Highly Available Central Services
An Intelligent Router Approach

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DESY/IT

Overview

- Why
- How
- Features
- Modes
- What
- Where to
- Conclusions

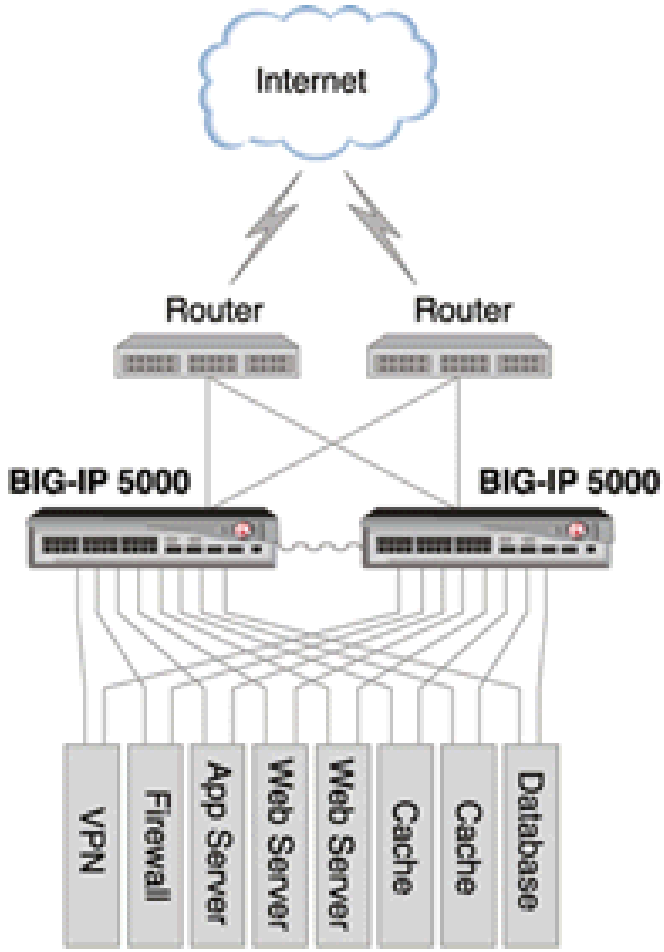
BIG-IP
Local Area
Application
Traffic
Management

Why

- **Get Rid Of Old Clusters**
  - AIX Highly Available Load Environment HALE
- **Minimize Efforts for Clustering**
  - Commercial „All-In-One“ Box
  - Possible Replacement For Traditional Clusters
- **Getting Better**
  - Customer Invisible Service Switching
  - Enhanced Load Distribution
  - Only One Virtual Hostname Per Service
  - Enhancing Fault Tolerance and Security

How

- **Using/Testing F5 Switch**
  - Common Effort of the IT Systems and Network Groups
  - Switch is BSD Unix Cluster
  - Redundant Network Connections
  - https:WEB and ssh:CLI Configuration Interface
  - Starting with Layer 2/3 Routing
    - Layer 7 Routing planned for WEB
  - Checking Implementation Aspects of Different Services



Redundant BIG-IP 5000s are positioned between the router and the server array in a meshed network.

Key Features and Benefits

- **Architecture:**
  - (24) 10/100 BASE-TX Ports
  - (4) 1000 BASE-SX Ports
  - Switch Fabric Capacity:
    - 8 Gb/s one direction
    - 16 Gb/s aggregate
  - 100 SSL TPS included at no additional charge; upgradeable to 800 TPS
  - Provides significant cost savings and flexibility for SSL acceleration and capacity
  - Flexibility and speed to directly connect servers, caches, firewalls, databases, SIP, and VPN endpoints
  - Eliminates the need to buy additional switches; supports fully meshed network deployments
  - 2 GHz of centralized processing power; provides more power to intercept, inspect, transform, and direct Layer 7 (application traffic) than web or content switches
  - 1 GB of RAM in base configuration; additional 1 GB can be added as an option - provides the greatest amount of concurrent connections for unparalleled traffic capacity

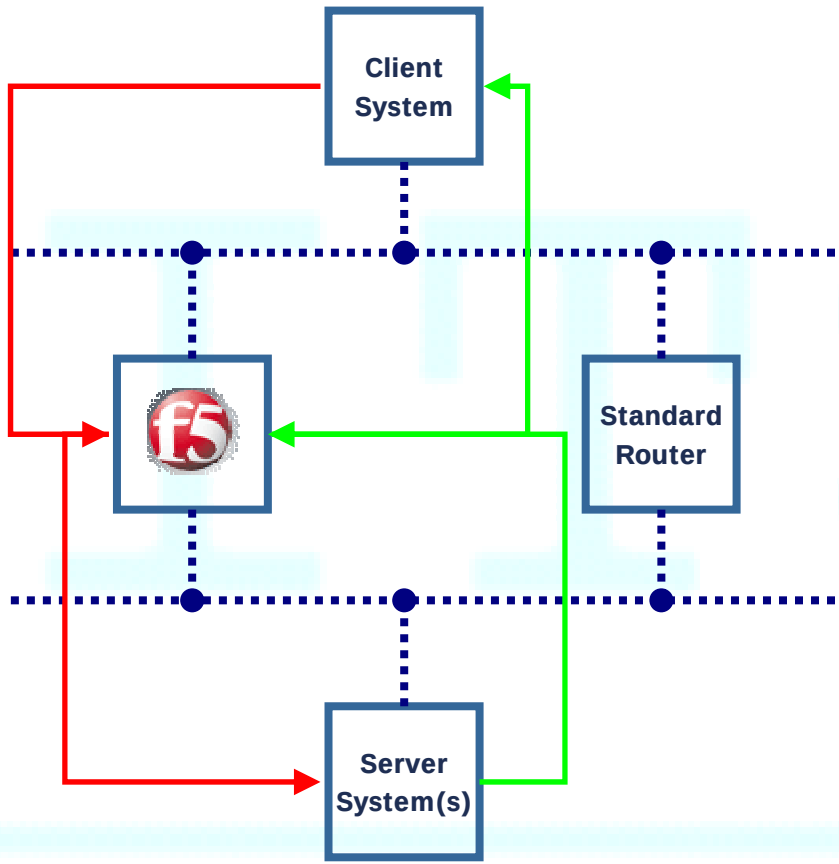
- **Traffic Management:**
  - All the advanced features and functions of award-winning BIG-IP software
  - Static and Dynamic load balancing for diverse server platforms and applications
  - Active/Active Controller feature for added performance, scalability, reliability
  - Full stateful session failover from active to backup or active IP Application Switch
  - Multiple modes of persistence
  - Simple and advanced business rules to ensure QoS
  - Smart content and application determination to route requests for content to appropriate devices
  - Unique One Connect™ Content switching reduces bandwidth costs and server overhead by up to 20%
  - iControl enabled- allows applications to directly control network traffic by preemptively avoiding application failures
  - Award-winning 3-DNS wide-area load balancing available as an option
  - Real-time performance monitoring and statistics
  - Easy to install and manage via secure CLI & GUI

Additional Information

“Not For Screen Usage”

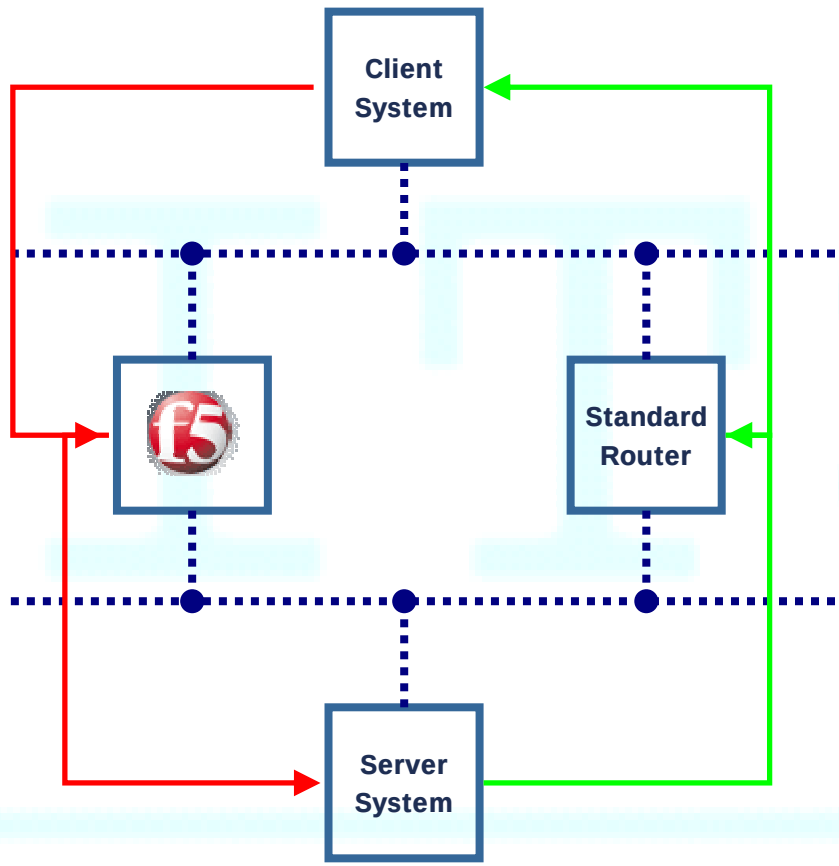
Mode 1: Dump Service

- **F5 Secure Network Address Translation**
  SNAT = on
  - Server sees F5 Switch as Client
- **No Client Change**
- **All Traffic handled by F5 Switch**



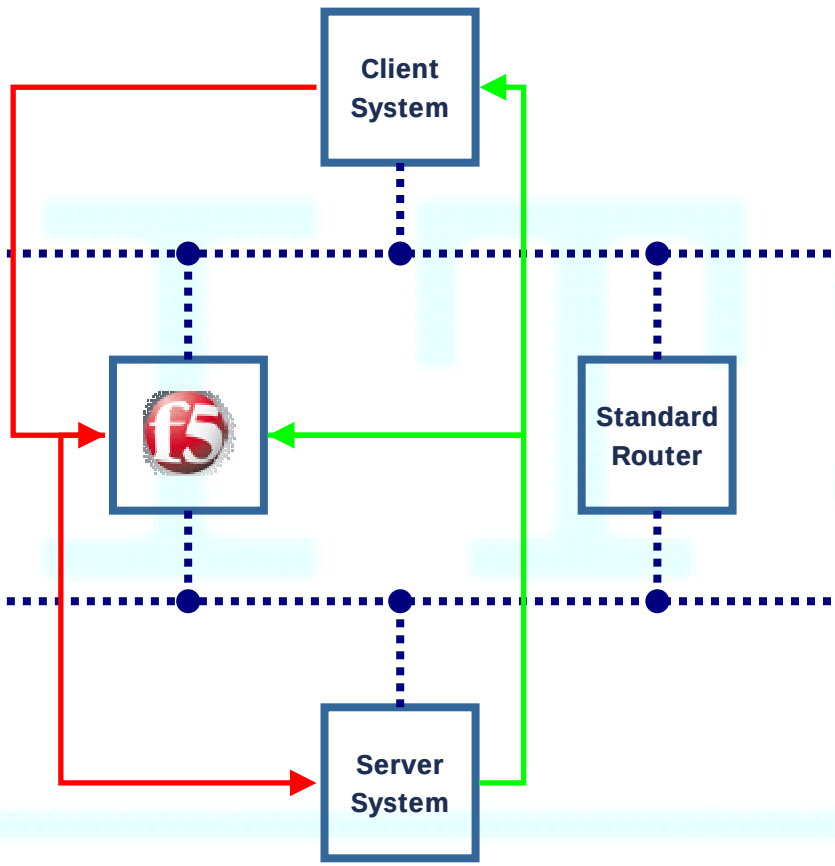
Mode 2: Single Service

- **No F5 Network Address Translation NAT = off**
- **Client Changes:**
  - Set Local Host Interface lo0 to Virtual Host IP (“NAT”)
- **Limitations**
  - One Service
  - Server on same L2 net
- **Default Route unchanged**



Mode 3: Multi Service

- **F5 Network Address Translation** NAT = on
- **Client Changes:**
  - Default Route to F5 Switch
  - F5 IP Forwarding needed
- **Multiple Services Possible**
- **All Traffic handled by F5 Switch**

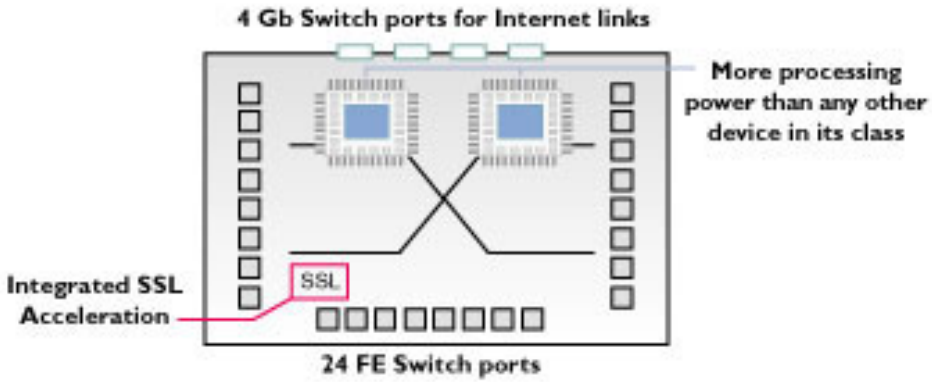


What

- **Font Server fontsrv.desy.de**
  - Multi Service Mode
  - Each Port Is One Service
  - 2 Port Protocol: Persistency
- **Network Install Management Server nims.desy.de**
  - Single Service Mode
  - Common Install Server
  - Testing UDP Persistency (NFS)
- **Public Login Service plus.desy.de (under Evaluation)**
  - Single or Multi Service ?
  - Key Handling
  - ISS Replacement
- **dCache Web and Control Connection dcap.desy.de**
  - Stateful failover
  - One Virtual Host
  - 2 Ports
- **…**

Where to

- **WEB Service**
  - Starting with standby server if AFS fails ?
  - Layer 7 Routing ?
- **MAIL Service**
  - Different SMTP Server for Internal and External (Rules Setup)
  - …
- **Security**
  - Use F5 Switch as Network Filter to Protected Server Subnet
- **Overcome Routing Problems**
  - Cisco Software Upgrade
    - Workaround: Moving MAC
  - Test Client Functionality From Server Network



- **SSL Possible**
  - But seems not compliant to .htaccess-Configuration
- **First Production Tests**
  - Planned for June 2003

Conclusions

- **Rather Simple To Use**
  - Nice Operating Model
  - Minimal Changes on Server Machines
  - Platform Independent
- **Could Be A Standard Feature**
  - If tests results will be reliable
  - If people will trust virtual hosts