



Gain Estimator

This chapter describes the Gain Estimator optical application for Cisco NCS 1020.

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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 line cards of NCS 1020. 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

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

NCS 1020 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
Thu May 12 09:32:05.414 UTC
```

```
Gain Estimation: is running
```

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

Start Gain Estimator Manually

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

Use the following commands to sets the Gain Estimator to manual mode:

```
configure
```

```
optical-line-control
```

```
controller ots Rack/Slot/Instance/Port
```

```
gain-estimator manual
```

```
commit
```

```
end
```

The following output is a sample configuration sets the Gain Estimator to manual mode:

```
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 manual
RP/0/RP0/CPU0:ios(config-olc-ots)#commit
```

The following sample output displays Gain Estimator Manual status:

```
RP/0/RP0/CPU0:SOLN-ILA-1#show olc gain-estimator controller Ots 0/0/0/0
Tue Jun 11 10:35:38.808 IST
Controller                               : Ots0/0/0/0
Egress Gain Estimator Status           : MANUAL
Egress Estimated Gain                     : 15.8 dB
Egress Estimated Gain Mode                 : Normal
Egress Gain Estimation Timestamp           : 2024-06-03 17:03:38
```

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:SOLN-OLT-1#show olc gain-estimator
Tue Jun 11 10:36:30.944 IST
Controller                               : Ots0/0/0/0
Ingress Gain Estimator Status            : MANUAL
Ingress Estimated Gain                   : 26.1 dB
Ingress Estimated Gain Mode              : Extended
Ingress Gain Estimation Timestamp        : 2024-06-03 17:04:25
```

