

(12) **United States Patent**
Jorgensen

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- (54) **APPLICATION-AWARE, QUALITY OF SERVICE (QOS) SENSITIVE, MEDIA ACCESS CONTROL (MAC) LAYER**
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- (*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

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(List continued on next page.)

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Related U.S. Application Data

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- (51) **Int. Cl.⁷** **G06F 15/173**
- (52) **U.S. Cl.** **709/226; 709/223; 709/229; 709/235; 370/328; 370/338**
- (58) **Field of Search** **709/226, 223-225, 709/229, 230, 235, 238, 249, 206, 203, 105, 245, 220; 370/459, 256, 389, 355, 392, 395.52, 401, 429, 443, 461, 468, 474, 310.2**

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(57) **ABSTRACT**

An application aware, quality of service (QoS) sensitive, media access control (MAC) layer includes an application-aware resource allocator, where the resource allocator allocates bandwidth resource to an application based on an application type. The application type can be based on input from at least one of: a packet header; and an application communication to the MAC layer. The application communication includes: a communication between the application, running on at least one of a subscriber workstation and a host workstation, and the MAC layer, running on at least one of a subscriber CPE station and a wireless base station. The bandwidth resource is wireless bandwidth. The resource allocator schedules bandwidth resource to an IP flow. The IP flow includes at least one of: a transmission control protocol/internet protocol (TCP/IP) IP flow; and a user datagram protocol/internet protocol (UDP/IP) IP flow. The resource allocator in scheduling takes into account resource requirements of at least one of a source application and a destination application of an IP flow. The resource allocator takes into account IP flow identification information extracted from at least one packet header field. The bandwidth resource is wireless bandwidth. The resource allocator allocates switching resource to an application based on an application type. The application type is based on input from at least one of: packet header; and an application communication to the MAC layer. The application communication includes a communication between an application, running on at least one of a subscriber workstation and a host workstation, and the MAC layer, running on at least one of a subscriber CPE station and a wireless base station. The application communication includes a priority class of the IP flow.

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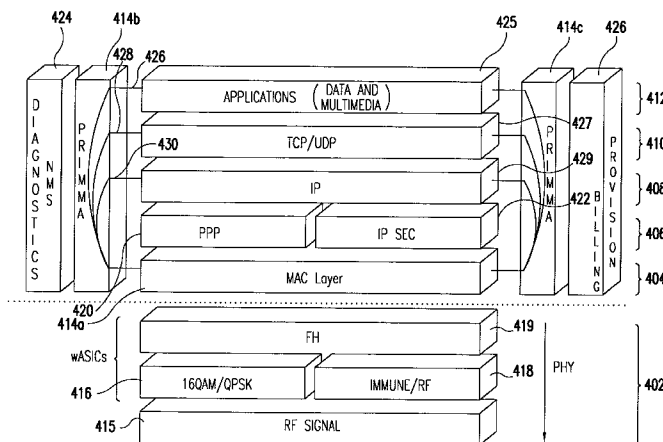
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20 Claims, 41 Drawing Sheets



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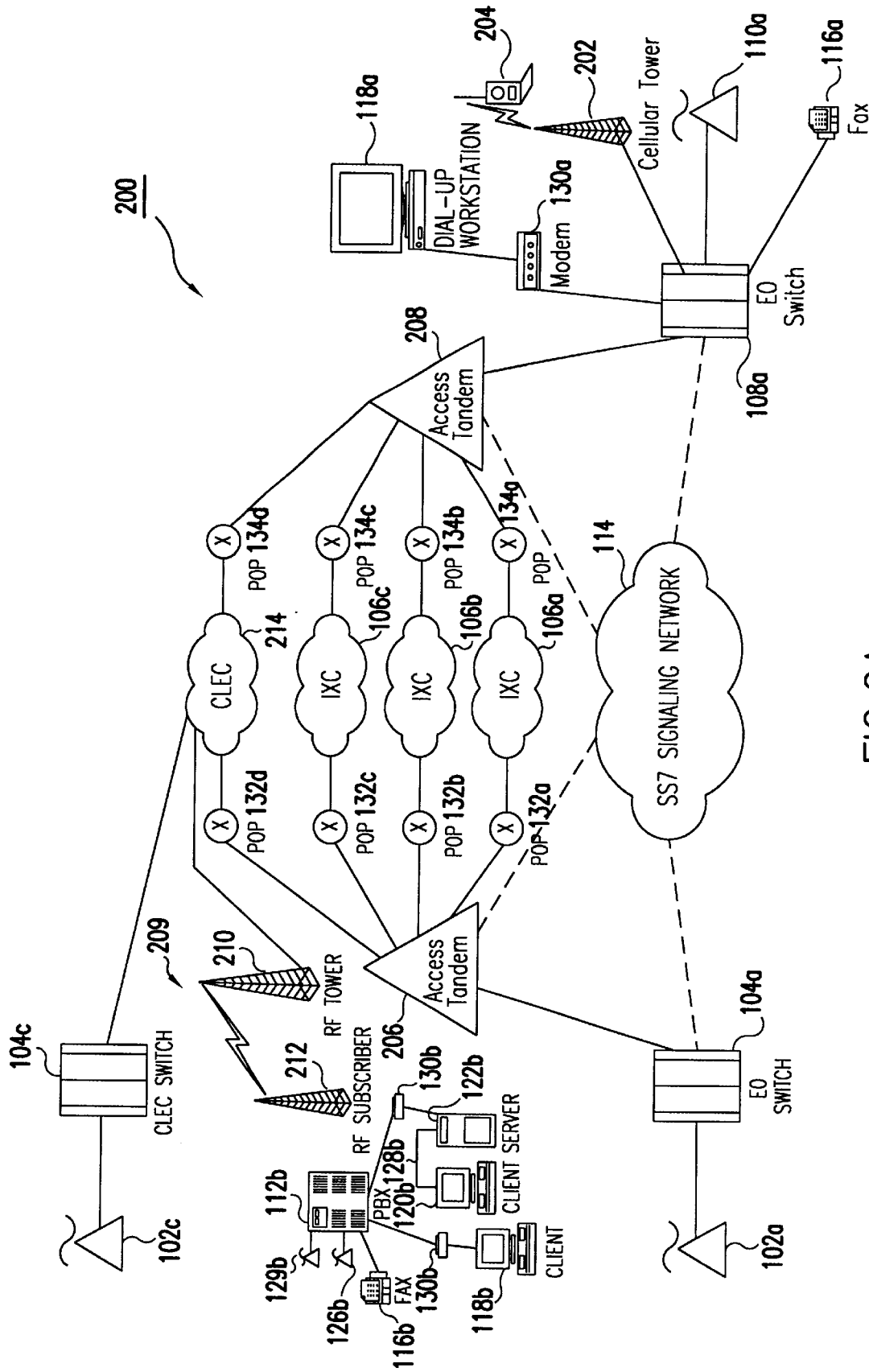


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