

CLAIMS

1. A mobile station that is configured to facilitate coordination of supplementary services in a centralized fashion, comprising:
 - circuit-switched (CS) domain components that are configured to place voice telephone calls in a CS domain; and
 - IP multimedia subsystem (IMS) components that are configured to place voice telephone calls in an IMS domain, the IMS components comprising:
 - a transport component for facilitating communication with an IMS core network; and
 - a signaling component that is configured to exchange information with a centralized server on the IMS core network via the transport component, wherein at least some of the information that is exchanged with the centralized server is related to supplementary services for the voice telephone calls in the CS domain as well as the voice telephone calls in the IMS domain.
2. The mobile station of claim 1, wherein the mobile station is configured to:
 - place a voice telephone call in the CS domain;
 - invoke a supplementary service via the centralized server on the IMS core network; and
 - communicate with the centralized server to access and/or update the supplementary service while the voice telephone call is in the CS domain.
3. The mobile station of claim 2, wherein the mobile station is further configured to select a transport protocol and a signaling protocol that may be used to communicate with the centralized server, and wherein the selected transport protocol and the selected signaling protocol are used to invoke the supplementary service and to access and/or update the supplementary service.

4. The mobile station of claim 2, wherein the mobile station is further configured to:
transfer the voice telephone call from the CS domain to the IMS domain; and
after the voice telephone call has been transferred to the IMS domain, continue to communicate with the centralized server on the IMS core network to access and/or update the supplementary service.
5. The mobile station of claim 1, wherein the mobile station is configured to:
place a voice telephone call in the IMS domain;
invoke a supplementary service via the centralized server on the IMS core network;
transfer the voice telephone call from the IMS domain to the CS domain; and
after the voice telephone call has been transferred to the CS domain, continue to communicate with the centralized server on the IMS core network to access and/or update the supplementary service.
6. The mobile station of claim 1, wherein the transport component implements a packet switched transport protocol, and wherein communication with the centralized server occurs via the packet switched transport protocol.
7. The mobile station of claim 1, wherein the transport component implements a data burst message protocol, and wherein communication with the centralized server occurs via the data burst message protocol.
8. The mobile station of claim 1, wherein the transport component implements a short message service protocol, and wherein communication with the centralized server occurs via the short message service protocol.
9. The mobile station of claim 1, wherein the transport component implements a dual tone multi frequency protocol, and wherein communication with the centralized server occurs via the dual tone multi frequency protocol.

10. The mobile station of claim 1, wherein the transport component implements a dialed digits suffix protocol, and wherein communication with the centralized server occurs via the dialed digits suffix protocol.

11. The mobile station of claim 1, wherein the transport component implements an unstructured supplementary services data protocol, and wherein communication with the centralized server occurs via the unstructured supplementary services data protocol.

12. The mobile station of claim 1, wherein the signaling component is configured to send a signaling message to the centralized server, and wherein the signaling message comprises:

- a service identifier field that identifies a supplementary service to be invoked;
- data that is specific to the invoked supplementary service; and
- a field that indicates continuation of dialogue to exchange further data that is specific to the invoked supplementary service.

13. The mobile station of claim 1, further comprising an encoding/decoding component that is configured to:

- encode information that is sent from the mobile station to the centralized server;
- and
- decode information that is sent from the centralized server to the mobile station.

14. A centralized server that is part of an IP multimedia subsystem (IMS) core network and that is configured to coordinate supplementary services for voice telephone calls, comprising:

- a transport component for facilitating communication with a mobile station when the mobile station is attached to an IMS domain or to a circuit-switched (CS) domain; and
- a signaling component that is configured to exchange information with the mobile station via the transport component, wherein the information that is exchanged with the mobile station is related to supplementary services for voice telephone calls involving the mobile station when the mobile station is attached to the IMS domain or to the CS domain.

15. The centralized server of claim 14, wherein the centralized server is further configured to store information about the supplementary services, the information comprising:

IMS domain-related information which corresponds to the voice telephone calls in the IMS domain; and

CS domain-related information which corresponds to the voice telephone calls in the CS domain.

16. A mobile station that is configured to facilitate coordination of supplementary services in a centralized fashion, comprising:

means for placing voice telephone calls in a CS domain;

means for placing voice telephone calls in an IMS domain; and

means for exchanging information with a centralized server on an IMS core network, wherein at least some of the information that is exchanged with the centralized server is related to supplementary services for the voice telephone calls in the CS domain as well as the voice telephone calls in the IMS domain.

17. The mobile station of claim 16, further comprising:

means for invoking a supplementary service via the centralized server on the IMS core network, the supplementary service corresponding to a voice telephone call in the CS domain; and

means for communicating with the centralized server to access and/or update the supplementary service while the voice telephone call is in the CS domain.

18. The mobile station of claim 17, further comprising means for selecting a transport protocol and a signaling protocol that may be used to communicate with the centralized server, and wherein the selected transport protocol and the selected signaling protocol are used to invoke the supplementary service and to access and/or update the supplementary service.

19. The mobile station of claim 17, further comprising:
means for transferring the voice telephone call from the CS domain to the IMS domain; and
means for continuing to communicate with the centralized server on the IMS core network to access and/or update the supplementary service after the voice telephone call has been transferred to the IMS domain.
20. The mobile station of claim 16, further comprising:
means for placing a voice telephone call in the IMS domain;
means for invoking a supplementary service via the centralized server on the IMS core network;
means for transferring the voice telephone call from the IMS domain to the CS domain; and
means for continuing to communicate with the centralized server on the IMS core network to access and/or update the supplementary service after the voice telephone call has been transferred to the CS domain.
21. A computer program product, comprising:
a computer-readable medium, comprising:
code for causing a mobile station to place voice telephone calls in a CS domain;
code for causing the mobile station to place voice telephone calls in an IMS domain; and
code for causing the mobile station to exchange information with a centralized server on an IMS core network, wherein at least some of the information that is exchanged with the centralized server is related to supplementary services for the voice telephone calls in the CS domain as well as the voice telephone calls in the IMS domain.

22. The computer program product of claim 21, further comprising:
code for causing the mobile station to invoke a supplementary service via the centralized server on the IMS core network, the supplementary service corresponding to a voice telephone call in the CS domain; and
code for causing the mobile station to communicate with the centralized server to access and/or update the supplementary service while the voice telephone call is in the CS domain.
23. The computer program product of claim 22, further comprising code for causing the mobile station to select a transport protocol and a signaling protocol that may be used to communicate with the centralized server, wherein the selected transport protocol and the selected signaling protocol are used to invoke the supplementary service and to access and/or update the supplementary service.
24. The computer program product of claim 22, further comprising:
code for causing the mobile station to transfer the voice telephone call from the CS domain to the IMS domain; and
code for causing the mobile station to continue to communicate with the centralized server on the IMS core network to access and/or update the supplementary service after the voice telephone call has been transferred to the IMS domain.

25. The computer program product of claim 21, further comprising:
code for causing the mobile station to place a voice telephone call in the IMS domain;
code for causing the mobile station to invoke a supplementary service via the centralized server on the IMS core network;
code for causing the mobile station to transfer the voice telephone call from the IMS domain to the CS domain; and
code for causing the mobile station to continue to communicate with the centralized server on the IMS core network to access and/or update the supplementary service after the voice telephone call has been transferred to the CS domain.
26. A computer program product, comprising:
a computer-readable medium, comprising:
code for causing a centralized server in an IP multimedia system (IMS) core network to facilitate communication with a mobile station when the mobile station is attached to an IMS domain or to a circuit-switched (CS) domain; and
code for causing the centralized server to exchange information with the mobile station, the information being related to supplementary services for voice telephone calls involving the mobile station when the mobile station is attached to the IMS domain or to the CS domain.

CLAIMS

1. A mobile station that is configured to facilitate coordination of supplementary services in a centralized fashion, comprising:

- circuit-switched domain components that are configured to place voice telephone calls in a circuit-switched domain; and

- Internet Protocol (IP) multimedia subsystem components that are configured to place voice telephone calls in an IP multimedia subsystem domain, the IP multimedia subsystem components comprising:

- a transport component for facilitating communication with an IP multimedia subsystem core network; and
- a signaling component that is configured to exchange information with a centralized server on the IP multimedia subsystem core network via the transport component;

wherein:

- at least some of the information that is exchanged with the centralized server is related to supplementary services for the voice telephone calls in the circuit-switched domain as well as the voice telephone calls in the IP multimedia subsystem domain;

- the information is exchanged with the centralized server via at least one of a packet switched transport protocol, a data burst message protocol, a short message service protocol, a dual tone multi frequency protocol, and a dialed digits suffix protocol;

exchanging information with the centralized server comprises sending a signaling message to the centralized server; and

the signaling message comprises a service identifier field that identifies a supplementary service to be invoked, data that is specific to the invoked supplementary service, and a field that indicates continuation of dialogue to exchange further data that is specific to the invoked supplementary service,

wherein:

the transport component implements the dialed digits suffix protocol;

communication with the centralized server occurs via the dialed digits suffix protocol; and

communication with the centralized server via the dialed digits suffix protocol comprises appending encoded signaling as a suffix to dialed digits during call origination to the centralized server.

2. The mobile station of claim 1, wherein the mobile station is configured to:

place a voice telephone call in the circuit-switched domain; invoke a supplementary service via the centralized server on the IP multimedia subsystem core network; and

communicate with the centralized server to access and/or update the supplementary service while the voice telephone call is in the circuit-switched domain.

3. The mobile station of claim 2, wherein the mobile station is further configured to select a transport protocol and a signaling protocol that may be used to communicate with the centralized server, and wherein the selected transport protocol and the selected signaling protocol are used to invoke the supplementary service and to access and/or update the supplementary service.

4. The mobile station of claim 2, wherein the mobile station is further configured to:

- transfer the voice telephone call from the circuit-switched domain to the IP multimedia subsystem domain; and
- after the voice telephone call has been transferred to the IP multimedia subsystem domain, continue to communicate with the centralized server on the IP multimedia subsystem core network to access and/or update the supplementary service.

5. The mobile station of claim 1, wherein the mobile station is configured to:

- place a voice telephone call in the IP multimedia subsystem domain;
- invoke a supplementary service via the centralized server on the IP multimedia subsystem core network;
- transfer the voice telephone call from the IP multimedia subsystem domain to the circuit-switched domain; and
- after the voice telephone call has been transferred to the circuit-switched domain, continue to communicate with the centralized server on the IP multimedia subsystem core network to access and/or update the supplementary service.

6. The mobile station of claim 1, wherein the transport component implements the packet switched transport protocol, and wherein communication with the centralized server occurs via the packet switched transport protocol.

7. The mobile station of claim 1, wherein:
the transport component implements the data burst message protocol;
communication with the centralized server occurs via the data burst message protocol;
communication with the centralized server via the data burst message protocol comprises transmitting a data burst message to the centralized server;
the data burst message embeds an IP datagram;
a source address of the IP datagram corresponds to the mobile station; and
a destination address of the IP datagram corresponds to the centralized server.

8. The mobile station of claim 1, wherein:
the transport component implements the short message service protocol;
communication with the centralized server occurs via the short message service protocol;
communication with the centralized server via the short message service protocol comprises transmitting a special short message service message that receives preferential treatment while being routed in the IP multimedia subsystem core network; and
the special short message service message is not stored in the IP multimedia subsystem core network.

9. The mobile station of claim 1, wherein:
the transport component implements the dual tone multi frequency protocol;
communication with the centralized server occurs via the dual tone multi frequency protocol; and
communication with the centralized server via the dual tone multi frequency protocol comprises transmitting tones in band to a media gateway, which decodes the tones and passes them to the centralized server.
10. The mobile station of claim 1, further comprising an encoding/decoding component that is configured to:
encode information that is sent from the mobile station to the centralized server; and
decode information that is sent from the centralized server to the mobile station.
11. A centralized server that is part of an Internet Protocol (IP) multimedia subsystem core network and that is configured to coordinate supplementary services for voice telephone calls, comprising:
a transport component for facilitating communication with a mobile station when the mobile station is attached to an IP multimedia subsystem domain or to a circuit-switched domain; and
a signaling component that is configured to exchange information with the mobile station via the transport component;
wherein:
the information that is exchanged with the mobile station is related to supplementary services for voice telephone calls involving the mobile station when the mobile station is attached to the IP multimedia subsystem domain or to the circuit-switched domain;

the information is exchanged with the mobile station via at least one of a packet switched transport protocol, a data burst message protocol, a short message service protocol, a dual tone multi frequency protocol, and a dialed digits suffix protocol;

exchanging information with the mobile station comprises receiving a signaling message from the mobile station; and

the signaling message comprises a service identifier field that identifies a supplementary service to be invoked, data that is specific to the invoked supplementary service, and a field that indicates continuation of dialogue to exchange further data that is specific to the invoked supplementary service,

wherein:

the transport component implements the dialed digits suffix protocol;

communication with the centralized server occurs via the dialed digits suffix protocol; and

communication with the centralized server via the dialed digits suffix protocol comprises appending encoded signaling as a suffix to dialed digits during call origination to the centralized server.

12. The centralized server of claim 11, wherein the centralized server is further configured to store information about the supplementary services, the information comprising:

IP multimedia subsystem domain-related information which corresponds to the voice telephone calls in the IP multimedia subsystem domain; and

circuit-switched domain-related information which corresponds to the voice telephone calls in the circuit-switched domain.

13. A mobile station that is configured to facilitate coordination of supplementary services in a centralized fashion, comprising:

- means for placing voice telephone calls in a circuit-switched domain;

- means for placing voice telephone calls in an Internet Protocol (IP) multimedia subsystem domain; and

- means for exchanging information with a centralized server on an IP multimedia subsystem core network;

wherein:

- at least some of the information that is exchanged with the centralized server is related to supplementary services for the voice telephone calls in the circuit-switched domain as well as the voice telephone calls in the IP multimedia subsystem domain;

- the information is exchanged with the centralized server via at least one of a packet switched transport protocol, a data burst message protocol, a short message service protocol, a dual tone multi frequency protocol, and a dialed digits suffix protocol;

- exchanging information with the centralized server comprises sending a signaling message to the centralized server; and

- the signaling message comprises a service identifier field that identifies a supplementary service to be invoked, data that is specific to the invoked supplementary service, and a field that indicates continuation of dialogue to exchange further data that is specific to the invoked supplementary service,

wherein:

- the transport component implements the dialed digits suffix protocol;

- communication with the centralized server occurs via the dialed digits suffix protocol; and

communication with the centralized server via the dialed digits suffix protocol comprises appending encoded signaling as a suffix to dialed digits during call origination to the centralized server.

14. The mobile station of claim **13**, further comprising:
means for invoking a supplementary service via the centralized server on the IP multimedia subsystem core network, the supplementary service corresponding to a voice telephone call in the circuit-switched domain; and
means for communicating with the centralized server to access and/or update the supplementary service while the voice telephone call is in the circuit-switched domain.

15. The mobile station of claim **14**, further comprising
means for selecting a transport protocol and a signaling protocol that may be used to communicate with the centralized server, and wherein the selected transport protocol and the selected signaling protocol are used to invoke the supplementary service and to access and/or update the supplementary service.

16. The mobile station of claim **14**, further comprising:
means for transferring the voice telephone call from the circuit-switched domain to the IP multimedia subsystem domain; and
means for continuing to communicate with the centralized server on the IP multimedia subsystem core network to access and/or update the supplementary service after the voice telephone call has been transferred to the IP multimedia subsystem domain.

17. The mobile station of claim **13**, further comprising:
means for placing a voice telephone call in the IP multimedia subsystem domain;

means for invoking a supplementary service via the centralized server on the IP multimedia subsystem core network;

means for transferring the voice telephone call from the IP multimedia subsystem domain to the circuit-switched domain; and

means for continuing to communicate with the centralized server on the IP multimedia subsystem core network to access and/or update the supplementary service after the voice telephone call has been transferred to the circuit-switched domain.

18. A computer program product, comprising:

a non-transitory computer-readable medium, comprising:

code for causing a mobile station to place voice telephone calls in a circuit-switched domain;

code for causing the mobile station to place voice telephone calls in an Internet Protocol (IP) multimedia subsystem domain; and

code for causing the mobile station to exchange information with a centralized server on an IP multimedia subsystem core network;

wherein:

at least some of the information that is exchanged with the centralized server is related to supplementary services for the voice telephone calls in the circuit-switched domain as well as the voice telephone calls in the IP multimedia subsystem domain;

the information is exchanged with the centralized server via at least one of a packet switched transport protocol, a data burst message protocol, a short message service protocol, a dual tone multi frequency protocol, and a dialed digits suffix protocol;

exchanging information with the centralized server comprises sending a signaling message to the centralized server; and

the signaling message comprises a service identifier field that identifies a supplementary service to be invoked, data that is specific to the invoked supplementary service, and a field that indicates continuation of dialogue to exchange further data that is specific to the invoked supplementary service,

wherein:

the transport component implements the dialed digits suffix protocol;

communication with the centralized server occurs via the dialed digits suffix protocol; and

communication with the centralized server via the dialed digits suffix protocol comprises appending encoded signaling as a suffix to dialed digits during call origination to the centralized server.

19. The computer program product of claim 18, further comprising:

code for causing the mobile station to invoke a supplementary service via the centralized server on the IP multimedia subsystem core network, the supplementary service corresponding to a voice telephone call in the circuit-switched domain; and

code for causing the mobile station to communicate with the centralized server to access and/or update the supplementary service while the voice telephone call is in the circuit-switched domain.

20. The computer program product of claim 19, further comprising code for causing the mobile station to select a transport protocol and a signaling protocol that may be used to communicate with the centralized server, wherein the selected transport protocol and the selected signaling protocol are used to invoke the supplementary service and to access and/or update the supplementary service.

21. The computer program product of claim **19**, further comprising:

- code for causing the mobile station to transfer the voice telephone call from the circuit-switched domain to the IP multimedia subsystem domain; and

- code for causing the mobile station to continue to communicate with the centralized server on the IP multimedia subsystem core network to access and/or update the supplementary service after the voice telephone call has been transferred to the IP multimedia subsystem domain.

22. The computer program product of claim **18**, further comprising:

- code for causing the mobile station to place a voice telephone call in the IP multimedia subsystem domain;

- code for causing the mobile station to invoke a supplementary service via the centralized server on the IP multimedia subsystem core network;

- code for causing the mobile station to transfer the voice telephone call from the

- IP multimedia subsystem domain to the circuit-switched domain; and

- code for causing the mobile station to continue to communicate with the centralized server on the IP multimedia subsystem core network to access and/or update the supplementary service after the voice telephone call has been transferred to the circuit-switched domain.

23. A computer program product, comprising:

- a non-transitory computer-readable medium, comprising:

- code for causing a centralized server in an Internet Protocol (IP) multimedia system core network to facilitate communication with a mobile station when the mobile station is attached to an IP multimedia subsystem domain or to a circuit-switched domain; and

code for causing the centralized server to exchange information with the mobile station, the information being related to supplementary services for voice telephone calls involving the mobile station when the mobile station is attached to the IP multimedia subsystem domain or to the circuit-switched domain;

wherein:

the information is exchanged with the mobile station via at least one of a packet switched transport protocol, a data burst message protocol, a short message service protocol, a dual tone multi frequency protocol, and a dialed digits suffix protocol;

exchanging information with the mobile station comprises receiving a signaling message from the mobile station; and

the signaling message comprises a service identifier field that identifies a supplementary service to be invoked, data that is specific to the invoked supplementary service, and a field that indicates continuation of dialogue to exchange further data that is specific to the invoked supplementary service,

wherein:

the transport component implements the dialed digits suffix protocol;

communication with the centralized server occurs via the dialed digits suffix protocol; and

communication with the centralized server via the dialed digits suffix protocol comprises appending encoded signaling as a suffix to dialed digits during call origination to the centralized server.

24. A method for facilitating coordination of supplementary services in a centralized fashion, comprising:

- placing voice telephone calls in a circuit-switched domain;
- placing voice telephone calls in an Internet Protocol (IP) multimedia subsystem domain; and
- exchanging information with a centralized server on an IP multimedia subsystem core network,

wherein:

- at least some of the information that is exchanged with the centralized server is related to supplementary services for the voice telephone calls in the circuit-switched domain as well as the voice telephone calls in the IP multimedia subsystem domain;

- the information is exchanged with the centralized server via at least one of a packet switched transport protocol, a data burst message protocol, a short message service protocol, a dual tone multi frequency protocol, and a dialed digits suffix protocol;

- exchanging information with the centralized server comprises sending a signaling message to the centralized server; and

- the signaling message comprises a service identifier field that identifies a supplementary service to be invoked, data that is specific to the invoked supplementary service, and a field that indicates continuation of dialogue to exchange further data that is specific to the invoked supplementary service,

wherein:

- the transport component implements the dialed digits suffix protocol;

- communication with the centralized server occurs via the dialed digits suffix protocol; and

communication with the centralized server via the dialed digits suffix protocol comprises appending encoded signaling as a suffix to dialed digits during call origination to the centralized server.

25. The method of claim **24**, further comprising:
invoking a supplementary service via the centralized server on the IP multimedia subsystem core network, the supplementary service corresponding to a voice telephone call in the circuit-switched domain; and
communicating with the centralized server to access or update the supplementary service while the voice telephone call is in the circuit-switched domain.

26. The method of claim **25**, further comprising:
transferring the voice telephone call from the circuit-switched domain to the IP multimedia subsystem domain; and
continuing to communicate with the centralized server on the IP multimedia subsystem core network to access or update the supplementary service after the voice telephone call has been transferred to the IP multimedia subsystem domain.

27. The method of claim **24**, further comprising:
placing a voice telephone call in the IP multimedia subsystem domain;
invoking a supplementary service via the centralized server on the IP multimedia subsystem core network;
transferring the voice telephone call from the IP multimedia subsystem domain to the circuit-switched domain;
and
continuing to communicate with the centralized server on the IP multimedia subsystem core network to access or update the supplementary service after the voice telephone call has been transferred to the circuit-switched domain.