



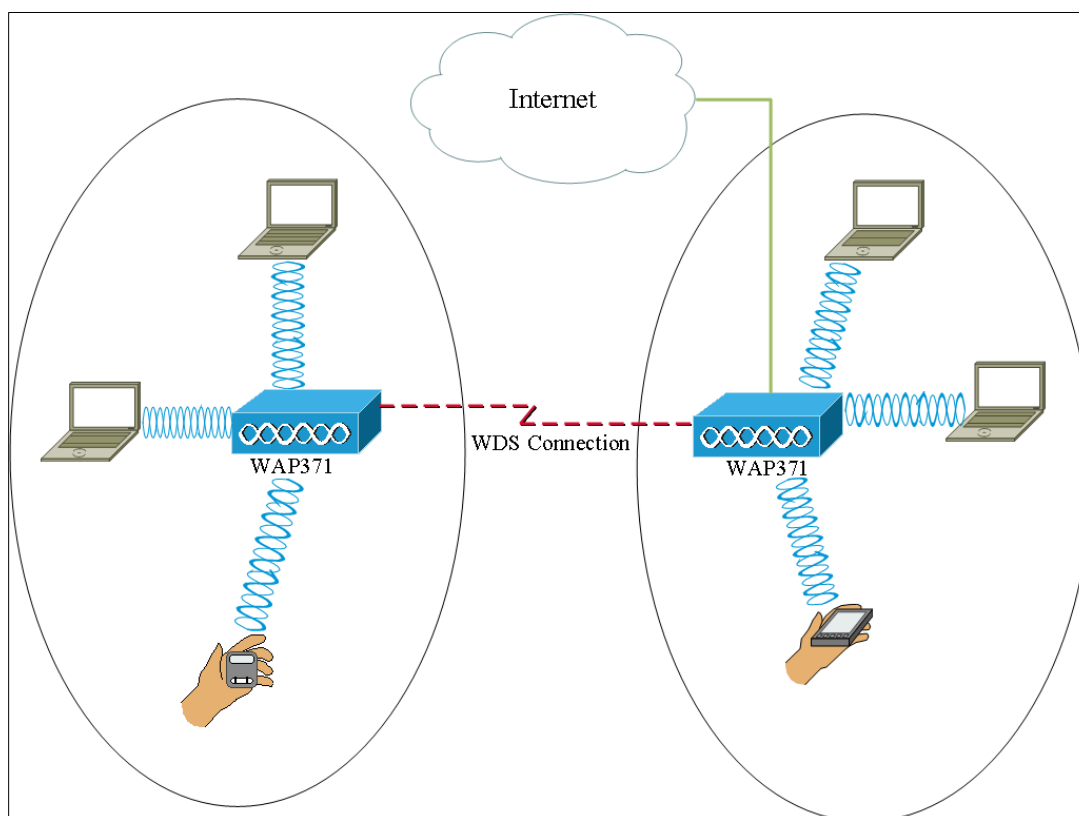
Article ID: 5070

Wireless Distribution System (WDS) Configuration on WAP371

Objective

Wireless Distribution System (WDS) allows you to connect multiple access point devices and have them communicate with one another wirelessly. This functionality is key to providing a seamless network environment for roaming clients. WDS also simplifies network infrastructure by reducing the amount of cabling required in a network setup. Up to 4 WDS interfaces may be configured and used at once. These configurations must be made to each access point on either end of the WDS link. You can have only one WDS link between any pair of WAP devices.

The objective of this document is to show you how to configure Wireless Distribution System (WDS) on the WAP371.



Applicable Devices

- WAP371

Software Version

- V1.1.2.3

Configuring a WDS Bridge

Note: All WAP devices must have identical settings:

- Radio
- IEEE 802.11 mode
- Channel Bandwidth
- Channel (auto not recommended).

For more information on configuring these settings, refer to the article [Basic Radio Settings on the WAP371](#).

Note: When using WDS bridge in the 802.11n 2.4 GHz band, set the Channel Bandwidth to 20 MHz, rather than the default 20/40 MHz. Since the channel bandwidth must be the same, selecting a specific bandwidth instead of allowing the WAP to use both 20/40 MHz ensures that the device will not disconnect.

Note: If you want to enable a feature that allows you to detect access points around you, then you would enable AP Detection for the desired radio in the **Rogue AP Detection** page and click **Trust** for the Mac address that you are trying to link with. For more information about Rogue AP Detection, refer to the article [Configuring Rogue AP Detection on the WAP351 and WAP371 Access Points](#).

Step 1. Log in to the web configuration utility and choose **Wireless > WDS Bridge**. The *WDS Bridge* page opens:

The screenshot shows the 'WDS Bridge' configuration page. It contains two identical sections for configuring wireless bridges. Each section has the following fields:

- Spanning Tree Mode:** A checkbox labeled 'Enable' which is checked.
- Radio:** Two radio buttons: 'Radio 1 (5 GHz)' (selected) and 'Radio 2 (2.4 GHz)'.
- Local MAC Address:** A text field containing a masked address (XXXXXXXXXX).
- WDS Interface:** A checkbox labeled 'Enable' which is unchecked.
- Remote MAC Address:** A text field containing a masked address (XXXXXXXXXX) with a small circular icon to its right.
- Encryption:** A dropdown menu with 'None' selected.

Step 2. Check the **Enable** check box in the *Spanning Tree Mode* field. When this is enabled, the Spanning Tree Protocol is used to prevent loops from being formed when switches or bridges are interconnected via multiple paths. Spanning Tree Protocol implements the 802.1D IEEE standard by exchanging BPDU messages with other switches to detect loops, and then removes the loop by shutting down selected bridge interfaces. This standard guarantees that there is one and only one active path between two network devices. This is recommended if you configure WDS links.

This is a close-up screenshot of the 'Spanning Tree Mode' field. The checkbox is checked, and the word 'Enable' is displayed next to it. A red rectangle highlights the checkbox and the 'Enable' text.

Step 3. In the *Radio* field, select Radio 1 (5GHz) or Radio 2 (2.4GHz) for each WDS link that you configured.

The available options are defined as follows:

- Radio 1 (5GHz) — 5 GHz is a bit faster than 2.4 GHz and used for newer devices but may have less range.
- Radio 2 (2.4GHz) — 2.4 GHz supports older devices and has wider range.

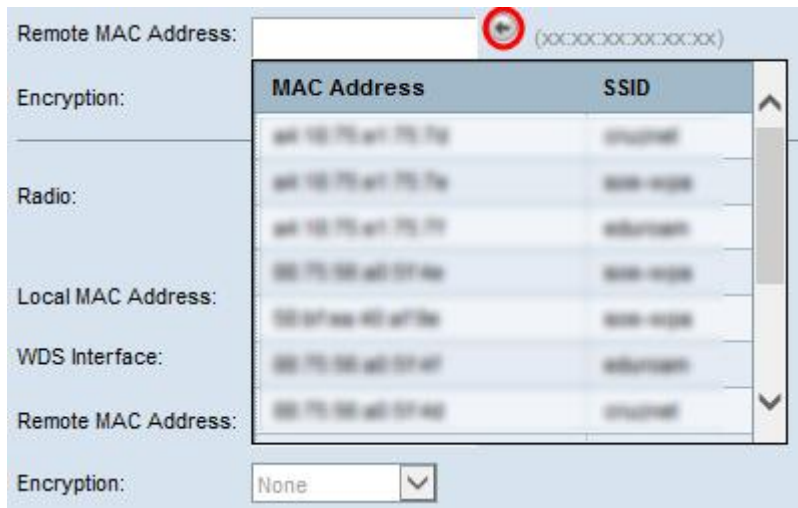
This screenshot shows the configuration interface for a WDS link. At the top, 'Spanning Tree Mode' is checked and labeled 'Enable'. Below this, the 'Radio' field has two radio button options: 'Radio 1 (5 GHz)' and 'Radio 2 (2.4 GHz)'. The 'Radio 1 (5 GHz)' option is selected and is highlighted with a red rectangular box. The 'Local MAC Address' field contains a masked address. The 'WDS Interface' field is checked and labeled 'Enable'. The 'Remote MAC Address' field is empty, with a placeholder '(xxxxxxxxxxxx)' and a circular arrow icon to its right. The 'Encryption' field is set to 'None' with a dropdown arrow.

Note: The *Local MAC Address* field displays the MAC address that is locally attributed to the selected wireless antenna in the *Radio* field.

Step 4. Check the **Enable** check box in the *WDS Interface* field to enable the WDS link.

This screenshot shows the same configuration interface as the previous one, but with the 'WDS Interface' field checked and labeled 'Enable'. This checkbox and its label are highlighted with a red rectangular box. All other fields remain the same: 'Spanning Tree Mode' is checked, 'Radio 1 (5 GHz)' is selected, 'Local MAC Address' is masked, 'Remote MAC Address' is empty with a placeholder and icon, and 'Encryption' is set to 'None'.

Step 5. In the *Remote Mac Address field*, click the **arrow button**. A *MAC Address* drop-down list will appear showing all neighboring access points. Click the Mac Address from the list that you want to form a WDS link with.

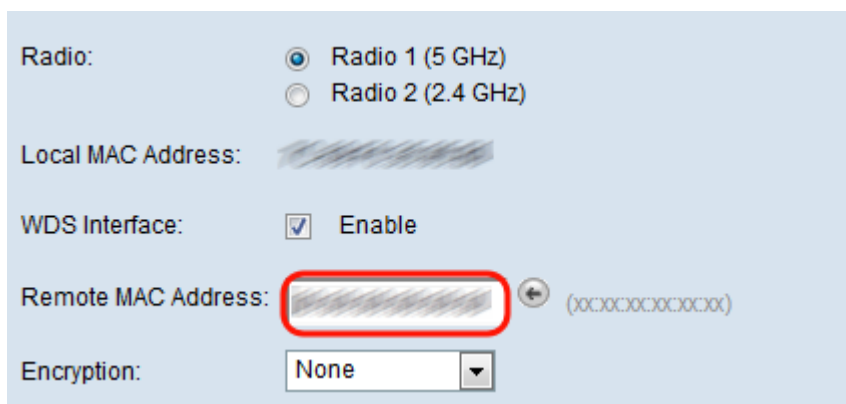


The screenshot shows the WDS configuration interface. The 'Remote MAC Address' field is highlighted with a red circle, and a dropdown menu is open, displaying a list of neighboring access points. The list has two columns: 'MAC Address' and 'SSID'. The 'Remote MAC Address' field is currently empty, and the 'Encryption' dropdown is set to 'None'.

MAC Address	SSID
00:11:22:33:44:55	ssid1
00:11:22:33:44:55	ssid2
00:11:22:33:44:55	ssid3
00:11:22:33:44:55	ssid4
00:11:22:33:44:55	ssid5
00:11:22:33:44:55	ssid6
00:11:22:33:44:55	ssid7

Note: The MAC address and SSID are blurred.

Step 6. (Optional) If you do not find the device from the drop-down list from [Step 5](#), you may also manually enter in the MAC address in the *Remote MAC Address field* of the access point device on the other end of the WDS link to which data is sent.



The screenshot shows the WDS configuration interface. The 'Remote MAC Address' field is highlighted with a red rectangle. The 'Radio' section shows 'Radio 1 (5 GHz)' selected. The 'Local MAC Address' field is blurred. The 'WDS Interface' checkbox is checked and labeled 'Enable'. The 'Remote MAC Address' field is currently empty, and the 'Encryption' dropdown is set to 'None'.

Radio: ☒ Radio 1 (5 GHz) ☐ Radio 2 (2.4 GHz)

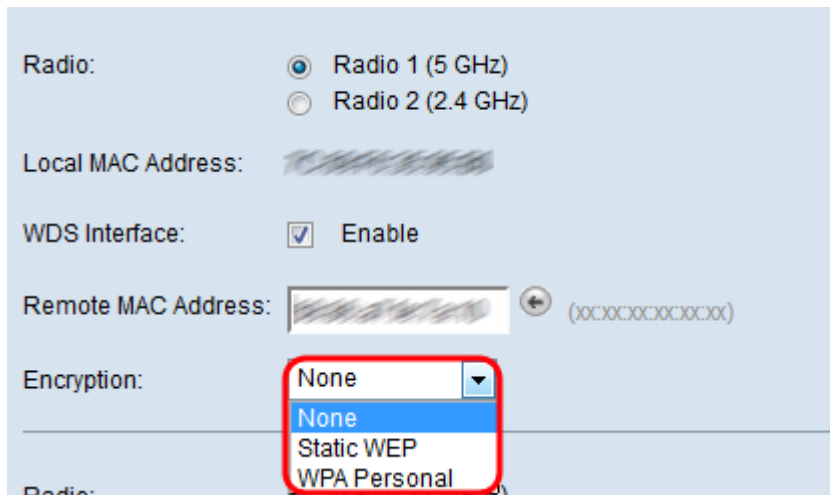
Local MAC Address: [blurred]

WDS Interface: ☒ Enable

Remote MAC Address: [blurred] (xxxxxxxxxxxx)

Encryption: None

Step 7. From the *Encryption* drop-down list, choose the method of encryption you wish to have the access points use to communicate to each other over the WDS link.



The screenshot shows a configuration window for WDS (Wireless Distribution System). It includes fields for Radio selection (Radio 1 (5 GHz) is selected), Local MAC Address, WDS Interface (checked), Remote MAC Address, and an Encryption dropdown menu. The dropdown menu is open, showing three options: None, Static WEP, and WPA Personal. The 'None' option is highlighted in blue. A red rectangle is drawn around the dropdown menu.

The available options are defined as follows:

- None — No security is applied to the WDS link. Skip to [Step 13](#) if this option is chosen.
- WPA Personal — WPA uses a pre-shared key to authenticate between two access points. This is the recommended method of encryption. Skip to [Step 8](#) if you choose this option.
- Static WEP — Static WEP is the minimal security and can support up to 4 keys of length 64 to 128 bits. The same key must be used in all modes. This is only applicable only when the radio is operating in legacy mode: 802.11a for 5 GHz radio and 802.11b/g for 2.4 GHz radio. Skip to [Step 9](#) if you choose this option.

Note: The encryption type chosen for use on the WDS link does not need to match the access point that is bridged.

Step 8. If **WPA Personal** is chosen in [Step 7](#), enter an ID name and key for shared devices on the WDS bridge in the *WDS ID* and *Key* fields. Then skip to [Step 13](#).

The screenshot shows a configuration interface for WDS. The 'Radio' section has 'Radio 1 (5 GHz)' selected. 'Local MAC Address' is masked. 'WDS Interface' is checked and labeled 'Enable'. 'Remote MAC Address' is masked with a help icon and the format '(xxxxxxxxxxxx)'. 'Encryption' is set to 'WPA Personal'. A red box highlights the 'WDS ID' field containing 'ciscotest' (Range: 2-32 Characters) and the 'Key' field containing 'testing123' (Range: 8-63 Characters).

Step 9. If **Static WEP** is chosen in [Step 7](#), then select either the **64 bits** radio button or the **128 bits** radio button in the *Key Length* field. This specifies the length of the key used.

The screenshot shows the same configuration interface but with 'Encryption' set to 'Static WEP'. The 'Key Length' section has '64 bits' selected (circled in red) and '128 bits' as an option. 'Key Type' has 'Hex' selected. The 'WEP Key' field is empty, with a hint '(Hint: 10 Characters Required)'.

Step 10. In the *Key Type* field, select the desired radio button.

The screenshot shows a configuration window with the following fields and options:

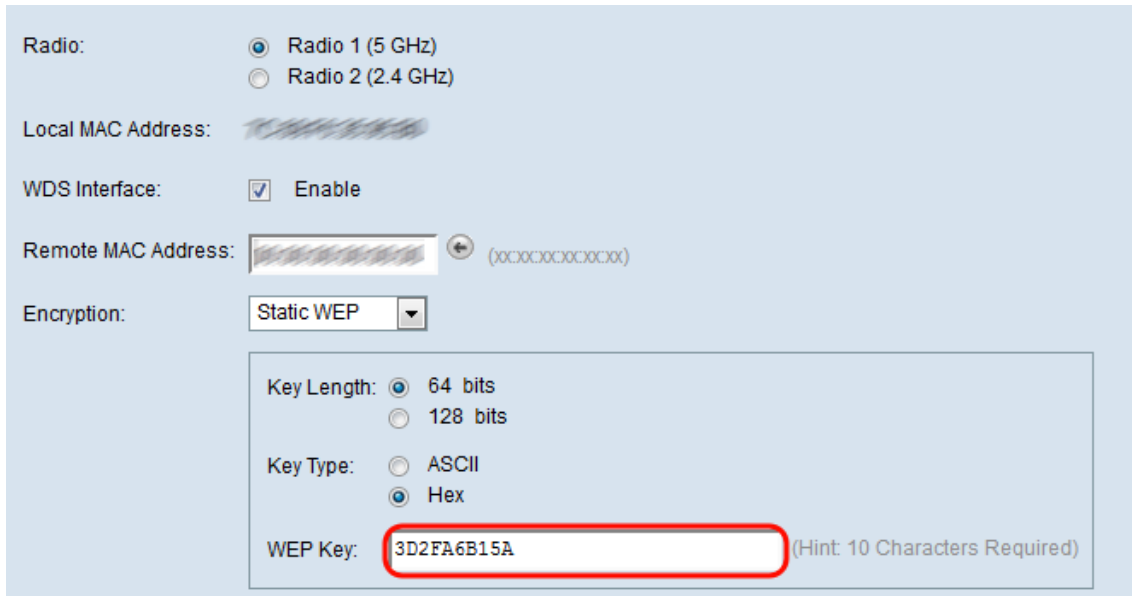
- Radio:** Two radio buttons: ☒ Radio 1 (5 GHz) and ☐ Radio 2 (2.4 GHz).
- Local MAC Address:** A text field containing a masked address (XXXXXXXXXX).
- WDS Interface:** A checkbox labeled "Enable" which is checked.
- Remote MAC Address:** A text field containing a masked address (XXXXXXXXXX) with a refresh button (circular arrow) and a placeholder (XXXXXXXXXX).
- Encryption:** A dropdown menu set to "Static WEP".
- Key Length:** Two radio buttons: ☒ 64 bits and ☐ 128 bits.
- Key Type:** Two radio buttons: ☐ ASCII and ☒ Hex. This section is highlighted with a red rectangle.
- WEP Key:** A text field with a hint "(Hint: 10 Characters Required)".

The available options are defined as follows:

- **ASCII** — ASCII (American Standard Code for Information Interchange) is a character encoding scheme based on the English alphabet encoded into 128 specified characters. Enter any combination of 0 to 9, a to z and A to Z. Skip to [Step 12](#) if you choose this option.
- **HEX** — HEX (Hexadecimal) is a positional numeral system with base 16. It uses any combination of "0 to 9" and "a to f" or "A to F". These are the RC4 encryption keys shared with the stations using the WAP device. Skip to [Step 11](#) if you choose this option.

Note: The required number of characters is indicated to the right of the field and changes based on your selections in the *Key Type* and *Key Length* field.

Step 11. If you have selected **HEX** in [Step 10](#), then enter in a WEP Key in the *WEP Key* field. This is a string entered as the key. The WEP Key strings must match the WEP key string value of all the WAP. The required number of characters is 10 characters if you have chosen 64 bits for the *Key Length* field and 26 characters if you have selected 128 bits in the *Key Length* field. Then skip to [Step 13](#).



Radio: ☒ Radio 1 (5 GHz)
☐ Radio 2 (2.4 GHz)

Local MAC Address: [REDACTED]

WDS Interface: ☒ Enable

Remote MAC Address: [REDACTED] (xxxxxxxxxxxx)

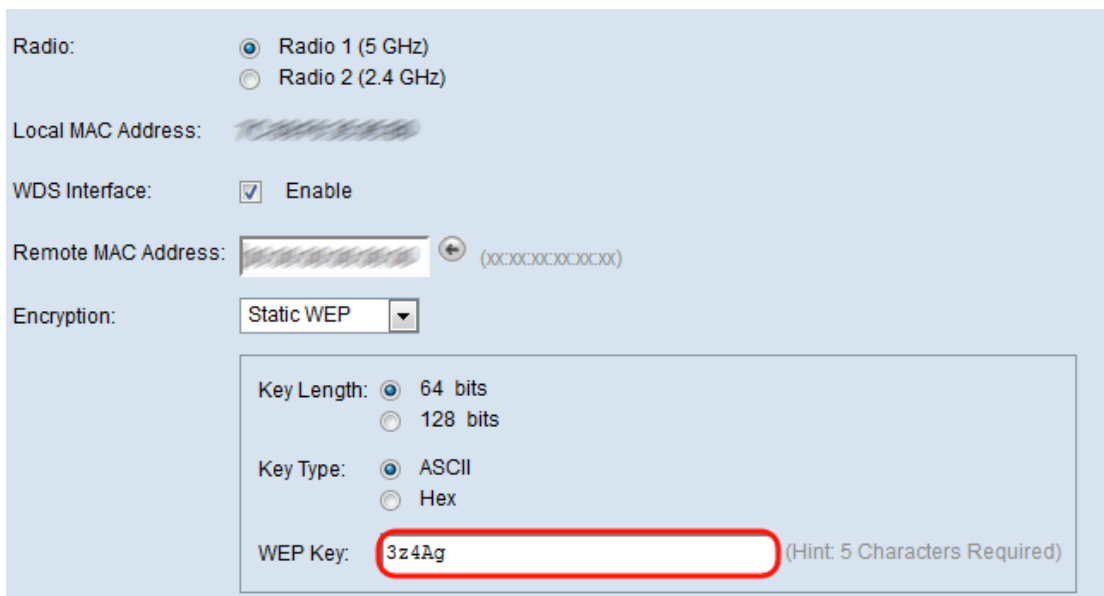
Encryption: Static WEP

Key Length: ☒ 64 bits
☐ 128 bits

Key Type: ☐ ASCII
☒ Hex

WEP Key: 3D2FA6B15A (Hint: 10 Characters Required)

Step 12. If you have selected **ASCII** in [Step 10](#), then enter in a WEP Key in the *WEP Key* field. This is a string entered as the key. The WEP Key strings must match the WEP key string value of all the WAP. The required number of characters is 5 characters if you have chosen 64 bits for the *Key Length* field. If you have selected 128 bits in the *Key Length* field, then 13 characters is required.



Radio: ☒ Radio 1 (5 GHz)
☐ Radio 2 (2.4 GHz)

Local MAC Address: [REDACTED]

WDS Interface: ☒ Enable

Remote MAC Address: [REDACTED] (xxxxxxxxxxxx)

Encryption: Static WEP

Key Length: ☒ 64 bits
☐ 128 bits

Key Type: ☒ ASCII
☐ Hex

WEP Key: 3z4Ag (Hint: 5 Characters Required)

Step 13. When you have finished configuring all the desired WDS link interfaces, click **Save** to save your changes.

Note: To complete a WDS link, the same configuration procedures must be followed for the other access point devices on the shared WDS bridge.