



# Gain Estimator

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This chapter describes the Gain Estimator optical application for Cisco NCS 1010.

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## Overview of Gain Estimator

Gain Estimator analyses the span loss and sets the gain mode of the EDFA amplifier and provides the initial target gain for the amplifier. EDFA amplifiers are present in both OLT and ILA variants of NCS 1010. These EDFA amplifiers are variable-gain optical amplifiers capable of working at two different gain ranges or modes. The modes are normal mode and extended mode. Extended mode provides higher gain than the normal mode. Running the Gain Estimator is a traffic-impacting operation.

Gain Estimator uses the following parameters to estimate the gain necessary on a span.

- Ingress span loss
- Span length
- Tx connector loss
- Spectrum density
- Fiber type
- Raman gain (only on Raman spans)

Gain estimator uses the estimated gain to set the gain range.

NCS 1010 automatically triggers gain estimator:

- During automatic link bring up
- After Line Card cold reload
- After device power cycle

### Start Gain Estimator

Use the **olc start-gain-estimation controller ots** *Rack/Slot/Instance/Port* command to trigger the gain estimation operation.

The following output is a sample of the **olc start-gain-estimation controller ots 0/0/0/0** command.

```
RP/0/RP0/CPU0:ios#olc start-gain-estimation controller ots 0/0/0/0
```

### Disable Gain Estimator

Use the following commands to disable Gain Estimator.

```
configure
optical-line-control
controller ots Rack/Slot/Instance/Port
gain-estimator disable
commit
end
```

The following output is a sample configuration that disables Gain Estimator.

```
RP/0/RP0/CPU0:ios#configure terminal
Mon Jun 13 05:35:20.510 UTC
RP/0/RP0/CPU0:ios(config)#optical-line-control
RP/0/RP0/CPU0:ios(config-olc)#controller ots 0/0/0/0
RP/0/RP0/CPU0:ios(config-olc-ots)#gain-estimator disable
RP/0/RP0/CPU0:ios(config-olc-ots)#commit
```

### Enable Gain Estimator

Use the following set of commands to enable Gain Estimator.

```
configure
optical-line-control
controller ots Rack/Slot/Instance/Port
gain-estimator enable
commit
end
```

The following output is a sample configuration that enables Gain Estimator.

```
RP/0/RP0/CPU0:ios#configure terminal
Mon Jun 13 05:35:27.511 UTC
RP/0/RP0/CPU0:ios(config)#optical-line-control
RP/0/RP0/CPU0:ios(config-olc)#controller ots 0/0/0/0
RP/0/RP0/CPU0:ios(config-olc-ots)#gain-estimator enable
RP/0/RP0/CPU0:ios(config-olc-ots)#commit
```

## View Gain Estimator Status

Use the **show olc gain-estimator** command to view the gain estimation details.

The following output is a sample of the **show olc gain-estimator** command.

```
RP/0/RP0/CPU0:ios#show olc gain-estimator
Thu May 12 09:30:39.987 UTC
Controller                               : Ots0/0/0/0
Egress Gain Estimator Status             : IDLE
Egress Estimated Gain                     : 25.9 dB
Egress Estimated Gain Mode               : Extended
```

```
Egress Gain Estimation Timestamp : 2022-05-07 09:16:53
Controller                        : Ots0/0/0/2
Egress Gain Estimator Status      : IDLE
Egress Estimated Gain             : 11.7 dB
Egress Estimated Gain Mode        : Normal
Egress Gain Estimation Timestamp  : 2022-05-07 10:13:53
```

Use the **show olc gain-estimator controller ots *Rack/Slot/Instance/Port*** command to view the gain estimation details for a specific controller.

The following output is a sample of the **show olc gain-estimator controller ots *Rack/Slot/Instance/Port*** command.

```
RP/0/RP0/CPU0:ios#show olc gain-estimator controller Ots 0/0/0/0
Fri Jun 10 05:47:21.119 UTC
Controller                        : Ots0/0/0/0
Ingress Gain Estimator Status      : IDLE
Ingress Estimated Gain             : 21.7 dB
Ingress Estimated Gain Mode        : Normal
Ingress Gain Estimation Timestamp  : 2022-06-10 05:46:48
```

