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## Configuring ClientLink

*17 Sunday Mar 2013*

Posted by [nayarasi](#) in [RRM](#)

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[ClientLink](#), [RRM](#)

Client Link (know as beamforming as well) is a spatial-filtering mechanism used at a transmitter to improve the received signal power or signal to noise (SNR) ratio at an intended receiver(client). ClientLink uses multiple transmit antenna to focus transmission in the direction of a 802.11a or 802.11g client ( true for WLC 7.0.116.0 code & later releases with 3600 may support this for n clinets as well- Called ClientLink 2.0) which increases the downlink SNR and the data rate to the client, reduces coverage holes & enhance overall system performance. Below diagram shows graphical representation of effect of client link.



ClientLink starts only when signal from the client falls below these thresholds:

802.11a clients – RSSI of -60 dBm or weaker

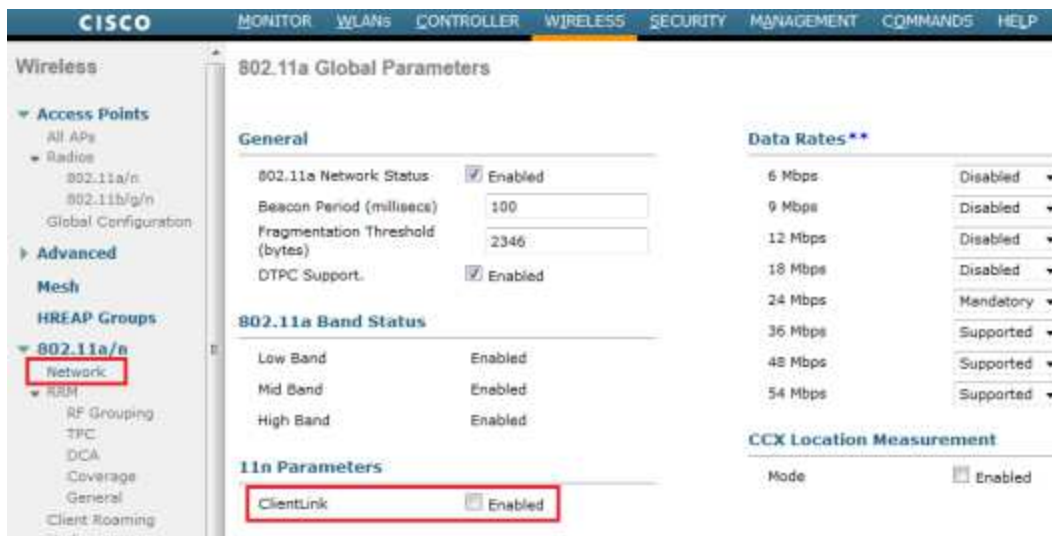
802.11g clients – RSSI of -50 dBm or weaker

AP actively maintains ClientLink data for upto 15 clients per radio.

When configuring ClientLink following guideline should followed.

1. ClientLink is supported only for legacy OFDM data rates (6,9,12,18,24,36,48,54 Mbps)
2. Only APs that support 802.11n can use client link
3. Two or more antennas must be enabled for transmission
4. OFDM data rates must be enabled.

Following screen “Wireless -> 802.11b|802.11a ” shows the setting to enable client link.



You can override this and enable or disable it per AP. To do that you have to go to the required AP ” Wireless -> Access Points -> Radios > 802.11a/n or 802.11b/g/n” page. Below shows disabling client link for a AP (named LWAP-03)

The screenshot shows the configuration page for a Cisco Wireless LAN Controller (WLC). The left sidebar shows the navigation tree with '802.11a/n' selected. The main content area is divided into several sections:

- General:** AP Name: LWAP-03, Admin Status: Enable, Operational Status: UP, Slot #: 1.
- 11n Parameters:** 11n Supported: Yes, ClientLink:  (highlighted with a red box).
- CleanAir:** CleanAir Capable: Yes, CleanAir Admin Status: Enable. Note: CleanAir enable will take effect only if it is enabled on this band.
- Antenna Parameters:** Antenna Type: Internal, Antenna: A, B (both checked).
- RF Channel Assignment:** Current Channel: 40, Channel Width: 20 Mhz, Assignment Method: Global.
- Tx Power Level Assignment:** Current Tx Power Level: 1, Assignment Method: Global.
- Performance Profile:** View and edit Performance Profile for this AP. Button: Performance Profile.

Note: Changing any of the parameters causes the Radio to restart and this may result in loss of connectivity for some clients.

By using CLI you can enable this as well. see below commands

```
config 802.11a|802.11b beamforming global enable|disable
config 802.11a|802.11b beamforming ap <AP_name> enable|disable
```

You can verify this by “show 802.11a” or “show ap config 802.11a <ap\_name>” CLI commands as shown below.

```
(WLC1) >show 802.11a
```

```
.
.
Beacon Interval..... 100
CF Pollable mandatory..... Disabled
CF Poll Request mandatory..... Disabled
CFP Period..... 4
CFP Maximum Duration..... 60
Default Channel..... 36
Default Tx Power Level..... 0
DTPC Status..... Enabled
Fragmentation Threshold..... 2346
TI Threshold..... -50
Legacy Tx Beamforming setting..... Enabled
Traffic Stream Metrics Status..... Disabled
Expedited BW Request Status..... Disabled
World Mode..... Enabled
EDCA profile type..... optimized-video-voice
```

```
(WLC2) >show ap config 802.11a LWAP-03
```

```
.
.
Phy OFDM parameters
Configuration ..... AUTOMATIC
Current Channel ..... 40
Extension Channel ..... NONE
Channel Width..... 20 Mhz
Allowed Channel List..... 36,40,44,48,52,56,60,64,149,153,157,161
TI Threshold ..... -50
Legacy Tx Beamforming Configuration ..... AUTOMATIC
Legacy Tx Beamforming ..... ENABLED
Antenna Type..... INTERNAL_ANTENNA
Internal Antenna Gain (in .5 dBi units).... 8
.
```

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## 5 thoughts on “Configuring ClientLink”

1.  [getmaximum](#) said:

[May 5, 2014 at 11:45 pm](#)

Nowdays even 1600 Series AP is Clientlink 2.0 capable, it pleases me.

But it's interesting to know how Clientlink works in real life.

As I not use x600 Sereies AP before, can you Rasika please share yours experience with beamforming?

This week I'll speak with our Medical College IT director about new Wi-Fi implementation in their educational buildings and information about real-life experience will be important for him.

### Reply

-  [nayarasi](#) said:

[May 6, 2014 at 7:21 pm](#)

Hi Maksim,

I have not deployed 1600/2600 in our environment (only 3600 in that x600 series).

In general I would suggest at least 2600 or 2700 series AP for typical enterprise deployment. If you could afford 3600/3700 it is much better.

Client link in real life, you have to do some testing & verify the difference. But in my case I have not put that much effort to verify those features.

Regards  
Rasika

Reply

2.  Jude *said:*

[May 7, 2014 at 1:13 pm](#)

I have a cisco aircap 3602i-e-k9 ap I just acquired, I have tried all the default IPs I know, but could not log in. Please how do I log in to it's GUI and configure it?  
Thanks.

Reply

o  [nayarasi](#) *said:*

[May 7, 2014 at 3:59 pm](#)

It may not have default IP. You just need to get into CLI access via console cable (Cisco/Cisco) should work if it is brand new access point.

Depend on the software it has (CAP-Lightweight or SAP-Standalone) either it will require a WLC to operate. If it comes with Standalone image you can configure it via GUI or CLI.

HTH  
Rasika

Reply

3.  Babak *said:*

[September 17, 2014 at 11:18 am](#)

Thanks.

Reply

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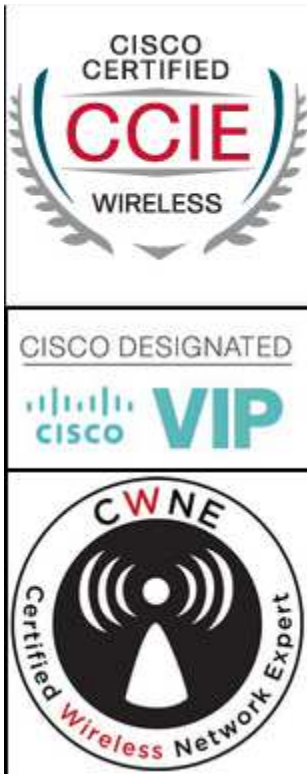


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