



US006298057B1

(12) **United States Patent**
Guy et al.

(10) **Patent No.: US 6,298,057 B1**
(45) **Date of Patent: *Oct. 2, 2001**

(54) **SYSTEM AND METHOD FOR RELIABILITY TRANSPORTING AURAL INFORMATION ACROSS A NETWORK**

(75) Inventors: **Kenneth R. Guy**, Thousand Oaks; **Jaswant R. Jain**, Chatsworth; **Ishwar V. Jasuja**, Simi Valley; **Michael W. Johnson**; **Albert Juandy**, both of Petaluma; **Simon S. Lam**, Agoura Hills; **Anthony Y. Lee**, Northridge; **David Misunas**, Thousand Oaks; **Jacques A. Roth**, San Rafael, all of CA (US)

(73) Assignee: **Nortel Networks Limited**, St. Laurent (CA)

(*) Notice: This patent issued on a continued prosecution application filed under 37 CFR 1.53(d), and is subject to the twenty year patent term provisions of 35 U.S.C. 154(a)(2).

Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: **08/634,927**

(22) Filed: **Apr. 19, 1996**

(51) **Int. Cl.**⁷ **H04L 12/28**; H04J 3/16; G06F 11/00

(52) **U.S. Cl.** **370/389**; 370/466; 370/474; 714/746

(58) **Field of Search** 370/359, 389, 370/401, 402, 403, 405, 419, 450, 466, 467, 473, 474, 477; 371/31, 30; 395/182.18; 348/466; 714/746, 747

(56) **References Cited**

U.S. PATENT DOCUMENTS

4,630,262	*	12/1986	Callens et al.	370/435
4,726,019	*	2/1988	Adelmann et al.	370/474
4,866,704	*	9/1989	Bergmann	370/452
5,187,591		2/1993	Guy et al.	
5,341,374	*	8/1994	Lewen et al.	370/450

5,359,598	*	10/1994	Steagall et al.	370/359
5,394,407		2/1995	Coddington	371/37.1
5,426,652		6/1995	Heiman	371/30
5,459,741		10/1995	Iwamura	371/37.1
5,596,604		1/1997	Cioffi et al.	345/260
5,636,231		6/1997	Huang et al.	371/37.1
5,659,541	*	8/1997	Chan	370/236
5,699,485	*	12/1997	Shoham	395/2.32

OTHER PUBLICATIONS

Request for Comments (RFC) 2205, Resource ReSerVation Protocol—Version 1 Functional Specification, dated Sep. 1997.

* cited by examiner

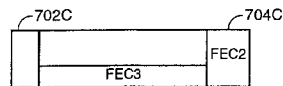
Primary Examiner—William Luther

(74) *Attorney, Agent, or Firm*—Trop, Pruner & Hu, P.C.

(57) **ABSTRACT**

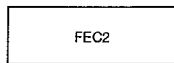
A system and method for transparently transmitting aural signals across a wide area network (WAN). The system of present invention is connected to one or more of a private branch exchange, a key telephone system, a telephone, a facsimile machine, and a modem, for example. In the case of voice transmission, a user places a telephone call using the same procedure that is used when placing a telephone call over a conventional public switched network. The aural signals are translated into a format that is compatible with the local area network (LAN) and the translated signals are transmitted to a router or a switch that connects the LAN to the WAN. The data is transmitted across the WAN to a router or switch coupled to a second LAN. The data is then sent to a destination central site unit or PC which translates the signal into a format that is compatible with the telephone system connected thereto. The present invention provides a voice quality that approaches, equals, or exceeds the voice quality of conventional telephone switched networks. This high voice quality is achieved by utilizing a high quality voice digitization algorithm, by ensuring a low maximum network delay, by dynamically compensating for variations in network delay, and by using a forward error correction technique that can recreate lost or delayed signals in a manner that recreates the signal so the lost signal is typically not detectable by a user.

36 Claims, 9 Drawing Sheets



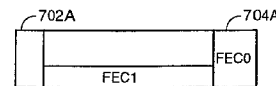
| F2C | F1C |

Packet C



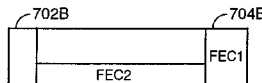
| F2B' | F1B' |

Recreated Voice Packet



| F2A | F1A |

Packet A



| F2B | F1B |

Packet B

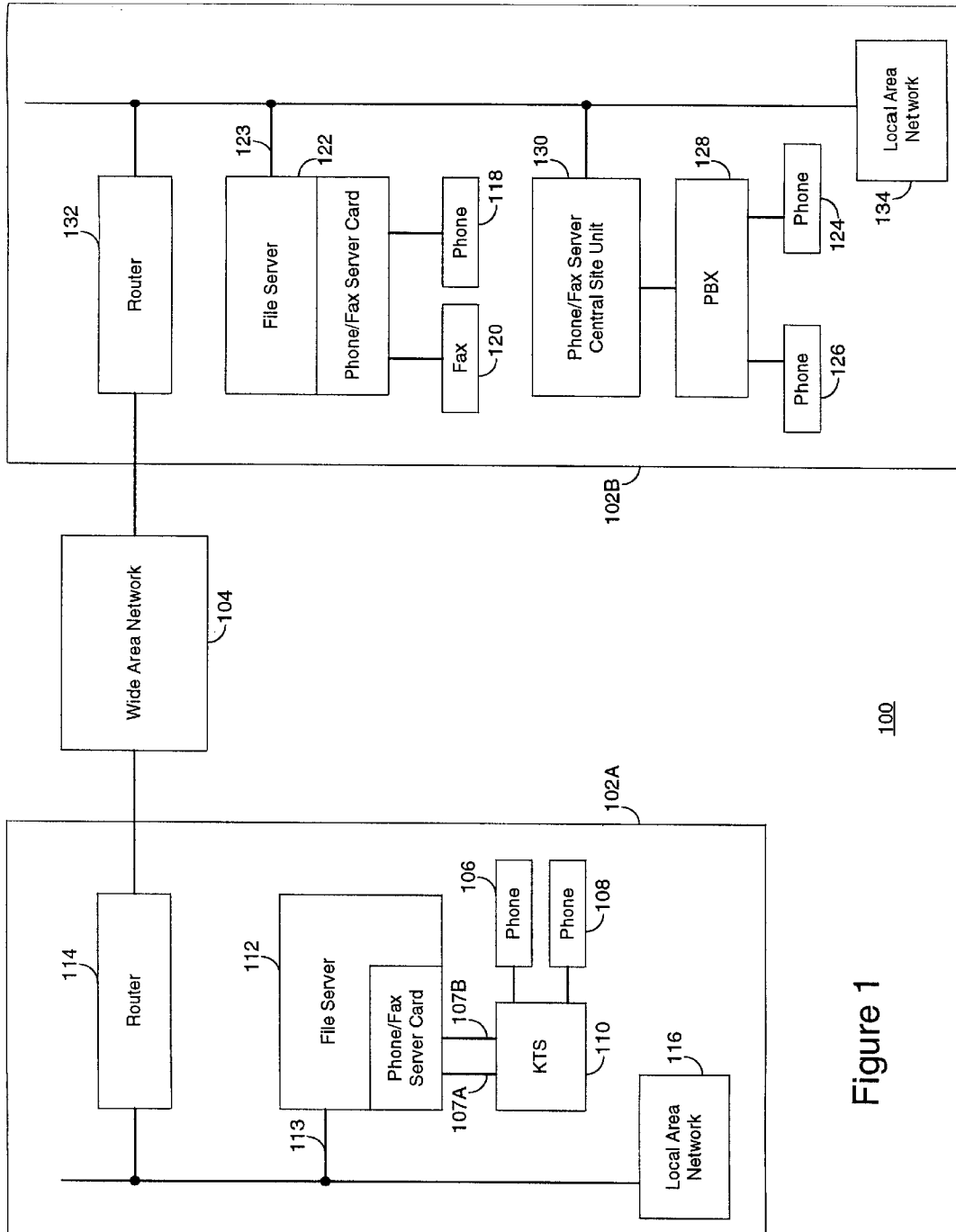


Figure 1

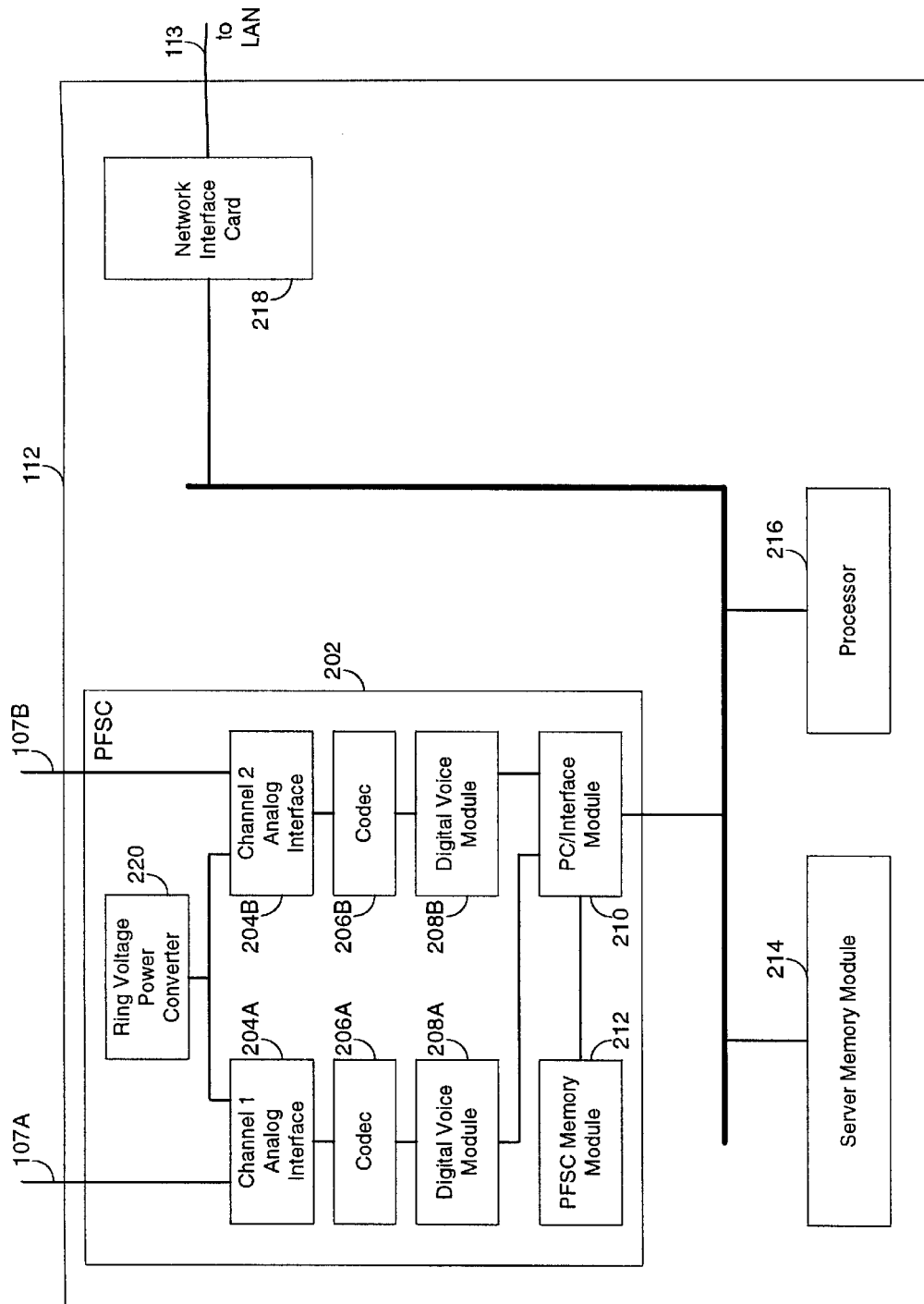


Figure 2

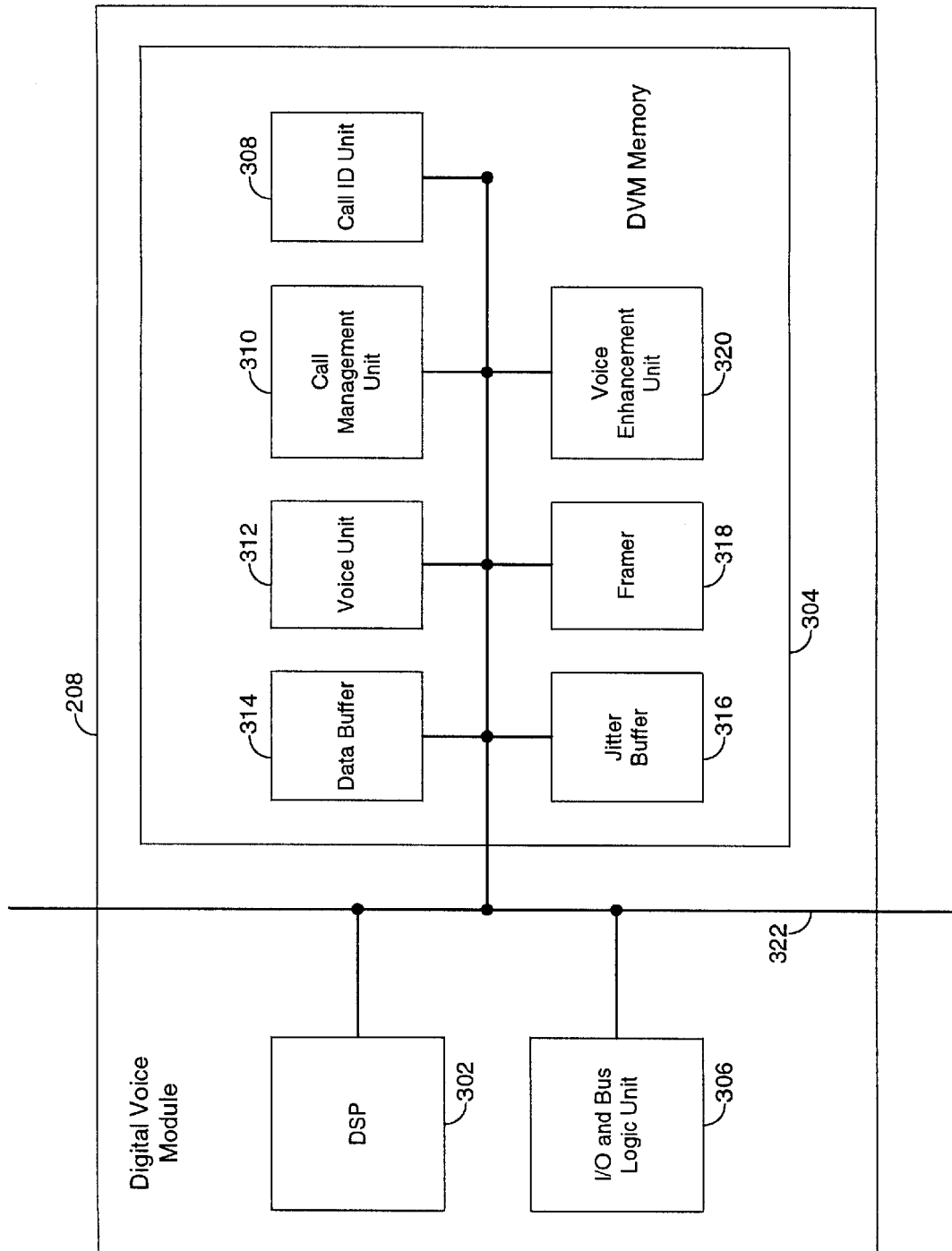


Figure 3

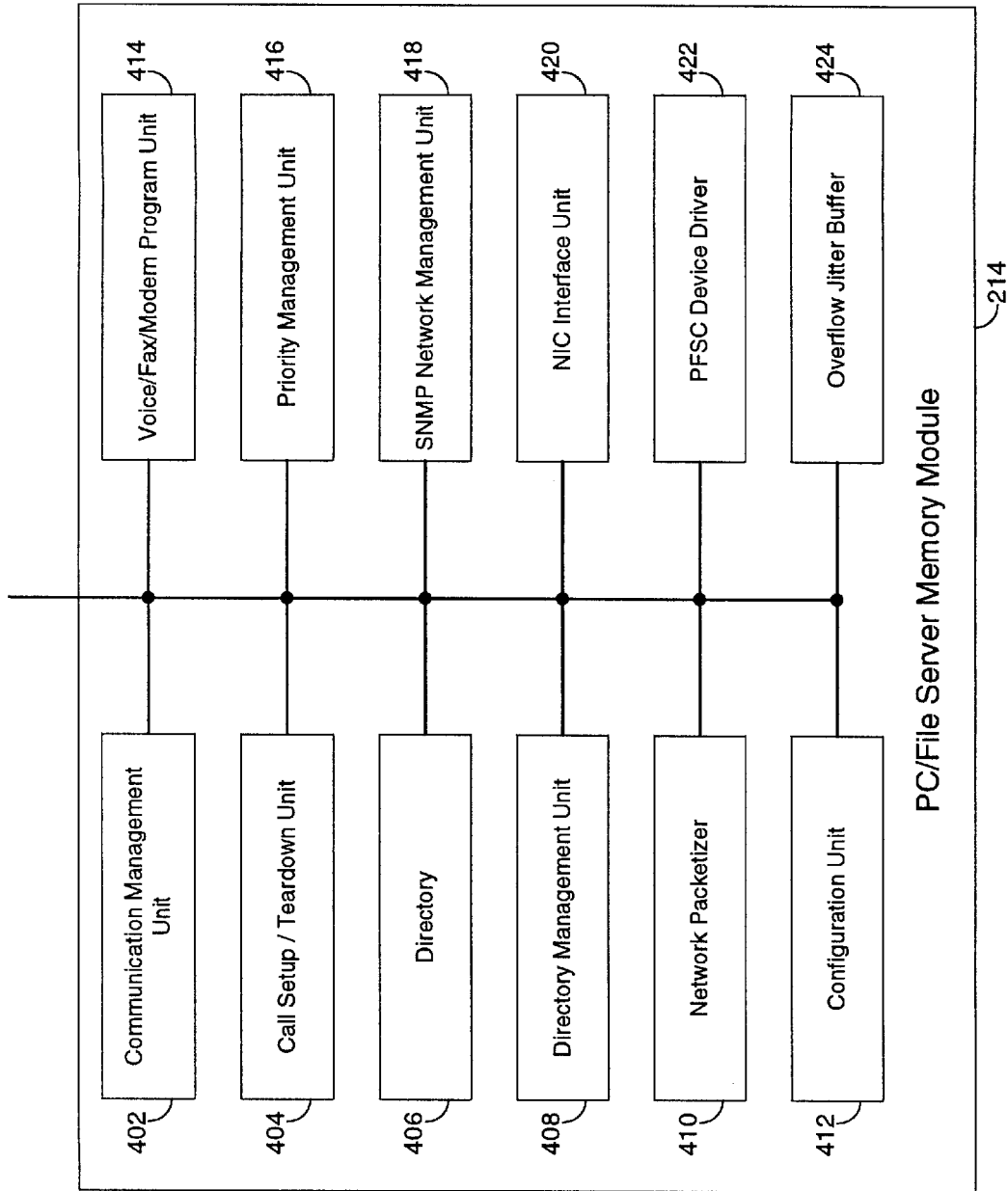


Figure 4

Explore Litigation Insights

Docket Alarm provides insights to develop a more informed litigation strategy and the peace of mind of knowing you're on top of things.

Real-Time Litigation Alerts



Keep your litigation team up-to-date with **real-time alerts** and advanced team management tools built for the enterprise, all while greatly reducing PACER spend.

Our comprehensive service means we can handle Federal, State, and Administrative courts across the country.

Advanced Docket Research



With over 230 million records, Docket Alarm's cloud-native docket research platform finds what other services can't. Coverage includes Federal, State, plus PTAB, TTAB, ITC and NLRB decisions, all in one place.

Identify arguments that have been successful in the past with full text, pinpoint searching. Link to case law cited within any court document via Fastcase.

Analytics At Your Fingertips



Learn what happened the last time a particular judge, opposing counsel or company faced cases similar to yours.

Advanced out-of-the-box PTAB and TTAB analytics are always at your fingertips.

API

Docket Alarm offers a powerful API (application programming interface) to developers that want to integrate case filings into their apps.

LAW FIRMS

Build custom dashboards for your attorneys and clients with live data direct from the court.

Automate many repetitive legal tasks like conflict checks, document management, and marketing.

FINANCIAL INSTITUTIONS

Litigation and bankruptcy checks for companies and debtors.

E-DISCOVERY AND LEGAL VENDORS

Sync your system to PACER to automate legal marketing.