METHOD AND SYSTEM FOR AN ADAPTIVE UNIVERSAL NETWORK ENGINE FOR MOBILE AD-HOC NETWORK NODES

Field of the Invention

This invention relates to Mobile Ad-hoc NETwork (MANET) devices. More particularly, this invention relates to methods and systems for adapting a mobile device to support one or more network functionalities to meet expectations of a user for communications over a network, to adapt to a changing operating environment, meet changing resource requirements in the device, and demands of upstream devices. Still more particularly, this invention relates to method and system for receiving inputs of expectation parameters by a user, determining network transmission parameters needed to meet the user expectation parameters and adapting the network functionality of the device based upon the network transmission parameters, parameters relating to the operating environment, device resource requirements, and upstream device requirements to meet the user expectation parameters.

Prior Art

In today's society, it is common to use mobile devices to communicate. For example, mobile devices may be used for person to person communication or to transmit information from sensors to a monitoring system. One method of communication between mobile devices is a Mobile Ad-hoc NETwork (MANET). In a MANET, devices establish wireless communications with one another to communicate information to other devices in the network. MANET devices operate both as end systems and routers, and are free to move randomly and organize themselves arbitrarily. MANETs are dynamic meaning that the topology of the network changes as devices move into and out of the range of one another.

MANETs are used in many different types of situations. Thus, it is difficult for designers of devices that connect to MANETs to deploy the devices to function optimally in all situations. Thus, those skilled in the art are constantly striving to provide methods and systems that allow a device in a MANET to perform optimally to transmit data over the MANET to meet the requirements of applications being provided and expectations of a user in a variety of scenarios.

Summary of the Invention

The above and other problems are solved and an advance in the art is made by methods and systems for providing a universal network engine for a MANET node in accordance with this invention. A first advantage of methods and systems in accordance with this invention is that the engine will work independently from the physical layers and wireless technologies in the node to provide requirements to meet user's expectations, varying operating environments, changing requirements of device resources, demands of upstream devices. A second advantage of methods and systems in accordance with this invention is that the engine expands and allows co-existence of multiple networking functions within a node. A third advantage of methods and systems in accordance with this invention is that networking functions may be activated on the fly to adapt to changing environments. A fourth advantage of methods and systems in accordance with this invention is that networking functions may be activated and/or deactivated on the fly to meet the changing requirements of device resources. A fifth advantage of methods and systems in accordance with this invention is that networking functions may be activated and/or deactivated on the fly to meet dynamic demands upstream devices. A sixth advantage of methods and systems in accordance with this invention is that the engine allows users without any technical expertise to deploy a MANET with improved technical performance. A seventh advantage of methods and systems in accordance with this invention is that the engine allows users to define the network functionalities of a MANET device.

In accordance with embodiments of this invention, an adaptive universal engine is provided by software executed on the node. The software operates in the following process. The process begins by receiving an input of a user scenario. The user scenario includes a user expectation parameter. The process then reads the user expectation parameter from the user scenario and assigns a parametric template for the scenario based upon the user expectation parameter. The parametric template includes network transmission parameters that meet the user expectation parameters. The process then reads the network transmission parameters from the parametric template and modifies a network resource composition by activating and/or deactivating network functionalities of the node based upon the network transmission parameters read from the parametric template. In accordance with some embodiments, the receiving of the user scenario and assigning of the parametric template are performed by a Smart Parametric

Translator/Mapper (SPTM) module and the activation and/or deactivation of network functionalities of node to change the network resource composition of the node based upon the parametric template is performed by an Adaptive Actuator (AA) module.

In accordance with some embodiments of this invention, the user scenario includes a ranking associated with the user expectation parameter. In accordance with some of these embodiments, the parametric template is assigned based upon the user expectation parameter and the ranking associated with the user expectation parameter.

In accordance with some embodiments, the user scenario includes many user expectation parameters. In accordance with some of these embodiments, a ranking is associated with each of the user expectation parameters. In accordance with further of these embodiments, the parametric template is assigned based upon the user expectation parameters in the user scenario and the rankings associated with each of the user expectation parameters.

In accordance with some embodiments of this invention, the process of assigning a parametric template for a user scenario includes the process of generating a parametric template for the scenario. In accordance with some of these embodiments, the parametric template is generated in the following manner. The process begins by reading one of the user expectation parameters from the user scenario. Network transmission parameters that support the user expectation parameter are then selected. The process then determines whether the selected network transmission parameters conflict with existing network transmission parameters in a parametric template. If the selected network transmission parameters do not conflict with existing network transmission parameters, the selected network transmission parameters are added to the parametric template. These steps are then repeated for each user expectation parameter in the user scenario. In accordance with some of these embodiments, any conflicts are resolved and the parametric template is updated accordingly.

In accordance with some embodiments of this invention, node resource information is received from a network and is used to modify the network resource composition. The node resource information may include resource demands received from upstream devices and/or operating parameters of the node. In accordance with some of these embodiments, the process of modifying the network resource composition is performed in the following manner. The network resources needed to provide said

network transmission parameters in the parametric template are determined. The process then determines whether the network resources needed conflict with network resources currently in use. If there is no conflict, a new network resource composition including the network resources needed to support the network transmission parameters in the parametric template is provided.

In accordance with some embodiments of this invention, the parametric template is assigned to a user scenario in the manner. The user expectation parameter is read from the user scenario and one of a group of parametric templates stored in a memory that best fits the user expectation parameter is selected and assigned to the user scenario.

In accordance with some embodiments of this invention, the user scenario is stored in a memory. In accordance with some of these embodiments, the assigning of a parametric template to the user scenario is completed by generating a new parametric template from the user scenarios including the user scenario stored in the memory and assigning the new generated parametric template for each of the user scenarios. In accordance with some of these embodiments, the parametric template is generated in the following manner. The process begins by reading each user expectation parameter from each user scenarios stored in the memory. A weighted value is then determined for each user expectation parameter from each of the user scenarios stored in the memory. The weighted values of each user expectation are then summed from all of the user scenarios stored in the memory. Network transmission parameters supported each of the user expectation parameters are added to the new parametric template based upon the sums of weighted values of each the user expectation parameters. Any conflicts between network transmission parameters added to the parametric template are then resolved.

Brief Description of the Drawings

The above and other features and advantages of methods and systems in accordance with this invention are described in the following detailed description and are shown in the following drawings:

Figure 1 illustrating mobile devices deployed in a MANET in accordance with an embodiment of this invention;

Figure 2 illustrating a block diagram of components of a processing device providing a system and performing methods in accordance with an embodiment of this invention;

Figure 3 illustrating a block diagram of software modules and data used to provide system and methods in accordance with an embodiment of this invention;

Figure 4 illustrating a flow diagram of a process for receiving a user scenario in accordance with an embodiment of this invention;

Figure 5 illustrating a flow diagram of a process for assigning a parametric template to a user scenario in accordance with an embodiment of this invention;

Figure 6 illustrating a flow diagram of a process for assigning a parametric template to a user scenario in accordance with another embodiment of this invention; and

Figure 7 illustrating a flow diagram of a process for adaptively activate, deactivate or configure network resource composition based on a parametric template for a user scenario in accordance with an embodiment of this invention.

Detailed Description of the Invention

This invention relates to Mobile Ad-hoc NETwork (MANET) devices. More particularly, this invention relates to methods and systems for adapting a mobile device to support one or more network functionalities to meet expectations of a user for communications over a network, to adapt to a changing operating environment, meet changing resource requirements in the device, and demands of upstream devices. Still more particularly, this invention relates to methods and systems for receiving inputs of expectation parameters by a user, determining network transmission parameters needed to meet the user expectation parameters and adapting the network functionality of the device based upon the network transmission parameters , parameters relating to the operating environment, device resource requirements, and upstream device requirements to meet the user expectation parameters.

Figure 1 illustrates MANET 100 including mobile devices 110-117. Mobile devices 110-117 may be sensors, handheld telephones, smartphones, laptop computers,

Personal Digital Assistances (PDAs), or any other devices that communicates using wireless connections and performing the processes to participate in MANET 100. Mobile devices 110-117 communicate wirelessly via wireless signals 120-127. Wireless signals 120-127 may be Radio Frequency (RF), Infrared (IF), or any other type of signal used to transmit communications between devices.

For purposes of this invention, each mobile device using the methods and systems in accordance with this invention must include circuitry for performing the invention. The methods and systems may be embodied in hardware, software, or firmware. In the described embodiment, the system and methods are embodied in software and each mobile device 110-117 includes a processing system. Figure 2 illustrates an exemplary processing system 200 representing the processing system in each of mobile devices 110-117. One skilled in the art will recognize that the exact configuration of each processing system will vary and processing system 200 is given by way of example only.

Processing system 200 includes Central Processing Unit (CPU) 205. CPU 205 is a processor, microprocessor, or any combination of processors and microprocessors that execute instructions to perform the processes in accordance with the present invention. CPU 205 connects to memory bus 210 and Input/Output (I/O) bus 215. Memory bus 210 connects CPU 205 to memories 220 and 225 to transmit data and instructions between the memories and CPU 205. I/O bus 215 connects CPU 205 to peripheral devices to transmit data between CPU 205 and the peripheral devices. One skilled in the art will recognize that I/O bus 215 and memory bus 210 may be combined into one bus or subdivided into many other busses and the exact configuration is left to those skilled in the art.

A non-volatile memory 220, such as a Read Only Memory (ROM), is connected to memory bus 210. Non-volatile memory 220 stores instructions and data needed to operate various sub-systems of processing system 200 and to boot the system at start-up. One skilled in the art will recognize that any number of types of memory may be used to perform this function.

A volatile memory 225, such as Random Access Memory (RAM), is also connected to memory bus 210. Volatile memory 225 stores the instructions and data needed by CPU 205 to perform software instructions for processes such as the

processes for providing a system in accordance with this invention. One skilled in the art will recognize that any number of types of memory may be used to provide volatile memory and the exact type used is left as a design choice to those skilled in the art.

I/O device 230, keyboard 235, display 240, memory 245, network interface 250 and any number of other peripheral devices connect to I/O bus 215 to exchange data with CPU 205 for use in applications being executed by CPU 205. I/O device 230 is any device that transmits and/or receives data from CPU 205. Keyboard 235 is a specific type of I/O device that receives user input and transmits the input to CPU 205. Display 240 receives display data from CPU 205 and display images on a screen for a user to see. Memory 245 is a device that transmits and receives data to and from CPU 205 for storing data to a media. Network interface 250 connects CPU 205 to a network for transmission of data to and from other processing systems.

Figure 3 illustrates data and software modules in system 300 for providing an adaptive universal engine in accordance with the described embodiment of this invention. Smart Parametric Translator/Mapper (SPTM) 315 receives user input scenarios 305-307 and outputs parametric templates for each user input scenario. Each user input scenario includes one or more user expectation parameters. User expectation parameters are a desired service or degree of service a user desires for a specific use of the device. For example, user expectation parameters may include, but are not limited to, speed of transmission, reliability of communicating with all nodes in the network, security of the transmission between nodes, and network availability. In the described embodiment, each user expectation also includes a ranking or quality expectation, input by the user, indicating the importance of the user expectation parameter to the user. The following table shows examples of user input scenarios 305-307:

User Input Scenario 305	Communicate with all node	10
	Fastest	9
User Input Scenario 306	Secured	10
	Network availability	9
User Input Scenario 307	Communicate with all nodes	10
	Network availability	10

SPTM 315 then assigns a parametric template of network transmission parameters to the user input scenario. Each template includes pre-defined network

resource parameters for providing the desired user expectation parameters. The following is a table showing parametric templates 316-318 that are assigned to user input scenarios 305-307 respectively:

User Input Scenario	Parametric template Assigned	Network Transmission Parameter in Template
User Input Scenario 305	Parametric template 316	Communicate to all nodes within 100m
		End-to-End delay less than 1 msec
User Input Scenario 306	Parametric template 317	Authenticated nodes
		Network lifetime more than 1 minute
User Input Scenario 307	Parametric template 318	Communicate to all nodes within 100m
		Network lifetime more than 1 minute

The parametric templates may be assigned by determining one of a number of pre-defined parametric templates stored in a memory that best fits the user expectation parameters and/or rankings in the user input scenario or may be generated in the manner described below with respect to Figures 5 and 6.

Network and System Monitoring Agent (NSMA) module 310 is a software module that monitors the network activity in a mobile device and provides operating parameters 311 and node resource information 312 to Adaptive Actuator (AA) 320. Operating parameters 311 include noise, propagation model, etc. Node resource information 312 includes power, buffer size, etc. Node resource information may also includes demands for network resources from upstream devices. NSMA module 310 is a conventional control module and exact details of the module are omitted for brevity.

AA 320 receives the parametric templates 316-318, operating parameters 311, and node resource information 312. AA 320 uses one or more items from the received data to modify node resource configuration 312 of the device. Specifically, AA 320 makes determinations of the network resources activated for the node and the parameters of each resource to support the parametric templates received. Network resources may include, but are not limited to, routing protocols, switching methods, bridging methods, broadcasting types, and others. Routing protocols may include OLSR,

FSR, LANMAR, user-defined protocols, and any other routing protocol that may be supported by the devices. The switching types may include circuit switching and packet switching, and other switching processes. The system may be modified to support one or more parametric templates at any given time or may designed to switch between parametric templates based upon operating parameters or the node resource information received.

Figure 4 illustrates process 400 which a process performed by SPTM 315 to receive a user input scenario and assign a template in accordance with this invention. Process 400 begins in step 405 by receiving an input of user expectation parameters for a user scenario. As described above, a ranking or quality expectation may be input for each user expectation parameter in the user scenario. The user scenario is then stored in memory in step 410. In step 415, each of the user expectation parameters are read from the user scenario. The associated rankings may also be read with the user expectation parameter in step 415 without departing from this invention. The user expectation parameters and possibly the associated rankings are used to assign a parametric template to the user scenario in step 420 and process 400 ends.

Figure 5 illustrates process 500 which is one embodiment of a process for generating a parametric template to assign to user input user scenario in accordance with one embodiment of this invention. Process 500 begins in step 505 by reading each user expectation parameter from a user scenario stored in the memory and determining a weighted value for each of the user expectation parameters in step 510. One method of assigning a weighted value is to maintain a counter of the number of times user expectation parameter has appeared in a scenario and multiply the number of appearances by the ranking of the user expectation parameter in the user scenario. However, other methods of determining a weighted value for the user expectation parameter may be used without departing from this invention. In step 515, process 500 determines if there are other user scenarios remaining in the memory. If so, steps 505-510 are repeated for each user scenario stored in the memory.

After each of the user expectation parameters is given a weighted value. The sum of the weighted values for each of the user expectation parameters is determined in step 520. The sums of the weighted values are then used to add network transmission parameters to a parametric template for use with each of the stored user input scenarios. For example, X number of user expectation parameters with the greatest weighted sums

may be used to determine the network transmission parameters added to the parametric template, where X is a predetermined number of user expectation parameters. In step 530, any conflicts that arise from the network transmission parameters chosen based on the weighted sums are resolved and process 500 ends.

Figure 6 illustrates a flow diagram for process 600 which is another embodiment of a process for generating a parametric template to assign to user input scenario in accordance with this invention. Process 600 begins in step 605 by reading a user expectation parameter from a user input scenario. In step 610, a network transmission parameter that supports the user expectation parameter is determined. The determination can be made by searching a library or other data structure that stored associated user expectation parameters and network transmission parameters for a network transmission parameter that matches the read user expectation parameter. In step 615, the selected network transmission parameters is compared to networks transmission parameters already in the parametric template to determine if there is a conflict of parameters. If there is no conflict, the selected network transmission parameter is added to the parametric template in step 630. If there is a conflict, the conflict is resolved in step 620. One way to resolve the conflict is to simply select the network transmission parameter that corresponds to the user expectation parameter with the highest ranking. However, other methods may be used and the exact resolution process is left to those skilled in the art. After the conflict is resolved, the parametric template is updated in step 625. In step 635, process 600 is repeated until all of the user expectation parameters are handled. Process 600 then ends and the generated parametric template is assigned to the user input scenario.

Figure 7 illustrates a flow diagram of an embodiment of process 700 that is performed by AA 320 to modify the composition of the network resources of the mobile device in accordance with a received parametric template. For purposes of this discussion, a network resource composition of a device includes network resources of the device that are activated. The network resource composition may further include network functionalities active within the device. Process 700 begins in step 705 by reading the network transmission parameters from the parametric template. In step 710, node resource information 312 is received from NSMA module 310. Updated operating parameter information 311 is then received in step 715. In step 720, the read network transmission parameters from the parametric template, node resource information 312, and the updated operating parameter information 311 are used to determine the network

resources needed to operate with the network transmission parameters. In step 725, the system is checked to determine if the needed resources are available. If not, an error message is generated in step 730 and the input user scenario remains unsupported. If the resource is available, process 700 determines if the needed resources conflict with the existing network resources currently in use. If there is a conflict, the conflict is resolved in step 737. Otherwise, the network resource composition is modified to include the needed resources in step 740 and process 700 ends.

One skilled in the art will recognize that the above is a description of embodiments for providing an adaptive universal network engine for MANET node. It is envisioned that those skilled in the art will design alternatives to these embodiments that infringe on the invention as set forth in the following claims.

What is claimed is:

1. A system for adaptively activate and deactivate network functionalities of a node in a mobile ad-hoc network comprising:

instructions for directing a processing unit to:

receive an input of a user scenario wherein said user scenario includes a user expectation parameter,

read said user expectation parameter from said user scenario,

assign a parametric template for said user scenario based upon said user expectation parameter wherein said parametric template includes network transmission parameters,

read said network transmission parameters from said parametric template, and

modify a network resource composition of said node based upon said network transmission parameters read from said parametric template wherein said network resource composition includes each network resource activated in said node; and

a media readable by said processing unit for storing said instructions.

2. The system of claim 1 wherein said user scenario further comprises a ranking associated with said user expectation parameter.

3. The system of claim 2 wherein said parametric template is assigned based upon said user expectation parameter and said ranking associated with said user expectation parameter.

4. The system of claim 1 wherein said user scenario comprises a plurality of said user expectation parameters.

5. The system of claim 4 wherein said user scenario further comprises a plurality of rankings wherein each of said plurality of rankings is associated with one of said plurality of user expectation parameters.

6. The system of claim 5 wherein said parametric template is assigned based upon said plurality of user expectation parameters and each of said plurality of rankings associated with one of said plurality of user expectation parameters.

7. The system of claim 6 wherein said instructions to assign said parametric template comprise:

instructions for directing said processing unit to:

generate said parametric template for said user scenario.

8. The system of claim 7 wherein said instructions to generate said parametric template comprise:

instructions for directing said processing unit to:

1) read one of said plurality of user expectation parameters from said user scenario,

2) select network transmission parameters that support said read user expectation parameter,

3) determine whether said selected network transmission parameters conflict with existing network transmission parameters in said parametric template,

4) add said selected network transmission parameters to said parametric template in response to a determination that no conflict exists, and

5) repeating steps 1-4 for each of said plurality of user expectation parameters in said user scenario.

9. The system of claim 8 wherein said instructions to generate said parametric template further comprise:

instructions for directing said processing unit to:

resolve any conflict between said selected network transmission parameters and said existing network transmission parameters in said parametric template, and

update said parametric template based upon said resolved conflict.

10. The system of claim 1 wherein said instructions further comprise:

instructions for directing said processing unit to:

receive node resource information wherein said node resource information is used to modify said network resource composition.

11. The system of claim 1 wherein said instructions to modify said network resource composition comprise:

instructions for directing said processing unit to:

determine network resources needed to provide said network transmission parameters in said parametric template,

determine whether said network resources needed conflict with network resources currently in use, and

provide a new network resource composition including said network resources needed in response to a determination that there is no conflict.

12. The system of claim 1 wherein said instructions to assign said parametric template comprise:

instructions for directing said processing unit to:

read said user expectation parameter,

select one of a plurality of parametric templates stored in a memory wherein said selected parametric template includes network transmission parameters that support said user expectation parameter from said user scenario.

13. The system of claim 1 wherein said instructions further comprise:

instructions for directing said processing unit to:

store said user scenario in a memory.

14. The system of claim 13 wherein said instructions to assign said parametric template comprise:

instructions for directing said processing unit to:

generate a new parametric template from a plurality of user scenarios including said user scenario stored in said memory, and

assign said new parametric template for said user scenario.

15. The system of claim 14 wherein said instructions to generate said parametric template comprise:

instructions for directing said processing unit to:

read each user expectation parameter from each one of said plurality of user scenarios stored in said memory,

determine a weight for said each user expectation parameter from each one of said plurality of user scenarios stored in said memory,

sum the weights of each of said user expectation parameters in said plurality of stored user scenarios,

add network transmission parameters to said new parametric template based upon said sums of weights of each of said user expectation parameters.

16. The system of claim 15 wherein said instructions to generate said parametric template further comprise:

instructions for directing said processing unit to:

resolve conflicts between said network transmission parameters added to said parametric template.

17. A method for adaptively activate and deactivate network functionalities of a node in a mobile ad-hoc network comprising:

receiving an input of a user scenario wherein said user scenario includes a user expectation parameter;

reading said user expectation parameter from said user scenario;

assigning a parametric template for said user scenario based upon said user expectation parameter wherein said parametric template includes network transmission parameters;

reading said network transmission parameters from said parametric template; and

modifying a network resource composition of said node based upon said network transmission parameters read from said parametric template wherein said network resource composition includes each network resource activated in said node .

18. The method of claim 17 wherein said user scenario further comprises a ranking associated with said user expectation parameter.

19. The method of claim 18 wherein said parametric template is assigned based upon said user expectation parameter and said ranking associated with said user expectation parameter.

20. The method of claim 17 wherein said user scenario comprises a plurality of said user expectation parameters.

21. The method of claim 20 wherein said user scenario further comprises a plurality of rankings wherein each of said plurality of rankings is associated with one of said plurality of user expectation parameters.

22. The method of claim 21 wherein said parametric template is assigned based upon said plurality of user expectation parameters and each of said plurality of rankings associated with one of said plurality of user expectation parameters.

23. The method of claim 22 wherein said step of assigning said parametric template comprises:

generating said parametric template for said user scenario.

24. The method of claim 23 wherein said step of generating said parametric template comprises:

1) reading one of said plurality of user expectation parameters from said scenario;

2) select network transmission parameters that supports said read user expectation parameter;

3) determining whether said selected network transmission parameters conflict with existing network transmission parameters in said parametric template;

4) adding said selected network transmission parameters to said parametric template in response to a determination that no conflict exists; and

5) repeating steps 1-4 for each of said plurality of user expectation parameters in said user scenario.

25. The method of claim 24 wherein said step of generating said parametric template further comprises:

resolving any conflict between said selected network transmission parameters and said existing network transmission parameters in said parametric template; and

updating said parametric template based upon said resolved conflict.

26. The method of claim 17 further comprising:

receiving node resource information wherein said node resource information is used to modify said network resource composition.

27. The method of claim 17 wherein said step of modifying said network resource composition comprise:

determining network resources needed to provide said network transmission parameters in said parametric template;

determining whether said network resources needed conflict with network resources currently in use; and

providing a new network resource composition including said network resources needed in response to a determination that there is no conflict.

28. The method of claim 17 wherein said step of assigning said parametric template comprises:

reading said user expectation parameter; and

selecting one of a plurality of parametric templates stored in a memory wherein said selected parametric template includes network transmission parameters that support said user expectation parameter from said user scenario.

29. The method of claim 17 further comprising:

storing said user scenario in a memory.

30. The method of claim 17 wherein said step of assigning said parametric template comprises:

generating a new parametric template from a plurality of user scenarios including said user scenario stored in said memory,

assigning said new parametric template for said user scenario.

31. The method of claim 30 wherein said step of generating said parametric template comprises:

reading each user expectation parameter from each one of said plurality of user scenarios stored in said memory;

determining a weight for said each user expectation parameter from each one of said plurality of user scenarios stored in said memory;

summing the weights of each of said user expectation parameters in said plurality of stored user scenarios; and

adding network transmission parameters to said new parametric template based upon said sums of weights of each of said user expectation parameters.

32. The method of claim 31 wherein said step of generating said parametric template further comprises:

resolving conflicts between said network transmission parameters added to said parametric template.

33. A node in a mobile ad-hoc network comprising:

circuitry configured to receive an input of a user scenario wherein said user scenario includes a user expectation parameter;

circuitry configured to read said user expectation parameter from said user scenario;

circuitry configured to assign a parametric template for said user scenario based upon said user expectation parameter wherein said parametric template includes network transmission parameters,

circuitry configured to read said network transmission parameters from said parametric template; and

circuitry configured to modify a network resource composition of said node based upon said network transmission parameters read from said parametric template wherein said network resource composition includes each network resource activated in said node.

34. The node of claim 33 wherein said user scenario further comprises a ranking associated with said user expectation parameter.

35. The node of claim 34 wherein said parametric template is assigned based upon said user expectation parameter and said ranking associated with said user expectation parameter.

36. The node of claim 33 wherein said user scenario comprises a plurality of said user expectation parameters.

37. The node of claim 36 wherein said user scenario further comprises a plurality of rankings wherein each of said plurality of rankings is associated with one of said plurality of user expectation parameters.

38. The node of claim 37 wherein said parametric template is assigned based upon said plurality of user expectation parameters and each of said plurality of rankings associated with one of said plurality of user expectation parameters.

39. The node of claim 38 wherein said circuitry configured to assign said parametric template comprises:

circuitry configured to generate said parametric template for said user scenario.

40. The node of claim 39 wherein said circuitry configured to generate said parametric template comprises:

circuitry configured to read each of said plurality of user expectation parameters from said scenario;

circuitry configured to select network transmission parameters that support said each of said plurality of user expectation parameters;

circuitry configured to determine whether said selected network transmission parameters conflict with existing network transmission parameters in said parametric template; and

circuitry configured to add each said selected network transmission parameters to said parametric template in response to a determination that no conflict exists.

41. The node of claim 40 wherein said circuitry configured to generate said parametric template further comprise:

circuitry configured to resolve any conflict between said selected network transmission parameters and said existing network transmission parameters in said parametric template; and

circuitry configured to update said parametric template based upon said resolved conflict.

42. The node of claim 33 further comprising:

circuitry configured to receive node resource information wherein said node resource information is used to modify said network resource composition.

43. The node of claim 33 wherein said circuitry configured to modify said network resource composition comprises:

circuitry configured to determine network resources needed to provide said network transmission parameters in said parametric template;

circuitry configured to determine whether said network resources needed conflict with network resources currently in use, and

circuitry configured to provide a new network resource composition including said network resources needed in response to a determination that there is no conflict.

44. The node of claim 33 wherein said circuitry configured to assign said parametric template comprise:

circuitry configured to read said user expectation parameter;

circuitry configured to select one of a plurality of parametric templates stored in a memory wherein said selected parametric template includes network transmission parameters that support said user expectation parameter from said user scenario.

45. The node of claim 33 further comprising:

circuitry configured to store said user scenario in a memory.

46. The node of claim 45 wherein said circuitry configured to assign said parametric template comprises:

circuitry configured to generate a parametric template from a plurality of user scenarios including said scenario stored in said memory.

47. The node of claim 46 wherein said circuitry configured to generate said parametric template comprise:

circuitry configured to read each user expectation parameter from each one of said plurality of user scenarios stored in said memory;

circuitry configured to determine a weight for said each user expectation parameter from each one of said plurality of user scenarios stored in said memory;

circuitry configured to sum the weights of each of said user expectation parameters in said plurality of stored user scenarios; and

circuitry configured to add network transmission parameters to a new parametric template based upon said sums of weights of each of said user expectation parameters.

48. The node of claim 47 wherein said circuitry configured to generate said parametric template further comprise:

circuitry configured to resolve conflicts between network transmission parameters added to said parametric template.