IEEE 802.11 Distribution System Services Functionality

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Nov. 9th 1992

Simplified 802.11 Architecture
Distribution System Definitions

- **Distribution System (DS):** A system used to interconnect a set of BSSs to create an ESS.
- **Distribution System Medium (DSM):** The medium used by a DS (for BSS interconnections).
- **Distribution System Services (DSS):** The set of services provided by the DS which enable the MAC to transport MSDUs between BSSs within an ESS.
- **Access Point (AP):** Any entity that has STA functionality and provides access to the DS.
- **DSMI:** Distribution System Medium Interface.

Simplified DS Services

![](image)
Distribution System Services

- **Association:**
  - The service which enables the establishment of an initial Association between a STA and an AP.

- **Reassociation:**
  - The service which enables an established Association (of a Station) to be transferred from one AP to another AP.

- **Disassociation:**
  - The service which removes an existing Association.

- **Distribution:**
  - The service which (by using Association information) delivers MSDUs within the DS.

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Distribution System Services

- **Authentication:**
  - The service used to establish the identity of Stations and APs to each other.

- **Privacy:**
  - The functionality used to prevent the contents of messages from being read by other than the intended recipient.

- **Integration:**
  - The service which enables delivery of MSDUs between the DS and an existing network.

- **Network Management**
  - TBD.
Disassociation

- Only now the association is with a different AP
- Station simply returns to the Associated state
- Reassociation
  (negotiate with the distributed service)
  (negotiate with the authentication service)
  and with other stations
- STA can now exchange MSDUs with the associated AP

Associated State
Ad-Hoc & Infrastructure DS Services

- The DS Services are equally applicable and needed for both Infrastructure and Ad-Hoc networks.
- Consider a simple two STA ad-hoc case:
  - Each STA looks like an AP to the other STA.
  - Services which are the same:
    - Association, Authentication, Privacy, Disassociation
  - Services which are Null in an Ad-Hoc network:
    - Distribution, Reassociation, Integration.

An important Question

- Question: What will customers want to use for their DS?
- Answer: Whatever type of network they already have!
We Should Not Define the Distribution System Internals.

- We cannot specify the internal details of the DS without being overly constrained.
- We need only to specify the functionality and interfaces of the DS.
- DSS functionality need not be in any particular physical part of a DS.
  - Could be either in a physical AP, running on a machine inside the DS, or completely distributed.
  - This provides enormous flexibility, allowing both distributed and centralized DS to be created.