US005367635A

United States Patent [19]

Bauer et al.

[11] Patent Number: 5,367,635

[45] Date of Patent: Nov. 22, 1994

[54] **NETWORK MANAGEMENT AGENT WITH USER CREATED OBJECTS PROVIDING ADDITIONAL FUNCTIONALITY**

[75] Inventors: **Neal Bauer**, Loveland; **Mark A. Kepke**, Ft. Collins, both of Colo.

[73] Assignee: **Hewlett-Packard Company**, Palo Alto, Calif.

[21] Appl. No.: **752,152**

[22] Filed: **Aug. 29, 1991**

[51] **Int. Cl.**[5] **G06F 13/00**

[52] **U.S. Cl.** **395/200**; 395/425; 395/600; 395/650; 395/700; 395/775; 364/DIG. 1; 364/221; 364/222.81; 364/222.82; 364/280; 364/280.2; 364/280.3; 364/284

[58] **Field of Search** 395/600; 364/280.9, 364/280.3, 280.2

[56] **References Cited**

PUBLICATIONS

Individuals connected with Columbia University; "Kermit"; Screen prints of computer program.

Novell, Inc.; *Net Wave Version 3.11 System Administration*, Novell, Inc., 1991.

Simrin; *The MS-DOS Bible*; Howard Sams & Co.; pp. 389–390.

IEEE Communications Magazine, vol. 29, No. 7, Jul. 1991, pp. 29–38, N. Modiri "An Implementation . . . Information Service Element Interfaces".

The Simple Book: An Introduction to Management of TCP/IP-Based Internets, 1991, pp. 69–244, Marshall T. Rose.

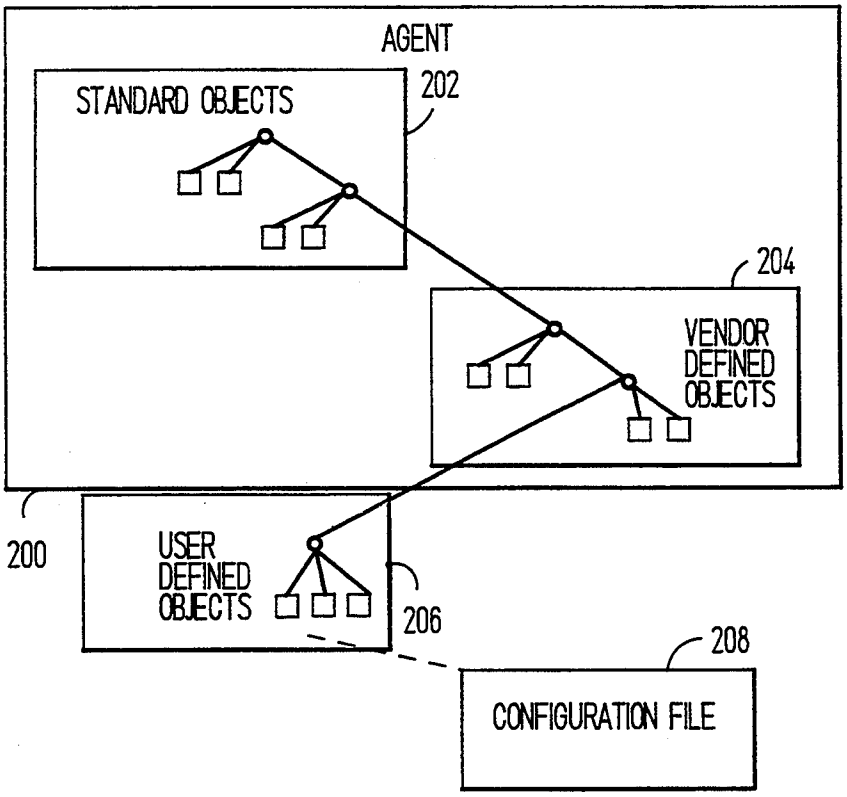
IRE WESCON Convention Record, vol. 35, Nov. 1991, pp. 190–195, S. R. Reasoner, "Management by Proxy Agent".

Primary Examiner—Thomas M. Heckler
Assistant Examiner—J. Hall Backenstose
Attorney, Agent, or Firm—Augustus W. Winfield

[57] **ABSTRACT**

A computer network management software agent which includes the ability for users to add new user defined management objects. A user editable text file defines object identifications, object types, and the path and name of associated executable software. A user can then invoke user defined executable software at a managed node by sending a network command and a user defined associated object identifier to the agent in the managed node. Data can be sent between a user and user defined executable software. A timeout feature generates an error if commands are not completed within a user defined time.

1 Claim, 6 Drawing Sheets



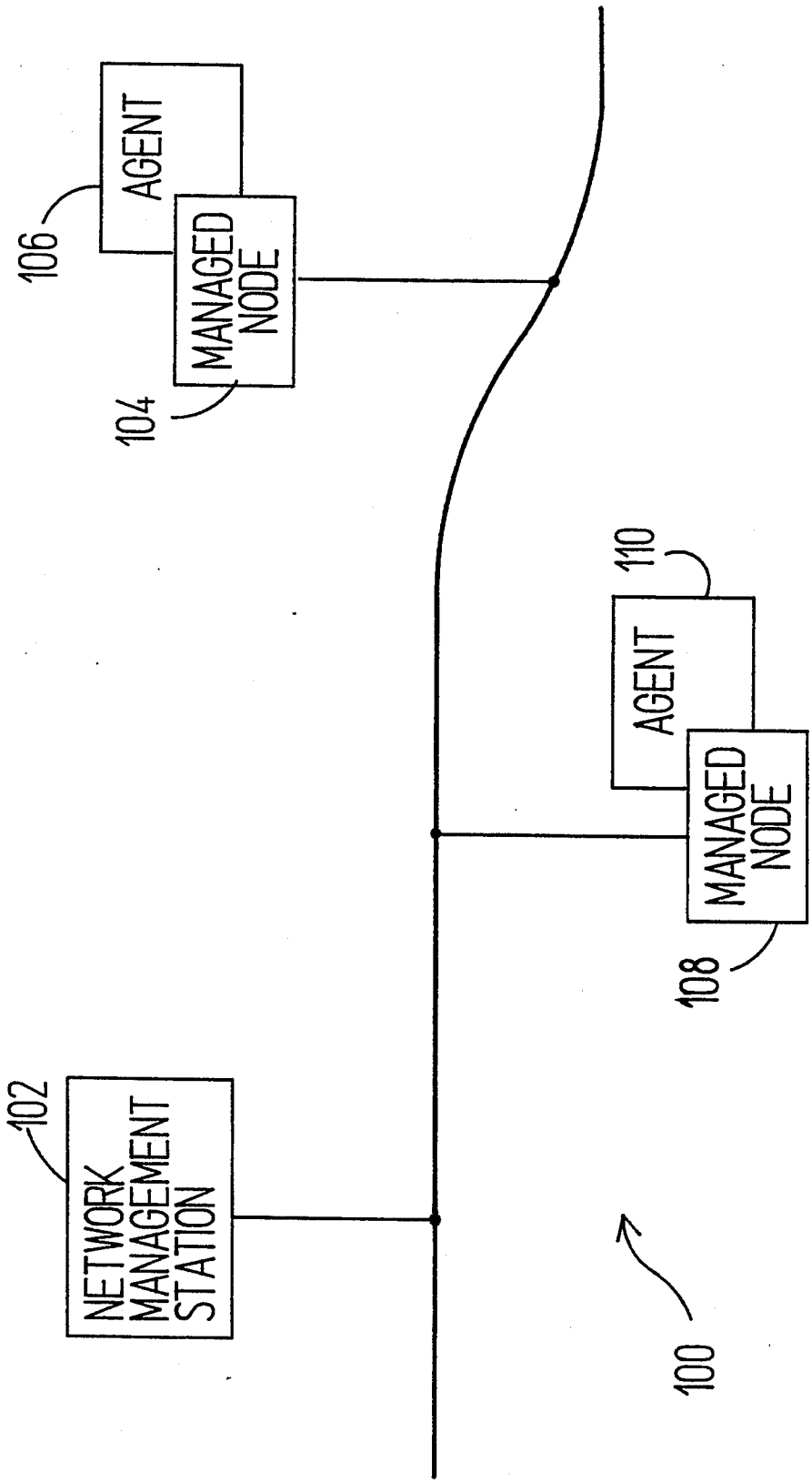


FIG 1

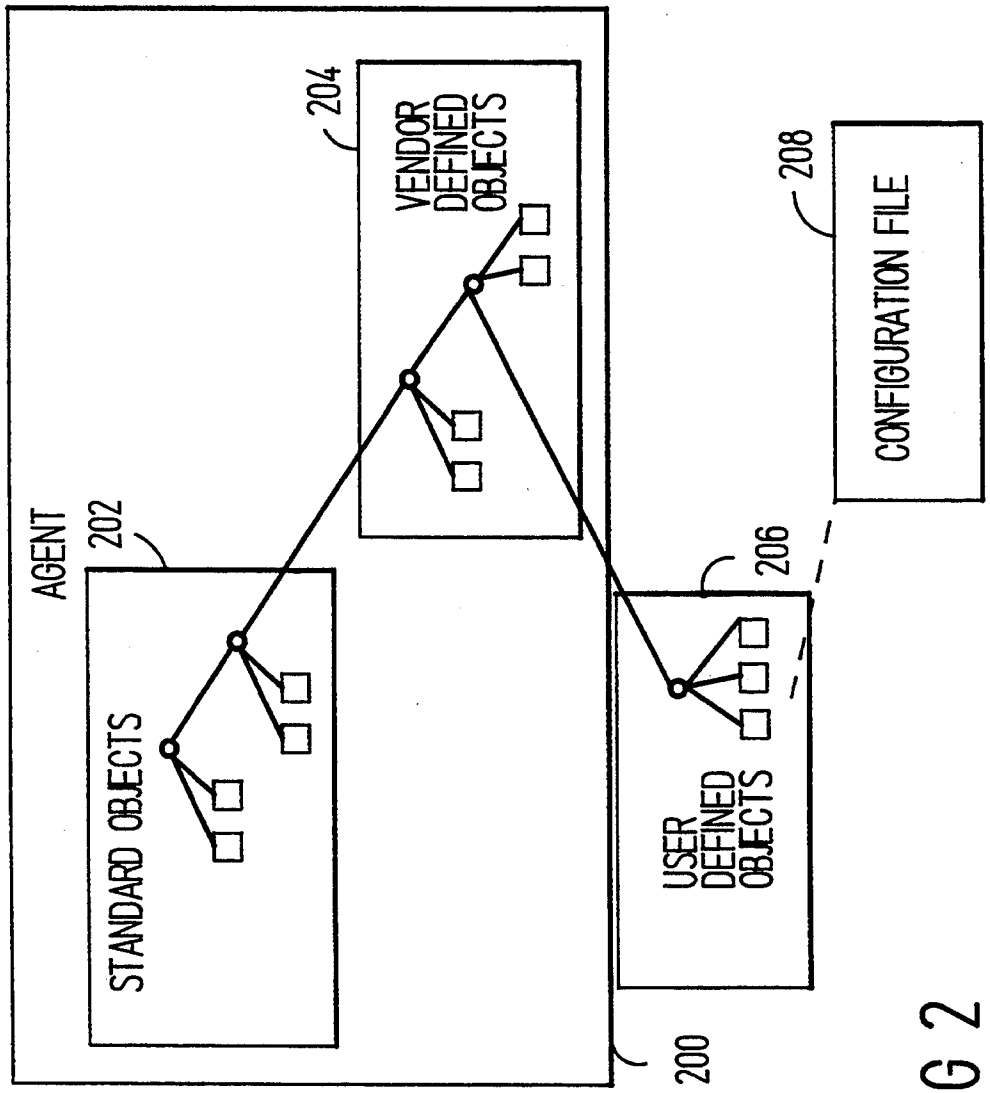


FIG 2

FIG 3A

An example agent configuration file would contain:

```
CUSTOMER-XYZ DEFINITIONS ::= BEGIN

private         OBJECT IDENTIFIER ::= { iso(1) org(3) dod(6) internet(1) 4 }
enterprises     OBJECT IDENTIFIER ::= { private 1 }

company-xyz     OBJECT IDENTIFIER ::= { enterprises 58 }
xyzprinter      OBJECT IDENTIFIER ::= { company-xyz 1 }
xyzusers        OBJECT IDENTIFIER ::= { company-xyz 2 }

printerstatus   OBJECT-TYPE
                SYNTAX  INTEGER {
                        up(1)
                        down(2)
                }
                ACCESS  read-write
                STATUS  mandatory
                DESCRIPTION
                   "status of the laser printer
                   READ-COMMAND: /usr/local/bin/printer_status
                   READ-COMMAND-TIMEOUT: 10
                   WRITE-COMMAND: /usr/local/bin/change_printer_status
                   WRITE-COMMAND-TIMEOUT: 2"
    ::= { xyzprinter 1 }
```

302 304 312 308 310 306 314

```
printertype     OBJECT-TYPE
                SYNTAX  OCTET STRING
                ACCESS  read-only
                STATUS  mandatory
                DESCRIPTION
                        "type of laser printer
                        READ-COMMAND: /usr/local/bin/printer_type
                        READ-COMMAND-TIMEOUT: 5"
    ::= { xyzprinter 2 }

user-logins     OBJECT-TYPE
                SYNTAX  OCTET STRING
                ACCESS  read-only
                STATUS  mandatory
                DESCRIPTION
                        "list of user login ids that are currently logged in
                        READ-COMMAND: /usr/bin/users
                        READ-COMMAND-TIMEOUT: 7"
    ::= { xyzusers 1 }

numusers        OBJECT-TYPE
                SYNTAX  Gauge
                ACCESS  read-only
                STATUS  mandatory
                DESCRIPTION
                        "number of users logged in
                        READ-COMMAND: /usr/bin/users | /bin/wc -w
                        READ-COMMAND-TIMEOUT: 4"
    ::= { xyzusers 2 }
END
```

316 318 320

FIG 3B

DOCKET ALARM

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.