NetFuel

high octane boost for your network!

OpenSig - 2001
9-19-2001
About NetFuel Technology

- We actively participate in formulating the following Industry Standards:
  - IEEE P1520 – Active/Adaptive Networks
  - IETF RFC 3060 – Policy based Networking
  - Network Processing Forum (NPF)
  - IETF ForCeS Working Group

- Our technology implements these industry standards and extends them to embrace applications and the operating systems in which they run – for this we are recognized as technological leaders.

- NetFuel’s technology operates in heterogeneous multi-vendor environments where nearly all other companies in our space assume “clean” or homogeneous vendor equipment experience has shown that Enterprise customers are extremely complex.

- Our software has already been recognized for it’s ground breaking innovations that are currently in the process of patent protection.

- According to people who’ve done due diligence “NetFuel’s Appliance, running NetFuel Software, represents the ‘killer app’ that Network Processor vendors have been looking for”.

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What we are building

1. Software-based infrastructure
   running on standard platforms

3. Instrumentation

2. An appliance
   that dramatically increases speed & fault tolerance thus reducing costs

Conversing over secure Message channels

Making resources smarter so Enterprises need fewer…
Hierarchy of NetFuel’s Adaptive Network Infrastructure

**CCE+ (Global Controller)** = Software running on multi-processor computers from IBM, Sun, HP, etc.

**CCE- (Regional Controller)** = Software running on enterprise computers From IBM, Sun, HP, and/or NetFuel Appliances controlling policy-based Operational domains

**ARE (Local Controller)** = Existing enterprise computers From IBM, Sun, HP, performing sensory, stabilization and remediation functions for operational domains

Services:
- Security
- Load Balancing
- Authentication
- Context-aware routing
CCE+ (Global Modeler)

Agent Store

Policy Store

Config Mgr + PKI Signer

Agent Authoring Tool

Policy Authoring Tool

Policy Tester

Network Simulator

Policy Publishing

Global Modeler, CCE- State Manager, Kohonen SOM

NetFuel Message Bus
CCE- (Regional Modeler)

Agent Store

Policy Store

Modeler/ARE State Manager

NetFuel Message Bus
ARE (Agent Runtime Environment)

Agent Runtime Environment

- Policy Store
- Agent State Modeler
- Agent Runtime Environment

NetFuel Device Adapter

- Application (BEA/IBM)
- Native OS (Sun, IBM, MS, HP)
- NPF/IEEE APIs for Multi-vendor support

NetFuel APIs

NPU or FPGA
NPU Policy

Agent Runtime Environment

Intel IXP-1200

PCI Bus Interface

SDRAM (256Meg)

SRAM Interface

FlashROM (32Meg)

IX Bus Interface

IX Bus (64-bit @ 66MHz up to 85MHz point to point)

16 port-10/100MBit Assembly with IX Bus Interface
Resource recruitment & balancing

Customer Authentication data from systems of record

Trading ($)
Trading system requests additional resources

CRM
Trading system recruits under-utilized resources from CRM

Acct info
Some CRM resources recruited to Trading until no longer needed

Web
Regional Control

Message Bus

Modeler/ARE State Manager
Policy Store
Agent Store

DataCenter

Trading system
Publishing
Modeler
Tester
Config
CCE-State Manager,
Global Modeler,
Network Simulator

Customer Authentication data
Resource recruitment &
balancing
Most security is static and hack-able

Current methods are insufficient to meet next generation demands of the Internet if a Bank or Financial Institution desires leveraging the technology of the Internet to lower operating costs.

Simple, randomized ciphers, and port hopping, are more effective than single expansive cipher keys over a single port.
Port-hopping Security

Cipher key is exchanged

Port sequence for send/receive are calculated from exchanged key

All occurring in less than 10 milliseconds under worst conditions