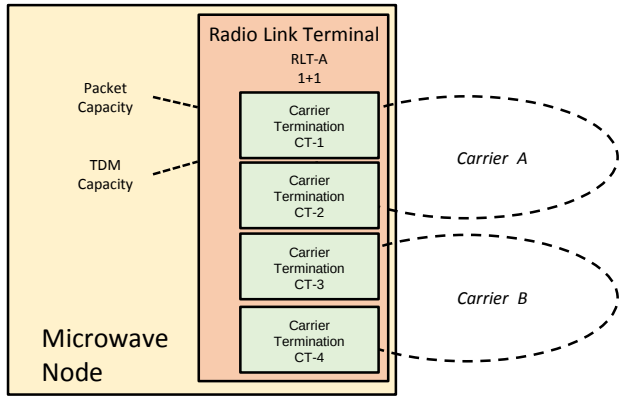
type = 'mrl:carrier-termination‘
name = 'CT-2‘
carrier-id = 'A‘
higher-layer-if = interface-state-ref (RLT-A)
tx-oper-status = ‘standby’

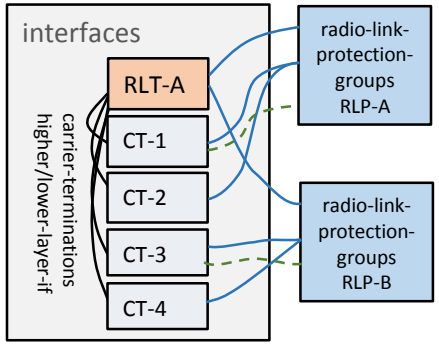
RLP-A

RLP-Group-Config

name = ‘RLP-A‘
protection-architecture-type = 'one-plus-one-type ‘
protection-operation-type = ‘revertive’
working-entity = interface-ref (CT-1)
radio-link-protection-members = interface-ref (CT-1; CT-2)
protection-status = ‘protected’

2+2 - MODEL INSTANTIATION





RLT-A

RLT-Config

type = 'mrl:radio-link-terminal‘
name = 'RLT-A‘
mode = ‘two-plus-two‘
carrier-terminations = interface-ref (CT-1; CT-2; CT-3; CT-4)
rlp-groups = leafref (RLP-A)
higher-layer-if = interface-state-ref (...)
lower-layer-if = interface-state-ref (CT-1; CT-2; CT-3; CT-4)

CT-1

CT-Config

type = 'mrl:carrier-termination‘
name = 'CT-1‘
carrier-id = 'A‘
higher-layer-if = interface-state-ref (RLT-A)
tx-oper-status = ‘on’

CT-2

CT-Config

type = 'mrl:carrier-termination‘
name = 'CT-2‘
carrier-id = ‘A‘
higher-layer-if = interface-state-ref (RLT-A)
tx-oper-status = ‘standby’

CT-3

CT-Config

type = 'mrl:carrier-termination‘
name = 'CT-3‘
carrier-id = ‘B‘
higher-layer-if = interface-state-ref (RLT-A)
tx-oper-status = ‘on’

CT-4

CT-Config

type = 'mrl:carrier-termination‘
name = 'CT-4‘
carrier-id = ‘B‘
higher-layer-if = interface-state-ref (RLT-A)
tx-oper-status = ‘standby’

RLP-A

RLP-Group-Config

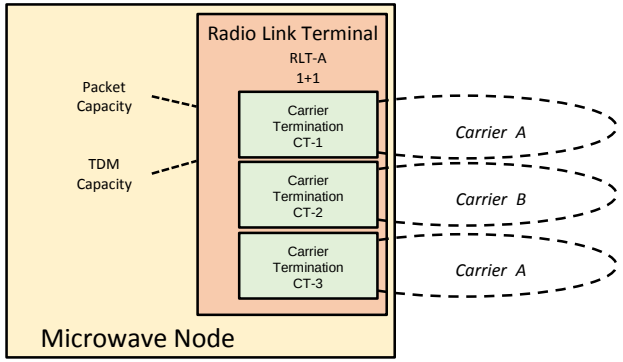
name = ‘RLP-A‘
protection-architecture-type = 'one-plus-one-type ‘
protection-operation-type = ‘revertive’
working-entity = interface-ref (CT-1)
radio-link-protection-members = interface-ref (CT-1; CT-2)
protection-status = ‘protected’

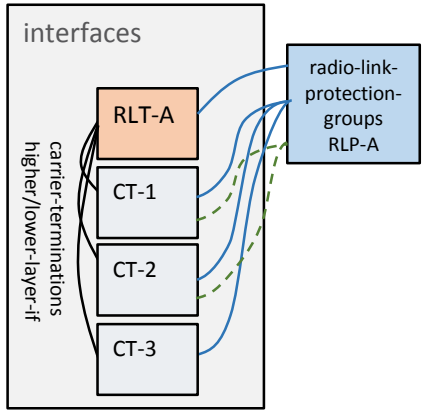
RLP-B

RLP-Group-Config

name = ‘RLP-B‘
protection-architecture-type = 'one-plus-one-type ‘
protection-operation-type = ‘revertive’
working-entity = interface-ref (CT-3)
radio-link-protection-members = interface-ref (CT-3; CT-4)
protection-status = ‘protected’

1:2 - MODEL INSTANTIATION





RLT-A

RLT-Config

type = 'mrl:radio-link-terminal'
name = 'RLT-A'
mode = 'one-to-two'
carrier-terminations = interface-ref (CT-1; CT-2; CT-3)
rlp-groups = leafref (RLP-A)
higher-layer-if = interface-state-ref (...)
lower-layer-if = interface-state-ref (CT-1; CT-2; CT-3)

CT-1

CT-Config

type = 'mrl:carrier-termination'
name = 'CT-1'
carrier-id = 'A'
higher-layer-if = interface-state-ref (RLT-A)
tx-oper-status = 'on'

CT-2

CT-Config

type = 'mrl:carrier-termination'
name = 'CT-2'
carrier-id = 'B'
higher-layer-if = interface-state-ref (RLT-A)
tx-oper-status = 'on'

CT-3

CT-Config

type = 'mrl:carrier-termination'
name = 'CT-3'
carrier-id = 'A'
higher-layer-if = interface-state-ref (RLT-A)
tx-oper-status = 'standby'

RLP-A

RLP-Group-Config

name = 'RLP-A'
protection-architecture-type = 'one-to-n-type'
protection-operation-type = 'revertive'
working-entity = interface-ref (CT-1; CT-2)
radio-link-protection-members = interface-ref (CT-1; CT-2; CT-3)
protection-status = 'protected'