

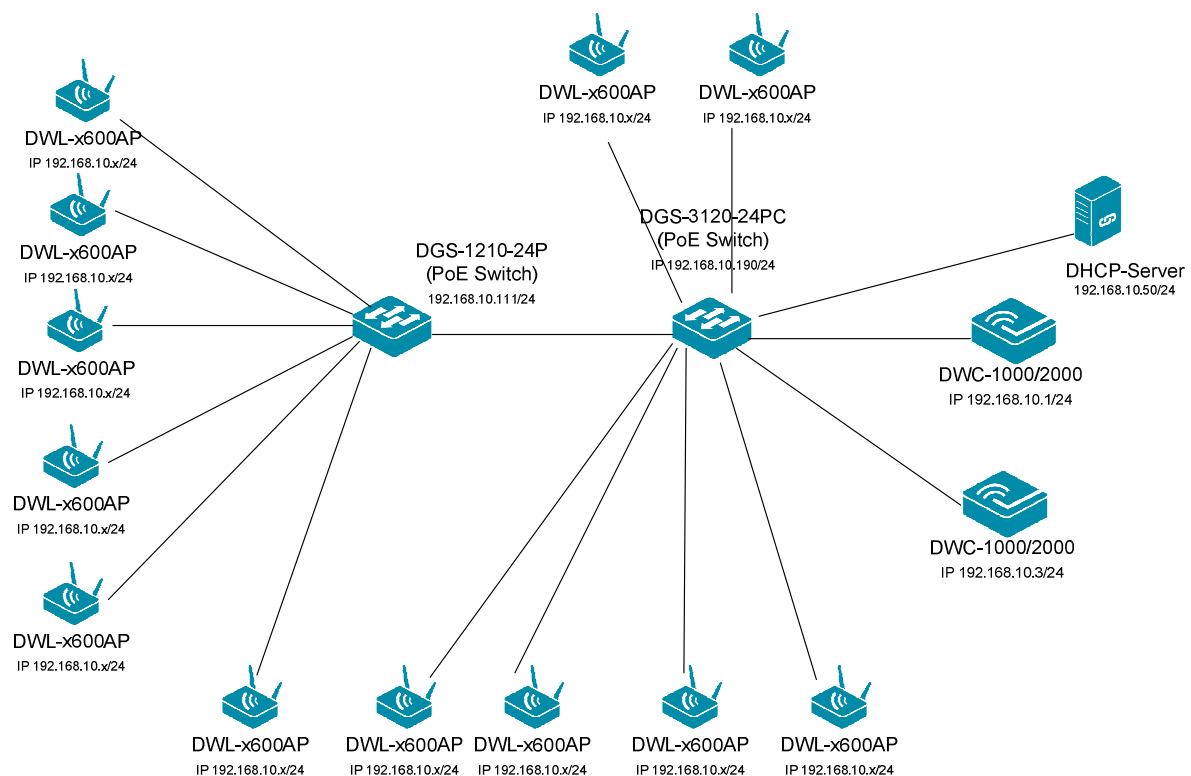
# HowTo: Einrichtung eines Cluster zwischen 2 und mehr DWC-1000

## [Voraussetzungen]

1. DWC-2000 mit Firmware Version: 4.4.0.3B101 und höher
2. DWC-1000 mit Firmware Version: 4.4.1.2 und höher
2. Kompatibler AP mit aktueller Firmware > 4.2.0.x, und höher (DWL-8610, DWL-8600AP, DWL-6700, DWL-6610, DWL-6600AP, DWL-3600AP & DWL-2600AP)

## [Szenario]

2 DWC-1000/2000 sollen im Cluster verbunden werden, um insgesamt 12 x DWL-6600AP zu verwalten. (Dieser Aufbau kann, je nach Anzahl der vorhandenen AP-Lizenzen, auf max. 96 APs im Peer-Verband DWC-1000 sowie 1024 APs im Peer-Verband DWC-2000 erweitert werden)



**[Vorbereitung]**

- ⇒ Der DWC-1000/2000 hat im Auslieferungszustand die Standard IP 192.168.10.1/24 sowie den Benutzernamen „admin“ & Passwort „admin“
- ⇒ Bitte ändern Sie dies bei der Ersteinrichtung (Integration in Ihre bestehende Infrastruktur) des DWC-1000/2000 in Ihrem Netzwerk, für die genaue Vorgehensweise der Einstellung der IP & des Benutzernamens schlagen Sie bitte im Handbuch ([ftp://ftp.dlink.de/dwc/dwc-1000/documentation/DWC-1000\\_HowTo/](ftp://ftp.dlink.de/dwc/dwc-1000/documentation/DWC-1000_HowTo/) && [ftp://ftp.dlink.de/dwc/dwc-2000/documentation/DWC-2000\\_HowTo/](ftp://ftp.dlink.de/dwc/dwc-2000/documentation/DWC-2000_HowTo/)) nach
- ⇒ Stellen Sie bitte sicher, dass Sie die aktuellste Firmware für den DWC-1000 installiert haben ([ftp://ftp.dlink.de/dwc/dwc-1000/driver\\_software/](ftp://ftp.dlink.de/dwc/dwc-1000/driver_software/) && [ftp://ftp.dlink.de/dwc/dwc-2000/driver\\_software/](ftp://ftp.dlink.de/dwc/dwc-2000/driver_software/))
- ⇒ Bitte lesen Sie vorab das Handbuch und die bereits vorhandenen Anleitungen um die grundlegende Konfiguration des DWC-1000/2000 zu erledigen.
- ⇒ Bitte lesen Sie vorab das Handbuch und die bereits vorhandenen Anleitungen um die grundlegende Konfiguration des entsprechenden DWL-x600 zu erledigen.
- ⇒ **Mit der derzeitigen Firmwareversion werden im Peer-Verband bei einem Ausfall Captive Portal Sitzungen und Benutzer nicht vom Mastercontroller auf den Slavecontroller übertragen.**
- ⇒ **Je nach Konfiguration des Peering ist es möglich, ein Active-Backup Ausfallszenario oder eine Erweiterung der maximalen Anzahl der managebaren APs zu konfigurieren. Eine Mischung der beiden Betriebsarten ist innerhalb des Gesamtmaximums der APs je DWC und der maximalen APs im Cluster/Peer-Verband möglich.**

## [Abgeschlossene Vorarbeiten]

1.) IP Adresseinstellungen der entsprechenden DWC-1000/2000 durchgeführt

a. DWC-1000 Peer-Master IP = 192.168.10.1/24

Network » LAN » LAN Settings

The LAN Configuration page allows you to configure the LAN interface of the router including the DHCP Server which runs on it and Changes here affect all devices connected to the router's LAN switch and also wireless LAN clients. Note that a change to the LAN IP address will require all LAN hosts to be in the same subnet and use the new address to access this GUI.

### LAN Settings

**IP Address Setup**

IP Address:

Subnet Mask:

**DHCP Setup**

DHCP Mode:

Default Gateway:

Domain Name:

Lease Time:  [Range: 1 - 262800] Hours

Configure DNS / WINS:

Primary DNS Server:

b. DWC-1000 Peer-Slave IP = 192.168.10.3/24

Network » LAN » LAN Settings » IPv4 LAN Settings

The LAN Configuration page allows you to configure the LAN interface of the controller including the DHCP Server which runs on it and Changes here affect all devices connected to the controller's LAN switch and also wireless LAN clients. Note that a change to the LAN IP address will require all LAN hosts to be in the same subnet and use the new address to access this GUI.

### LAN Settings

**IPv4 LAN Settings** | IPv6 LAN Settings | IPv6 Address Pools | IPv6 Prefix Length | Router Advertisement | Advertisement Prefixes

**IP Address Setup**

IP Address:

Subnet Mask:

**DHCP Setup**

DHCP Mode:

Domain Name:

**Default Route**

Enable Default Route:

Gateway:

DNS Server:

SNAT:  OFF

2.) Das AP-Profil wurde bereits am zukünftigen Peer-Master DWC-1000 erstellt und konfiguriert.

Wireless » Access Point » AP Profiles » AP Profile Radio

AP Profiles | **AP Profile Radio** | AP Profile SSID | AP Profile QoS

This page contains several parameters that are not available for the default. AP Profile.AP can support up to two radios. By default, Radio 1 operates in the IEEE 802.11a/n/ac mode, and Radio 2 operates in the IEEE 802.11b/g/n mode. The difference between these modes is the frequency in which they operate. IEEE 802.11a/n/ac operates at 5 Ghz frequency and IEEE 802.11b/g/n operates at 2.4 GHz frequency.

**Access Point Profiles Radio List**

Show 10 entries [Right click on record to get more options]

AP Profile Name	Radio Mode	Status	Sentry Mode	Initial Power	Minimum Power	Max. Clients	Support Channels
1-Default	802.11n/ac	On	Disabled	80%	60%	30	36,40,44,48,52,56,60,64,100,104,108,112
1-Default	802.11b/g/n	On	Disabled	80%	60%	30	1,2,3,4,5,6,7,8,9,10,11,12,13

Showing 1 to 2 of 2 entries

First Previous 1 Next Last

Wireless » Access Point » AP Profiles » AP Profile SSID

AP Profiles | AP Profile Radio | **AP Profile SSID** | AP Profile QoS

This page displays the virtual access point (VAP) settings associated with the selected AP profile. Each VAP is identified by its network number and Service Set Identifier (SSID). We can configure and enable up to 16 VAPs per radio on each physical access point.

**Access Point Profiles SSID List**

AP Profile: 1-Default

Radio Mode:  802.11n/ac  802.11b/g/n

Show 10 entries [Right click on record to get more options]

SSID Name	SSID Status	VLAN	Hide SSID	Security	Redirect	Captive Portal
1-broadway	Enabled	1-Default	Disabled	WPA Personal	None	Free
2-Broadway	Enabled	1-Default	Disabled	WPA Personal	None	Free

- 3.) Bei einem Layer3 Peering die IP Adresse des „Peer“ Switches in der Poll List eintragen
  - a. Peer Master

The screenshot shows the 'IP Discovery' configuration page. At the top, there are navigation tabs for 'IP Discovery' and 'VLANs Discovery'. Below the tabs is a descriptive paragraph: 'This page contain all the information about IP Address which can be configured for peer controllers. The IP Discovery list can contain the IP addresses of peer controller and APs for the controller to discover and associate with as part of the WLAN.' Under the 'IP Discovery' heading, there is a 'Pool List Discovery Setup' section with a sub-label 'L3 / IP Discovery'. It features an 'ON' toggle switch and 'Save' and 'Cancel' buttons. Below this is the 'IP Discovered List' section, which includes a search bar and a table. The table has two columns: 'IP Address' and 'Status'. One entry is visible: IP Address '192.168.10.3' with Status 'Polled'. Navigation buttons for 'First', 'Previous', 'Next', and 'Last' are present. At the bottom, there is a button labeled 'Add New IP Addresses to Poll'.

- b. Peer Slave

The screenshot shows the 'IP Discovery' configuration page, similar to the one above. It includes the same navigation tabs and descriptive text. The 'Pool List Discovery Setup' section has the 'ON' toggle switch and 'Save' and 'Cancel' buttons. The 'IP Discovered List' section features a search bar and a table with columns 'IP Address' and 'Status'. One entry is visible: IP Address '192.168.10.1' with Status 'Not Polled'. Navigation buttons for 'First', 'Previous', 'Next', and 'Last' are present.

## [Einstellen des Peering]

### 1.) Auswahl des Master-Controllers

- a. Gehen Sie hierzu auf „Advanced -> Global -> General“
- b. Passen Sie nun die „Peer Group ID“ des PeerMaster DWC-1000/2000 an
- c. Passen Sie nun die „Cluster Priority“ des PeerMaster DWC-1000/2000 an
  - i. Cluster Master wird der DWC-1000/2000 mit dem höchsten Wert (z.B. 255)

Wireless » General

This page will guide you through common and easy steps to configure your DWC-1000 router WLAN global settings. Make sure that WLAN controller is being enabled for working of wireless functionality.

### General Setting

#### WLAN Global Setup

WLAN Controller Operational Status	<input checked="" type="checkbox"/> ON
IP Address	192.168.10.1
Peer Group ID	111 [Default: 1, Range: 1 - 255]
Client Roam Timeout	1 [Range: 1 - 120] Seconds
Ad Hoc Client Status Timeout	1 [Range: 0 - 168] Hours
AP Failure Status Timeout	1 [Range: 0 - 168] Hours
Client MAC Authentication Mode	<input checked="" type="radio"/> White-list <input type="radio"/> Black-list
RF Scan Status Timeout	1 [Range: 0 - 168] Hours
Detected Clients Status Timeout	1 [Range: 0 - 168] Hours
Tunnel IP MTU Size	<input checked="" type="radio"/> 1500 <input type="radio"/> 1520
Cluster Priority	255 [Range: 0 - 255]
AP Client QoS	<input checked="" type="checkbox"/> ON
Radius Authentication Server	Default-RADIUS-Server
Radius Authentication Server Status	Configured
Radius Accounting Server	Default-RADIUS-Server
Radius Accounting Server Status	Configured
Global Accounting Mode	<input type="checkbox"/> OFF
<h4>AP Validation</h4>	
AP MAC Validation	<input checked="" type="radio"/> Local <input type="radio"/> Radius
Require Authentication Passphrase	<input type="checkbox"/> OFF
Manage AP with Previous Release Code	<input type="checkbox"/> OFF
<h4>Country Configuration</h4>	
Country Code	DE - Germany

Save Cancel

Mittels des Button „Save Setting“ speichern Sie Ihre Änderungen ab.

- d. Führen Sie diesen Vorgang nun erneut für den PeerSlave-DWC-1000/2000 durch
- i. Cluster Slave wird der DWC-1000/2000 mit dem kleinsten Wert (z.B. 1)

**General Setting**

**WLAN Global Setup**

IP Address	192.168.10.3
Peer Group ID	111 [Default: 1, Range: 1 - 255]
Client Roam Timeout	1 [Range: 1 - 120] Seconds
Ad Hoc Client Status Timeout	1 [Range: 0 - 168] Hours
AP Failure Status Timeout	1 [Range: 0 - 168] Hours
Client MAC Authentication Mode	<input checked="" type="radio"/> White-list <input type="radio"/> Black-list
RF Scan Status Timeout	1 [Range: 0 - 168] Hours
Detected Clients Status Timeout	1 [Range: 0 - 168] Hours
Tunnel IP MTU Size	<input checked="" type="radio"/> 1500 <input type="radio"/> 1520
Cluster Priority	1 [Range: 0 - 255]
AP Client QoS	<input checked="" type="checkbox"/> ON <input type="checkbox"/> OFF
Radius Authentication Server	Default-RADIUS-Server
Radius Authentication Server Status	Configured
Radius Accounting Server	Default-RADIUS-Server
Radius Accounting Server Status	Configured
Global Accounting Mode	<input type="checkbox"/> ON <input checked="" type="checkbox"/> OFF

**AP Validation**

AP MAC Validation	<input checked="" type="radio"/> Local <input type="radio"/> Radius
Require Authentication Passphrase	<input type="checkbox"/> ON <input checked="" type="checkbox"/> OFF
Manage AP with Previous Release Code	<input type="checkbox"/> ON <input checked="" type="checkbox"/> OFF

**Country Configuration**

Country Code	DE - Germany
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- 2.) Passen Sie jetzt die zu peerenden Einstellungen auf dem Master-Controller an
  - a. Wählen Sie die zu peerenden Einstellungen aus

Wireless » Peer Group » Peer Configuration ? ↻

This page allows you to select which parts of the configuration to copy to one or more peer controllers in the group. You can make changes to a configuration that has been sent to one or more peer controllers, and you can make changes to a configuration received from a peer controller. No changes automatically propagate from one controller to the cluster; you must manually initiate a request on one controller in order to copy any configuration to its peers.

### Peer Configuration

General	<input type="checkbox"/>
Discovery	<input type="checkbox"/>
Channel / Power	<input type="checkbox"/>
AP Database	<input type="checkbox"/>
AP Profiles	<input type="checkbox"/>
MAC Authentication Database	<input type="checkbox"/>
Captive Portal	<input type="checkbox"/>
Radius Client	<input type="checkbox"/>
Controller Provisioning Mode	<input type="checkbox"/>
Mutual Authentication Mode	<input type="checkbox"/>
Unmanaged AP Reprovisioning Mode	<input type="checkbox"/>

Mittels des Button „Save Setting“ speichern Sie Ihre Änderungen ab.

**! Beim DWC-1000 gibt es u.U. nicht alle Peer-Optionen des DWC-2000 !**



b. Wiederholen Sie den Vorgang auf dem Slave-Controller

Wireless >> Peer Group >> Peer Configuration ? ↻

This page allows you to select which parts of the configuration to copy to one or more peer controllers in the group. You can make changes to a configuration that has been sent to one or more peer controllers, and you can make changes to a configuration received from a peer controller. No changes automatically propagate from one controller to the cluster; you must manually initiate a request on one controller in order to copy any configuration to its peers.

### Peer Configuration

General	<input type="checkbox"/> ON <input type="checkbox"/> OFF
Discovery	<input type="checkbox"/> ON <input type="checkbox"/> OFF
Channel / Power	<input type="checkbox"/> ON <input type="checkbox"/> OFF
AP Database	<input type="checkbox"/> ON <input type="checkbox"/> OFF
AP Profiles	<input type="checkbox"/> ON <input type="checkbox"/> OFF
MAC Authentication Database	<input type="checkbox"/> ON <input type="checkbox"/> OFF
Captive Portal	<input type="checkbox"/> ON <input type="checkbox"/> OFF
Radius Client	<input type="checkbox"/> ON <input type="checkbox"/> OFF
Controller Provisioning Mode	<input type="checkbox"/> ON <input type="checkbox"/> OFF
Mutual Authentication Mode	<input type="checkbox"/> ON <input type="checkbox"/> OFF
Unmanaged AP Reprovisioning Mode	<input type="checkbox"/> ON <input type="checkbox"/> OFF

Mittels des Button „Save Setting“ speichern Sie Ihre Änderungen ab.

- c. Auf dem Peer Master wählen Sie nun die IP-Adresse des/der Slave DWC-1000 aus
- d. Mittels des Button „Start Sync for All Peers“ führen Sie nun das Übertragen der Einstellungen vom Peer-Master zum Peer-Slave aus

Operation Succeeded

This page provides information about the status of the configuration upgrade on the controllers in the cluster. The Peer Controller Configuration feature allows you to send a variety of configuration information from one controller to all other controllers. In addition to keeping the controllers synchronized, this function allows you to manage all wireless controllers in the cluster from one controller.

### Peer Status

Configuration Request Status	
Status	Send Requested
Total Count	1
Success Count	0
Failure Count	0

**Peer Configuration Sync**

Show  entries [Right click on record to get more options]

Peer IP Address	Configuration Request Status
192.168.10.3	Send Requested

Showing 1 to 1 of 1 entries

- e. Anschließend werden die Daten vom Peer-Master an den/die entsprechenden Peer-Slaves übertragen

Wireless » Peer Group » Peer Status ? ↻

This page provides information about the status of the configuration upgrade on the controllers in the cluster. The Peer Controller Configuration feature allows you to send a variety of configuration information from one controller to all other controllers. In addition to keeping the controllers synchronized, this function allows you to manage all wireless controllers in the cluster from one controller

**Peer Status**

*Configuration Request Status*

Status	Sending Config
Total Count	1
Success Count	0
Failure Count	0

*Peer Configuration Sync*

Show 10 entries [Right click on record to get more options]

Peer IP Address	Configuration Request Status
192.168.10.3	Send in Progress

Showing 1 to 1 of 1 entries First Previous 1 Next Last

[Start Sync for All Peers](#)

Wireless » Peer Group » Peer Status ? ↻

This page provides information about the status of the configuration upgrade on the controllers in the cluster. The Peer Controller Configuration feature allows you to send a variety of configuration information from one controller to all other controllers. In addition to keeping the controllers synchronized, this function allows you to manage all wireless controllers in the cluster from one controller

**Peer Status**

*Configuration Request Status*

Status	Complete
Total Count	1
Success Count	1
Failure Count	0

*Peer Configuration Sync*

Show 10 entries [Right click on record to get more options]

Peer IP Address	Configuration Request Status
192.168.10.3	Success

Showing 1 to 1 of 1 entries First Previous 1 Next Last

[Start Sync for All Peers](#)

3.) Nach dem erfolgreichen Peer-Vorgang prüfen Sie am Slave DWC-1000/2000 ob das AP-Profil korrekt übertragen wurde

Wireless » Access Point » AP Profile » AP Profile SSID

AP Profiles | AP Profile Radio | **AP Profile SSID** | AP Profile QoS

This page displays the virtual access point(VAP) settings associated with the selected AP profile. Each VAP is identified by its network number and Service Set Identifier(SSID). We can configure and enable up to 16 VAPs per radio on each physical access point.

**Access Point Profiles SSID List**

AP Profile: 1-Default  
Radio Mode:  802.11n/ac  802.11b/g/n

Show 10 entries [Right click row to see more options]

SSID Name	SSID Status	VLAN	Hide SSID	Security	Redirect	Captive Portal
1-broadway	Enabled	1-Default	Disabled	WPA Personal	None	Free
2-Broadway	Enabled	1-Default	Disabled	WPA Personal	None	Free

Wie Sie nun am Peer Slave DWC-1000/2000 erkennen können, wurden das AP-Profil, sowie die entsprechenden Radio-Einstellungen des Master DWC-1000 korrekt übertragen.

Wenn Sie nun am Peer-Master-DWC-1000/2000 eine Änderung am AP-Profil durchführen, so müssen Sie dies anschließend (nach dem lokalen Apply) auch mittels des Peering auf den/die Peer-Slave übertragen.

**[Einstellung um das AP-Limit mittels des Peering zu erhöhen.]**

4.) Passen Sie wie in Punkt 2 dieser Anleitung beschrieben die Peering-Einstellungen an.

Deaktivieren Sie die Option „AP Database“, damit jeder DWC-1000/2000 die maximale Anzahl an APs managen kann.

Wireless » Peer Group » Peer Configuration ? ↻

This page allows you to select which parts of the configuration to copy to one or more peer controllers in the group. You can make changes to a configuration that has been sent to one or more peer controllers, and you can make changes to a configuration received from a peer controller. No changes automatically propagate from one controller to the cluster; you must manually initiate a request on one controller in order to copy any configuration to its peers.

### Peer Configuration

General	<input type="checkbox"/> ON <input type="checkbox"/> OFF
Discovery	<input type="checkbox"/> ON <input type="checkbox"/> OFF
Channel / Power	<input type="checkbox"/> ON <input type="checkbox"/> OFF
AP Database	<input type="checkbox"/> ON <input checked="" type="checkbox"/> OFF
AP Profiles	<input type="checkbox"/> ON <input type="checkbox"/> OFF
MAC Authentication Database	<input type="checkbox"/> ON <input type="checkbox"/> OFF
Captive Portal	<input type="checkbox"/> ON <input type="checkbox"/> OFF
Radius Client	<input type="checkbox"/> ON <input type="checkbox"/> OFF
Controller Provisioning Mode	<input type="checkbox"/> ON <input type="checkbox"/> OFF
Mutual Authentication Mode	<input type="checkbox"/> ON <input type="checkbox"/> OFF
Unmanaged AP Reprovisioning Mode	<input type="checkbox"/> ON <input type="checkbox"/> OFF

Wenn Sie nun z.B. ein Firmwareupdate auf allen managed APs durchführen wollen, so können Sie dies zentral durch den Peer-Master-DWC-1000/2000 durchführen.

Maintenance » Firmware » AP Firmware Download

AP Firmware Download | AP Firmware Status

The Unified Wireless Controller can upgrade software on the APs that it manages. The Cluster Controller can update code on APs managed by peer wireless controllers. It may take about 12 minutes for the upgrade process to complete for an AP.

### AP Firmware Download

Server Address	<input type="text" value="192.168.10.168"/>
Img_dw18600	D-Link 8600 AP Radios
File Path	<input type="text"/>
File Name	<input type="text" value="DWL-8610AP_4302B036.tar"/>
Img_dw13600/6600	D-Link 3600/6600 AP Radios
File Path	<input type="text"/>
File Name	<input type="text" value="DWL-8610AP_4302B036.tar"/>
Img_dw12600	D-Link 2600 AP Radios
File Path	<input type="text"/>
File Name	<input type="text" value="DWL-8610AP_4302B036.tar"/>
Img_dw18610	D-Link 8610 AP Radios
File Path	<input type="text"/>
File Name	<input type="text" value="DWL-8610AP_4302B042.tar"/>
Img_dw16700	D-Link 6700 AP Radios
File Path	<input type="text"/>
File Name	<input type="text" value="DWL-8610AP_4302B036.tar"/>
Img_dw16610	D-Link 6610 AP Radios
File Path	<input type="text"/>
File Name	<input type="text" value="DWL-8610AP_4302B036.tar"/>
Group Size	<input type="text" value="6"/> [Default: 6, Range: 1 - 12]
Image Download Type	<input type="text" value="DWL-8610AP"/>
Managed AP	<input type="text" value="All"/> 3c:1e:04:f3:dc:80-192.168.10.142 - b0:c5:54:e7:a0:00-192.168.10.58 -

Beachten Sie bitte, dass Sie am DWC-1000 jeweils immer nur maximal 12 APs gleichzeitig aktualisieren können. Der empfohlene Wert liegt beim DWC-1000 bei 6 APs.

Beachten Sie bitte, dass Sie am DWC-2000 jeweils immer nur maximal 64 APs gleichzeitig aktualisieren können. Der empfohlene Wert liegt beim DWC-1000 bei 12 APs.

Beachten Sie bitte, dass Sie alle Änderungen, welche Sie am Peer-Master-DWC-1000/2000 durchführen auch an die entsprechenden Peer-Slave-DWC-1000/2000 übermitteln.

Diese Einstellungen/Anpassungen werden automatisch auf den entsprechenden DWC-1000/2000 nach der Übermittlung durch den Peer-Master aktiv.

## [Peerstatus prüfen]

### Master

Status » Wireless Information » Clustering ? ⚙

This page provides information about other Unified Wireless Controllers in the network. Peer wireless Controllers within the same cluster exchange data about themselves, their managed APs, and clients. The Controller maintains a database with this data so you can view information about a peer, such as its IP address and software version. If the Controller loses contact with a peer, all of the data for that peer is deleted.

**Peer Controller & Clustering Info**

*Peer Controller Status*

Cluster Controller IP Address: 192.168.10.1

Peer Controllers: 1

*Peer Controllers List*

Show 10 entries [No right click options]

IP Address	Vendor ID	Software Version	Protocol Version	Discovery Reason	Managed AP Count	Age
192.168.10.3	D-Link	4.2.0.1	2	IP Poll	0	0d:00:00:10

Showing 1 to 1 of 1 entries First Previous 1 Next Last

### Peer

Status » Wireless Information » Clustering ? ⚙

This page provides information about other Unified Wireless Controllers in the network. Peer wireless Controllers within the same cluster exchange data about themselves, their managed APs, and clients. The Controller maintains a database with this data so you can view information about a peer, such as its IP address and software version. If the Controller loses contact with a peer, all of the data for that peer is deleted.

**Peer Controller & Clustering Info**

*Peer Controller Status*

Cluster Controller IP Address: 192.168.10.1

Peer Controllers: 1

*Peer Controllers List*

Show 10 entries [This information is view only]

IP Address	Vendor ID	Software Version	Protocol Version	Discovery Reason	Managed AP Count	Age [DD:HH:MM:SS]
192.168.10.1	D-Link	4.2.0.1	2	IP Poll	2	00:00:00:17

Showing 1 to 1 of 1 entries First Previous 1 Next Last