

NAS 307

進階網路應用: Link Aggregation

在 ASUSTOR NAS 上設定 Link Aggregation

ASUSTOR COLLEGE

課程目的

完成此課程後您將能夠：

1. 對於 Link Aggregation 及相關的模式有初步的了解
2. 了解如何在你的 ASUSTOR NAS 設置 Link Aggregation

必修項目

課程必修項目：

無

學生須先具備以下知識：

無

大綱

1. Link Aggregation 簡介

1.1 什麼是 Link Aggregation?

1.2 Link Aggregation 模式

2. 設定你的 NAS

2.1 設定 Link Aggregation

1. Link Aggregation 簡介

1.1 什麼是 Link Aggregation?

Link aggregation (又名 trunking, bonding 或 teaming) 可將兩個或多個網路介面結合為一。欲使用 Link Aggregation，你的多個網路介面需接到同一個網路交換器 (switch) 上，此外，該網路交換器也必須支援設定 Link Aggregation。在本篇文章中，我們將以兩個網路介面為範例進行說明。

Link Aggregation 主要可提供以下兩種優點：

a. 負載平衡 (Load Balancing)

網路流量將會被分配至兩個網路介面，而對於用戶端而言，將只會視為單一連線。此種模式主要在於能夠藉由多重管道以提昇傳輸可靠度。

b. 網路容錯 (Fault tolerance / Failover)

網路容錯優點主要在於當其中一個網路介面失效或斷線時，另一個網路介面仍能夠負擔起傳輸的責任，讓資料傳輸不致於中斷，提昇 NAS 系統的可得性 (availability)。

1.2 Link aggregation 模式

ASUSTOR NAS 提供多種不同的 Link Aggregation 模式，以下將會簡單說明 (英文) 各種模式的傳輸特性：

Round-Robin: Transmits packets in sequential order from the first available connection to the next. This mode provides load balancing and fault tolerance.

Active Backup: Only one connection is active. A different connection becomes active if, and only if, the active connection fails. The aggregated MAC address is externally visible on only one port (network adapter) to avoid confusing the switch. This mode provides fault tolerance.

XOR: Transmits based on the default simple transmit hash policy. This mode provides load balancing and fault tolerance.

Broadcast: Transmits everything on all connections. This mode provides fault tolerance.

802.3ad (IEEE 802.3ad Dynamic Link Aggregation): Creates aggregation groups that share the same speed and duplex settings. Utilizes all connections in the active aggregator according to the 802.3ad specification. You will need a switch that supports IEEE 802.3ad dynamic link aggregation. This mode provides fault tolerance and load balancing.

Adaptive Transmit Load Balancing: Does not require any special switch support. The outgoing traffic is distributed according to the current load (computed relative to the speed) on each connection. Incoming traffic is received by the current connection. If the receiving connection fails, another connection takes over the MAC address of the failed receiving connection. This mode provides fault tolerance.

Adaptive Load Balancing: Includes transmit load balancing plus receive load balancing for IPV4 traffic and does not require any special switch support. The receive load balancing is achieved by ARP negotiation. This mode provides fault tolerance and load balancing.

Generally speaking, link aggregation modes provide either fault tolerance or load balancing benefits. The benefits provided by each mode are summarized in the chart below.

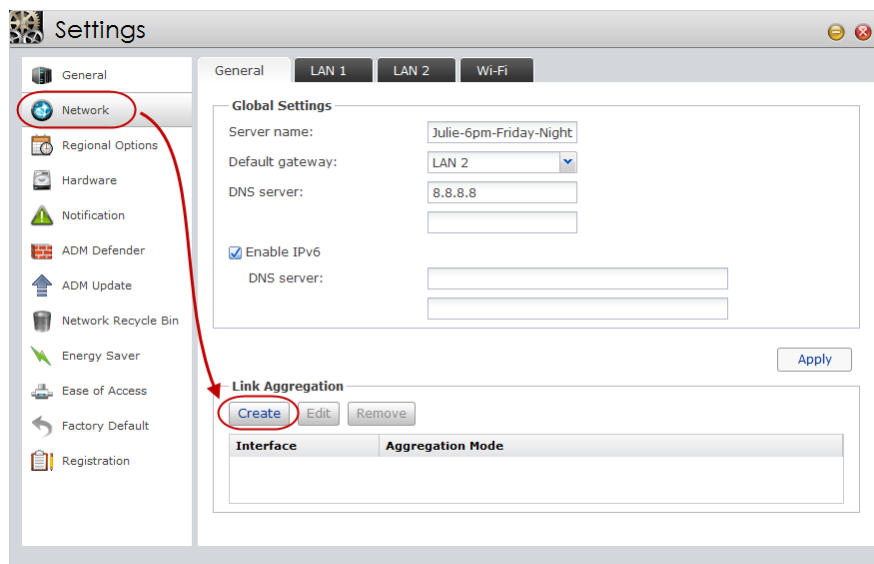
Aggregation 模式	網路容錯	負載平衡
Round-Robin	✓	✓
Active-Backup	✓	✗
XOR	✓	✓
Broadcast	✓	✗
802.3ad	✓	✓
Adaptive Transmit Load Balancing	✓	✗
Adaptive Load Balancing	✓	✓

2. 設定你的 NAS

2.1 設定 Link Aggregation

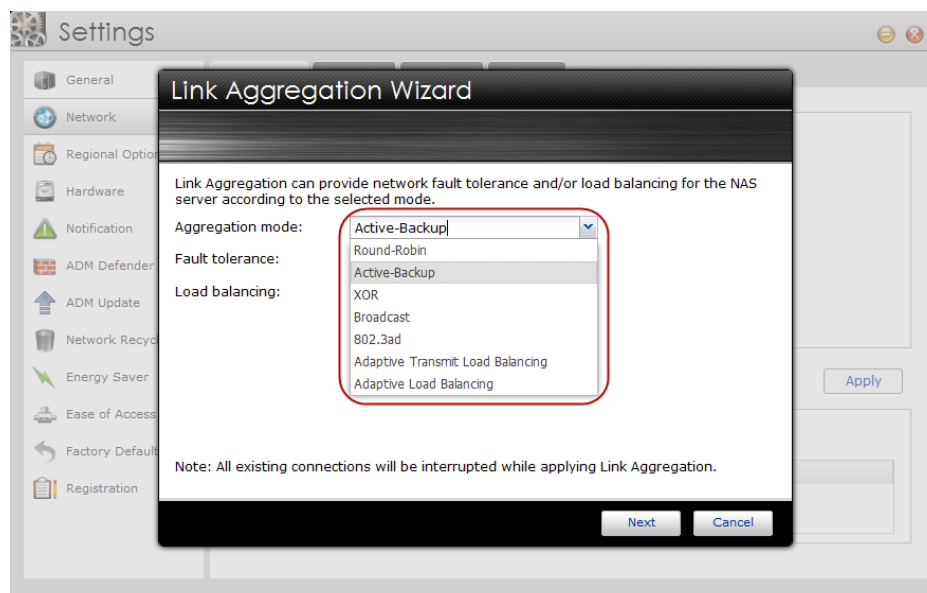
步驟 1

開啟桌面圖示 [設定] → [網路]，並在 Link Aggregation 中點擊 [建立]。



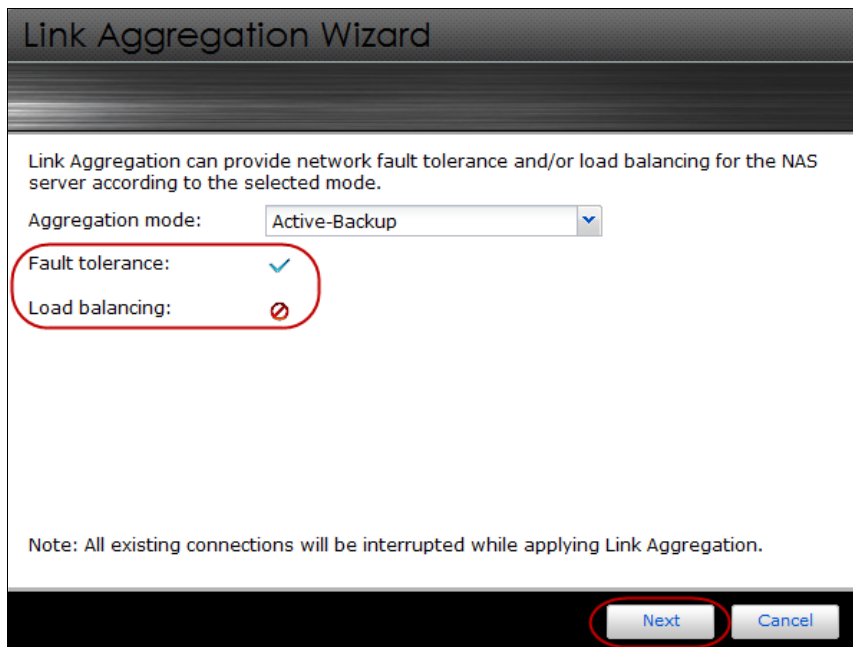
步驟 2

Link Aggregation 精靈將會引導你設置 aggregation 模式，只要從下拉選單中選取你欲使用的模式即可。



步驟 3

當你選擇任一模式後，設置精靈將會提示你關於此模式是否具備網路容錯或負載平衡的特性。如下圖範例所示，若選擇“Active-Backup”，則該模式僅支援網路容錯。當確定選擇後，請點擊[下一步]。



Link Aggregation Wizard

Link Aggregation can provide network fault tolerance and/or load balancing for the NAS server according to the selected mode.

Aggregation mode: Active-Backup

Fault tolerance: ☒

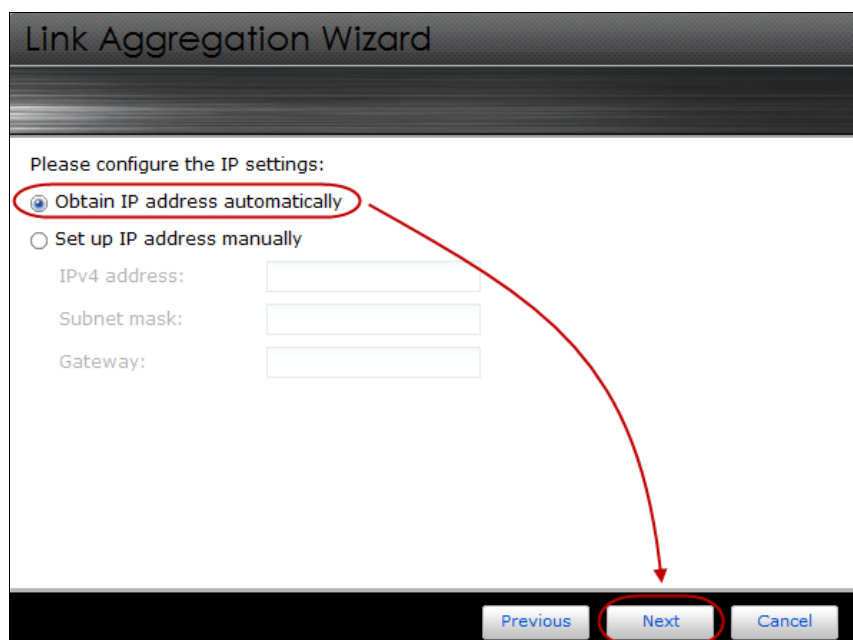
Load balancing: ☐

Note: All existing connections will be interrupted while applying Link Aggregation.

Next Cancel

步驟 4

若你欲手動指定 IP 位址，請選擇[手動設定 IP 位址]。若你不確定選擇該如何設定，請選擇[自動取得 IP 位址]並點擊[下一步]。



Link Aggregation Wizard

Please configure the IP settings:

☒ Obtain IP address automatically

☐ Set up IP address manually

IPv4 address:

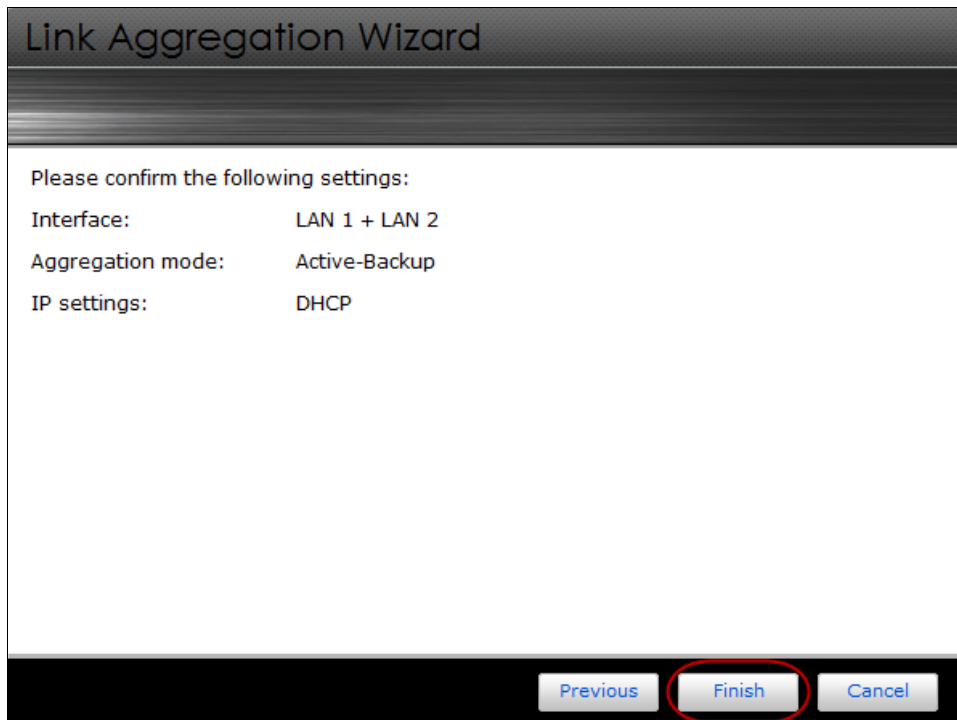
Subnet mask:

Gateway:

Previous Next Cancel

步驟 5

最後請檢查你的設定值是否皆正確，確定之後請點擊 **【完成】** 以套用此設定。



Link Aggregation Wizard

Please confirm the following settings:

Interface: LAN 1 + LAN 2

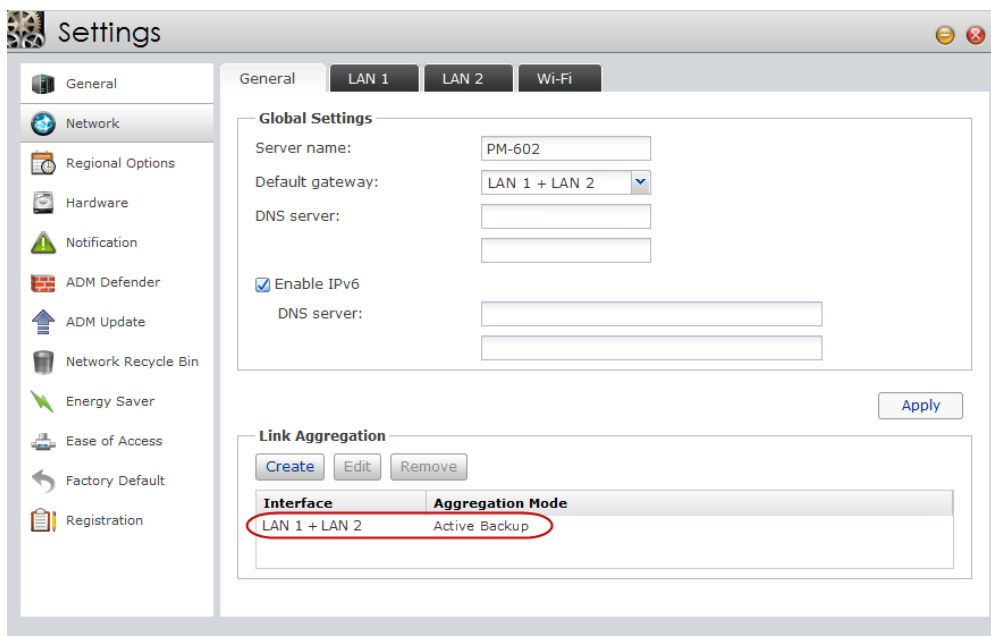
Aggregation mode: Active-Backup

IP settings: DHCP

Buttons: Previous, **Finish**, Cancel

步驟 6

套用完成之後，你即可在畫面中看到如下方圖示所示，兩個網路介面已經被綁定成為一個網路介面並已可開始使用。



Settings

General | LAN 1 | LAN 2 | Wi-Fi

Global Settings

Server name: PM-602

Default gateway: LAN 1 + LAN 2

DNS server:

☒ Enable IPv6

DNS server:

Link Aggregation

Create Edit Remove

Interface	Aggregation Mode
LAN 1 + LAN 2	Active Backup