

CPC COOPERATIVE PATENT CLASSIFICATION

H ELECTRICITY

(NOTE omitted)

H04 ELECTRIC COMMUNICATION TECHNIQUE

(NOTE omitted)

H04W WIRELESS COMMUNICATION NETWORKS (broadcast communication [H04H](#); communication systems using wireless links for non-selective communication, e.g. wireless extensions [H04M 1/72](#))

NOTES

1. This subclass covers :
 - communication networks for selectively establishing one or a plurality of wireless communication links between a desired number of users or between users and network equipment, for the purpose of transferring information via these wireless communication links;
 - networks deploying an infrastructure for mobility management of wireless users connected thereto, e.g. cellular networks, WLAN [Wireless Local Area Network], wireless access networks, e.g. WLL [Wireless Local Loop] or self-organising wireless communication networks, e.g. ad hoc networks;
 - planning or deployment specially adapted for the above-mentioned wireless networks;
 - services or facilities specially adapted for the above-mentioned wireless networks;
 - arrangements or techniques specially adapted for the operation of the above-mentioned wireless networks.
2. This subclass does not cover :
 - communication systems using wireless extensions, i.e. wireless links without selective communication, e.g. cordless telephones, which are covered by group [H04M 1/72](#);
 - broadcast communication, which is covered by subclass [H04H](#).
3. In this subclass, the first place priority rule is applied, i.e. at each hierarchical level, in the absence of an indication to the contrary, classification is made in the first appropriate place.

4/00 Services specially adapted for wireless communication networks; Facilities therefor

4/021 . . Services related to particular areas, e.g. point of interest [POI] services, venue services or geofences

NOTES

1. This groups covers mobile application services or application service signalling for communication over wireless networks.
2. This group focuses on application services specially adapted for wireless networks or adjusted to the wireless environment
3. In this group, the first place priority rule is not applied, i.e. the common rule is applied.

WARNING

Group [H04W 4/021](#) is incomplete pending reclassification of documents from groups [H04W 4/04](#), [H04W 4/043](#) and [H04W 4/046](#).

Groups [H04W 4/04](#), [H04W 4/043](#), [H04W 4/046](#) and [H04W 4/021](#) should be considered in order to perform a complete search.

4/02 . Services making use of location information

4/022 . . . {with dynamic range variability}

WARNING

Group [H04W 4/02](#) is incomplete pending reclassification of documents from groups [H04W 4/04](#), [H04W 4/043](#), and [H04W 4/046](#). Group [H04W 4/02](#) is also impacted by reclassification into groups [H04W 4/024](#) and [H04W 4/029](#).

All groups listed in this Warning should be considered in order to perform a complete search .

WARNING

Group [H04W 4/022](#) is incomplete pending reclassification of documents from groups [H04W 4/04](#), [H04W 4/043](#) and [H04W 4/046](#).

Groups [H04W 4/04](#), [H04W 4/043](#), [H04W 4/046](#) and [H04W 4/022](#) should be considered in order to perform a complete search.

- 4/023 . . {using mutual or relative location information between multiple location based services [LBS] targets or of distance thresholds}
- WARNING**
- Group [H04W 4/023](#) is incomplete pending reclassification of documents from groups [H04W 4/04](#), [H04W 4/043](#) and [H04W 4/046](#). Groups [H04W 4/04](#), [H04W 4/043](#), [H04W 4/046](#) and [H04W 4/023](#) should be considered in order to perform a complete search.
- 4/024 . . Guidance services
- WARNING**
- Group [H04W 4/024](#) is incomplete pending reclassification of documents from groups [H04W 4/02](#), [H04W 4/04](#), [H04W 4/043](#) and [H04W 4/046](#). Groups [H04W 4/02](#), [H04W 4/04](#), [H04W 4/043](#), [H04W 4/046](#) and [H04W 4/024](#) should be considered in order to perform a complete search.
- 4/025 . . {using location based information parameters}
- WARNING**
- Group [H04W 4/025](#) is incomplete pending reclassification of documents from groups [H04W 4/04](#), [H04W 4/043](#) and [H04W 4/046](#). Groups [H04W 4/04](#), [H04W 4/043](#), [H04W 4/046](#) and [H04W 4/025](#) should be considered in order to perform a complete search.
- 4/026 . . . {using orientation information, e.g. compass}
- WARNING**
- Group [H04W 4/026](#) is incomplete pending reclassification of documents from groups [H04W 4/04](#), [H04W 4/043](#) and [H04W 4/046](#). Groups [H04W 4/04](#), [H04W 4/043](#), [H04W 4/046](#) and [H04W 4/026](#) should be considered in order to perform a complete search.
- 4/027 . . . {using movement velocity, acceleration information}
- WARNING**
- Group [H04W 4/027](#) is incomplete pending reclassification of documents from groups [H04W 4/04](#), [H04W 4/043](#) and [H04W 4/046](#). Groups [H04W 4/04](#), [H04W 4/043](#), [H04W 4/046](#) and [H04W 4/027](#) should be considered in order to perform a complete search.
- 4/029 . . Location-based management or tracking services
- WARNING**
- Group [H04W 4/029](#) is incomplete pending reclassification of documents from groups [H04W 4/02](#), [H04W 4/04](#), [H04W 4/043](#) and [H04W 4/046](#). Groups [H04W 4/02](#), [H04W 4/04](#), [H04W 4/043](#), [H04W 4/046](#) and [H04W 4/029](#) should be considered in order to perform a complete search.
- 4/04 (Frozen) . . {using association of physical positions and logical data} in a dedicated environment, e.g. buildings or vehicles
- WARNING**
- Group [H04W 4/04](#) is no longer used for the classification of documents as of February 1, 2018. The content of this group is being reclassified into groups [H04W 4/02](#) – [H04W 4/029](#), and [H04W 4/30](#) – [H04W 4/48](#). All groups listed in this Warning should be considered in order to perform a complete search.
- 4/043 (Frozen) . . . {using ambient awareness, e.g. involving buildings using floor or room numbers}
- WARNING**
- Group [H04W 4/043](#) is no longer used for the classification of documents as of February 1, 2018. The content of this group is being reclassified into groups [H04W 4/02](#) – [H04W 4/029](#), and [H04W 4/33](#). All groups listed in this Warning should be considered in order to perform a complete search.
- 4/046 (Frozen) . . . {involving vehicles, e.g. floating traffic data [FTD] or vehicle traffic prediction}
- WARNING**
- Group [H04W 4/046](#) is no longer used for the classification of documents as of February 1, 2018. The content of this group is being reclassified into groups [H04W 4/02](#) – [H04W 4/029](#), and [H04W 4/40](#) – [H04W 4/48](#). All groups listed in this Warning should be considered in order to perform a complete search.
- 4/06 . Selective distribution of broadcast services, e.g. multimedia broadcast multicast service [MBMS]; Services to user groups; One-way selective calling services
- 4/08 . . User group management
- 4/10 . . Push-to-Talk [PTT] or Push-On-Call services
- 4/12 . Messaging; Mailboxes; Announcements
- 4/14 . . Short messaging services, e.g. short message services [SMS] or unstructured supplementary service data [USSD]
- 4/16 . Communication-related supplementary services, e.g. call-transfer or call-hold

- 4/18 . Information format or content conversion, e.g. adaptation by the network of the transmitted or received information for the purpose of wireless delivery to users or terminals
- 4/185 . . {by embedding added-value information into content, e.g. geo-tagging}
- 4/20 . Services signaling; Auxiliary data signalling, i.e. transmitting data via a non-traffic channel
- WARNING**
- Group [H04W 4/20](#) is impacted by reclassification into groups [H04W 4/21](#) and [H04W 4/23](#).
- Groups [H04W 4/20](#), [H04W 4/21](#), and [H04W 4/23](#) should be considered in order to perform a complete search.
- 4/203 . . {for converged personal network application service interworking, e.g. OMA converged personal network services [CPNS]}
- 4/21 . . for social networking applications
- WARNING**
- Group [H04W 4/21](#) is incomplete pending reclassification of documents from group [H04W 4/20](#).
- Groups [H04W 4/20](#) and [H04W 4/21](#) should be considered in order to perform a complete search.
- 4/23 . . for mobile advertising
- WARNING**
- Group [H04W 4/23](#) is incomplete pending reclassification of documents from group [H04W 4/20](#).
- Groups [H04W 4/20](#) and [H04W 4/23](#) should be considered in order to perform a complete search.
- 4/24 . Accounting or billing
- 4/30 . Services specially adapted for particular environments, situations or purposes
- WARNING**
- Group [H04W 4/30](#) is incomplete pending reclassification of documents from group [H04W 4/04](#).
- Groups [H04W 4/04](#) and [H04W 4/30](#) should be considered in order to perform a complete search.
- 4/33 . . for indoor environments, e.g. buildings
- WARNING**
- Group [H04W 4/33](#) is incomplete pending reclassification of documents from groups [H04W 4/04](#) and [H04W 4/043](#).
- Groups [H04W 4/04](#), [H04W 4/043](#) and [H04W 4/33](#) should be considered in order to perform a complete search.
- 4/35 . . for the management of goods or merchandise
- WARNING**
- Group [H04W 4/35](#) is incomplete pending reclassification of documents from group [H04W 4/04](#).
- Groups [H04W 4/04](#) and [H04W 4/35](#) should be considered in order to perform a complete search.
- 4/38 . . for collecting sensor information
- WARNING**
- Group [H04W 4/38](#) is incomplete pending reclassification of documents from group [H04W 4/04](#).
- Groups [H04W 4/04](#) and [H04W 4/38](#) should be considered in order to perform a complete search.
- 4/40 . . for vehicles, e.g. vehicle-to-pedestrians [V2P]
- WARNING**
- Group [H04W 4/40](#) is incomplete pending reclassification of documents from groups [H04W 4/04](#) and [H04W 4/046](#).
- Groups [H04W 4/04](#), [H04W 4/046](#) and [H04W 4/40](#) should be considered in order to perform a complete search.
- 4/42 . . . for mass transport vehicles, e.g. buses, trains or aircraft
- WARNING**
- Group [H04W 4/42](#) is incomplete pending reclassification of documents from groups [H04W 4/04](#) and [H04W 4/046](#).
- Groups [H04W 4/04](#), [H04W 4/046](#) and [H04W 4/42](#) should be considered in order to perform a complete search.
- 4/44 . . . for communication between vehicles and infrastructures, e.g. vehicle-to-cloud [V2C] or vehicle-to-home [V2H]
- WARNING**
- Group [H04W 4/44](#) is incomplete pending reclassification of documents from groups [H04W 4/04](#) and [H04W 4/046](#).
- Groups [H04W 4/04](#), [H04W 4/046](#) and [H04W 4/44](#) should be considered in order to perform a complete search.
- 4/46 . . . for vehicle-to-vehicle communication [V2V]
- WARNING**
- Group [H04W 4/46](#) is incomplete pending reclassification of documents from groups [H04W 4/04](#) and [H04W 4/046](#).
- Groups [H04W 4/04](#), [H04W 4/046](#) and [H04W 4/46](#) should be considered in order to perform a complete search.

- 4/48 . . . for in-vehicle communication
 - WARNING**
 - Group [H04W 4/48](#) is incomplete pending reclassification of documents from groups [H04W 4/04](#) and [H04W 4/046](#).
 - Groups [H04W 4/04](#), [H04W 4/046](#) and [H04W 4/48](#) should be considered in order to perform a complete search.
- 4/50 . Service provisioning or reconfiguring
- 4/60 . Subscription-based services using application servers or record carriers, e.g. SIM application toolkits
- 4/70 . Services for machine-to-machine communication [M2M] or machine type communication [MTC]
- 4/80 . Services using short range communication, e.g. near-field communication [NFC], radio-frequency identification [RFID] or low energy communication
- 4/90 . Services for handling of emergency or hazardous situations, e.g. earthquake and tsunami warning systems [ETWS]
- 8/00 Network data management**
- 8/005 . {Discovery of network devices, e.g. terminals}
- 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
- 8/04 . . Registration at HLR or HSS [Home Subscriber Server]
- 8/06 . . Registration at serving network Location Register, VLR or user mobility server
- 8/065 . . . {involving selection of the user mobility server}
- 8/08 . . Mobility data transfer
- 8/082 . . . {for traffic bypassing of mobility servers, e.g. location registers, home PLMNs or home agents}
- 8/085 . . . {involving hierarchical organized mobility servers, e.g. hierarchical mobile IP [HMIP]}
- 8/087 . . . {for preserving data network PoA address despite hand-offs}
- 8/10 . . . between location register and external networks
- 8/12 . . . between location registers or mobility servers
- 8/14 . . . between corresponding nodes
- 8/16 . . . selectively restricting mobility {data} tracking
- 8/18 . Processing of user or subscriber data, e.g. subscribed services, user preferences or user profiles; Transfer of user or subscriber data
- 8/183 . . {Processing at user equipment or user record carrier}
- 8/186 . . {Processing of subscriber group data}
- 8/20 . . Transfer of user or subscriber data
- 8/205 . . . {Transfer to or from user equipment or user record carrier}
- 8/22 . Processing or transfer of terminal data, e.g. status or physical capabilities
- 8/24 . . Transfer of terminal data
- 8/245 . . . {from a network towards a terminal}
- 8/26 . Network addressing or numbering for mobility support
- 8/265 . . {for initial activation of new user}

- 8/28 . . Number portability {; Network address portability}
- 8/30 . Network data restoration; {Network data reliability; Network data fault tolerance}

12/00 Security arrangements, e.g. access security or fraud detection; Authentication, e.g. verifying user identity or authorisation; Protecting privacy or anonymity {; Protecting confidentiality; Key management; Integrity; Mobile application security; Using identity modules; Secure pairing of devices; Context aware security; Lawful interception}

WARNING

Group [H04W 12/00](#) is impacted by reclassification into groups [H04W 12/00](#), [H04W 12/001](#), [H04W 12/0013](#), [H04W 12/0017](#), [H04W 12/002](#), [H04W 12/0023](#), [H04W 12/0027](#), [H04W 12/003](#), [H04W 12/00305](#), [H04W 12/004](#), [H04W 12/00401](#), [H04W 12/00403](#), [H04W 12/00405](#), [H04W 12/00407](#), [H04W 12/00409](#), [H04W 12/005](#), [H04W 12/0051](#), [H04W 12/00502](#), [H04W 12/00503](#), [H04W 12/00504](#), [H04W 12/00505](#), [H04W 12/00506](#), [H04W 12/00508](#), [H04W 12/0051](#), [H04W 12/00512](#), [H04W 12/00514](#), [H04W 12/00516](#), [H04W 12/00518](#), [H04W 12/0052](#), [H04W 12/00522](#), [H04W 12/00524](#), [H04W 12/007](#), [H04W 12/009](#), [H04W 12/0401](#), [H04W 12/0403](#), [H04W 12/04031](#), [H04W 12/04033](#), [H04W 12/0407](#), [H04W 12/04071](#), [H04W 12/0602](#), [H04W 12/0605](#), [H04W 12/0608](#), [H04W 12/0609](#), [H04W 12/0802](#), [H04W 12/0804](#), [H04W 12/0806](#), [H04W 12/0808](#), [H04W 12/1002](#), [H04W 12/1004](#), [H04W 12/1006](#), [H04W 12/1008](#), [H04W 12/12](#), [H04W 12/1201](#), [H04W 12/1202](#), [H04W 12/1204](#), [H04W 12/1205](#), [H04W 12/1206](#), [H04W 12/1208](#).

All groups listed in this warning should be considered in order to perform a complete search.

- 12/001 . {Protecting confidentiality, e.g. by encryption or ciphering}

WARNING

Group [H04W 12/001](#) is incomplete pending reclassification of documents from groups [H04W 12/00](#) and [H04W 12/02](#).

Groups [H04W 12/00](#), [H04W 12/02](#), and [H04W 12/001](#) should be considered in order to perform a complete search.

- 12/0013 . . {of user plane, e.g. user traffic}
WARNING
 Group [H04W 12/0013](#) is incomplete pending reclassification of documents from group [H04W 12/00](#).
 Groups [H04W 12/00](#) and [H04W 12/0013](#) should be considered in order to perform a complete search.
- 12/0017 . . {of control plane, e.g. signalling traffic}
WARNING
 Group [H04W 12/0017](#) is incomplete pending reclassification of documents from group [H04W 12/00](#).
 Groups [H04W 12/00](#) and [H04W 12/0017](#) should be considered in order to perform a complete search.
- 12/002 . {Mobile device security; Mobile application security}
WARNING
 Group [H04W 12/002](#) is incomplete pending reclassification of documents from group [H04W 12/00](#).
 Groups [H04W 12/00](#) and [H04W 12/002](#) should be considered in order to perform a complete search.
- 12/0023 . . {Protecting application or service provisioning, e.g. securing SIM application provisioning}
WARNING
 Group [H04W 12/0023](#) is incomplete pending reclassification of documents from group [H04W 12/00](#).
 Groups [H04W 12/00](#) and [H04W 12/0023](#) should be considered in order to perform a complete search.
- 12/0027 . . {Managing security policies for mobile device or applications control, e.g. mobile application permission management or mobile device security settings}
WARNING
 Group [H04W 12/0027](#) is incomplete pending reclassification of documents from group [H04W 12/00](#).
 Groups [H04W 12/00](#) and [H04W 12/0027](#) should be considered in order to perform a complete search.
- 12/003 . {Secure pairing of devices, e.g. bootstrapping a secure communication link between pairing terminals; Secure socializing}
WARNING
 Group [H04W 12/003](#) is incomplete pending reclassification of documents from group [H04W 12/00](#).
 Groups [H04W 12/00](#) and [H04W 12/003](#) should be considered in order to perform a complete search.
- 12/00305 . . {involving three or more devices, e.g. group pairing}
WARNING
 Group [H04W 12/00305](#) is incomplete pending reclassification of documents from group [H04W 12/00](#).
 Groups [H04W 12/00](#) and [H04W 12/00305](#) should be considered in order to perform a complete search.
- 12/004 . {using identity modules}
WARNING
 Group [H04W 12/004](#) is incomplete pending reclassification of documents from group [H04W 12/00](#).
 Groups [H04W 12/00](#) and [H04W 12/004](#) should be considered in order to perform a complete search.
- 12/00401 . . {using virtual identity modules}
WARNING
 Group [H04W 12/00401](#) is incomplete pending reclassification of documents from group [H04W 12/00](#).
 Groups [H04W 12/00](#) and [H04W 12/00401](#) should be considered in order to perform a complete search.
- 12/00403 . . {using shared identity modules, e.g. SIM sharing}
WARNING
 Group [H04W 12/00403](#) is incomplete pending reclassification of documents from group [H04W 12/00](#).
 Groups [H04W 12/00](#) and [H04W 12/00403](#) should be considered in order to perform a complete search.
- 12/00405 . . {using multiple identity modules}
WARNING
 Group [H04W 12/00405](#) is incomplete pending reclassification of documents from group [H04W 12/00](#).
 Groups [H04W 12/00](#) and [H04W 12/00405](#) should be considered in order to perform a complete search.
- 12/00407 . . {using near field communication [NFC], e.g. NFC tag, smart tag or radio frequency identification [RFID] module}
WARNING
 Group [H04W 12/00407](#) is incomplete pending reclassification of documents from group [H04W 12/00](#).
 Groups [H04W 12/00](#) and [H04W 12/00407](#) should be considered in order to perform a complete search.

- 12/00409 . . {using secure binding, e.g. securely binding identity modules to devices, services or applications}
- WARNING**
- Group [H04W 12/00409](#) is incomplete pending reclassification of documents from group [H04W 12/00](#).
- Groups [H04W 12/00](#) and [H04W 12/00409](#) should be considered in order to perform a complete search.
- 12/005 . . {Context aware security}
- WARNING**
- Group [H04W 12/005](#) is incomplete pending reclassification of documents from group [H04W 12/00](#).
- Groups [H04W 12/00](#) and [H04W 12/005](#) should be considered in order to perform a complete search.
- 12/00502 . . {Time aware}
- WARNING**
- Group [H04W 12/00502](#) is incomplete pending reclassification of documents from group [H04W 12/00](#).
- Groups [H04W 12/00](#) and [H04W 12/00502](#) should be considered in order to perform a complete search.
- 12/00503 . . {Location or proximity aware, e.g. using proximity to other devices}
- WARNING**
- Group [H04W 12/00503](#) is incomplete pending reclassification of documents from group [H04W 12/00](#).
- Groups [H04W 12/00](#) and [H04W 12/00503](#) should be considered in order to perform a complete search.
- 12/00504 . . {Ambient aware, e.g. using captured environmental data}
- WARNING**
- Group [H04W 12/00504](#) is incomplete pending reclassification of documents from group [H04W 12/00](#).
- Groups [H04W 12/00](#) and [H04W 12/00504](#) should be considered in order to perform a complete search.
- 12/00505 . . {Risk aware, e.g. selecting security levels depending on risk profiles}
- WARNING**
- Group [H04W 12/00505](#) is incomplete pending reclassification of documents from group [H04W 12/00](#).
- Groups [H04W 12/00](#) and [H04W 12/00505](#) should be considered in order to perform a complete search.
- 12/00506 . . {Trust aware, e.g. using trust scores or trust relationships}
- WARNING**
- Group [H04W 12/00506](#) is incomplete pending reclassification of documents from group [H04W 12/00](#).
- Groups [H04W 12/00](#) and [H04W 12/00506](#) should be considered in order to perform a complete search.
- 12/00508 . . {Gesture or behaviour aware, e.g. device movements or biometrics}
- WARNING**
- Group [H04W 12/00508](#) is incomplete pending reclassification of documents from group [H04W 12/00](#).
- Groups [H04W 12/00](#) and [H04W 12/00508](#) should be considered in order to perform a complete search.
- 12/0051 . . {Identity aware}
- WARNING**
- Group [H04W 12/0051](#) is incomplete pending reclassification of documents from group [H04W 12/00](#).
- Groups [H04W 12/00](#) and [H04W 12/0051](#) should be considered in order to perform a complete search.
- 12/00512 . . . {Hardware identity}
- WARNING**
- Group [H04W 12/00512](#) is incomplete pending reclassification of documents from group [H04W 12/00](#).
- Groups [H04W 12/00](#) and [H04W 12/00512](#) should be considered in order to perform a complete search.
- 12/00514 . . . {Subscriber identity}
- WARNING**
- Group [H04W 12/00514](#) is incomplete pending reclassification of documents from group [H04W 12/00](#).
- Groups [H04W 12/00](#) and [H04W 12/00514](#) should be considered in order to perform a complete search.
- 12/00516 . . . {Access point logical identity}
- WARNING**
- Group [H04W 12/00516](#) is incomplete pending reclassification of documents from group [H04W 12/00](#).
- Groups [H04W 12/00](#) and [H04W 12/00516](#) should be considered in order to perform a complete search.

- 12/00518 . . . {Temporary identity}
WARNING
 Group [H04W 12/00518](#) is incomplete pending reclassification of documents from group [H04W 12/00](#).
 Groups [H04W 12/00](#) and [H04W 12/00518](#) should be considered in order to perform a complete search.
- 12/0052 . . . {Group identity}
WARNING
 Group [H04W 12/0052](#) is incomplete pending reclassification of documents from group [H04W 12/00](#).
 Groups [H04W 12/00](#) and [H04W 12/0052](#) should be considered in order to perform a complete search.
- 12/00522 . . . {Graphical identity}
WARNING
 Group [H04W 12/00522](#) is incomplete pending reclassification of documents from group [H04W 12/00](#).
 Groups [H04W 12/00](#) and [H04W 12/00522](#) should be considered in order to perform a complete search.
- 12/00524 . . . {Radio fingerprint}
WARNING
 Group [H04W 12/00524](#) is incomplete pending reclassification of documents from group [H04W 12/00](#).
 Groups [H04W 12/00](#) and [H04W 12/00524](#) should be considered in order to perform a complete search.
- 12/007 . {Lawful interception}
WARNING
 Group [H04W 12/007](#) is incomplete pending reclassification of documents from group [H04W 12/00](#).
 Groups [H04W 12/00](#), [H04W 12/02](#), and [H04W 12/007](#) should be considered in order to perform a complete search.
- 12/009 . {specially adapted for networks, e.g. wireless sensor networks, ad-hoc networks, RFID networks or cloud networks}
WARNING
 Group [H04W 12/009](#) is incomplete pending reclassification of documents from group [H04W 12/00](#).
 Groups [H04W 12/00](#) and [H04W 12/009](#) should be considered in order to perform a complete search.
- 12/02 . Protecting privacy or anonymity {, e.g. protecting personally identifiable information [PII]}
WARNING
 Group [H04W 12/02](#) is impacted by reclassification into groups [H04W 12/02](#), [H04W 12/001](#), [H04W 12/007](#).
 All groups listed in this Warning should be considered in order to perform a complete search.
- 12/04 . Key management {, e.g. by generic bootstrapping architecture [GBA]}
WARNING
 Group [H04W 12/04](#) is impacted by reclassification into groups [H04W 12/04](#), [H04W 12/0401](#), [H04W 12/0403](#), [H04W 12/04031](#), [H04W 12/04033](#), [H04W 12/0407](#), [H04W 12/04071](#).
 All groups listed in this Warning should be considered in order to perform a complete search.
- 12/0401 . . {Key generation or derivation}
WARNING
 Group [H04W 12/0401](#) is incomplete pending reclassification of documents from groups [H04W 12/00](#) and [H04W 12/04](#).
 Groups [H04W 12/00](#), [H04W 12/04](#), and [H04W 12/0401](#) should be considered in order to perform a complete search.
- 12/0403 . . {using a trusted network node as anchor}
WARNING
 Group [H04W 12/0403](#) is incomplete pending reclassification of documents from groups [H04W 12/00](#) and [H04W 12/04](#).
 Groups [H04W 12/00](#), [H04W 12/04](#), and [H04W 12/0403](#) should be considered in order to perform a complete search.
- 12/04031 . . . {Key distribution, e.g. key pre-distribution or key agreement}
WARNING
 Group [H04W 12/04031](#) is incomplete pending reclassification of documents from groups [H04W 12/00](#) and [H04W 12/04](#).
 Groups [H04W 12/00](#), [H04W 12/04](#), and [H04W 12/04031](#) should be considered in order to perform a complete search.
- 12/04033 . . . {Key management protocols, e.g. managing shared keys, group keys, multicast keys or rekeying}
WARNING
 Group [H04W 12/04033](#) is incomplete pending reclassification of documents from groups [H04W 12/00](#) and [H04W 12/04](#).
 Groups [H04W 12/00](#), [H04W 12/04](#), and [H04W 12/04033](#) should be considered in order to perform a complete search.

- 12/0407 . . . {without using a trusted network node as anchor}
- WARNING**
- Group [H04W 12/0407](#) is incomplete pending reclassification of documents from groups [H04W 12/00](#) and [H04W 12/04](#).
- Groups [H04W 12/00](#), [H04W 12/04](#), and [H04W 12/0407](#) should be considered in order to perform a complete search.
- 12/04071 . . . {Key exchange, e.g. between nodes}
- WARNING**
- Group [H04W 12/04071](#) is incomplete pending reclassification of documents from groups [H04W 12/00](#) and [H04W 12/04](#).
- Groups [H04W 12/00](#), [H04W 12/04](#), and [H04W 12/04071](#) should be considered in order to perform a complete search.
- 12/06 . . Authentication
- WARNING**
- Group [H04W 12/06](#) is impacted by reclassification into groups [H04W 12/06](#), [H04W 12/0602](#), [H04W 12/0605](#), [H04W 12/0608](#), [H04W 12/0609](#).
- All groups listed in this Warning should be considered in order to perform a complete search.
- 12/0602 . . {Pre-authentication}
- WARNING**
- Group [H04W 12/0602](#) is incomplete pending reclassification of documents from groups [H04W 12/00](#) and [H04W 12/06](#).
- Groups [H04W 12/00](#), [H04W 12/06](#), and [H04W 12/0602](#) should be considered in order to perform a complete search.
- 12/0605 . . {Continuous authentication}
- WARNING**
- Group [H04W 12/0605](#) is incomplete pending reclassification of documents from groups [H04W 12/00](#) and [H04W 12/06](#).
- Groups [H04W 12/00](#), [H04W 12/06](#), and [H04W 12/0605](#) should be considered in order to perform a complete search.
- 12/0608 . . {using credential vaults, e.g. password manager applications or one time password [OTP] applications}
- WARNING**
- Group [H04W 12/0608](#) is incomplete pending reclassification of documents from groups [H04W 12/00](#) and [H04W 12/06](#).
- Groups [H04W 12/00](#), [H04W 12/06](#), and [H04W 12/0608](#) should be considered in order to perform a complete search.
- 12/0609 . . {using certificates or pre-shared keys}
- WARNING**
- Group [H04W 12/0609](#) is incomplete pending reclassification of documents from groups [H04W 12/00](#) and [H04W 12/06](#).
- Groups [H04W 12/00](#), [H04W 12/06](#), and [H04W 12/0609](#) should be considered in order to perform a complete search.
- 12/08 . . Access security
- WARNING**
- Group [H04W 12/08](#) is impacted by reclassification into groups [H04W 12/08](#), [H04W 12/0802](#), [H04W 12/0804](#), [H04W 12/0806](#), [H04W 12/0808](#).
- All groups listed in this Warning should be considered in order to perform a complete search.
- 12/0802 . . {using revocation of authorisation}
- WARNING**
- Group [H04W 12/0802](#) is incomplete pending reclassification of documents from groups [H04W 12/00](#) and [H04W 12/08](#).
- Groups [H04W 12/00](#), [H04W 12/08](#), and [H04W 12/0802](#) should be considered in order to perform a complete search.
- 12/0804 . . {using delegated authorisation, e.g. Open Authorisation [OAuth] protocol, user centric management of access rights or user consent}
- WARNING**
- Group [H04W 12/0804](#) is incomplete pending reclassification of documents from groups [H04W 12/00](#) and [H04W 12/08](#).
- Groups [H04W 12/00](#), [H04W 12/08](#), and [H04W 12/0804](#) should be considered in order to perform a complete search.
- 12/0806 . . {using security domains, e.g. separating enterprise and private data domains, building machine-to-machine [M2M] domains or global platform domains}
- WARNING**
- Group [H04W 12/0806](#) is incomplete pending reclassification of documents from groups [H04W 12/00](#) and [H04W 12/08](#).
- Groups [H04W 12/00](#), [H04W 12/08](#), and [H04W 12/0806](#) should be considered in order to perform a complete search.
- 12/0808 . . {using packet filters or firewalls}
- WARNING**
- Group [H04W 12/0808](#) is incomplete pending reclassification of documents from groups [H04W 12/00](#) and [H04W 12/08](#).
- Groups [H04W 12/00](#), [H04W 12/08](#), and [H04W 12/0808](#) should be considered in order to perform a complete search.

- 12/10 . Integrity
WARNING
Group [H04W 12/10](#) is impacted by reclassification into groups [H04W 12/10](#), [H04W 12/1002](#), [H04W 12/1004](#), [H04W 12/1006](#), [H04W 12/1008](#).
All groups listed in this Warning should be considered in order to perform a complete search.
- 12/1002 . . {Route integrity, e.g. using trusted paths}
WARNING
Group [H04W 12/1002](#) is incomplete pending reclassification of documents from groups [H04W 12/00](#) and [H04W 12/10](#).
Groups [H04W 12/00](#), [H04W 12/10](#), and [H04W 12/1002](#) should be considered in order to perform a complete search.
- 12/1004 . . {Location integrity, e.g. secure geo-tagging or trusted cell tagging}
WARNING
Group [H04W 12/1004](#) is incomplete pending reclassification of documents from groups [H04W 12/00](#) and [H04W 12/10](#).
Groups [H04W 12/00](#), [H04W 12/10](#), and [H04W 12/1004](#) should be considered in order to perform a complete search.
- 12/1006 . . {Packet or message integrity}
WARNING
Group [H04W 12/1006](#) is incomplete pending reclassification of documents from groups [H04W 12/00](#) and [H04W 12/10](#).
Groups [H04W 12/00](#), [H04W 12/10](#), and [H04W 12/1006](#) should be considered in order to perform a complete search.
- 12/1008 . . {Source integrity}
WARNING
Group [H04W 12/1008](#) is incomplete pending reclassification of documents from groups [H04W 12/00](#) and [H04W 12/10](#).
Groups [H04W 12/00](#), [H04W 12/10](#), and [H04W 12/1008](#) should be considered in order to perform a complete search.
- 12/12 . Fraud detection {or prevention}
WARNING
Group [H04W 12/12](#) is incomplete pending reclassification of documents from group [H04W 12/00](#).
Group [H04W 12/12](#) is also impacted by reclassification into groups [H04W 12/12](#), [H04W 12/1201](#), [H04W 12/1202](#), [H04W 12/1204](#), [H04W 12/1205](#), [H04W 12/1206](#), [H04W 12/1208](#).
All groups listed in this Warning should be considered in order to perform a complete search.
- 12/1201 . . {Wireless intrusion detection system [WIDS]; Wireless intrusion prevention system [WIPS]}
WARNING
Group [H04W 12/1201](#) is incomplete pending reclassification of documents from groups [H04W 12/00](#) and [H04W 12/12](#).
Groups [H04W 12/00](#), [H04W 12/12](#), and [H04W 12/1201](#) should be considered in order to perform a complete search.
- 12/1202 . . . {Protecting against rogue devices}
WARNING
Group [H04W 12/1202](#) is incomplete pending reclassification of documents from groups [H04W 12/00](#) and [H04W 12/12](#).
Groups [H04W 12/00](#), [H04W 12/12](#), and [H04W 12/1202](#) should be considered in order to perform a complete search.
- 12/1204 . . . {Countermeasures against attacks}
WARNING
Group [H04W 12/1204](#) is incomplete pending reclassification of documents from groups [H04W 12/00](#) and [H04W 12/12](#).
Groups [H04W 12/00](#), [H04W 12/12](#), and [H04W 12/1204](#) should be considered in order to perform a complete search.
- 12/1205 . . {Protecting against power exhaustion attacks, e.g. power depletion, starvation attack or sleep deprivation attack}
WARNING
Group [H04W 12/1205](#) is incomplete pending reclassification of documents from groups [H04W 12/00](#) and [H04W 12/12](#).
Groups [H04W 12/00](#), [H04W 12/12](#), and [H04W 12/1205](#) should be considered in order to perform a complete search.
- 12/1206 . . {Anti-theft arrangements, e.g. protecting against device theft, subscriber identity module [SIM] cloning or machine-to-machine [M2M] displacement}
WARNING
Group [H04W 12/1206](#) is incomplete pending reclassification of documents from groups [H04W 12/00](#) and [H04W 12/12](#).
Groups [H04W 12/00](#), [H04W 12/12](#), and [H04W 12/1206](#) should be considered in order to perform a complete search.
- 12/1208 . . {Anti-malware arrangements, e.g. protecting against SMS fraud or mobile malware}
WARNING
Group [H04W 12/1208](#) is incomplete pending reclassification of documents from groups [H04W 12/00](#) and [H04W 12/12](#).
Groups [H04W 12/00](#), [H04W 12/12](#), and [H04W 12/1208](#) should be considered in order to perform a complete search.

16/00	Network planning, e.g. coverage or traffic planning tools; Network deployment, e.g. resource partitioning or cells structures	28/0247	. . {based on conditions of the access network or the infrastructure network (central resource management H04W 28/16)}
16/02	. Resource partitioning among network components, e.g. reuse partitioning	28/0252	. . {per individual bearer or channel (dynamic wireless traffic scheduling H04W 72/12)}
16/04	. . Traffic adaptive resource partitioning	28/0257	. . . {the individual bearer or channel having a maximum bit rate or a bit rate guarantee}
16/06	. . Hybrid resource partitioning, e.g. channel borrowing	28/0263	. . . {involving mapping traffic to individual bearers or channels, e.g. traffic flow template [TFT]}
16/08	. . . Load shedding arrangements	28/0268	. . {using specific QoS parameters for wireless networks, e.g. QoS class identifier [QCI] or guaranteed bit rate [GBR] (negotiating SLA or negotiating QoS H04W 28/24)}
16/10	. . Dynamic resource partitioning	28/0273	. . {adapting protocols for flow control or congestion control to wireless environment, e.g. adapting transmission control protocol [TCP] (wireless network protocols or protocol adaptations to wireless operation, e.g. wireless application protocol H04W 80/00)}
16/12	. . Fixed resource partitioning	28/0278	. . {using buffer status reports (dynamic wireless traffic scheduling definition H04W 72/1205)}
16/14	. Spectrum sharing arrangements {between different networks}	28/0284	. . {detecting congestion or overload during communication (monitoring arrangements H04L 43/00)}
16/16	. . for PBS [Private Base Station] arrangements	28/0289	. . {Congestion control (performing reselection for handling the traffic H04W 36/22 ; load shedding arrangements in network planning H04W 16/08 ; dynamic wireless traffic scheduling H04W 72/12)}
16/18	. Network planning tools	28/0294	. . {forcing collision (non-scheduled or contention based wireless access channel H04W 74/08)}
16/20	. . for indoor coverage or short range network deployment	28/04	. . Error control
16/22	. Traffic simulation tools or models		NOTE
16/225	. . {for indoor or short range network}		When classifying in this group, classification is also made in the appropriate groups under H04L 1/00 .
16/24	. Cell structures		
16/26	. . Cell enhancers {or enhancement}, e.g. for tunnels, building shadow		
16/28	. . using beam steering		
16/30	. . Special cell shapes, e.g. doughnuts or ring cells		
16/32	. . Hierarchical cell structures		
24/00	Supervisory, monitoring or testing arrangements		
24/02	. Arrangements for optimising operational condition		
24/04	. Arrangements for maintaining operational condition		
24/06	. Testing, {supervising or monitoring} using simulated traffic		
24/08	. Testing, {supervising or monitoring} using real traffic		
24/10	. Scheduling measurement reports {; Arrangements for measurement reports}		
28/00	Network traffic or resource management		
28/02	. Traffic management, e.g. flow control or congestion control	28/06	. . Optimizing {the usage of the radio link}, e.g. header compression, information sizing {, discarding information (system modifying transmission characteristic according to link quality by modifying frame length H04L 1/0007 ; dynamic adaptation of the packet size for flow control or congestion control H04L 47/365)}
28/0205	. . {at the air interface (dynamic wireless traffic scheduling H04W 72/12)}	28/065	. . . {using assembly or disassembly of packets}
28/021	. . {in wireless networks with changing topologies, e.g. ad-hoc networks (self-organizing networks H04W 84/18)}	28/08	. . Load balancing or load distribution
28/0215	. . {based on user or device properties, e.g. MTC-capable devices (services for machine-to-machine communication [M2M] or machine type communication [MTC] H04W 4/70 ; wireless resource selection or allocation plan definition based on terminal or device properties H04W 72/048)}	28/085	. . . {among bearers or channels}
28/0221	. . . {power availability or consumption}	28/10	. . Flow control {between communication endpoints}
28/0226	. . {based on location or mobility (handoff or reselection H04W 36/00 ; mobile application services making use of the location of users or terminals H04W 4/02)}	28/12	. . . using signalling between network elements
28/0231	. . {based on communication conditions (dynamic wireless traffic scheduling definition based on channel quality criteria H04W 72/1226)}	28/14	. . . using intermediate storage
28/0236	. . . {radio quality, e.g. interference, losses or delay}	28/16	. Central resource management; Negotiation of resources or communication parameters, e.g. negotiating bandwidth or QoS [Quality of Service]
28/0242	. . . {Determining whether packet losses are due to overload or to deterioration of radio communication conditions}	28/18	. . Negotiating wireless communication parameters
		28/20	. . . Negotiating bandwidth
		28/22	. . . Negotiating communication rate
		28/24	. . Negotiating SLA [Service Level Agreement]; Negotiating QoS [Quality of Service]
		28/26	. . Resource reservation

36/00 Hand-off or reselection arrangements

NOTE

In this group, local priority rules supersede the first-place priority rule (FPPR) applying throughout [H04W](#)

WARNING

Group [H04W 36/00](#) is impacted by reclassification into group [H04W 36/03](#).

Groups [H04W 36/00](#) and [H04W 36/03](#) should be considered in order to perform a complete search.

36/0005 . {Control or signalling for completing the hand-off}

WARNING

Group [H04W 36/0005](#) is impacted by reclassification into groups [H04W 36/0007](#) and [H04W 36/0009](#).

All groups listed in this Warning should be considered in order to perform a complete search.

36/0007 . . {for multicast or broadcast services, e.g. MBMS (multicast or broadcast application services [H04W 4/06](#); resource management for broadcast services [H04W 72/005](#); connection management for selective distribution or broadcast [H04W 76/40](#))}

WARNING

Group [H04W 36/0007](#) is incomplete pending reclassification of documents from group [H04W 36/0005](#).

Groups [H04W 36/0005](#) and [H04W 36/0007](#) should be considered in order to perform a complete search.

36/0009 . . {for a plurality of users or terminals, e.g. group communication or moving wireless networks (user group management [H04W 4/08](#); processing of subscriber group data [H04W 8/186](#))}

WARNING

Group [H04W 36/0009](#) is incomplete pending reclassification of documents from group [H04W 36/0005](#).

Groups [H04W 36/0005](#) and [H04W 36/0009](#) should be considered in order to perform a complete search.

36/0011 . . {for data session or connection}

36/0016 . . . {for hand-off preparation}

36/0022 . . . {for transferring sessions between adjacent core network technologies}

36/0027 . . . {for a plurality of sessions or connections, e.g. multi-call, multi-bearer connections}

36/0033 . . . {with transfer of context information}

36/0038 {of security context information}

36/0044 {of quality context information}

36/005 . . {involving radio access media independent information, e.g. MIH [Media independent Hand-off]}

36/0055 . . {Transmission and use of information for re-establishing the radio link}

WARNING

Group [H04W 36/0055](#) is impacted by reclassification into groups [H04W 36/0058](#), [H04W 36/0069](#) and [H04W 36/0079](#).

All groups listed in this Warning should be considered in order to perform a complete search.

36/0058 . . . {Transmission of hand-off measurement information, e.g. measurement reports}

WARNING

Group [H04W 36/0058](#) is incomplete pending reclassification of documents from group [H04W 36/0055](#).

Groups [H04W 36/0005](#) and [H04W 36/0058](#) should be considered in order to perform a complete search.

36/0061 . . . {of neighbor cell information}

36/0066 . . . {of control information between different types of networks in order to establish a new radio link in the target network}

36/0069 . . . {in case of dual connectivity, e.g. CoMP, decoupled uplink/downlink or carrier aggregation (allocation of physical resources in CoMP or in carrier aggregation [H04L 5/0035](#))}

WARNING

Group [H04W 36/0069](#) is incomplete pending reclassification of documents from group [H04W 36/0055](#).

Groups [H04W 36/0055](#) and [H04W 36/0069](#) should be considered in order to perform a complete search.

36/0072 . . . {of resource information of target access point}

36/0077 . . . {of access information of target access point}

36/0079 . . . {in case of hand-off failure or rejection}

WARNING

Group [H04W 36/0079](#) is incomplete pending reclassification of documents from groups [H04W 36/0055](#) and [H04W 36/30](#).

Groups [H04W 36/0055](#), [H04W 36/30](#) and [H04W 36/0079](#) should be considered in order to perform a complete search.

36/0083 . . {Determination of parameters used for hand-off, e.g. generation or modification of neighbour cell lists}

WARNING

Group [H04W 36/0083](#) is impacted by reclassification into groups [H04W 36/00835](#), [H04W 36/00837](#), and [H04W 36/0085](#).

All groups listed in this Warning should be considered in order to perform a complete search.

<p>36/00835 . . . {Determination of the neighbour cell list}</p> <p>WARNING</p> <p>Group H04W 36/00835 is incomplete pending reclassification of documents from group H04W 36/0083.</p> <p>Groups H04W 36/0083 and H04W 36/00835 should be considered in order to perform a complete search.</p>	<p>36/125 . . . {involving different types of service backbone}</p> <p>WARNING</p> <p>Group H04W 36/125 is incomplete pending reclassification of documents from group H04W 36/12.</p> <p>Groups H04W 36/12 and H04W 36/125 should be considered in order to perform a complete search.</p>
<p>36/00837 . . . {Determination of triggering parameters for hand-off}</p> <p>WARNING</p> <p>Group H04W 36/00837 is incomplete pending reclassification of documents from group H04W 36/0083.</p> <p>Groups H04W 36/0083 and H04W 36/00837 should be considered in order to perform a complete search.</p>	<p>36/14 . . . Reselecting a network or an air interface</p> <p>36/16 . . . Performing reselection for specific purposes</p> <p>36/165 . . . {for improving the overall network performance (H04W 36/18 - H04W 36/22 take precedence)}</p> <p>36/18 . . . for allowing seamless reselection, e.g. soft reselection</p> <p>36/20 . . . for optimising the interference level</p> <p>36/22 . . . for handling the traffic</p> <p>36/24 . . . Reselection being triggered by specific parameters {used to improve the performance of a single terminal}</p>
<p>36/0085 . . . {Hand-off measurements}</p> <p>WARNING</p> <p>Group H04W 36/0085 is incomplete pending reclassification of documents from group H04W 36/0083.</p> <p>Groups H04W 36/0083 and H04W 36/0085 should be considered in order to perform a complete search.</p>	<p>36/245 . . . {by historical data}</p> <p>36/26 . . . by agreed or negotiated communication parameters</p> <p>36/28 . . . involving a plurality of connections, e.g. multi-call, multi-bearer connections</p> <p>36/30 . . . by measured or perceived connection quality data</p> <p>WARNING</p> <p>Group H04W 36/30 is impacted by reclassification into groups H04W 36/305 and H04W 36/0079</p> <p>Groups H04W 36/30, H04W 36/305 and H04W 36/0079 should be considered in order to perform a complete search.</p>
<p>36/0088 {Scheduling hand-off measurements}</p> <p>36/0094 {Definition of hand-off measurement parameters}</p> <p>36/02 . . . Buffering or recovering information during reselection {; Modification of the traffic flow during hand-off}</p> <p>36/023 . . . {Buffering or recovering information during reselection}</p> <p>36/026 . . . {Multicasting of data during hand-off}</p> <p>36/03 . . . {Reselecting a link using a direct mode connection}</p> <p>WARNING</p> <p>Group H04W 36/03 is incomplete pending reclassification of documents from group H04W 36/00.</p> <p>Groups H04W 36/03 and H04W 36/00 should be considered in order to perform a complete search.</p>	<p>36/305 {Reselection due to radio link failure (control signalling for hand-off failure H04W 36/0079)}</p> <p>WARNING</p> <p>Group H04W 36/305 is incomplete pending reclassification of documents from group H04W 36/30.</p> <p>Groups H04W 36/30 and H04W 36/305 should be considered in order to perform a complete search.</p>
<p>36/04 . . . Reselecting a cell layer in multi-layered cells</p> <p>36/06 . . . Reselecting a communication resource in the serving access point</p> <p>36/08 . . . Reselecting an access point</p> <p>36/10 . . . Reselecting an access point controller</p> <p>36/12 . . . Reselecting a serving backbone network switching or routing node</p> <p>WARNING</p> <p>Group H04W 36/12 is impacted by reclassification into group H04W 36/125.</p> <p>Groups H04W 36/12 and H04W 36/125 should be considered in order to perform a complete search.</p>	<p>36/32 . . . by location or mobility data, e.g. speed data</p> <p>36/34 . . . Reselection control</p> <p>36/36 . . . by user or terminal equipment</p> <p>36/365 {by manual user interaction}</p> <p>36/38 . . . by fixed network equipment</p> <p>36/385 {of the core network}</p> <p>40/00 Communication routing or communication path finding</p> <p>40/005 . . . {Routing actions in the presence of nodes in sleep or doze mode}</p> <p>40/02 . . . Communication route or path selection, e.g. power-based or shortest path routing</p> <p>40/023 . . . {Limited or focused flooding to selected areas of a network}</p> <p>40/026 . . . {Route selection considering the moving speed of individual devices}</p> <p>40/04 . . . based on wireless node resources</p>

40/06	. . . based on characteristics of available antennas	52/0209	. . . {in terminal devices (terminal devices per se H04W 88/02)}
40/08	. . . based on transmission power	52/0212	. . . {managed by the network, e.g. network or access point is master and terminal is slave}
40/10	. . . based on available power or energy	52/0216	. . . . {using a pre-established activity schedule, e.g. traffic indication frame}
40/12	. . based on transmission quality or channel quality	52/0219	. . . . {where the power saving management affects multiple terminals}
40/125	. . . {using a measured number of retransmissions as a link metric}	52/0222	. . . . {in packet switched networks}
40/14	. . . based on stability	52/0225	. . . {using monitoring of external events, e.g. the presence of a signal}
40/16	. . . based on interference	52/0229	. . . . {where the received signal is a wanted signal}
40/18	. . based on predicted events	52/0232	. . . . . {according to average transmission signal activity}
40/20	. . based on geographic position or location	52/0235	. . . . {where the received signal is a power saving command}
40/205	. . . {using topographical information, e.g. hills, high rise buildings}	52/0238	. . . . {where the received signal is an unwanted signal, e.g. interference or idle signal}
40/22	. . using selective relaying for reaching a BTS [Base Transceiver Station] or an access point	52/0241	. . . . {where no transmission is received, e.g. out of range of the transmitter}
40/24	. Connectivity information management, e.g. connectivity discovery or connectivity update	52/0245	. . . . {according to signal strength}
40/242	. . {aging of topology database entries}	52/0248	. . . . {dependent on the time of the day, e.g. according to expected transmission activity}
40/244	. . {using a network of reference devices, e.g. beaconing}	52/0251	. . . {using monitoring of local events, e.g. events related to user activity}
40/246	. . {Connectivity information discovery}	52/0254	. . . . {detecting a user operation or a tactile contact or a motion of the device}
40/248	. . {Connectivity information update}	52/0258	. . . . {controlling an operation mode according to history or models of usage information, e.g. activity schedule or time of day}
40/26	. . for hybrid routing by combining proactive and reactive routing	52/0261	. . . {managing power supply demand, e.g. depending on battery level}
40/28	. . for reactive routing	52/0264	. . . . {by selectively disabling software applications}
40/30	. . for proactive routing	52/0267	. . . . {by controlling user interface components}
40/32	. . for defining a routing cluster membership	52/027	. . . . . {by controlling a display operation or backlight unit}
40/34	. Modification of an existing route	52/0274	. . . . {by switching on or off the equipment or parts thereof}
40/36	. . due to handover	52/0277	. . . . . {according to available power supply, e.g. switching off when a low battery condition is detected}
40/38	. . adapting due to varying relative distances between nodes	52/028	. . . . . {switching on or off only a part of the equipment circuit blocks}
48/00	Access restriction (access security to prevent unauthorised access H04W 12/08); Network selection; Access point selection	52/0283	. . . . . {with sequential power up or power down of successive circuit blocks, e.g. switching on the local oscillator before RF or mixer stages}
48/02	. Access restriction performed under specific conditions	52/0287	. . . . {changing the clock frequency of a controller in the equipment}
48/04	. . based on user or terminal location or mobility data, e.g. moving direction, speed	52/029	. . . . . {reducing the clock frequency of the controller}
48/06	. . based on traffic conditions	52/0293	. . . . . {having a sub-controller with a low clock frequency switching on and off a main controller with a high clock frequency}
48/08	. Access restriction or access information delivery, e.g. discovery data delivery (signalling during connection H04W 76/00)	52/0296	. . . . . {switching to a backup power supply}
48/10	. . using broadcasted information	52/04	. TPC
48/12	. . using downlink control channel	52/06	. . TPC algorithms
48/14	. . using user query {or user detection}	52/08	. . . Closed loop power control
48/16	. Discovering, processing access restriction or access information	52/10	. . . Open loop power control
48/17	. {Selecting a data network PoA [Point of Attachment]}	52/12	. . . Outer and inner loops
48/18	. Selecting a network or a communication service	52/125	. . . . {cascaded outer loop power control}
48/20	. Selecting an access point	52/14	. . . Separate analysis of uplink or downlink
52/00	Power management, e.g. TPC [Transmission Power Control], power saving or power classes {(gain control in transmitters or power amplifiers H03G 3/3042)}		
52/02	. Power saving arrangements {(in wired systems H04L 12/12 ; signaling of mobile application services, e.g. low battery notifications H04W 4/20)}		
52/0203	. . {in the radio access network or backbone network of wireless communication networks}		
52/0206	. . . {in access points, e.g. base stations (access point devices per se H04W 88/08)}		

- 52/143 {Downlink power control}
- 52/146 {Uplink power control}
- 52/16 . . . Deriving transmission power values from another channel
- 52/18 . . TPC being performed according to specific parameters
- 52/20 . . . using error rate
- 52/22 . . . taking into account previous information or commands
- 52/221 {using past power control commands}
- 52/223 {predicting future states of the transmission}
- 52/225 {Calculation of statistics, e.g. average, variance}
- 52/226 {using past references to control power, e.g. look-up-table}
- 52/228 {using past power values or information}
- 52/24 . . . using SIR [Signal to Interference Ratio] or other wireless path parameters
- 52/241 {taking into account channel quality metrics, e.g. SIR, SNR, CIR, Eb/lo}
- 52/242 {taking into account path loss}
- 52/243 {taking into account interferences}
- 52/244 {Interferences in heterogeneous networks, e.g. among macro and femto or pico cells or other sector / system interference [OSI]}
- 52/245 {taking into account received signal strength}
- 52/246 {where the output power of a terminal is based on a path parameter calculated in said terminal}
- 52/247 {where the output power of a terminal is based on a path parameter sent by another terminal}
- 52/248 {where transmission power control commands are generated based on a path parameter}
- 52/26 . . . using transmission rate or quality of service QoS [Quality of Service]
- 52/262 {taking into account adaptive modulation and coding [AMC] scheme (AMC [per se H04L 1/0001](#))}
- 52/265 {taking into account the quality of service QoS}
- 52/267 {taking into account the information rate}
- 52/28 . . . using user profile, e.g. mobile speed, priority or network state, e.g. standby, idle or non transmission
- 52/281 {taking into account user or data type priority}
- 52/282 {taking into account the speed of the mobile}
- 52/283 {Power depending on the position of the mobile}
- 52/285 {taking into account the mobility of the user}
- 52/286 {during data packet transmission, e.g. high speed packet access [HSPA]}
- 52/287 {when the channel is in stand-by}
- 52/288 {taking into account the usage mode, e.g. hands-free, data transmission, telephone}
- 52/30 . . . using constraints in the total amount of available transmission power
- 52/32 . . . TPC of broadcast or control channels
- 52/322 {Power control of broadcast channels}
- 52/325 {Power control of control or pilot channels}
- 52/327 {Power control of multicast channels}
- 52/34 . . . TPC management, i.e. sharing limited amount of power among users or channels or data types, e.g. cell loading
- 52/343 {taking into account loading or congestion level}
- 52/346 {distributing total power among users or channels}
- 52/36 . . . with a discrete range or set of values, e.g. step size, ramping or offsets
- 52/362 {Aspects of the step size}
- 52/365 {Power headroom reporting}
- 52/367 {Power values between minimum and maximum limits, e.g. dynamic range}
- 52/38 . . . TPC being performed in particular situations
- 52/383 . . . {power control in peer-to-peer links}
- 52/386 . . . {centralized, e.g. when the radio network controller or equivalent takes part in the power control}
- 52/40 . . . during macro-diversity or soft handoff
- 52/42 . . . in systems with time, space, frequency or polarisation diversity
- 52/44 . . . in connection with interruption of transmission
- 52/46 . . . in multi hop networks, e.g. wireless relay networks
- 52/48 . . . during retransmission after error or non-acknowledgment
- 52/50 . . . at the moment of starting communication in a multiple access environment
- 52/52 . . . using AGC [Automatic Gain Control] circuits or amplifiers
- 52/54 . . . Signalisation aspects of the TPC commands, e.g. frame structure
- 52/545 . . . {modifying TPC bits in special situations}
- 52/56 . . . Detection of errors of TPC bits
- 52/58 . . . Format of the TPC bits
- 52/60 . . . using different transmission rates for TPC commands
- 56/00 Synchronisation arrangements**
- 56/0005 . . {synchronizing of arrival of multiple uplinks}
- 56/001 . . {Synchronization between nodes}
- 56/0015 . . . {one node acting as a reference for the others}
- 56/002 . . . {Mutual synchronization}
- 56/0025 . . . {synchronizing potentially movable access points}
- 56/003 . . {Arrangements to increase tolerance to errors in transmission or reception timing}
- 56/0035 . . {detecting errors in frequency or phase}
- 56/004 . . {compensating for timing error of reception due to propagation delay}
- 56/0045 . . . {compensating for timing error by altering transmission time}
- 56/005 . . . {compensating for timing error by adjustment in the receiver}
- 56/0055 . . {determining timing error of reception due to propagation delay}
- 56/006 . . . {using known positions of transmitter and receiver}
- 56/0065 . . . {using measurement of signal travel time}
- 56/007 {Open loop measurement}
- 56/0075 {based on arrival time vs. expected arrival time}

56/008	. . . . . {detecting arrival of signal based on received raw signal}	72/0466	. . . {the resource being a scrambling code}
56/0085	. . . . . {detecting a given structure in the signal}	72/0473	. . . {the resource being transmission power}
56/009	. . . {Closed loop measurements}	72/048	. . . {where an allocation plan is defined based on terminal or device properties}
56/0095	. . {estimated based on signal strength}	72/0486	. . {where an allocation plan is defined based on load}
60/00	Affiliation to network, e.g. registration; Terminating affiliation with the network, e.g. de-registration	72/0493	. . {where an allocation plan is defined based on a resource usage policy}
60/005	. {Multiple registrations, e.g. multihoming}	72/06	. . {where an allocation plan is defined} based on a ranking criteria of the wireless resources
60/02	. by periodical registration	72/08	. . {where an allocation plan is defined} based on quality criteria
60/04	. using triggered events	72/082	. . . {using the level of interference}
60/06	. De-registration or detaching	72/085	. . . {using measured or perceived quality}
64/00	Locating users or terminals {or network equipment} for network management purposes, e.g. mobility management	72/087	. . . {using requested quality}
64/003	. {locating network equipment}	72/10	. . {where an allocation plan is defined} based on priority criteria
64/006	. {with additional information processing, e.g. for direction or speed determination}	72/12	. {Dynamic} Wireless traffic scheduling {; Dynamically scheduled allocation on shared channel}
68/00	User notification, e.g. alerting and paging, for incoming communication, change of service or the like	72/1205	. . {Schedule definition, set-up or creation}
68/005	. {Transmission of information for alerting of incoming communication}	72/121	. . . {for groups of terminals or users}
68/02	. Arrangements for increasing efficiency of notification or paging channel	72/1215	. . . {for collaboration of different radio technologies}
68/025	. . {Indirect paging}	72/1221	. . . {based on age of data to be sent}
68/04	. multi-step notification using statistical or historical mobility data	72/1226	. . . {based on channel quality criteria, e.g. channel state dependent scheduling}
68/06	. using multi-step notification by changing the notification area	72/1231	. . . . {using measured or perceived quality}
68/08	. using multi-step notification by increasing the notification area	72/1236	. . . . {using requested quality}
68/10	. using simulcast notification	72/1242	. . . {based on precedence or priority of the traffic information}
68/12	. Inter-network notification	72/1247	. . . {based on priority of the information source or recipient}
72/00	Local resource management, e.g. wireless traffic scheduling or selection or allocation of wireless resources	72/1252	. . . {based on load}
	NOTE	72/1257	. . . {based on resource usage policy}
	In this group, local priority rules supersede the first-place priority rule (FPPR) applying throughout H04W	72/1263	. . {Schedule usage, i.e. actual mapping of traffic onto schedule; Multiplexing of flows into one or several streams; Mapping aspects; Scheduled allocation}
72/005	. {Resource management for broadcast services}	72/1268	. . . {of uplink data flows}
72/02	. Selection of wireless resources by user or terminal	72/1273	. . . {of downlink data flows}
72/04	. Wireless resource allocation	72/1278	. . {Transmission of control information for scheduling}
72/0406	. . {involving control information exchange between nodes}	72/1284	. . . {in the uplink, i.e. from terminal to network}
72/0413	. . . {in uplink direction of a wireless link, i.e. towards network}	72/1289	. . . {in the downlink, i.e. towards the terminal}
72/042	. . . {in downlink direction of a wireless link, i.e. towards terminal}	72/1294	. . . . {using a grant or specific channel (H04W 72/14 takes precedence)}
72/0426	. . . {between access points}	72/14	. . using a grant {or specific} channel
72/0433	. . . {between access point and access point controlling device}	74/00	Wireless channel access, e.g. scheduled or random access
72/044	. . {where an allocation plan is defined based on the type of the allocated resource}	74/002	. {Transmission of channel access control information}
72/0446	. . . {the resource being a slot, sub-slot or frame}	74/004	. . {in the uplink, i.e. towards network}
72/0453	. . . {the resource being a frequency, carrier or frequency band}	74/006	. . {in the downlink, i.e. towards the terminal}
72/046	. . . {the resource being in the space domain, e.g. beams}	74/008	. . {with additional processing of random access related information at receiving side}
		74/02	. Hybrid access techniques
		74/04	. Scheduled {or contention-free} access (H04W 74/02 takes precedence)
		74/06	. . using polling
		74/08	. Non-scheduled {or contention based} access, e.g. random access, ALOHA, CSMA [Carrier Sense Multiple Access] (H04W 74/02 takes precedence)

- 74/0808 . . {using carrier sensing, e.g. as in CSMA}
 - 74/0816 . . . {carrier sensing with collision avoidance}
 - 74/0825 . . . {carrier sensing with collision detection}
 - 74/0833 . . {using a random access procedure}
 - 74/0841 . . . {with collision treatment}
 - 74/085 {collision avoidance}
 - 74/0858 {collision detection}
 - 74/0866 . . {using a dedicated channel for access}
 - 74/0875 . . . {with assigned priorities based access}
 - 74/0883 . . . {for un-synchronized access}
 - 74/0891 . . . {for synchronized access}
- 76/00 Connection management**
- NOTE**
- In this main group, the first place priority rule is not applied, i.e. the common rule is applied.
- 76/10 . . Connection setup
 - 76/11 . . Allocation or use of connection identifiers
 - 76/12 . . Setup of transport tunnels
 - 76/14 . . Direct-mode setup
 - 76/15 . . Setup of multiple wireless link connections
 - 76/16 . . . Involving different core network technologies, e.g. a packet-switched [PS] bearer in combination with a circuit-switched [CS] bearer
 - 76/18 . . Management of setup rejection or failure
 - 76/19 . . Connection re-establishment
 - 76/20 . . Manipulation of established connections
 - 76/22 . . Manipulation of transport tunnels
 - 76/23 . . Manipulation of direct-mode connections
 - 76/25 . . Maintenance of established connections
 - 76/27 . . Transitions between radio resource control [RRC] states
 - 76/28 . . Discontinuous transmission [DTX]; Discontinuous reception [DRX]
 - 76/30 . . Connection release
 - 76/32 . . Release of transport tunnels
 - 76/34 . . Selective release of ongoing connections
 - 76/36 . . . for reassigning the resources associated with the released connections
 - 76/38 . . triggered by timers
 - 76/40 . . for selective distribution or broadcast
 - 76/45 . . for Push-to-Talk [PTT] or Push-to-Talk over cellular [PoC] services
 - 76/50 . . for emergency connections
- 80/00 Wireless network protocols or protocol adaptations to wireless operation**
- 80/02 . . Data link layer protocols
 - 80/04 . . Network layer protocols, e.g. mobile IP [Internet Protocol]
 - 80/045 . . {involving different protocol versions, e.g. MIPv4 and MIPv6}
 - 80/06 . . Transport layer protocols, e.g. TCP [Transport Control Protocol] over wireless {(transmission control protocol/Internet protocol [TCP/IP] or user datagram protocol [UDP] [H04L 69/16](#))}
 - 80/08 . . Upper layer protocols {(network arrangements or communication protocols for networked applications [H04L 67/00](#))}
 - 80/085 . . {involving different upper layer protocol versions, e.g. LCS - SUPL or WSN-SOA-WSDP}
- 80/10 . . adapted for {application} session management, e.g. SIP [Session Initiation Protocol] {(connection management [H04W 76/00](#); arrangements for session management [H04L 67/14](#))}
 - 80/12 . . Application layer protocols, e.g. WAP [Wireless Application Protocol]
- 84/00 Network topologies**
- NOTE**
- In this group, local priority rules supersede the first-place priority rule (FPPR) applying throughout [H04W](#)
- 84/005 . . {Moving wireless networks}
 - 84/02 . . Hierarchically pre-organised networks, e.g. paging networks, cellular networks, WLAN [Wireless Local Area Network] or WLL [Wireless Local Loop]
 - 84/022 . . . {One-way selective calling networks, e.g. wide area paging}
 - 84/025 . . . {with acknowledge back capability}
 - 84/027 . . . {providing paging services}
 - 84/04 . . Large scale networks; Deep hierarchical networks
 - 84/042 . . . {Public Land Mobile systems, e.g. cellular systems}
 - 84/045 {using private Base Stations, e.g. femto Base Stations, home Node B}
 - 84/047 {using dedicated repeater stations}
 - 84/06 . . . Airborne or Satellite Networks ([space-based or airborne stations \[H04B 7/185\]\(#\)](#))
 - 84/08 . . . Trunked mobile radio systems
 - 84/10 . . Small scale networks; Flat hierarchical networks
 - 84/105 . . . {PBS [Private Base Station] network ([H04W 84/12](#) - [H04W 84/16](#) take precedence)}
 - 84/12 . . . WLAN [Wireless Local Area Networks]
 - 84/14 . . . WLL [Wireless Local Loop]; RLL [Radio Local Loop]
 - 84/16 . . . WPBX [Wireless Private Branch Exchange]
 - 84/18 . . Self-organising networks, e.g. ad-hoc networks or sensor networks
 - 84/20 . . Master-slave {selection or change} arrangements
 - 84/22 . . with access to wired networks
- 88/00 Devices specially adapted for wireless communication networks, e.g. terminals, base stations or access point devices**
- 88/005 . . {Data network PoA devices}
 - 88/02 . . Terminal devices
 - 88/021 . . . {adapted for Wireless Local Loop operation}
 - 88/022 . . . {Selective call receivers}
 - 88/023 . . . {with message or information receiving capability}
 - 88/025 {Selective call decoders}
 - 88/026 {using digital address codes}
 - 88/027 {using frequency address codes}
 - 88/028 {using pulse address codes}
 - 88/04 . . adapted for relaying to or from another terminal or user
 - 88/06 . . adapted for operation in multiple networks {or having at least two operational modes}, e.g. multi-mode terminals
 - 88/08 . . Access point devices
 - 88/085 . . {Access point devices with remote components}

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- 88/10 . . adapted for operation in multiple networks, e.g. multi-mode access points
- 88/12 . Access point controller devices
- 88/14 . Backbone network devices
- 88/16 . Gateway arrangements
- 88/18 . Service support devices; Network management devices
- 88/181 . . {Transcoding devices; Rate adaptation devices}
- 88/182 . . {Network node acting on behalf of an other network entity, e.g. proxy}
- 88/184 . . {Messaging devices, e.g. message centre}
- 88/185 . . {Selective call encoders for paging networks, e.g. paging centre devices}
- 88/187 . . . {using digital or pulse address codes}
- 88/188 . . . {using frequency address codes}

92/00 Interfaces specially adapted for wireless communication networks

- 92/02 . Inter-networking arrangements
- 92/04 . Interfaces between hierarchically different network devices
- 92/045 . . {between access point and backbone network device}
- 92/06 . . between gateways and public network devices
- 92/08 . . between user and terminal device
- 92/10 . . between terminal device and access point, i.e. wireless air interface
- 92/12 . . between access points and access point controllers
- 92/14 . . between access point controllers and backbone network device
- 92/16 . Interfaces between hierarchically similar devices
- 92/18 . . between terminal devices
- 92/20 . . between access points
- 92/22 . . between access point controllers
- 92/24 . . between backbone network devices

99/00 Subject matter not provided for in other groups of this subclass