H04W

WIRELESS COMMUNICATION NETWORKS (radio transmission systems H04B7/00; transmission systems using electromagnetic waves other than radio waves, e.g. light, infrared H04B10/00; communication systems using wireless extensions, i.e. wireless links without selective communication, e.g. cordless telephones H04M1/72 ; broadcast communication H04H)

Definition statement

This subclass/group covers:

- Communication networks deploying an infrastructure for mobility management of wireless users connected thereto, e.g. cellular networks, wireless LANs.
- Self organizing wireless communication networks, e.g. ad-hoc networks.
- Wireless access networks e.g. Wireless Local Loop.
- Said networks being used for selectively establishing one or a plurality of communication links between a desired number of users or between users and network equipments for the purpose of transferring information via these communication links.
- Arrangements or techniques for planning, deploying wireless networks.
- Arrangements or techniques specially adapted for wireless service provisioning.
- Arrangements or techniques specially adapted for wireless network operation.

References relevant to classification in this group

This subclass/group does not cover:

Arrangements using wireless links for the sole purpose of tele-control or telemetry systems which are covered by	H04Q 9/00
Wireless sensing of record carriers which are covered by	G06K
Communication systems using wireless links for non-selective communication e.g. wireless	H04M 1/72

extensions.	
Broadcast communication covered by	H04H

Informative references

Attention is drawn to the following places, which may be of interest for search:

Arrangements for programme control, e.g. control unit	G06F 9/00
Signalling or calling systems	G08B
Traffic control systems	G08G
Transceivers, i.e. devices in which transmitter and receiver form a structural unit and in which at least one part is used for functions of transmitting and receiving.	H04B 1/38
Spread spectrum techniques in general.	H04B 1/69
Near-field transmission systems, e.g. inductive loop type.	H04B 5/00
Control of transmission; Equalising.	H04B 7/005
Diversity systems.	H04B 7/02
Space#based or airborne stations.	H04B 7/185
For communication between two or more posts at least one of which is mobile.	H04B 7/26
Transmission systems employing electromagnetic waves other than radio waves , e.g. light, infra#red. Transmission through free space.	H04B 10/10
Transmission systems employing sonic, ultrasonic or infrasonic waves.	H04B 11/00

Transmission systems characterised by the medium used for transmission	H04B 13/00
Multiplex communication.	H04J
Arrangements for detection or preventing errors in the information received.	H04L 1/00
Arrangements affording multiple use of the transmission path	H04L 5/00
Arrangements for synchronising receiver with transmitter.	H04L 7/00
Data switching networks.	H04L 12/00
Modulated-carrier systems.	H04L 27/00
Communication control, Communication processing, characterised by a protocol	H04L 29/06
Telephonic communication.	H04M
Substation equipment.	H04M 1/00
Automatic or semi-automatic exchanges.	H04M 3/00
Metering arrangements; Time controlling arrangements; Time-indicating arrangements.	H04M 15/00
Prepayment telephone systems.	H04M 17/00

Special rules of classification within this group

In this subclass, at each hierarchical level, in the absence of an indication to the contrary, classification is made in the first appropriate place.

When classifying in groups H04W 4/00 to H04W 76/00, subject matter relating to system, equipment, interface or protocol, which is considered to represent information of particular interest for search, may also be classified in (the most closely related group of) groups H04W 80/00 to H04W 92/00. Such

non-obligatory

classification should be given as "additional information".

It is mandatory to allocate additional information codes for further technical features which are considered relevant and useful for search.

Glossary of terms

In this subclass/group, the following terms (or expressions) are used with the meaning indicated:

In this subclass the following terms are used with the meaning indicated:

Access point	equipment providing wireless user access to a backbone network by terminating a radio link.
Backbone network	equipment(s) for connecting one or several wireless access points to a wired or wireless infrastructure in order to allow communication(s) between users' inside or outside the wireless network.
Care-of-address	the termination point of a tunnel toward a mobile node, for datagrams forwarded to the mobile node while it is away from home.
Cellular	an infrastructure deployment involving partitioning geographical areas in a plurality of sub-areas (cells) for the purpose of reusing wireless resources.
Communication link	physical or logical connection selectively established for the purpose of conveying messages or information between users or networks.
Connection	network resource(s) allocated or reserved for an affiliated user.
Connected state	state of a user/terminal having active i.e. allocated logical traffic/control channel, dormant or suspended, i.e. without allocated logical channels but with maintained service instances. It

	also incorporates context (PDP context), User Plane, Control Plane operations.
Control channel	transports control information used to control the function of the network element. ("signalling channel", e.g. paging channel, broadcast channel, pilot channel).
Core network, CN	3GPP standard terminology. PLMN architecture is divided into Core Network (CN) and Access Network (AN). Whereas Access Network comprises GERAN (BSS for GSM), UTRAN (RNS) and E-UTRAN, Core Network is logically subdivided into a Circuit Switched (CS) domain, a Packet Switched (PS) domain and an IP Multimedia (IM) subsystem.
Correspondent node	a peer with which a mobile node is communicating. A correspondent node may he either mobile or stationaly.
Data network PoA [Point of Attachment]	entity within wireless network or mobility management infrastructure providing access to a data network for a wireless user.
Direct mode	establishing a direct communication link between user/terminal; the link can be established using an intermediate node.
Domain;CS domain, PS domain	3GPP standard terminology. Circuit Switched domain (CS domain) refers to the set of all core network entities offering "circuit switched type of connection" for user traffic and for the related signalling. Dedicated network resources are allocated at connection establishment and released at connection release. Entities specific to the CS domain are: MSC, GMSC, VLR. The Packet Switched domain (PS domain, Packet domain) refers to the set of all core network entities

	offering "packet switched type of connection" for user traffic and for supporting the related signalling. Transports user information using autonomous concatenation of bits called packets: each packet can be routed independently from the previous one. PS domain includes General Packet Radio Service (GPRS) and Evolved Packet Core (EPC). Entities specific to the PS domain are: SGSN, GGSN, PDN GW, S-GW, MME, SGSN. CS and PS domains also have common network entities: e.g, HSS, HLR
Fixed allocation (of a dedicated resource)	allocation of a resource that is not changed with each frame or time slot. It is also named "persistent or semi-persistent scheduling".
Hand-off, handover	a change of radio link or data network point of attachment, while a connection is ongoing.
Home network	the network performing functions at a permanent location regardless of the location of the user’s access point. The home network is responsible for subscription information management and for specific services not provided by the serving network; dedicated equipment used therefore is designed by HLR (Home Location Register); also Home Agent, Home Subscriber Server.
Idle state	state of a user/terminal having no active traffic/control channel and no active service instances but being affiliated to the network. (See also "null state")
Mobility binding	the association of a home address with a care-of address, along with the remaining lifetime of that association.
Mobility data	information obtained by the network or exchanged by network

	components, in particular user affiliation or location data, to be used in providing a network service
Mobility management	techniques or arrangements allowing operation of, or services to be provided to, a user capable of selecting or changing his point of attachment to the network.
Mobility server	A network functional entity acting as an established reference point in location registration operations by (or on behalf of) a mobile user/terminal.
Mobile node	A host or router that changes its point of attachment from one network or subnetwork to another, without changing its constant home IP address.
Multi-call	a plurality of communication links established over one or a plurality of networks for transferring information to one user/terminal.
Multiplexing	sorting packets of flows onto one or several channels in time, frequency, code and space division. better or space division.
Network	physical or logical entities involved in providing communication services to users.
Network security	(see Tanenbaum) roughly means the four intertwined areas: secrecy, authentication, nonrepudiation and integrity control for a interconnected collection of autonomous nodes, e.g, computers
Null state	state of a user/terminal having no active traffic/control channel and no active service instances.
Originating	user/terminal acting as a requester for communication towards a wireless

	access point.
Packet domain PLMN backbone network	The 3GPP standard terminology defines two kinds of packet domain PLMN backbone networks: The intra-PLMN backbone network is the IP network comprising routers interconnecting ps domain(s) within the same PLMN. The inter-PLMN backbone network is the IP network comprising routers interconnecting ps domain(s) of different PLMNs.
Paging	Notifying a terminating user of a communication event.
Paging service	one-way selective calling service.
Partitioning	distributing/committing specific resources to a particular/specific network component.
Polling	questioning for needed transmission resources and according instant allocation for immediate transmission.
Private networks	networks owned and operated by non-public authorities.
Resource allocation	allocation of a resource to a communication.
Resource distribution	committing a resource to an entity for future allocation thereof for communication.
Scheduled access	access to a wireless resource follows a schedule or os performed in a defined order.
Scheduled allocation	resource allocation is continuously changed or adapted during a connection according to a transmission schedule. This requires the usage of a shared channel.
(semi-) persistent scheduling	allocation of resources that is persistent for a number of

	(consecutive) time slots or frames according to a transmission schedule. This requires the usage of a shared channel.
Serving network	the part of the network to which the access point providing user's access is connected. The serving network is responsible for path finding and transport of users data; dedicated equipment used therefore is designed by VLR (Visitor Location Register; also Foreign Agent, Visiting Subscriber Server.
Subscriber	an entity recognized and authorized as user.
Terminal	equipment acting as/or on behalf of a user.
Terminating	user/terminal specified as a recipient for communication from within or via a wireless network.
Tracking	monitoring a user or terminal activity in the network for purposes of gathering, e.g. location, activity or status information.
Traffic channel	transports communication information (user data) to and from one or several users.
Trigger, triggering	the act of initiating an action. This could be caused by certain criteria or events or involve the exchange of information.
(transmission) scheduling	defines an order of transmission of one or several data flows in time, frequency, code and space dimension.
User	entity acting as an information source (sender, transmitter, server) or information sink (recipient, receiver, client).

Wireless extension	equipment using a pre-defined dedicated wireless link.
Wireless link	a communication link established via radio, infra-red, inductive or other electromagnetic radiation.
Wireless resource	a communication link using a specific frequency, time, code or space (or combination thereof).

H04W 4/00

[N: Mobile application] services or facilities specially adapted for wireless communication networks [N: (network arrangements or comunication protocols for networked applications H04L67/00; network arrangements or protocols for real-time communications H04L65/00; network arrangements or network protocols for addressing or naming H04L61/00; application independent communication protocol aspects and techniques in packet data networks H04L69/00; network architectures or network communication protocols for network security H04L63/00; wireless network security H04W12/00; message switching systems H04L12/58; arrangements for broadcast or conference H04L12/18;telephonic communication, substation extension arrangements, cordless telephones, portable communication terminals with improved user interface to control a main telephone operation mode or to indicate the communication status H04M1/72522; automatic or semi-automatic exchanges for telephonic communication - systems providing special services or facilities to subscribers H04M3/42)]

Definition statement

This subclass/group covers:

Providing wireless communication services by or via one or a plurality of network equipments to one or a plurality of affiliated user or terminal equipments.

Informative references

Attention is drawn to the following places, which may be of interest for search:

Charging, metering arrangements	H04L 12/14, H04M 15/00, H04M 17/00
Broadcast or conference in data switching networks	H04L 12/18
Message switching systems	H04L 12/58
Telephonic communication systems providing special services or facilities to subscriber	H04M 3/42

Glossary of terms

In this subclass/group, the following terms (or expressions) are used with the meaning indicated:

In this group, the following terms or expressions are used with the meaning indicated:

Affiliated	means a user or terminal being recognized by a network and/or authorized to use network resources

H04W 8/00

Network data management

Definition statement

This subclass/group covers:

Managing network data, e.g. storing, updating, transferring, obtaining or exchanging operation data, mobility data, user service data or terminal service data.

References relevant to classification in this group

This subclass/group does not cover:

Connection management, e.g. connection set-up, manipulation or release.	H04W 76/00

H04W 8/005

[N: Discovery of network devices, e.g. terminals]

Definition statement

This subclass/group covers:
(RE-)scanning for and (re-)discovery of terminals or devices; inquiry methods

Informative references

Attention is drawn to the following places, which may be of interest for search:

Network service discovery by a Service Manager	H04L 12/2484
Arrangements for service discovery, e.g. Service Location Protocol	H04L 29/08648
Protocols for network applications involving the display to the application user of network conditions affecting the network application	H04L 29/0899
Connectivity information management, e.g. connectivity discovery or update	H04W 40/24
Discovering, processing access restriction or access information	H04W 48/16

H04W 8/02

Processing of mobility data, e.g. registration information at HLR [Home Location Register] or VLR [Visitor Location Register]; Transfer of mobility data, e.g. between HLR, VLR or external networks

Definition statement

This subclass/group covers:
Processing, e.g. storing, updating of mobility data; Transfer of mobility data.

Informative references

Attention is drawn to the following places, which may be of interest for search:

Network layer protocols, e.g. mobile IP [Internet Protocol]	H04W 80/04

H04W 8/04

Registration at HLR or HSS [Home Subscriber Server]

Definition statement

This subclass/group covers:

Registration of user or terminal affiliation or location information.

H04W 8/06

Registration at serving network Location Register, VLR or user mobility server

Definition statement

This subclass/group covers:

Temporary or semi-permanent registration of user or terminal mobility data at a user mobility server not being the permanent reference point for mobile data queries.

H04W 8/065

[N: involving selection of the user mobility server]

Definition statement

This subclass/group covers:

Selecting a user mobility server for registration.

H04W 8/08

Mobility data transfer

Definition statement

This subclass/group covers:

Transfer of mobility data, e.g. to network components or external parties.

H04W 8/082

[N: for traffic bypassing of mobility servers, e.g. location registers, home PLMNs or home agents]

Definition statement

This subclass/group covers:

Transfer of mobility data to forward traffic data directly to the mobile node without having to detour traffic data through the home network e.g. route optimization, local breakout

H04W 8/085

[N: involving hierarchically organized mobility servers, e.g. hierarchical mobile IP [HMIP]]

Definition statement

This subclass/group covers:

Transfer of mobility data in a network, wherein mobility servers are hierarchical components of a mobility management scheme.

H04W 8/087

[N: for preserving data network PoA address despite hand-offs]

Definition statement

This subclass/group covers:

Transfer of mobility data on the basis of a localised network-based mobility management scheme, where the user terminal preserves its data network address, e.g. HAWAII and NETLMM.

Informative references

Attention is drawn to the following places, which may be of interest for search:

Modification of an existing route due to handover	H04W 40/36

H04W 8/10

between location register and external networks

Definition statement

This subclass/group covers:

Transfer of mobility data between external networks and a location register or mobility server, e.g. HSS.

Informative references

Attention is drawn to the following places, which may be of interest for search:

Interfaces specially adapted for wireless communication networks, inter-networking arrangements	H04W 92/02

H04W 8/12

between location registers or mobility servers

Definition statement

This subclass/group covers:

Transfer of mobility data between location registers or mobility servers e.g. for the purpose of sharing the load between mobility servers, or for supporting roaming.

Informative references

Attention is drawn to the following places, which may be of interest for search:

Interfaces specially adapted for wireless communication networks, interfaces between backbone network devices	H04W 92/24

H04W 8/14

between corresponding nodes

Definition statement

This subclass/group covers:

Transfer of mobility data between corresponding nodes,e.g. among communicating users or terminals.

Informative references

Attention is drawn to the following places, which may be of interest for search:

Interfaces specially adapted for wireless communication networks, interfaces between hierarchical similar devices	H04W 92/16

H04W 8/16

selectively restricting mobility [N: data] tracking

Definition statement

This subclass/group covers:

Selectively restricting the tracking of mobility data by the network or user, e.g. restricting the transmission of affiliation or location information,or restricting the transfer of tracking information.

H04W 8/18

Processing of user or subscriber data, e.g. subscribed services, user preferences or user profiles; Transfer of user or subscriber data

Definition statement

This subclass/group covers:

Processing or transferring of user data, e.g. storing, updating, deleting, and transferring user profiles, service data, and preferences; Processing or transferring of subscriber data, e.g. data concerning subscribed services, subscriber profiles.

Storage arrangements therefore including dedicated record carriers.

References relevant to classification in this group

This subclass/group does not cover:

Devices for signalling identity of wanted subscriber with provision for storing more than one subscriber number at a time using static electronic memories	H04M 1/2745

Informative references

Attention is drawn to the following places, which may be of interest for search:

Protocols for network applications involving profiles	H04L 29/08918
Registration, e.g. affiliation to network; De-registration, e.g. terminating affiliation	H04W 60/00

H04W 8/183

[N: Processing at user equipment or user record carrier]

Definition statement

This subclass/group covers:

Processing, e.g. storing, updating, deleting, at user equipment or record carrier; logical bundling of record carrier and subscriber equipment, e.g. SIM-lock.

Informative references

Attention is drawn to the following places, which may be of interest for search:

Fraud detection as security arrangement	H04W 12/12

H04W 8/186

[N: Processing of subscriber group data]

Definition statement

This subclass/group covers:

- Affiliation of subscribers to a group
- De-affiliation of subscribers from a group
- Creation and administration of subscriber groups
- Transfer, processing, and update of subscriber group information

This subgroup covers all kinds of subscriber groups.

Network addressing or numbering for mobility support	H04W 8/26

Self-organizing networks, e.g. ad-hoc networks or sensor networks	H04W 84/18

H04W 8/20

Transfer of user or subscriber data

Definition statement

This subclass/group covers:

Arrangements for transfer of user data or subscriber data, e.g. between network databases, subscriber equipment or between network databases and authorized 3d parties.

H04W 8/205

[N: Transfer to or from user equipment or user record carrier]

Definition statement

This subclass/group covers:

Transfer is performed to or from user equipment or between user equipment and user record carrier.

H04W 8/22

Processing or transfer of terminal data, e.g. status or physical capabilities

Definition statement

This subclass/group covers:

Processing terminal data, e.g. storing, updating, deleting.

Transferring terminal data, e.g. data related to condition, physical capabilities.
Transferring terminal status, e.g. lost, stolen.

References relevant to classification in this group

This subclass/group does not cover:

Devices for signalling identity of wanted subscriber with provision for storing more than one subscriber number at a time using static electronic memories	H04M 1/2745

Informative references

Attention is drawn to the following places, which may be of interest for search:

Protocols for network applications adapted for proprietary or special purpose networking environments, involving the management of devices over a network	H04L 29/08567
Allocation plan definition, set-up or creation based on terminal or device properties	H04W 72/04S2

H04W 8/24

Transfer of terminal data

Definition statement

This subclass/group covers:

Transfer of terminal data, e.g. between network and terminal equipment.

Informative references

Attention is drawn to the following places, which may be of interest for search:

Portable communication terminals with means for supporting locally a plurality of applications to increase the functionality provided by software upgrading or downloading	H04M 1/72525
Programme loading or initiating G06F 9/445; Power saving arrangements H04W 52/02; De-registration or Detaching	H04W 60/06

H04W 8/245

[N: from a network towards a terminal]

Definition statement

This subclass/group covers:

Transfer of terminal data from a network towards a terminal, e.g. downloading terminal equipment software, remotely activating or deactivating terminals.

Informative references

Attention is drawn to the following places, which may be of interest for search:

Protocols for network applications involving the movement of software and/or configuration parameters	H04L 29/08981
Cordless phones with means for supporting locally a plurality of applications to increase the functionallity provided by software upgrading or downloading	H04M 1/72525

H04W 8/26

Network addressing or numbering for mobility support

Definition statement

This subclass/group covers:

Allocating address(es) to network components, services or other logical entities,for the purpose of handling mobility or establishing communication(s) using said address(es);

De-allocating, reclaiming of address(es); Action(s) making use of addresses.

Informative references

Attention is drawn to the following places, which may be of interest for search:

Address allocation involving portability aspects in data networks	H04L 29/12311
Additional connecting arrangements for providing access to frequently-wanted subscribers, e.g. abbreviated dialling	H04M 3/44
Assignment or use of connection identifiers when establishing a connection	H04W 76/021

H04W 8/265

[N: for initial activation of new user]

Definition statement

This subclass/group covers:
Allocation of network address or number at initial activation of a user

Informative references

Attention is drawn to the following places, which may be of interest for search:

Access control characterised by a protocol	H04L 29/06823

H04W 8/28

Number portability; [N: Network address portability]

Definition statement

This subclass/group covers:
Network addressing is carried out independently of a user's subscription data.

Informative references

Attention is drawn to the following places, which may be of interest for search:

Personal communications services for intelligent networking, e.g. provisions for portability of subscriber numbers	H04Q 3/005

H04W 8/30

Network data restoration; [N: Network data reliability; Network data fault tolerance]

Definition statement

This subclass/group covers:
Providing for reliability and fault tolerance of network data; Restoring network

data after accidental loss or network malfunction.

Informative references

Attention is drawn to the following places, which may be of interest for search:

Counter-measures to a fault	H04L 29/14
Arrangements for maintaining operational condition	H04W 24/04
Error control	H04W 28/04

H04W 12/00

Security arrangements, e.g. access security or fraud detection; Authentication, e.g. verifying user indentity or authorisation; Protecting privacy or anonymity

References relevant to classification in this subclass/group

This subclass/group does not cover:

Security arrangements for protecting computers against unauthorised activity	G06F 21/00
Arrangements for secret or secure communication	H04L 9/00

Glossary of terms

In this subclass/group, the following terms (or expressions) are used with the meaning indicated:

In this group, the following terms or expressions are used with the meaning indicated:

Authorisation	means providing access to network resources after consultation of network stored user or terminal data or after checking a user's credentials

H04W 16/00

Network planning, e.g. coverage or traffic planning tools; Network deployment, e.g. resource partitioning or cells structures

Definition statement

This subclass/group covers:

- Arrangements and techniques for determining traffic capacity for network equipments and/or linking infrastructure.
- Distribution of spectral resources at deployment stage, i.e. distributing wireless channels to access points; Re-distribution of said resources during operation on basis of predicted or predefined traffic patterns.
- Providing wireless coverage by special arrangements of service areas or shape, e.g. cell structures.

Informative references

Attention is drawn to the following places, which may be of interest for search:

Network traffic or resource management	H04W 28/00
Local resource management	H04W 72/00

H04W 16/02

Resource partitioning among network components, e.g. reuse partitioning

Definition statement

This subclass/group covers:

- Distribution, at initial stage of deployment, of spectral resources, e.g. channels among access points in a network.
- Defining spectral resources to be re-distributed.
- Sizing network equipments or network equipment links for the purpose of handling expected traffic.
- Distribution of pilot channels

H04W 16/04

Traffic adaptive resource partitioning

Definition statement

This subclass/group covers:

Part of the spectral resources can be re-distributed to the access points in order to autonomously optimize performance using long or short term variations in traffic, i.e. the network does not revert to the original distribution.

H04W 16/06

Hybrid resource partitioning, e.g. channel borrowing

Definition statement

This subclass/group covers:

Part of the spectral resources distributed to an access point can be relinquished to adjacent access points to avoid communication drops or regulate traffic load. When not longer needed, the relinquished resources are returned to the original access point.

H04W 16/08

Load shedding arrangements

Definition statement

This subclass/group covers:

The expected traffic load is regulated by controlling the size of a service area by controlling the transmission power of an access point.

Informative references

Attention is drawn to the following places, which may be of interest for search:

Hand-off or reselecting arrangements for handling the traffic	H04W 36/22
Transmission power control management, i.e. sharing limited amount of power among users or channels or data types, taking into account loading or congestion level	H04W 52/343

H04W 16/10

Dynamic resource partitioning

Definition statement

This subclass/group covers:

- Partitioning of all spectral resources is performed autonomously among the access points normally on a interference limiting criteria.
- Dynamic channel partioning as such.

Informative references

Attention is drawn to the following places, which may be of interest for search:

Wireless resource selection or allocation	H04W 72/04

H04W 16/12

Fixed resource partitioning

Definition statement

This subclass/group covers:

All of the available spectral resources are assigned in a fixed manner among the network's access points.

Cluster reuse wherein one or more reuse patterns are assigned to at least one access point.

H04W 16/14

Spectrum sharing arrangements [N: between different networks]

Definition statement

This subclass/group covers:

Service area(s) belonging to different wireless networks have at least one of their allocated or cooperatively used spectral resources in common.

Techniques and arrangements for avoiding simultaneous use of the resource, e.g. for detecting interference-free channels in overlap areas.

Covers overlap sharing, i.e. filling voids or gaps in used or allocated

resources. Covers also underlay sharing, i.e. using the resources of an overlayed system in an underlayed system while staying within an agreed noise floor. Covers the detection and cooperative use of licensed spectrum resources or their detection for interference free operation of unlicensed networks;

Covers also spectrum sharing aspects of cognitive radio systems.

Interference avoidance for communication to/from terminal.

Informative references

Attention is drawn to the following places, which may be of interest for search:

Wireless resource selection or allocation	H04W 72/04
Dynamic wireless traffic scheduling; Dynamically scheduled allocation on shared channel	H04W 72/12
Auxiliary means for detecting or identifying radar signals or the like	G01S 7/021
Assessment of spectral gaps suitable for allocating digitally modulated signals in multi-carrier systems, e.g. for carrier allocation in cognitive radio	H04L 27/0006

H04W 16/16

for PBS [Private Base Station] arrangements

Definition statement

This subclass/group covers:

One of the networks being of small scale for non-public usage.

Informative references

Attention is drawn to the following places, which may be of interest for search:

Public Land Mobile Systems, e.g. cellular systems, using private Base Stations, e.g. femto Base Stations, home Node B	H04W 84/045

Small scale networks, flat hierarchical networks, PBS [Private Base Station] network	H04W 84/105

H04W 16/18

Network planning tools

Definition statement

This subclass/group covers:

- Coverage prediction tools or models.
- Use of field measurements for network deployment, use of test access points for determining optimal or optimized locations for network deployment.
- Arrangements and techniques for providing initial network coverage at network deployment or additional coverage at subsequent re-deployment stage. This additional coverage at subsequent re-deployment stage refers to a planned system upgrade, i.e. is not an adaptation of a running system.

Informative references

Attention is drawn to the following places, which may be of interest for search:

Measuring electromagnetic field characteristics	G01R 29/08
Arrangements for maintenance or administration of data switching networks, hardware and software tools for network design, e.g. with integrated simulation and design testing	H04L 12/2456

H04W 16/22

Traffic simulation tools or models

Definition statement

This subclass/group covers:

Arrangements and techniques for predicting equipment or system link

capacity or system performance

Informative references

Attention is drawn to the following places, which may be of interest for search:

Arrangements for maintenance or administration of data switching networks, hardware and software tools for network design, e.g. with integrated simulation and design testing	H04L 12/2456

H04W 16/24

Cell structures

Definition statement

This subclass/group covers:

Arrangements where wireless coverage is provided by special arrangements of

service areas (cells) or shape thereof.

H04W 16/26

Cell enhancers [N: or enhancement], e.g. for tunnels, building shadow

Definition statement

This subclass/group covers:

Techniques and arrangements where the service area is extended by dedicated repeating equipment, Network coordinated processing for cell enhancements. This subgroup contains the use of repeaters to extend the coverage, i.e. the repeater is essentially at fixed position and under direct control of the wireless network.

Informative references

Attention is drawn to the following places, which may be of interest for search:

Active relay systems	H04B 7/15
Radio transmission arrangements for base station coverage control, e.g. by	H04B 7/2606

using relays in tunnels	
Public Land Mobile Systems using dedicated repeater stations	H04W 84/047
Terminal device adapted for relaying to or from another terminal or user	H04W 88/04

H04W 16/28

using beam steering

Definition statement

This subclass/group covers:

The service area is defined by a focused beam in a desired generally variable direction of transmission or reception, e.g. electric antenna tilting or beam forming.

References relevant to classification in this group

This subclass/group does not cover:

Arrangements for changing or varying the orientation or the shape of the directional pattern of the waves radiated from an aerial or aerial system	H01Q 3/00

Informative references

Attention is drawn to the following places, which may be of interest for search:

Control of transmission	H04B 7/005

H04W 16/30

Special cell shapes, e.g. doughnuts or ring cells

Definition statement

This subclass/group covers:

The service area differs substantially from a normally polygonal or sectorized

shape, e.g. the outer borders of the ring are defined by preset values of an access point's transmission power.

Informative references

Attention is drawn to the following places, which may be of interest for search:

Load shedding arrangements	H04W 16/08
Transmission power control management, i.e. sharing limited amount of power among users or channels or data types, taking into account loading or congestion level	H04W 52/343

H04W 16/32

Hierarchical cell structures

Definition statement

This subclass/group covers:

Partitioning spectral resources among access areas organized into ranks, each subordinate to the one above it. Macro cell, micro cell overlays.

H04W 24/00

Supervisory, monitoring or testing arrangements

Definition statement

This subclass/group covers:

- Arrangements for supervising performance of a deployed network.
- Testing or monitoring arrangements specially adapted for wireless networks.
- Arrangements for evaluating network performance under real or simulated traffic conditions.
- System equipment reconfiguration or upgrades in order to improve overall network performance.

This group relates also to testing of network components and the monitoring of connections for performance assessment.

Informative references

Attention is drawn to the following places, which may be of interest for search:

Monitoring; testing	H04B 17/00
Arrangements for maintenance or administration of data switching networks	H04L 12/24
Network Service management	H04L 12/2464
Details of data switching networks, monitoring arrangements, testing arrangement	H04L 12/26
Supervisory, monitoring or testing arrangements for automatic or semiautomatic exchanges	H04M 3/22

H04W 24/02

Arrangements for optimizing operational condition

Definition statement

This subclass/group covers:

Automatic configuration of system equipment, reconfiguration or upgrades in order to improve overall network performance. The permanent deployment of additional, i.e. not initially planned, equipment or resources for performance improvement.

Generation, update or management of Neighbour Cell Lists for network management

Informative references

Attention is drawn to the following places, which may be of interest for search:

Configuration optimization of network or network elements in data switching networks	H04L 12/2431
Network planning tools	H04W 16/18
Determination of parameters used for hand-off e.g. generation or	H04W 36/0083

modification of neighbour cell lists	
Service support, Network management device	H04W 88/18

H04W 24/04

Arrangements for maintaining operational condition

Definition statement

This subclass/group covers:

Reliability aspects, stand-by arrangements, back-up or redundant systems or system components in a network.

References relevant to classification in this group

This subclass/group does not cover:

Details of transmission systems for increasing reliability, e.g. using redundant or spare channels or apparatus	H04B 1/74

Informative references

Attention is drawn to the following places, which may be of interest for search:

Details of data switching networks, arrangements for maintenance or administration involving automatic restoration of network faults	H04L 12/2422
Network data restoration	H04W 8/30

H04W 24/06

Testing, [N: supervising or monitoring] using simulated traffic

Definition statement

This subclass/group covers:

The operational condition of the network or network nodes is assessed using

data generated outside normal operation or by self-testing operation, e.g. loop-back operation.

Informative references

Attention is drawn to the following places, which may be of interest for search:

Hardware and software tools for network design, e.g. with integrated simulation and design testing in data switching networks	H04L 12/2456
Monitoring arrangements for data switching networks	H04L 12/2602

H04W 24/08

Testing, [N: supervising or monitoring] using real traffic

Definition statement

This subclass/group covers:

The operational condition of the network or network nodes is assessed with data collected during normal operation.

Informative references

Attention is drawn to the following places, which may be of interest for search:

Hardware and software tools for for network design, e.g. with integrated simulation and design testing in data switching networks	H04L 12/2456
Monitoring arrangements for data switching networks	H04L 12/2602
Network Planning tools	H04W 16/18

H04W 24/10

Scheduling measurement reports; [N: Arrangements for measurement reports]

Definition statement

This subclass/group covers:

Generating measurement requests to monitoring equipment; measuring/collecting/receiving data at/from reporting equipment.

Informative references

Attention is drawn to the following places, which may be of interest for search:

Processing of captured monitoring data, report generation in data switching networks	H04L 12/2623
Generation, update or management of Neighbour Cell Lists for network management	H04W 24/02
Hand-off or reselecting arrangements	H04W 36/00
Generation, update or management of Neighbour Cell Lists for the purpose of hand-off	H04W 36/0083
Determination of parameters used for hand-off, scheduling hand-off measurements	H04W 36/0088
Connectivity information management, e.g. connectivity discovery or update	H04W 40/24
Power headroom reporting	H04W 52/365
Wireless resource selection or allocation based on quality criteria	H04W 72/08
Discovery of network devices, e.g. terminals	H04W 8/005

H04W 28/00

Network traffic or resource management

Definition statement

This subclass/group covers:

Arrangements or techniques for central control, by a network component, of traffic or admission policies for the purpose of, e.g. ensuring fair use of network resources among users or terminals or guarantying implicit or negotiated service level or quality agreements. Management of negotiated local resources for further allocation.

This group together with its subgroups cover all reservation and resource negotiation activities (both central and local).

Informative references

Attention is drawn to the following places, which may be of interest for search:

Local resource management , e.g. wireless traffic scheduling or selection or allocation of wireless resources	H04W 72/00

H04W 28/02

Traffic management, e.g. flow control or congestion control

Definition statement

This subclass/group covers:

Avoiding or regulating an actual or potential traffic overload condition

Informative references

Attention is drawn to the following places, which may be of interest for search:

Flow control in the network	H04W 28/10

H04W 28/04

Error control [N:, e.g. treating errors, collisions, noise or interference (arrangements for detecting or preventing errors in the information received H04L1/00]

Definition statement

This subclass/group covers:

Arrangements for preventing, detecting, or correcting errors in the information received in wireless networks, e.g. retransmission.

References relevant to classification in this group

This subclass/group does not cover:

Arrangements for detecting or preventing errors in the information received	H04L 1/00

H04W 28/06

Optimizing, e.g. header compression, information sizing

Definition statement

This subclass/group covers:

Techniques and arrangements whereby the amount of information transmitted over a wireless link is optimized by e.g. adapting the format of the information, reducing the amount of associated control information, discarding information.

This subgroup does not cover techniques used with the purpose of improving the efficiency of the wireless transmission, e.g. adaptive modulation, blind detection.

This subgroup is for adapting the transmission onto a particular wireless link without changing the content of the information.

References relevant to classification in this group

This subclass/group does not cover:

Arrangements for detecting or preventing errors in the information received	H04L 1/00

Informative references

Attention is drawn to the following places, which may be of interest for search:

Protocols for data compression	H04L 29/0604
Flow control using intermediate storage	H04W 28/14

H04W 28/065

[N: using assembly or disassembly of packets]

Definition statement

This subclass/group covers:

Adaptation of traffic data packets received from higher layers onto packet transmission requirements of lower layer, e.g. SDU onto PDU

Informative references

Attention is drawn to the following places, which may be of interest for search:

Open systems interconnection (OSI) architecture, e.g. layering, entities, standards; Interface between layers; Software aspects	H04L 29/08009

H04W 28/08

Load balancing or load distribution

Definition statement

This subclass/group covers:

Techniques and arrangements where communication information is transmitted over alternate transmission paths for balancing the load in the system or when a preferred or desired path is unavailable due to excessive traffic carried over said path, e.g. load shedding/sharing involving alternative entities.

Emphasis is put on "alternate" here to distinguish from flow control; e.g. load shedding/sharing involving alternative entities will be covered here.

Typical example: different paths in the backbone network.

Informative references

Attention is drawn to the following places, which may be of interest for search:

Load balancing in packet switching networks	H04L 12/56D2B
Hand-off or reselecting arrangements for handling the traffic	H04W 36/22
Communication route or path	H04W 40/04

selection based on wireless node resources	
Access restriction based on traffic conditions	H04W 48/06

H04W 28/10

Flow control [N: between communication endpoints]

Definition statement

This subclass/group covers:

Techniques and arrangements to regulate the amount of communication information in the network.

In this subgroup flow control is seen from a network point of view, i.e. involving backbone network entities which can communicate to perform flow control. This covers up and downlink.

Informative references

Attention is drawn to the following places, which may be of interest for search:

Local resource management with wireless traffic scheduling	H04W 72/12
Flow control in packet switching networks	H04L 12/569

H04W 28/12

using signalling between network elements

Definition statement

This subclass/group covers:

Supervisory or control information is exchanged between equipments involved in information transmission.

Informative references

Attention is drawn to the following places, which may be of interest for search:

Flow Control and congestion control in packet switching networks using signalling	H04L 12/56D17, H04L 12/56D24

H04W 28/14

using intermediate storage

Definition statement

This subclass/group covers:

The information is temporarily stored, buffered, queued for transmission.

Informative references

Attention is drawn to the following places, which may be of interest for search:

Buffering or recovering information during reselection	H04W 36/02
Schedule definition, set-up, creation based on age of data to be sent	H04W 72/1221
Flow Control and congestion control in packet switching networks using information about buffer occupancy at either end or transit nodes	H04L 12/56D21

H04W 28/16

Central resource management; Negotiation of resources [N: or communication parameters], e.g. negotiating bandwidth or QoS [Quality of Service]

Definition statement

This subclass/group covers:

- Central management of wireless communication resources, i.e. management of wireless communication resources in the access network, e.g. between a central communication resource manager and an access point
- (Re)Negotiating communication parameters of connections involving at least one wireless communication link over which information is to be

delivered with a requesting user/terminal from within or outside the system.

- Grant or denial of requests from new users/terminals via access points and conditions under which such requests are granted in view of keeping respectively meeting negotiated or implicit requirements for serviced users or terminals. Establishment of communication parameters through actions other than negotiation (e.g. delegating or commanding the use of pre-established parameters; determining by a device itself the set of parameters to use).

Informative references

Attention is drawn to the following places, which may be of interest for search:

Admission Control and Resource allocation in packet switching networks	H04L 12/5695
Security arrangements, e.g. access security or fraud detection, Authentication, e.g. verifying user identity or authorisation, Protecting privacy or anonymity	H04W 12/00
Services or facilities specially adapted for wireless communication networks	H04W 4/00
Local resource management	H04W 72/00

H04W 28/18

Negotiating wireless communication parameters

Definition statement

This subclass/group covers:

Determining the wireless resources or parameters to be used to achieve an agreed SLA, QoS, etc.

The resources can be provided by/in different networks.

Informative references

Attention is drawn to the following places, which may be of interest for search:

Arrangements for detecting or preventing errors in the information	H04L 1/0001

received, modifying transmission characteristics according to link quality	

H04W 28/20

Negotiating bandwidth

Definition statement

This subclass/group covers:

(Re)negotiating bandwidth of connection(s) via one or more communication links.

The negotiated bandwidth may be provided via one or more communication links.

Informative references

Attention is drawn to the following places, which may be of interest for search:

Details of data switching networks, arrangements for maintenance or administration, involving configuration of the network and network elements, bandwidth and capacity management, i.e. automatically increasing or decreasing capacities, e.g. bandwidth on demand	H04L 12/2439

Glossary of terms

In this subclass/group, the following terms (or expressions) are used with the meaning indicated:

In this group, the following term is used with the meaning indicated:

Bandwidth	transmission capacity available for communication as provided by a suitable combination of communication links of predefined capacity

H04W 28/22

Negotiating communication rate

Definition statement

This subclass/group covers:

(Re)negotiating transmission rate of connection.

Glossary of terms

In this subclass/group, the following terms (or expressions) are used with the meaning indicated:

In this group, the following term is used with the meaning indicated:

Communication rate	information rate available for communication provided by a suitable combination of information coding and/or modulation techniques

H04W 28/24

Negotiating SLA [Service Level Agreement]; Negotiating QoS [Quality of Service]

Definition statement

This subclass/group covers:

Determining or negotiating the SLA or QoS. Allowing temporary "graceful degradation" in order to maximize general network capacity.

Informative references

Attention is drawn to the following places, which may be of interest for search:

Data switching networks, stored and forward switching systems, packet switching systems, flow control, access or admission control, e.g. network resource reservation	H04L 12/56D5
Selecting arrangements, arrangements providing connection between exchanges, provisions for network management, bandwidth allocation or management	H04Q 3/0066

H04W 28/26

Resource reservation

Definition statement

This subclass/group covers:

- Reservation of resources in backbone network; reservation of wireless resources to be allocated by local controller.
- Reservation based on predicted user or terminal behaviour, e.g. moving direction or speed.

Resources are reserved not for immediate but for future use.

Informative references

Attention is drawn to the following places, which may be of interest for search:

Wireless resource selection or allocation	H04W 72/04

H04W 36/00

Hand-off or reselecting arrangements

Definition statement

This subclass/group covers:

Transferring ongoing connection(s) of a user or terminal in connected state to different network resource(s) or administrative domains with the purpose of avoiding or limiting loss or degradation of said connection(s) due to user mobility, wireless link conditions or system loading.

The reselection can take place at the user and/or system initiative based on fixed or agreed criteria and can be performed for all or part of the assigned resources.

Generation, update or management of Neighbour Cell Lists; temporary storage, buffering of connection data during reselection, performing registration, binding or location updates at reselection of network equipments or administrative domains

Informative references

Attention is drawn to the following places, which may be of interest for search:

Arrangements for detecting or preventing errors in the information received	H04L 1/00
Supervisory, monitoring or testing arrangements	H04W 24/00
Transmission Power Control during macro-diversity or soft handoff	H04W 52/40
Registration, e.g. affiliation to network; De-registration, e.g. terminating affiliation	H04W 60/00
Resource management for broadcast services	H04W 72/005
"Idle hand-off", i.e. reselection while user terminal is in an idle, non-connected state	H04W 48/18, H04W 48/20.

Special rules of classification within this group

In this main group, local priority rules supersede first-place priority rule (FPPR) classification.

H04W 36/0005

[N: Control or signalling for completing the hand-off]

Definition statement

This subclass/group covers:

Exchange of information for controlling the realisation of the hand-off

H04W 36/0011

[N: for data session or connection]

Definition statement

This subclass/group covers:

Transmission and use of control information, e.g. hand-off signalling messages, including trigger messages which initiate data session or

connection hand-off

Informative references

Attention is drawn to the following places, which may be of interest for search:

Connection manipulation	H04W 76/04
Real-time multimedia communications - Session control	H04L 29/06319

H04W 36/0016

[N: for hand-off preparation]

Definition statement

This subclass/group covers:

Preparing data session or connection hand-off (e.g. by using binding update messages) carried out during or prior to lower layer hand-off events (e.g. radio link hand-off)

Informative references

Attention is drawn to the following places, which may be of interest for search:

Resource reservation	H04W 28/26

H04W 36/0022

[N: for transferring sessions between adjacent core network technologies]

Definition statement

This subclass/group covers:

Facilitating access network mobility through handovers between at least two core network domains, either in one or in both directions. Involves change from one core network technology, e.g. from PS [Packet Switched] domain, to a different core network technology, to e.g. CS [Circuit Switched] domain, to CS fallback in EPS [Evolved Packet System].

Used, e.g., in VCC [Voice Call Continuity], SRVCC [Single Radio VCC], VoLGA [Voice over LTE Generic Access].

H04W 36/0027

[N: for a plurality of sessions or connections, e.g. multi-call, multi-bearer connections]

Definition statement

This subclass/group covers:

Exchange of information for selecting a particular session to be handed off

H04W 36/0033

[N: with transfer of context information]

Definition statement

This subclass/group covers:

Existing context information e.g. PDP context is provided to the hand-off target, e.g., using hand-off signalling between source and target node

H04W 36/0038

[N: of security context information]

Definition statement

This subclass/group covers:

Transparent transfer of whole security contexts or parts of a security context, e.g., using hand-off signalling between source and destination node. Solely the transport but not the particular content of the context information is essential. For earlier or in-time availability of established security contexts in connection with hand-offs.

Informative references

Attention is drawn to the following places, which may be of interest for search:

Security arrangements; authentication; protecting privacy or anonymity	H04W 12/00
Arrangements for Network Security characterised by a protocol	H04L 29/06551

Special rules of classification within this group

The use of H04W 12/04 code for additional information is mandatory.

H04W 36/0044

[N: of quality context information]

Definition statement

This subclass/group covers:

Transparent transfer of data session or connection quality contexts or parameters, e.g. using hand-off signalling between source and target node. Solely the transport but not the particular content of the context information is essential. For earlier or in-time availability of established quality contexts in connection with hand-offs.

Informative references

Attention is drawn to the following places, which may be of interest for search:

Flow control in packet switching systems	H04L 12/569
Central resource management; Negotiation of resources, e.g. negotiating bandwidth or QoS [Quality of Service]	H04W 28/16

H04W 36/005

[N: involving radio access media independent information, e.g. MIH [Media independent Hand-off]

Definition statement

This subclass/group covers:

Radio network independent, universal signalling methods are used to control hand-off in different radio networks, e.g., IEEE 802.21 Media Independent Handoff

H04W 36/0055

[N: Transmission and use of information for re-establishing the radio link]

Definition statement

This subclass/group covers:

Transmission and use of capacity information of neighbouring cells; Transmission and use of configuration information to be applied in the target cell; Transmission and use of information to assist the MT to retrieve neighbour cell information;

Transmission and use of the configuration information of the links associated with the terminal realising the hand-off; Transmission and use of specific resource information which are used to transmit a handover message.

Informative references

Attention is drawn to the following places, which may be of interest for search:

Load balancing or load distribution	H04W 28/08
Central resource management, Negotiation of resources, e.g. negotiating bandwidth or QoS [Quality of Service]	H04W 28/16
Access restriction or access information delivery, e.g. discovery data delivery	H04W 48/08
Control information exchange between nodes	H04W 72/0406

H04W 36/0061

[N: of neighbour cell information]

Definition statement

This subclass/group covers:

Transmission and use of cell information, e.g. cell ID, neighbour cell lists

H04W 36/0066

[N: of control information between different types of networks in order to establish a new radio link in the target network]

Definition statement

This subclass/group covers:

Transmission of information between different types of networks in order to

establish a new radio link.

H04W 36/0072

[N: of resource information of target access point]

Definition statement

This subclass/group covers:

Notifying the terminal about resources assigned to the target access point or to be used by the terminal; Notification of timing information of a target cell.

Informative references

Attention is drawn to the following places, which may be of interest for search:

Compensating for timing error of reception due to propagation delay by altering transmission time	H04W 56/0045

H04W 36/0077

[N: of access information of target access point]

Definition statement

This subclass/group covers:

Transmission of random access codes to be used for accessing the destination cell; Transmission of ranging codes.

H04W 36/0083

[N: Determination of parameters used for hand-off e.g. generation or modification of neighbour cell lists]

Definition statement

This subclass/group covers:

Scanning for hand-off; generation of neighbour cell lists; determination of threshold for signal level reception upon which reporting should be done or upon which hand-off is triggered; update of neighbouring cell list; Determination of the resource that shall be used in the neighbouring cell; Provision of measurements reports in connection with hand-off.

Informative references

Attention is drawn to the following places, which may be of interest for search:

Discovering; Processing access restriction or access information	H04W 48/16

H04W 36/0088

[N: Scheduling hand-off measurements]

Definition statement

This subclass/group covers:

Determination of the time at which measures shall be performed.

Informative references

Attention is drawn to the following places, which may be of interest for search:

Scheduling measurement reports; Arrangements for measurements reports	H04W 24/10

H04W 36/0094

[N: Definition of hand-off measurement parameters]

Definition statement

This subclass/group covers:

Arrangements and techniques for defining parameters required for neighbour cell measurements.

H04W 36/02

Buffering or recovering information during reselection [N: Modification of the traffic flow during hand-off]

Definition statement

This subclass/group covers:

Sending data to a buffer during hand-off; reading data from a buffer during hand-off and sending the data to one or more access points; Sending the same data to several access points during handoff.

Informative references

Attention is drawn to the following places, which may be of interest for search:

Flow control in the network	H04W 28/10

H04W 36/023

[N: Buffering or recovering information during reselection]

Definition statement

This subclass/group covers:

Sending data to a buffer during hand-off; reading data from a buffer during hand-off and sending the data to one or more access points

Informative references

Attention is drawn to the following places, which may be of interest for search:

Modification of an existing route due to handover	H04W 40/36
Sequence integrity	H04L 12/56D25

H04W 36/026

[N: Multicasting of data during hand-off]

Definition statement

This subclass/group covers:

Sending the same data to several access points during handoff.

Informative references

Attention is drawn to the following places, which may be of interest for search:

Site diversity, e.g. macro-diversity for radio transmission systems	H04B 7/022

H04W 36/04

Reselecting a cell layer in multi-layered cells

Definition statement

This subclass/group covers:

The connection is transferred between access points providing communication in areas of significantly different coverage. Macrocell/microcell hand-off, with the following features: hand-off within the same network authority and using the same air interface.

H04W 36/06

Reselecting a communication resource in the serving access point

Definition statement

This subclass/group covers:

Arrangements where wireless communication(s) channel(s) are locally re-arranged without altering the fixed network connection(s); e.g. intra-cell hand-off, hand-off between sectors of one access point.

Informative references

Attention is drawn to the following places, which may be of interest for search:

Wireless resource selection or (re-)allocation within a cell without exchange of handoff signalling messages	H04W 72/04

H04W 36/08

Reselecting an access point

Definition statement

This subclass/group covers:

Arrangements where a different access point is selected, e.g. Intra BSC/RNC hand-off. In case of failure the previous access point can be reselected.

H04W 36/10

Reselecting an access point controller

Definition statement

This subclass/group covers:

Arrangements where the reselected access point(s) belongs to a different access controller, e.g. inter BSC/RNC hand-off.

H04W 36/12

Reselecting a serving backbone network switching or routing node

Definition statement

This subclass/group covers:

The connection is transferred between serving nodes in the backbone network e.g. inter-MSC, inter-SGSN.

H04W 36/14

Reselecting a network or an air interface

Definition statement

This subclass/group covers:

The connection is transferred to a different network or authority, e.g. inter-operator, inter-system hand-off.

Informative references

Attention is drawn to the following places, which may be of interest for search:

Control or signalling for completing the hand-off	H04W 36/0005

H04W 36/16

Performing reselection for specific purposes

Definition statement

This subclass/group covers:

Event causing a hand-off initiation

H04W 36/165

[N: for improving the overall network performance

(H04W36/18 to H04W36/22 take precedence)

Definition statement

This subclass/group covers:

Hand-off of terminals for improving the overall network performance, e.g. reducing overall network power consumption or interference.

Informative references

Attention is drawn to the following places, which may be of interest for search:

Performing selection for specific purposes	H04W 36/18 - H04W 36/22

Special rules of classification within this group

In practice, all documents falling under coverage of H04W 36/165 are all classified in H04W 36/165 unless they fit at least into one of the groups H04W 36/18 to H04W 36/22.

H04W 36/18

for allowing seamless reselection, e.g. soft reselection

Definition statement

This subclass/group covers:

Wireless links or data associations are temporarily added or deleted in such a manner that the terminal has at least one wireless link connected or one data association.The primary and the temporarily added wireless link carry the same content. This group covers temporarily established parallel radio links or data associations for the purpose of maintaining a connection during a hand-off.

Data associations cover mobility data e.g. IP addresses.

References relevant to classification in this group

This subclass/group does not cover:

Diversity systems, i.e. using permanently existing parallel connections for improving the robustness of the wireless connection	H04B 7/02
Diversity systems, Cooperative use of antennas of several nodes, e.g. in	H04B 7/024

coordinated multipoint or cooperative MIMO	

H04W 36/20

for optimizing the interference level

Definition statement

This subclass/group covers:

Transferring connections in order to avoid interference to/from neighbouring cells, e.g. confinement hand-off.

Informative references

Attention is drawn to the following places, which may be of interest for search:

Allocation of wireless resources based on quality criteria	H04W 72/08

H04W 36/22

for handling the traffic

Definition statement

This subclass/group covers:

Transferring connections in order to distribute the traffic to neighbouring cells, e.g. load shedding hand-off.

Informative references

Attention is drawn to the following places, which may be of interest for search:

Load shedding arrangements	H04W 16/08
Load balancing or load distribution	H04W 28/08

H04W 36/245

[N: by historical data]

Definition statement

This subclass/group covers:

The hand-off criteria are derived / calculated from recorded network data. Preventing hand-off to target cells for which a short dwell time is expected.

H04W 36/26

by agreed or negotiated communication parameters

Definition statement

This subclass/group covers:

The reselection is performed in order to meet service level agreements.

Informative references

Attention is drawn to the following places, which may be of interest for search:

Negotiating wireless communication parameters	H04W 28/18

H04W 36/28

involving a plurality of connections, e.g. multi-call, multi-bearer connections

Definition statement

This subclass/group covers:

The reselection may be performed for selected parts of a plurality of connections of an user or terminal.

H04W 36/365

[N: by manual user interaction]

Definition statement

This subclass/group covers:

The user's opinion on whether the hand-off should be carried out is requested or the user pre-configures under which conditions a hand-off is to be carried out.

H04W 36/385

[N: of the core network]

Definition statement

This subclass/group covers:

E.g. under control of PCRF, MSC, HSS, HLR

H04W 40/00

Communication routing or communication path finding

Definition statement

This subclass/group covers:

Techniques and arrangements for selectively establishing one or a plurality of communication paths involving at least one wireless path, from information sources to information sinks, over which information is communicated.

Techniques and arrangements for discovering, establishing, maintaining connectivity information among affiliated wireless equipment, e.g. routing lists.

Techniques and arrangements for path selection, path optimisation in network.

Informative references

Attention is drawn to the following places, which may be of interest for search:

Attention is drawn to the following places, which may be interesting for search:

Packet switching systems	H04L 12/56

H04W 48/00

Access restriction; Network selection; Access point selection

Definition statement

This subclass/group covers:

Techniques or arrangements for preventing user or terminal affiliation or for preventing use of network or access point resources or services.

Techniques or arrangements for selecting one or a plurality of networks, access points, or PoAs.

Techniques or arrangements for network or access point information delivery, e.g. discovery information delivery.

Informative references

Attention is drawn to the following places, which may be of interest for search:

Security arrangements	H04W 12/00
Hand-off or reselecting arrangements	H04W 36/00
Registration, e.g. affiliation to network, De-registration, e.g. terminating affiliation	H04W 60/00
Local resource management	H04W 72/00
Wireless channel access	H04W 74/00

H04W 48/02

Access restriction performed under specific conditions

Definition statement

This subclass/group covers:

Techniques or arrangements for preventing one or a plurality of users or terminals to affiliate to a selected network or access point, or to use network or access point resources or services, e.g. by jamming broadcast, using barring information.

Preventing or restricting access to service.

This group also covers terminal data consulting, e.g. IMEI data consulting.

Informative references

Attention is drawn to the following places, which may be of interest for search:

Jamming of communication, Counter-measures	H04K 3/00
Access security	H04W 12/08
Fraud detection	H04W 12/12
Central resource management	H04W 28/16
Local resource management	H04W 72/00

H04W 48/04

based on user or terminal location or mobility data, e.g. moving direction, speed

Definition statement

This subclass/group covers:

Affiliation, access or use is prevented or restricted in specific areas e.g. hospitals, or makes use of user or terminal behaviour information.

Access restriction to avoid influencing systems outside the network.

H04W 48/06

based on traffic conditions

Definition statement

This subclass/group covers:

Affiliation, access or use is prevented or restricted in response to or to avoid a congestion situation, e.g. cell barring.

H04W 48/08

Access restriction or access information delivery, e.g. discovery data delivery

Definition statement

This subclass/group covers:

Distribution, by network equipment to a user or terminal, of information e.g. for the purpose of selecting a network, a network service, a data network PoA or an access point. This group contains downlink delivery of discovery data.

Informative references

Attention is drawn to the following places, which may be of interest for search:

Connectivity information management, e.g. connectivity discovery or update	H04W 40/24

H04W 48/10

using broadcasted information

Definition statement

This subclass/group covers:

The information is distributed by network equipment or by separate equipment on a channel which is distinct from a network communication or control channel e.g. bulletin board. This group contains broadcasting of network (discovery, access...) data for other networks.

H04W 48/12

using downlink control channel

Definition statement

This subclass/group covers:

Using part of/or a network control channel, e.g. beacon channel. This group contains broadcasting of network (discovery, access...) data by the network on a downlink control channel.

Informative references

Attention is drawn to the following places, which may be of interest for search:

Pilot transmitters or receivers for control of transmission or for equalising	H04B 1/76
Dynamic Wireless traffic scheduling; Dynamically scheduled allocation on shared channel using a grant channel	H04W 72/14
Non-scheduled or contention based access, e.g. random access, ALOHA, CSMA [Carrier Sense Multiple Access] using a dedicated channel for access	H04W 74/0866

H04W 48/14

using user query [N: or user detection]

Definition statement

This subclass/group covers:

The information is sent by the network or access point in response to a user query or user presence detection.

Informative references

Attention is drawn to the following places, which may be of interest for search:

Discovery of network devices, e.g. terminals	H04W 8/005

H04W 48/16

Discovering, processing access restriction or access information

Definition statement

This subclass/group covers:

Searching for available networks, access points and/or communication services they provide; receiving provided discovery information.

Storage, updating, processing discovery information, generally at terminal or user equipment.

Covers also the discovery of the data network PoA

Informative references

Attention is drawn to the following places, which may be of interest for search:

Spread spectrum techniques in general for transmission systems using direct sequence modulation with code acquisition	H04B 1/707A

H04W 48/17

[N: Selecting a data network PoA [Point of Attachment]]

Definition statement

This subclass/group covers:

Selecting, based on processed network information, communication service information, or user defined criteria, one or a plurality of data network PoA

device(s) within wireless network infrastructure (e.g. PDSN [Packet Date Switching Node] device for immediate or deferred access or affiliation request.

Informative references

Attention is drawn to the following places, which may be of interest for search:

Network selection for access arrangements in wide area data switching networks characterised by path configuration	H04L 12/28P1A
Reselecting a Data Network Point of Attachment	H04W 36/00D

H04W 48/18

Selecting a network or a communication service

Definition statement

This subclass/group covers:

Based on processed network information, communication service information, or user defined criteria, one or a plurality of networks is (are) (re-)selected for immediate or deferred access or affiliation request. Selection of an air interface within a network, or selection of a service, or selection of a network domain in the core network. This group also covers selection between CS and PS domain, preferred PLMN, Home area, Localized Service Area selection.

Informative references

Attention is drawn to the following places, which may be of interest for search:

Attention is drawn to the following places, which maybe of interest for search:

Selecting a backbone service provider; Access to open networks	H04L 12/5691

H04W 48/20

Selecting an access point

Definition statement

This subclass/group covers:

Based on processed access point information, or user defined criteria, one or a plurality of access points is (are) (re-)selected for immediate or deferred access or affiliation request. Selection of a cell served by an access point.

H04W 52/00

Power Management, e.g. TPC [Transmission Power Control], power saving or power classes [N: (gain control in transmitters or power amplifiers H03G3/3042)]

Definition statement

This subclass/group covers:

Techniques and arrangements for optimizing network or terminal performance by regulating the amount of power used by a wireless terminal or network equipment.

H04W 56/00

Synchronization arrangements

Definition statement

This subclass/group covers:

Techniques and arrangements for establishing or maintaining a predetermined timing relationship between wireless terminal and network equipments or among wireless network equipments.

H04W 60/00

Registration, e.g. affiliation to network; De-registration, e.g. terminating affiliation

Definition statement

This subclass/group covers:

- Registering, affiliating of an authorized user or terminal to a network
- Re-registration of subscribers or terminals in the network
- De-registration of subscribers or terminals from the network
- Tracking a subscriber or terminal by monitoring transmitted information e.g. location updates, communication information from the user or terminal either in response of a network's query, trigger event, periodical request or of his own volition, e.g. periodic registration
- Structure of location areas

- Mobility database structures therefor"

This group covers all registration procedures caused by the mobility of a terminal which are not induced by a hand-off.

Informative references

Attention is drawn to the following places, which may be of interest for search:

Network data management	H04W 8/00
Network addressing or numbering for mobility support for initial activation of new users	H04W 8/265
Tracking of users for legal interception	H04W 12/02
"Idle hand-off", i.e. reselection while user terminal is in an idle, non-connected state	H04W 48/18, H04W 48/20

H04W 60/005

[N: Multiple registrations e.g. multihoming]

Definition statement

This subclass/group covers:

Multiple affiliations to one or multiple networks or network domains e.g. Multiple WLAN affiliations, parallel affiliations to GSM and UMTS networks, simultaneous registration of more than one binding in one or several location register.

H04W 60/02

by periodical registration

Definition statement

This subclass/group covers:

The user or terminal is requested to transmit registration information at scheduled intervals.

H04W 60/04

using triggered events

Definition statement

This subclass/group covers:

The registration information is transmitted upon occurrence of specific events, e.g. change of location or routing area, network query. Also changing from idle to active mode at terminal in response to such queries.

H04W 60/06

De-registration or Detaching

Definition statement

This subclass/group covers:

Indication to the network, access point, user or terminal that affiliation will

cease immediately or in a deferred manner; the indication may include

information for maintaining or resuming affiliation.

Informative references

Attention is drawn to the following places, which may be of interest for search:

Transfer of terminal data from a network towards a terminal	H04W 8/245

H04W 64/00

Locating users or terminals [N: or network equipment] for network management purposes, e.g. mobility management

Definition statement

This subclass/group covers:

Locating user or terminal or network equipment for the purpose of network management or for providing network services to the user or terminal.

References relevant to classification in this group

This subclass/group does not cover:

Radio direction finding, determining distance or velocity by use of radio waves	G01S

Beacon or beacon systems transmitting signals having a characteristic or characteristics capable of being detected by non-directional receivers and defining directions, positions, or position lines fixed relatively to the beacon transmitters or receivers co-operating therewith	G01S 1/00
Direction-finders for determining the direction from which electromagnetic waves, not having a directional ignificance, are being received	G01S 3/00
Position-fixing by co-ordinating in general	G01S 5/00

H04W 64/003

[N: locating network equipment]

Definition statement

This subclass/group covers:

Locating network equipment for the purpose of network management or for providing network services to the user or terminal.

H04W 64/006

with additional information processing, e.g. for direction or speed determination

Definition statement

This subclass/group covers:

The measurements on the wireless network links are used to derive additional information, e.g. mobility data.

References relevant to classification in this group

This subclass/group does not cover:

Systems for determining distance or velocity using radio waves	G01S 11/02

H04W 68/00

Notification of users, e.g. alerting for incoming communication or change of service

Definition statement

This subclass/group covers:

Notifying one or a plurality of users specified as recipients of an incoming communication or changes in provided services. Selectively performing notifying in parts of the network, e.g. paging strategies. Techniques to increase efficiency of the notification channel.The notification uses specific wireless channel(s) reserved/allocated for this purpose; Arrangements and techniques for defining/optimizing paging areas.

Notification, paging strategies based on established location update areas.

H04W 68/005

[N: Transmission of information for alerting of incoming communication]

Definition statement

This subclass/group covers:

Dedicated structure of paging channels (uplink, downlink, or both). This group covers paging channel structures and paging signalling

H04W 68/02

Arrangements for increasing efficiency of notification or paging channel

Definition statement

This subclass/group covers:

Techniques for enhancing notification attempts, e.g. changing the characteristics of the transmitted notification signal or notification channel(s) between unsuccessful attempts.

Informative references

Attention is drawn to the following places, which may be of interest for search:

Transmission Power Control during retransmission after error or non-acknowledgment	H04W 52/48

H04W 68/025

[N: Indirect paging]

Definition statement

This subclass/group covers:

Indirect paging, whereby a first paging message containing references to the actual paging information is transmitted, e.g. quick paging.

H04W 68/04

multi-step notification using statistical or historical mobility data

Definition statement

This subclass/group covers:

The notification is performed using several attempts in an order based on user's habits or recent network interaction data. Notification based on mobility data, e.g. direction of move, speed.

H04W 68/06

using multi-step notification by changing the notification area

Definition statement

This subclass/group covers:

The notification is performed using several attempts involving different network areas between unsuccessful attempts.

H04W 68/08

using multi-step notification by increasing the notification area

Definition statement

This subclass/group covers:

The notification is performed using several attempts and increasing the initial area by including surrounding network areas between unsuccessful attempts.

Informative references

Attention is drawn to the following places, which may be of interest for search:

Arrangements for increasing efficiency of notification or paging channel	H04W 68/02

H04W 68/10

using simulcast notification

Definition statement

This subclass/group covers:

The incoming communication is notified over the whole network.

H04W 68/12

Inter-network notification

Definition statement

This subclass/group covers:

The notification is conducted simultaneously or sequentially in a plurality of networks. Notification over other subscribed networks when user is unreachable/idle; Using notification associated with different services provided by one (the same) network.

H04W 72/00

Local resource management, e.g. wireless traffic scheduling or selection or allocation of wireless resources

Definition statement

This subclass/group covers:

Processing originating user or terminal resource requests for the purpose of allocating one or a plurality of local wireless resources to the user or terminal. Allocating one or a plurality of local wireless resources in response to a terminating user or terminal communication request.

Controlling wireless resource requests(grant or denial) and wireless resource allocation among contending users or terminals.

Selection of wireless resources by user or terminal.

Allocation one or a plurality of local wireless resources based on certain criteria or to fulfil certain requirements. in this group, a relaying equipment is considered as local access point for the requester. This group implicitely includes deallocation of resources.

Informative references

Attention is drawn to the following places, which may be of interest for search:

Arrangements affording multiple use of the transmission path	H04L 5/00
Central resource management	H04W 28/16
Negotiating wireless communication parameters	H04W 28/18
Resource reservation	H04W 28/26

Special rules of classification within this group

In this main group, local priority rules supersede first-place priority rule (FPPR) classification.

H04W 72/005

[N: Resource management for broadcast services]

Definition statement

This subclass/group covers:

Allocation of specific resources for broadcast/multicast purposes; reselection of preferred frequency layers (reselecting a different broadcast carrier when service is interrupted on the one in use).

Informative references

Attention is drawn to the following places, which may be of interest for search:

Central resource management	H04W 28/16
Local resource management	H04W 72/00

H04W 72/02

Selection of wireless resources by user or terminal

Definition statement

This subclass/group covers:

The user or terminal decides on the ressources to be choosen

H04W 72/04

Wireless resource allocation

Definition statement

This subclass/group covers:

Allocation of wireless resources or adaptation of assigned wireless ressources of an access point or of a regulating authority of a self-organizing network for the purpose of communication with user or terminal; (Semi-) persistent scheduling; Allocation of channels to users.

Semi-persistent scheduling is understood as resource allocation, because the allocation of resources is not changed every transmission frame or slot. Re-allocation, i.e. a modification of an existing allocation plan is included, in case it does not involve handover signalling procedures.

Informative references

Attention is drawn to the following places, which may be of interest for search:

Cooperative use of antennas of several nodes, e.g. in coordinated multipoint or cooperative MIMO [Multiple Input Multiple Output]	H04B 7/024
Arrangements for detecting or preventing errors in the information received, modifying transmission characteristics according to link quality	H04L 1/0001
Arrangements affording multiple use of the transmission path	H04L 5/00
Network deployment, e.g. resource partionning or cells structures	H04W 16/00
Reselecting a communication resource in the serving access point	H04W 36/06

Scheduling is applied when selected data flows are multiplexed onto a wireless resource, the necessary allocation is implicitly executed	H04W 72/12
Code allocation for orthogonal multiplex systems, e.g. using WALSH codes	T04J 11/00B4

H04W 72/0406

[N: involving control information exchange between nodes]

Definition statement

This subclass/group covers:

Allocation-related communication among nodes, e.g. mobile stations, access points, leading to a transfer of control information e.g. a request for or an assignment of resources as well as descriptive information needed therefore. Control information exchanged via multiple interfaces or directions of similar importance.

Informative references

Attention is drawn to the following places, which may be of interest for search:

Transfer of user or subscriber data	H04W 8/20
Transmission and use of information for re-establishing the radio link of resource information of target access point	H04W 36/0072
Resource allocation for control channels instead of data channels	H04W 72/0406

H04W 72/0413

[N: in the uplink direction of a wireless link, i.e. towards network]

Definition statement

This subclass/group covers:

Allocation-related communication from a mobile station to an access point, from a mobile station to a relay node, or from a relay node to an access point. The allocation-related communication comprise e.g. requesting an allocation, or other allocation related issues.

H04W 72/042

[N: in the downlink direction of a wireless link, i.e. towards terminal]

Definition statement

This subclass/group covers:

Allocation-related communication from an access point to a mobile station, from an access point to a relay node, or from a relay node to a mobile station. The allocation-related communication comprises e.g. transmission of the allocation plan, or other allocation related issues.

H04W 72/0426

[N: between access points]

Definition statement

This subclass/group covers:

Allocation-related communication between access points, e.g. notifying the next access point about the resources allocated at the present access point.

H04W 72/0433

[N: between access point and access point controlling device]

Definition statement

This subclass/group covers:

Allocation related communication between an access point and a device controlling the access point, e.g. parameter settings to be applied by the access point

Informative references

Attention is drawn to the following places, which may be of interest for search:

Central resource management; Negotiating of resources	H04W 28/16

H04W 72/044

[N: where an allocation plan is defined based on the type of the allocated resource]

Definition statement

This subclass/group covers:

Allocation plan is based on a particular type of wireless resources to a user or terminal. Allocating complex or combinational resources, e.g. resource blocks in time-frequency domain.

H04W 72/0446

[N: the resource being a slot, sub-slot or frame]

Definition statement

This subclass/group covers:

Allocation of wireless resources to a user or terminal, where the resource allocated is a specified section of a time-based resource. The allocated resource can be specified indicating the start and stop times, or by indicating the identity of a known time-specified resource unit (e.g. slot)

H04W 72/0453

[N: the resource being a frequency, carrier or frquency band]

Definition statement

This subclass/group covers:

The resource allocated is a specified portion of a frequency-based resource. The resource can be specified e.g. by indicating the top/bottom frequencies, or by indicating the identity of a known frequency-specified resource unit (e.g. carrier)].

H04W 72/046

[N: the resource being in the space domain, e.g. beams]

Definition statement

This subclass/group covers:

The resource allocated is a specified portion of a space-based resource. The resource can be specified by indicating the sector or area where an operation may take place, or by indicating the identity of a known spatially-specified resource unit, e.g. sector, area.

Informative references

Attention is drawn to the following places, which may be of interest for search:

Cell structures using beam steering	H04W 16/28

H04W 72/0466

[N: the resource being a scrambling code]

Definition statement

This subclass/group covers:
The resource allocated is a code.

Informative references

Attention is drawn to the following places, which may be of interest for search:

Orthogonal multiplex systems	H04J 11/00
Code multiplex systems	H04J 13/00

H04W 72/0473

[N: the resource being transmission power]

Definition statement

This subclass/group covers:
The resource allocated is defined in terms of transmission power.

Informative references

Attention is drawn to the following places, which may be of interest for search:

Transmission power control management, i.e. sharing limited amount of power among users or channels or data types, e.g. cell loading	H04W 52/34

H04W 72/048

[N: where an allocation plan is defined based on terminal or device properties]

Definition statement

This subclass/group covers:

Allocation of resources on the basis of properties related to the terminal/device to which resources are to be allocated e.g. location, mobility status, operating applications.

Properties either are known by or reported to the instance making the allocation decision.

Informative references

Attention is drawn to the following places, which may be of interest for search:

Processing or transfer of terminal data, e.g. status or physical capabilities	H04W 8/22

H04W 72/0486

[N: where an allocation plan is defined based on load]

Definition statement

This subclass/group covers:

Allocation of resources on the basis of loading of the stations involved or level of usage of resources.

H04W 72/0493

[N: where an allocation plan is defined based on a resource usage policy]

Definition statement

This subclass/group covers:

Allocation of resources making use of explicit instructions/regulations, whose application directly leads to a specified and well defined allocation plan

H04W 72/06

[N: where an allocation plan is defined] based on a ranking criteria of the wireless resources

Definition statement

This subclass/group covers:

Allocation of resources on the basis of ranking criteria of the wireless resources, e.g. preferred channel list. Usually a ranking criteria exist before a decision on allocation is made.

H04W 72/08

[N: where an allocation plan is defined] based on quality criteria

Definition statement

This subclass/group covers:

Allocation of resources on the basis of quality of communication provided by the links or stations involved

Informative references

Attention is drawn to the following places, which may be of interest for search:

Definition of hand-off measurement parameters; Arrangements and techniques for reducing the perturbation due to measuring activities performed for neighbour cell list measurements e.g. compressed mode	H04W 36/0094

H04W 72/082

[N: using the level of interference]

Definition statement

This subclass/group covers:

Allocation of resources on the basis of interference on the air interface or faced by the stations involved, e.g. co-channel interference; Arrangements and techniques for measuring or sensing the primary network in a cognitive radio, e.g. "quiet period".

Informative references

Attention is drawn to the following places, which may be of interest for search:

Spectrum sharing arrangements	H04W 16/14

between different networks	

Special rules of classification within this group

Defining or using a "quiet period" for sensing for the primary network in cognitive radio should be classified in H04W 72/082 with an additional code in H04W 16/14.

H04W 72/085

[N: using measured or perceived quality]

Definition statement

This subclass/group covers:

Allocation of resources on the basis of the measured quality of communication provided by the air interface or stations involved, e.g. C/I, BER

H04W 72/087

[N: using requested quality]

Definition statement

This subclass/group covers:

Allocation of resources on the basis of the requested quality of communication provided by the air interface or stations involved

H04W 72/10

[N: where an allocation plan is defined] based on priority criteria

Definition statement

This subclass/group covers:

Allocation of resources on the basis of priority of the traffic communicated, or the priority of the stations involved.

H04W 72/12

[N: Dynamic] Wireless traffic scheduling [N: Dynamically scheduled allocation on shared channel]

Definition statement

This subclass/group covers:

Techniques and arrangements for:

- establishing the order of transmission of pending traffic information over one or a plurality of the access point's wireless resources. The order of transmission is based on precedence/priority of the information, priority of the information source or recipient or defined resource usage policy.
- notifying user(s) of granted transmission request(s).
- assigning traffic (of one of more users) to existing channels.
- wireless multiplexing of several flows into one single stream on the wireless interface. It applies to up- and downlink.
- scheduled allocation of resources, allocation change can be signalled and changed every transmission frame or slot, i.e. scheduling is applied when selected data flows are multiplexed onto a wireless resource; the necessary allocation is implicitly executed.

Informative references

Attention is drawn to the following places, which may be of interest for search:

Flow control in the network	H04W 28/10
Arrangements for detecting or preventing errors in the information received, modifying transmission characteristics according to link quality	H04L 1/0001
Flow control in packet switching networks	H04L 12/569
Power saving arrangements using pre-established activity schedule	H04W 52/02A
Discontinuous transmission or reception	H04W 76/048
Semi-persistent scheduling is understood as resource allocation, because the allocation of resources is not changed every transmission frame, slot	H04W 72/04
Adaptation of traffic data packets received from higher layers onto	H04W 28/065

packet transmission requirements of lower layer, e.g. SDU onto PDU"	

H04W 72/1205

[N: Schedule definition, set-up or creation]

Definition statement

This subclass/group covers:

Definition of a transmission schedule for pending traffic data in a single or multidimensional resource, e.g. frequency and time in case of OFDMA. A transmission schedule is defined depending on e.g. depending on terminal capability

H04W 72/121

[N: for groups of terminals or users]

Definition statement

This subclass/group covers:

Schedule is established jointly for a group of users; Definition of scheduling group; Assigning group identifier

Informative references

Attention is drawn to the following places, which may be of interest for search:

User group management	H04W 4/08

H04W 72/1215

[N: for collaboration of different radio technologies]

Definition statement

This subclass/group covers:

Schedule is defined to provide for a disturbance free usage of different radio technologies by one network element

Informative references

Attention is drawn to the following places, which may be of interest for search:

Spectrum sharing arrangements [between different networks	H04W 16/14
Terminal device adapted for operation in multiple networks, e.g. multi-mode terminals	H04W 88/06
Access point device adapted for operation in multiple networks, e.g. multi-mode access points	H04W 88/10
Programme switching, task transfer initiation or dispatching by program, scheduling strategies for dispatcher	G06F 9/4881
Allocation of resources to service a request, the resources being hardware resources other than CPUs, Servers and Terminals	G06F 9/5011

Special rules of classification within this group

Collaborative techniques,

- in terminals should receive the H04W 88/06 code as additional information
- in base stations should receive the H04W 88/10 code as additional information.

H04W 72/1221

[N: based on age of data to be sent]

Definition statement

This subclass/group covers:

Schedule definition is based on the time traffic data has been already waiting for transport e.g. in a terminal or base station buffer

Informative references

Attention is drawn to the following places, which may be of interest for search:

Flow control in the network using intermediate storage	H04W 28/14

Schedule definition, set-up or creation based on load	H04W 72/1252

H04W 72/1226

[N: based on channel quality criteria, e.g. channel state dependent scheduling]

Definition statement

This subclass/group covers:

Schedule definition is based on a quality criteria of a channel involved in transmission of the traffic data

Informative references

Attention is drawn to the following places, which may be of interest for search:

Definition of hand-off measurement parameters	H04W 36/0094
Arrangements and techniques for reducing the perturbation due to measuring activities performed for neighbour cell list measurements e.g. compressed mode	H04W 36/0094

H04W 72/1231

[N: using measured or perceived quality]

Definition statement

This subclass/group covers:

Schedule definition is based on a measured channel quality parameter related to an entity involved in transmission of the traffic data; e.g. measured interference, quality, throughput

H04W 72/1236

[N: using requested quality]

Definition statement

This subclass/group covers:

Schedule definition is based on a requested channel quality parameter related to an entity involved in transmission of the traffic data; e.g. requested data or transmission rate or throughput, delay, bandwidth

This group covers also the preferred transmission of packets with earliest deadline or due time.

H04W 72/1242

[N: based on precedence or priority of the information]

Definition statement

This subclass/group covers:

Schedule definition is based on a precedence or priority of the data to be transmitted

H04W 72/1247

[N: based on priority of the information source or recipient]

Definition statement

This subclass/group covers:

Schedule definition is based on a priority attached to the source or recipient of the traffic data to be transmitted

H04W 72/1252

[N: based on load]

Definition statement

This subclass/group covers:

Schedule definition is based on a load status of a resource or entity involved in one of transmission of the traffic data, actual throughput, transmitted amount of data

Informative references

Attention is drawn to the following places, which may be of interest for search:

Schedule definition, set-up or creation based on age of data to be sent	H04W 72/1221

H04W 72/1257

[N: based on a resource usage policy]

Definition statement

This subclass/group covers:

Schedule definition based on a usage policy related to a resource or entity involved in transmission of the traffic data, e.g. fairness of transmission opportunity, opportunistic scheduling, synchronised switch between uplink and downlink transmission.

H04W 72/1263

[N: Schedule usage, i.e. actual mapping of traffic onto schedule; Multiplexing of flows into one or several streams; Mapping aspects; Scheduled allocation]

Definition statement

This subclass/group covers:

Application of a (pre-defined) schedule to accomplish the transport of traffic data over a wireless link. Mapping of traffic data onto a schedule pattern which is defined by the physical parameters used for quantising the wireless medium, e.g. a combination of a frequency and time slots in OFDMA. Also covers cases where scheduling effectively leads to a (temporary) allocation of resources.

H04W 72/1268

[N: of uplink data flows]

Definition statement

This subclass/group covers:

Schedule usage for uplink data flows.

H04W 72/1273

[N: of downlink data flows]

Definition statement

This subclass/group covers:

Schedule usage for downlink data flows

H04W 72/1278

[N: Transmission of control information for scheduling]

Definition statement

This subclass/group covers:

Transmission of information related to the control of scheduling, e.g. requesting of and notification about scheduling, provision of scheduling relevant information

Informative references

Attention is drawn to the following places, which may be of interest for search:

Transfer of user or subscriber data	H04W 8/20
Transmission of channel access control information	H04W 74/002

H04W 72/1284

[N: in the uplink, i.e. from terminal to network]

Definition statement

This subclass/group covers:

Transmission of scheduling control information on uplink, e.g. informing about terminal buffer status

H04W 72/1289

[in the downlink, i.e. towards the terminal]

Definition statement

This subclass/group covers:

Transmission of scheduling control information on downlink, e.g. providing scheduling notification information

H04W 72/1294

[N: using a grant or specific channel (H04W72/14 takes precedence)

Definition statement

This subclass/group covers:

Transmission of downlink control information is sent over a specific channel, e.g. downlink control channel. The information signalled may not only be a grant but other control information sent over the channel.

References relevant to classification in this group

This subclass/group does not cover:

Transmission of control information for scheduling in the downlink using a grant channel	H04W 72/14

Informative references

Attention is drawn to the following places, which may be of interest for search:

Flow control in the network using signalling between network elements	H04W 28/12

Special rules of classification within this group

H04W 72/14 is an IPC class; all documents which would be classified in H04W 72/1294 have to be classified into H04W 72/14 instead.

H04W 72/14

using a grant [N: or specific] channel

Definition statement

This subclass/group covers:

Transmission of downlink control information is sent over a specific channel, e.g. downlink control channel. The information signalled may not only be a grant but other control information sent over the channel.

Informative references

Attention is drawn to the following places, which may be of interest for search:

Flow control in the network using signalling between network elements	H04W 28/12

H04W 74/00

Wireless channel access, e.g. scheduled or random access

Definition statement

This subclass/group covers:

Techniques or arrangements for managing user or terminal requests for access to a channel. Techniques or arrangements for arbitration of access between contending users

H04W 74/002

[N: Transmission of channel access control information]

Definition statement

This subclass/group covers:

Channel access related information is transmitted between access point and user or terminal. Exchange of information relevant for a random access procedure between nodes. Covers structures of control channels for access; transmission of access information to be used for access channels; access information format.

Informative references

Attention is drawn to the following places, which may be of interest for search:

Access restriction or access information delivery, e.g. discovery data delivery	H04W 48/08

Transmission and use of information for re-establishing the radio link of access information of target access points	H04W 36/0077
Non-scheduled or contention based access with exchange of random access related information	H04W 74/08D4

H04W 74/004

[N: in the uplink, i.e. towards network]

Definition statement

This subclass/group covers:

Channel access related information is sent by a user or terminal towards an access point. A user equipment signals random access information to a radio base station, e.g. RA [Random Access] request, M1 message in LTE [Long Term Evolution].

H04W 74/006

[N: in the downlink, i.e. towards the terminal]

Definition statement

This subclass/group covers:

Channel access related information is send from access point to user or terminal. A radio base station signals random access information to a user equipment, e.g. RA [Random Access] request response, M2 message in LTE [Long Term Evolution], parameter provisioning)

H04W 74/008

[N: with additional processing of random access related information at receiving side]

Definition statement

This subclass/group covers:

Parameters relevant for random access, which are exchanged between the involved nodes are additionally processed at the receiving side

H04W 74/02

Hybrid access techniques

Definition statement

This subclass/group covers:

Automatic selection of an access technique, e.g. scheduled or non-scheduled with respect to network, user(s) requirements or channel conditions

H04W 74/04

Scheduled [N: or contention free] access

Definition statement

This subclass/group covers:

Access techniques whereby access a shared media is established for one or

a plurality of user's in an orderly fashion generally by a controller. Covers also Slotted access

H04W 74/06

using polling

Definition statement

This subclass/group covers:

Users or terminals are polled for their immediate transmission requirements and channel access is granted accordingly. Invitation for transmission. Covers also Slotted polling

H04W 74/08

Non-scheduled [N: or contention based access], e.g. random access, ALOHA, CSMA [Carrier Sense Multiple Access]

Definition statement

This subclass/group covers:

Access to the shared wireless channel is performed without full awareness of other users' or channel state. This group covers the random access as such. Covers also Slotted ALOHA

H04W 74/0808

[N: using carrier sensing, e.g. as in CSMA]

Definition statement

This subclass/group covers:

Before transmission, the sender listens to the shared medium to detect transmissions by others. Covers also Slotted CSMA

H04W 74/0816

[N: carrier sensing with collision avoidance]

Definition statement

This subclass/group covers:

Besides listening to the shared medium additional measures are taken in order to avoid collisions, e.g. notifying other senders of an intended transmission, RTS / CTS. Covers also Slotted CSMA

H04W 74/0825

[N: carrier sensing with collision detection]

Definition statement

This subclass/group covers:

If, despite performing carrier sensing, collisions can not be completely avoided, their occurrence is at least detected. Covers also Slotted CSMA

H04W 74/0833

[N: using a random access procedure]

Definition statement

This subclass/group covers:

In the framework of a given (multiple) access scheme the actual access to the shared medium takes place at a random instance without prior carrier sensing.

H04W 74/0841

[N: with collision treatment]

Definition statement

This subclass/group covers:

Given the intrinsic risk of a collision between multiple random access attempts, additional measures are taken for collision treatment of potential further collisions.

H04W 74/085

[N: collision avoidance]

Definition statement

This subclass/group covers:

Measures are taken in order to avoid further collisions, e.g. applying a time back-off for retransmissions.

H04W 74/0858

[N: collision detection]

Definition statement

This subclass/group covers:

In cases where collisions can not be avoided, their occurrence is at least detected.]

H04W 74/0866

[N: using a dedicated channel for access]

Definition statement

This subclass/group covers:

Access requests are transmitted on a distinct channel, normally allocated or defined by a controlling entity, e.g. an access point. This group covers the usage of an uplink control channel, i.e. a frequency, a code, a time slot, a frame section.

H04W 74/0875

[N: with assigned priorities based access]

Definition statement

This subclass/group covers:

Users access the dedicated channel in an order established by a controlling entity, e.g. an access point

H04W 74/0883

[N: for un-synchronized access]

Definition statement

This subclass/group covers:

Access to the dedicated channel is performed at random time, e.g. no frame structure exist or is respected.

H04W 74/0891

[N: for synchronised access]

Definition statement

This subclass/group covers:

Access to the dedicated channel is performed respecting a time structure on the channel, e.g. a frame or slot structure.

H04W 76/00

Connection management, e.g. connection set-up, manipulation or release

Definition statement

This subclass/group covers:

Techniques and arrangements for selecting and establishing one or a plurality of connections (e.g. tunnels), recovering or reconnecting accidentally lost connections.

Switching or re-directing connection or control function.

De-allocating, re-claiming one or a plurality of established communication resources no longer in use.

Signalling arrangements therefore.

Connection state management, e.g. idle mode; allocation of reserved affiliation/binding connection identifiers associated with one or a plurality of the managed connections.

Informative references

Attention is drawn to the following places, which may be of interest for search:

Communication routing or communication path finding	H04W 40/00
Arrangements for connection and session management	H04L 29/08576

H04W 76/002

[N: for selective distribution or broadcast]

Definition statement

This subclass/group covers:

Connection set up for allowing a plurality of users or terminals to be included in a single communication. Connection set up for special broadcast or group call services, e.g. emergency broadcast, CUG, VPN, PTT, PoC (PTT on Cellular), P2C (Press to Connect).

Informative references

Attention is drawn to the following places, which may be of interest for search:

Broadcast or conference, e.g.	H04L 12/18

multicast	
Arrangements for connecting several subscribers to a common circuit, i.e. affording conference facilities	H04M 3/56

H04W 76/005

for Push-to-Talk or Push-on-Call services

Definition statement

This subclass/group covers:

Communication is established among members of a predefined group by an active user with a talk request over usually a half-duplex channel.

Informative references

Attention is drawn to the following places, which may be of interest for search:

Trunked mobile radio systems	H04W 84/08
Arrangements for real-time multimedia communications - Push-to-X-Services	H04L 29/06442

H04W 76/007

[N: for emergency connection handling]

Definition statement

This subclass/group covers:

Connection set up requiring an urgent or hazardous situation; emergency connection set up techniques wherein an originating terminal creates an emergency communication to a central; Connection set up in disastrous scenarios wherein a central creates an emergency communication to a terminating terminal or a group of terminals.

Informative references

Attention is drawn to the following places, which may be of interest for search:

Alarm systems in which the location of the alarm condition is signalled to a	G08B 25/10

central station, e.g. fire or police telegraphic systems, characterised by the transmission medium, using wireless transmission systems	
Cordless telephones for supporting an emergency service	H04M 1/72536
Centralised call answering arrangements requiring operator intervention for emergency applications	H04M 3/5116

H04W 76/02

Connection set-up

Definition statement

This subclass/group covers:

- Techniques and arrangements for establishing one or a plurality of communication links, e.g. multi-call, in the backbone network(s) meeting the implicit or negotiated communication parameters or service level;
- PDP Context activation.
- Recovering or reconnecting accidentally lost connections.
- Rejection of requests for establishment of a connection and retry strategies after rejection.
- Allocation and use of connection identifers.
- Establishment of direct-mode connections.
- Signalling therefor

Informative references

Attention is drawn to the following places, which may be of interest for search:

Central resource management; Negotiation of resources, e.g. negotiating bandwidth or QoS [Quality of Service]	H04W 28/16
Transitions among RRC [Radio	H04W 76/046

Ressource Control] States	
Route fault recovery in data switching networks	H04L 12/56C108
Admission Control and Resource allocation in packet switching networks	H04L 12/5695

H04W 76/021

[N: Allocation or use of connection identifiers]

Definition statement

This subclass/group covers:

Assignment or use of one or a plurality of connection identifiers when establishing a connection

Informative references

Attention is drawn to the following places, which may be of interest for search:

Network addressing or numbering for mobility support	H04W 8/26
Arrangements for addressing and naming in data networks characterised by the data terminal	H04L 29/12009

H04W 76/022

[N: Set-up of transport tunnels]

Definition statement

This subclass/group covers:

Techniques and arrangements for establishing a tunnel connection for transport in the network, e.g. PDP Context establishment

Informative references

Attention is drawn to the following places, which may be of interest for search:

Protecting privacy or anonymity	H04W 12/02
Arrangements for network security	H04L 29/06551

H04W 76/023

[N: Direct mode set-up]

Definition statement

This subclass/group covers:

Set-up of a direct mode connection in a hierarchical pre-organized network whereby the establishment is done either directly between users/terminals or via relaying equipments, e.g. establishment of a wireless connection between two peers.

The user/terminal equipment establishes a direct communication with another user/terminal equipment on a communication channel defined or negotiated via the network. The direct connection between regular members of a network must be a special mode of operation.

References relevant to classification in this group

This subclass/group does not cover:

Set up of a connection, e.g. between Bluetooth terminals or between terminals belonging to self-organizing networks, e.g. ad-hoc networks or sensor, mesh networks	H04W 84/18

H04W 76/025

[N: Set-up of multiple wireless link connections]

Definition statement

This subclass/group covers:

Techniques and arrangements for establishing a plurality of wireless communication links for transferring information to one user/terminal, i.e. multi-call, multi-bearer connection.

Informative references

Attention is drawn to the following places, which may be of interest for search:

Multichannel or multilink protocols	H04L 29/06088

H04W 76/026

[N: involving adjacent core network technologies]

Definition statement

This subclass/group covers:

The mobile network correlates establishment of multiple bearers across at least two different core network domain technologies in parallel for one and the same end user session. The mobile network introduces a certain level of cooperation between, e.g., a PS bearer and a CS bearer or CS over EPS bearer. Used, e.g., in IMS Centralized Services ICS, Combining Circuit Switched and IMS services CSI

Informative references

Attention is drawn to the following places, which may be of interest for search:

Reselecting a network or an air interface	H04W 36/14
Control or signalling for completing the hand-off for transferring sessions between adjacent core network technologies	H04W 36/0022

H04W 76/027

[N: Management of set-up rejection and failure]

Definition statement

This subclass/group covers:

Techniques and arrangements for the purpose of establishing an alternate connection after the initial connection request being unsuccessful, e.g. retry strategies after rejection or after no response. Rejection of a request for establishing a connection.

Informative references

Attention is drawn to the following places, which may be of interest for search:

Network traffic or resource	H04W 28/04

management, Error control	
Access restriction performed under specific conditions	H04W 48/02
Reactions to resource unavailability in packet switching systems	T04L 12/56R3

H04W 76/028

[N: Connection re-establishment]

Definition statement

This subclass/group covers:

Recovering or reconnecting an accidentally lost connection.

Informative references

Attention is drawn to the following places, which may be of interest for search:

Control or signalling for completing the hand-off for data session or connection with transfer of context information	H04W 36/0033

H04W 76/04

Connection manipulation

Definition statement

This subclass/group covers:

Switching, re-routing connection or control function in addition to those necessary

to establish or maintain connection between users or terminals.

In-connection signalling, notification, connection state transition to and from e.g. hibernation or dormant mode.

Connection manipulation aspects of DTX or DRX not related to power saving arrangements.

Informative references

Attention is drawn to the following places, which may be of interest for search:

Hand-off or reselecting arrangements	H04W 36/00
Modification of an existing route due to handover	H04W 40/36
Power saving arrangements	H04W 52/02

H04W 76/041

[N: Manipulation of transport tunnels]

Definition statement

This subclass/group covers:

Techniques and arrangements for redefining a transport tunnel connection in the network, e.g. PDP context modification

Informative references

Attention is drawn to the following places, which may be of interest for search:

Control or signalling for completing the hand-off for data session or connection for hand-off preparation	H04W 36/0016

H04W 76/043

[N: Direct mode connection manipulation]

Definition statement

This subclass/group covers:

Transition in a hierarchical pre-organized network between direct mode and via third parties mode. Release of non-active connection legs after the transition.

H04W 76/045

[N: Maintenance of an established connection]

Definition statement

This subclass/group covers:

Techniques and arrangements for maintaining an already established connection and avoiding the release of the resources, e.g. transmitting a "keep-alive" packet over the packet protocol context so as to maintain the packet protocol context.

Informative references

Attention is drawn to the following places, which may be of interest for search:

Arrangements for connection and session management at the data link level	H04L 29/08576

H04W 76/046

[N: Transitions among RRC [Radio Resource Control] states]

Definition statement

This subclass/group covers:

Transitions between RRC states which reflect the level of user equipment connection and which transport channels can be used by the user equipment, e.g. transition between IDLE, CELL_FACH, CELL_DCH, CELL_PCH and URA_PCH states.

Informative references

Attention is drawn to the following places, which may be of interest for search:

Connection set-up	H04W 76/02

H04W 76/048

[N: Discontinuous transmission or reception [DTX, DRX]]

Definition statement

This subclass/group covers:

Connection manipulation aspects of DTX or DRX

Informative references

Attention is drawn to the following places, which may be of interest for search:

Power saving arrangements	H04W 52/02
Determination of parameters used for hand-off e.g. generation or modification of neighbour cell lists	H04W 36/0083

H04W 76/06

Connection release

Definition statement

This subclass/group covers:

De-allocating one or a plurality of established connections.

Signalling therefor.

H04W 76/062

[N: Release of transport tunnels]

Definition statement

This subclass/group covers:

Techniques and arrangements for releasing a transport tunnel connection in the network, e.g. PDP Context deactivation.

H04W 76/064

[N: Selective release of ongoing connections]

Definition statement

This subclass/group covers:

Techniques and arrangements for partially releasing connections of one or a plurality of users. Also release of one or a plurality of connections involved in a multi-call.

H04W 76/066

[N: for the purpose of reassigning the resources associated with the released connections]

Definition statement

This subclass/group covers:

Techniques and arrangements for forcibly releasing one or a plurality of the

ongoing connections according to criteria like the priority of the users, priority of the information to be transmitted or activity related factors for the purpose of re-assigning the released resources. e.g. call pre-emption.

H04W 76/068

[N: Connection release triggered by timers]

Definition statement

This subclass/group covers:

Techniques and arrangements for releasing connections according to inactivity timers.

H04W 80/00

Wireless network protocols or protocol adaptations to wireless operation, e.g. WAP [Wireless Application Protocol]

Definition statement

This subclass/group covers:

Generic data protocols for operation of wireless media and implemented at particular network layers.

Informative references

Attention is drawn to the following places, which may be of interest for search:

Communication control or communication processing characterised by a protocol	H04L 29/06

H04W 84/00

Network topologies

Definition statement

This subclass/group covers:

Networks characterized by a specific organisation of network equipments, e.g. wireless access points, or linking infrastructure thereof.

References relevant to classification in this group

This subclass/group does not cover:

Active relay systems	H04B 7/15

Special rules of classification within this group

In this main group, local priority rules supersede first-place priority rule (FPPR) classification.

Classification symbols of this group should preferably only be allocated as "additional information".

H04W 84/005

Moving wireless networks

Definition statement

This subclass/group covers:

The wireless network(s) with their affiliated terminals or users are moving with respect to a linked overlaying wireless network(s)

H04W 84/02

Hierarchical pre-organized networks, e.g. paging networks, cellular networks, WLAN [Wireless Local Area Network] or WLL [Wireless Local Loop]

Definition statement

This subclass/group covers:

Networks with a pre-established organization i.e. users are normally not responsible for or network configuration or management.

H04W 84/027

[N: providing paging services]

Definition statement

This subclass/group covers:

Providing paging services to users

H04W 84/04

Large scale networks; Deep hierarchical networks

Definition statement

This subclass/group covers:

Networks of large scale, e.g. nationwide, using a plurality of hierarchically

interconnected selecting equipments for path finding or routing communication(s) within the network from/to a wireless user. The communication(s) can originate or terminate from/in an external network e.g. cellular systems.

H04W 84/045

[N: using private Base Stations, e.g. femto Base Stations, home Node B]

Definition statement

This subclass/group covers:

PLMS [Public Land Mobile systems] where additional access points are deployed by a private entity and operated under the control of the public network operator/administrator for providing exclusive private services and/or additional coverage or enhanced communication services to affiliated PLMS network users.

H04W 84/047

[N: using dedicated repeater stations]

Definition statement

This subclass/group covers:

PLMN using dedicated relay/repeater stations (not relaying terminals)

Informative references

Attention is drawn to the following places, which may be of interest for search:

Cell enhancers or enhancement, e.g. for tunnels, building shadow	H04W 16/26
Self organising networks with access to wired networks	H04W 84/22
Terminal devices adapted for relaying to or from another terminal or user	H04W 88/04

H04W 84/06

Airborne or Satellite Networks

References relevant to classification in this group

This subclass/group does not cover:

Space-based or airborne stations	H04B 7/185

H04W 84/08

Trunked mobile radio systems

Definition statement

This subclass/group covers:

Dedicated systems in which, generally a half duplex communication channel is shared among a predefined group of users.

Informative references

Attention is drawn to the following places, which may be of interest for search:

Push-to-Talk or Push-on-Call services	H04W 4/10

H04W 84/10

Small scale networks; Flat hierarchical networks

Definition statement

This subclass/group covers:

Networks of small, local or limited size with a wired or wireless backbone connected to access points, e.g. private, corporate networks.

H04W 84/105

PBS [Private Base Station] network

Definition statement

This subclass/group covers:

Access point owned and operated by a private entity, i.e. non-public operator for its own exclusive use. The PBS remains in, or forms on its own, a separate network or is connected to a PBX

Informative references

Attention is drawn to the following places, which may be of interest for search:

Small scale networks; Flat hierarchical network	H04W 84/12 - H04W 84/16
Access point device	H04W 88/08

Special rules of classification within this group

In practice, all documents falling under coverage of H04W 84/105 are all classified in H04W 84/105 unless they fit at least into one of the groups H04W 84/12 to H04W 84/16.

H04W 84/14

WLL [Wireless Local Loop]; RLL [Radio Local Loop]

Definition statement

This subclass/group covers:

Networks in which subscribers with zero or limited mobility have wireless access to a public network.

Networks in which fixed subscribers have wireless access to a public network.

Radio concentration equipment for subscriber premises.

Informative references

Attention is drawn to the following places, which may be of interest for search:

Terminal device adapted for Wireless Local Loop operation	H04W 88/021

H04W 84/16

WPBX [Wireless Private Branch Exchange]

Definition statement

This subclass/group covers:

Networks in which wireless subscribers are connected by a Private Branch Exchange (PBX).

References relevant to classification in this group

This subclass/group does not cover:

Substation extension arrangements, cordless telephones	H04M 1/72

H04W 84/18

Self-organizing networks, e.g. ad-hoc networks or sensor networks

Definition statement

This subclass/group covers:

Single-hop or multi-hop networks for communication between network nodes having no predetermined connectivity and no pre-defined central control; responsibilities for establishing, maintaining and controlling the network's organization are distributed among the nodes dynamically;

the nodes are either capable of relaying messages between pairs of nodes not having a direct communication link (multi-hop networks) or they communicate directly without having a specific pre-defined association (single hop);

membership in the ad-hoc network may be dynamic.

Interrogation networks are considered being self-organizing networks.

Covers also the master-slave aspects as part of the ad-hoc network.

Informative references

Attention is drawn to the following places, which may be of interest for search:

Arrangements for peer-to-peer networking in which application tasks are distributed across nodes	H04L 29/08306
Arrangements for proprietary or special purpose networking environments, e.g. medical networks, sensor networks, networks in a car involving the management of devices	H04L 29/08567

over a network	

H04W 84/20

Master-slave [N: selection or change] arrangements

Definition statement

This subclass/group covers:

Techniques and arrangements to (re-)elect a user as regulating authority.

This group covers only the (re-)election of a master (also "transfer" of master role).

H04W 84/22

with access to wired networks

Definition statement

This subclass/group covers:

Techniques and arrangements for connection of a self-organizing network to a wired network through an access point.

H04W 88/00

Devices specially adapted for wireless communication networks, e.g. terminals, base stations or access point devices

Definition statement

This subclass/group covers:

Devices specially adapted for wireless communication networks, e.g. terminal equipment;

Wireless access network equipment e.g. access point, access point controllers;

Switching or routing equipment in wireless backbone networks,

gateways, service support - and network management equipment.

References relevant to classification in this group

This subclass/group does not cover:

Casings, cabinets or drawers for electric apparatus	H05K 5/00

H04W 88/005

[N: Data network PoA devices]

Definition statement

This subclass/group covers:

Logical entity within wireless network or mobility management infrastructure providing access to a data network for a wireless user.

H04W 88/02

Terminal devices

Definition statement

This subclass/group covers:

Physical equipment acting as/on behalf of a user, thereby behaving as an endpoint of a network functionality.

References relevant to classification in this group

This subclass/group does not cover:

Portable computers with a single-body enclosure integrating a flat display, e.g. personal digital assistants	G06F 1/1626
Transceivers, i.e. devices in which transmitter and receiver form a structural unit and in which at least one part is used for functions of transmitting and receiving	H04B 1/38
Substation equipment for telephonic communication	H04M 1/00

H04W 88/025

[N: Selective call decoders]

Informative references

Attention is drawn to the following places, which may be of interest for search:

Network addressing or numbering for mobility support	H04W 8/26

H04W 88/04

adapted for relaying to or from another terminal or user

Definition statement

This subclass/group covers:

Terminal device providing the additional functionality of acting as a relay e.g. on behalf of a different terminal, forwarding information to/from said terminal.

Informative references

Attention is drawn to the following places, which may be of interest for search:

Active relay systems	H04B 7/15
Cell enhancers or enhancement, e.g. for tunnels, building shadow	H04W 16/26
Public land mobile networks using dedicated repeater stations	H04W 84/047

H04W 88/06

adapted for operation in multiple networks [N: or having at least two operational modes], e.g. multi-mode terminals

Definition statement

This subclass/group covers:

Terminal equipment able to operate using at least two different communication technologies or standards, or different versions of a standard in a single network or multiple networks, e.g. packet-switched and circuit-switched operation, analog-digital, WLAN-cellular, GSM900-GSM1800.

Terminal equipment with at least two operational modes; multiple operational modes are understood to mean significantly different operations, which would be equivalent to deeming the operations to take place in two different

networks.

Informative references

Attention is drawn to the following places, which may be of interest for search:

Transceivers with more than one transmission mode	H04B 1/406
Power saving arrangements	H04W 52/02
Hybrid wireless channel access techniques	H04W 74/02
Connection manipulation, discontinuous transmission or reception	H04W 76/048

H04W 88/08

Access point devices

Definition statement

This subclass/group covers:

Access points. Equipment providing wireless coverage and selective access to/from wireless access network.

References relevant to classification in this group

This subclass/group does not cover:

Transceivers, i.e. devices in which transmitter and receiver form a structural unit and in which at least one part is used for functions of transmitting and receiving	H04B 1/38
Active relay systems	H04B 7/15
Cordless telephones	H04M 1/72
Casings, cabinets or drawers for electric apparatus	H05K 5/00
Constructional details common to	H05K 7/00

different types of electric apparatus	

H04W 88/085

[N: Access point devices with remote components]

Definition statement

This subclass/group covers:

Access point devices, where components of the access point device (e.g. transceiver and antenna) are located remote from the main body of the access point device, and the remote components are connected to the main body by cable, e.g. CATV or optical fibre.

Informative references

Attention is drawn to the following places, which may be of interest for search:

Radio through fibre	H04B 10/12R

H04W 88/10

adapted for operation in multiple networks, e.g. multi-mode access points

Definition statement

This subclass/group covers:

Access points able to operate using at least two networks, communication technologies or standards, or different versions of a standard, e.g. packet-switched and circuit-switched operation, analog-digital, WLAN-cellular, GSM900-GSM1800.

Access points with at least two operational modes.

H04W 88/12

Access point controller devices

Definition statement

This subclass/group covers:

Equipments for controlling access points, e.g. Base Station Controller (BSC), Radio Network Controller (RNC), Femto base station controller (Home nodeB

gateway).

H04W 88/14

Backbone network devices

Definition statement

This subclass/group covers:

Backbone network devices. Switching or routing equipments for a connection between a wireless user and a communication network, e.g. MSC/SGSN.

Informative references

Attention is drawn to the following places, which may be of interest for search:

Data switching networks	H04L 12/00
Selecting	H04Q

H04W 88/16

Gateway arrangements

Definition statement

This subclass/group covers:

Devices operating between different networks; Devices at the edge of one network interfacing to another network, e.g. between a wireless access network and a data network, or between a wireless access network and a wired network.

Informative references

Attention is drawn to the following places, which may be of interest for search:

Arrangements for connecting between networks having differing types of switching systems, e.g. gateways	H04L 12/66
Inter-networking arrangements	H04W 92/02

H04W 88/18

Service Support; Network management devices

Definition statement

This subclass/group covers:

- Wireless network equipments for providing services to users.
- Wireless network equipments for supporting the provision of services.
- Wireless network equipments for managing said networks.

Informative references

Attention is drawn to the following places, which may be of interest for search:

Supervisory, monitoring or testing arrangements	H04W 24/00

H04W 88/181

[N: Transcoding devices; Rate adaptation devices]

Definition statement

This subclass/group covers:

- Network equipment for providing direct digital-to-digital data conversion from one encoding to another.
- Network equipment for adapting the rate of a communication.
- Arrangements for avoiding multiple transcoding, e.g. for tandem free operation.

References relevant to classification in this group

This subclass/group does not cover:

Speech or audio signal analysis-synthesis techniques for redundancy reduction, e.g. in vocoders; Coding or decoding of speech or audio signals, e.g. for compression or expansion, source-filter models or psychoacoustic analysis	G10L 19/00

H04W 88/185

Selective call encoders for paging networks, e.g. paging centre devices

Informative references

Attention is drawn to the following places, which may be of interest for search:

Network addressing or numbering for mobility support	H04W 8/26

H04W 92/00

Interfaces specially adapted for wireless communication networks

Definition statement

This subclass/group covers:

- Arrangements for interconnecting network components or networks.
- Special equipment or adaptations therefor.
- Control and signalling arrangements at interface.

Special rules of classification within this group

Classification symbols of this group should preferably only be allocated as "additional information".

H04W 92/02

Inter-networking arrangements

Definition statement

This subclass/group covers:

Arrangements for interconnecting a plurality of networks. The networks may be either physically or logically separated.

Informative references

Attention is drawn to the following places, which may be of interest for search:

Gateway arrangements	H04W 88/16

H04W 92/04

Interfaces between hierarchically different network devices

Definition statement

This subclass/group covers:

E.g. A-bis, IuB, A, IuCS, IuPS.

Informative references

Attention is drawn to the following places, which may be of interest for search:

Master-slave arrangements in self-organizing networks	H04W 84/20

H04W 92/045

[N: between access point and network backbone network device]

Definition statement

This subclass/group covers:

Interface between access point and switching/routing equipment of the network e.g. S1, S1U

H04W 92/06

between gateways and public network devices

Definition statement

This subclass/group covers:

Interface between the wireless network and edge equipment of a public fixed telephone or data network.

H04W 92/08

between user and terminal device

Definition statement

This subclass/group covers:

E.g. Cu . (the Cu-interface is the interface between the "SIM card" and the terminal; the Cu-interface may be wireless).

Informative references

Attention is drawn to the following places, which may be of interest for search:

Mechanical arrangements for accommodating identification devices	H04B 1/3816

H04W 92/10

between terminal device and access point i.e. wireless air interface

References relevant to classification in this group

This subclass/group does not cover:

Radio transmission systems for communication between two or more posts, at least one of which is mobile	H04B 7/26

H04W 92/12

between access points and access point controllers

Definition statement

This subclass/group covers:

Interface between controlled access points and wireless access controlling equipment, e.g. A-bis, IuB, IuR, S1MME.

H04W 92/14

between access point controllers and backbone network device

Definition statement

This subclass/group covers:

Interface between BSC/RNC and switching/routing equipment of the network e.g. A, IuCS, IuPS, Gb, IuH, S1MME.

H04W 92/16

Interfaces between hierarchically similar devices

Definition statement

This subclass/group covers:

E.g. among access points, between switching/routing equipments, between support/management equipments.

H04W 92/20

between access points

Definition statement

This subclass/group covers:

Interface between access points of the network e.g. X2

H04W 92/24

between backbone network device

Definition statement

This subclass/group covers:

Interface between switching/routing equipments and support/management equipment e.g. HLR, VLR, AuC, SMS-C; B, D, F, Gf, Gr, Gc].

H04W 99/00

Subject matter not provided for in other groups of this subclass