



Load Balancer Management

Load balancers are a critical component of today's mission critical web infrastructures. These highly tuned devices make intelligent load balancing decisions to ensure the highest availability of your site. With the TELEHOUSE Management Framework, TELEHOUSE provides the highest level of support and management to ensure the ongoing performance of your load balancers.

Correlation Engine Technology

TELEHOUSE's correlation engine technology includes APIs for reading alerts and messages from a variety of tools such as HP OpenView, NetIQ AppManage and HP Insight Manager, among others. The correlation engine filters, correlates, validates, and auto-resolves routine alerts, allowing our analysts to focus on complex and proactive analysis of pre-screened, validated events. Additionally, TELEHOUSE can utilize synthetic transactions, URL and service monitoring to validate expected results. On average, 98% of incoming alerts and messages are automatically resolved by the correlation engine. By capturing and prioritizing the relevant data, the correlation engine enables exceptionally efficient incident management that improves your system performance.

Expert Analysts

Dedicated TELEHOUSE load balancer experts ensure high performance and availability for your environment. Support analysts are available 24x7 to respond to system events and for direct customer support via phone or email. With years of

focused experience in managed services and thousands of applications under management, TELEHOUSE successfully manages complex environments.

ITIL Best Practices

TELEHOUSE employs the IT Infrastructure Library (ITIL) Service Delivery and Service Support processes of Incident, Problem, Configuration, Change, Release, Service Level, Availability and Capacity Management. These standardized ITIL processes define our services and ensure consistent and measurable performance. TELEHOUSE's Management Action Plans (MAPs) are incident management best practices, which correspond to every event type that is monitored.

TELEHOUSE Platinum

TELEHOUSE Platinum consists of all the monitoring services of Silver and Gold and also includes remediation of issues, root cause analysis, failback, and configuration services. The Platinum support option includes remote administration, remote troubleshooting, and continuous backups on a set schedule.

Key Features

- ICMP Ping Monitoring
- SNMP Monitoring
- MIB II Support
- Incident and Problem Management
- Remote Diagnosis and Remediation
- Vendor Escalation
- Change Management
- Remote Administration Services
- Configuration Backup and Recovery

TELEHOUSE Management Framework Value

- Leverage TELEHOUSE's best-of-breed monitoring technologies and proven implementation processes to provide rapid and effective management.
- Gain visibility into your IT environment by viewing ticket, performance, and trend details through the customer portal.
- Rely on expert analysts, ITIL best practices and Management Action Plans (MAPs) to improve the stability and availability of your environment.

For more information visit www.TELEHOUSE.com

Feature	Default	Alternative(s)	Vendors
Redundancy	Yes	(Not Available)	F5 Big IP
Load balancing by port	None (layer 3 only)	80, 443, 21, others by request	F5 Big IP
Keepalive method	ICMP	TCP, HTTP, HEAD, HTTP GET	F5 Big IP
Balancing method	Least connections	Round robin, weighted round robin	All models
Advanced load balancing (persistence)	No	SSL v3.0, Cookie, URL, Cookie URL	Some models



Event Types Monitored via SNMP

- Device availability
- Real server status
- Interface status
- Cold start
- SNMP failure
- Link status
- Failover status
- Warm start
- Authentication failure

Performance Statistics Collected via SNMP

- System memory
- CPU utilization
- Temperature
- Power supply state
- Packets in/out
- Interface utilization (% in/out)
- Interface error (% in/out)
- The list of metrics above is dependent on MIB support by the specific load balancer manufacturer.
- Up to 15 metrics from the available MIBs will be collected for each device. Thresholds can be customized to suit your requirements. This may incur an extra charge.

TELEHOUSE Silver and Gold Supported Load Balancers

- F5 Big IP Load balancing Traffic Manager functions only (Local, Global)

TELEHOUSE Platinum Supported Load Balancers

- F5 Big IP Load balancing Traffic Manager functions only (Local, Global)

Incident and Problem Management

When a problem is indicated by abnormal performance or health statistics, a TELEHOUSE Network Engineer will diagnose the cause for the alert and implement the appropriate corrective actions. If required, the Network Engineer will perform a detailed investigation and evaluate the effects of the corrective actions.

Configuration Services

A TELEHOUSE Network Engineer will provide remote administration services to configure your load balancers for optimum performance. The configuration will be periodically reviewed and changes will be made as required, or upon request, to improve functionality or stability. All configuration changes require authorization from the customer and must follow TELEHOUSE's change management procedures. Please refer to the Change Management Technical Specifications for further details.

Configuration Backup Management

A backup of the configuration data files for each supported load balancer will be performed after any changes TELEHOUSE makes or upon request from the customer.

In the event of a device failure, the Network Engineer will restore and verify the proper functionality of the device configuration.

Vendor Escalation

If a supported device requires intervention from the hardware vendor, the Network Engineer will escalate the issue to the vendor according to the customer's support contract.

TELEHOUSE Platinum Configuration Details Redundancy

All load balancers will be configured to run in redundancy mode, where one device will receive all traffic unless it goes down, in which case all traffic will be diverted to the secondary load balancer (active-passive configuration). Non-redundant configurations will only be supported in special circumstances and must receive prior approval.

Configuration and Administrative Tasks

The following services or parameters can be configured by a TELEHOUSE Load Balancer Engineer:

- Virtual IPs
- Server and/or virtual IP status
- Load balancing method
- Redundancy
- Balancing of server farms
- SNMP configurations
- TACACS/Radius authentication
- NAT configurations
- IP forwarding
- Keepalives

Load Balancing by Port

By default, all load balancers will be configured to balance content only on a layer 3 basis (IP). Any load balancing based upon Transmission Control Protocol (TCP) ports will need to be specifically requested by the customer.

Keepalive Method

By default, the F5 Big IP uses ICMP as its keepalive method by which the load balancer will routinely ping each server to determine availability. Alternatively, the load balancer may be configured to support keepalive using either TCP (port handshake with the server) or Hyper Text Transfer Protocol (HTTP). For the HTTP keepalive configuration, the header can be verified for a specified static page (HTTP HEAD) or the content of a static page (HTTP GET) can be downloaded.

It is highly recommended that if the HTTP option is selected, the customer and engineers work to use a static page on the servers that will not change. When HTTP GET is the keepalive method chosen, the load balancer has an anti-graffiti mechanism that will shut down the service if the page's content changes.



Balancing Method

By default, all load balancers will be configured with a balancing method of least connections. That is, traffic will be routed to each server based on which host has the fewest connections at that given time. In addition, the supported load balancers can be configured for round robin or weighted round robin.

Advanced Local Server Load Balancing Support

Advanced load balancing, using several metrics, is supported on some models of load balancers. Sticky service or persistence can be supported using one of the following parameters:

Cookies:

The device directs traffic based on the cookie contents. For example, an existing customer with a cookie set on their machine will be sent to a server dedicated to customers who have already made a purchase, taking into account their preferences. Please note that TELEHOUSE supports cookie load balancing only when the cookie originates from the customer's server.

URL:

If particular content is accessed frequently, it is likely to be cached in the memory that last served it. In this case it is far more efficient to fetch the content from that particular server. URL hashing will map content to a server, hence speeding up the whole serving process.

CookieURL:

The device evaluates both the cookie and the URL for load balancing and persistence.

SSL:

The device balances the load based on SSL session ID. It should be noted that SSL load balancing is supported in SSL version 3.0 and higher.

Advanced load balancing is not configured as a default. If these features are desired, the customer should contact the TELEHOUSE Network Engineer to request the appropriate configuration changes.

TELEHOUSE Platinum Classes

At the Platinum support option, network devices are categorized into two classes. Class 1 devices are those that are used for only a single networking function, such as a switch or a load balancer. Class 2 devices perform multiple networking functions, such as load balancing and switching, within a single device. To purchase support for the additional functions of a Class 2 device, begin with the appropriate part number for a single function network device, and add the appropriate number of Class 2 Function Additions.

Event Resolution Example

The following example demonstrates the Silver, Gold, and Platinum service responses for a common load balancer event: Active Node Failure.

TELEHOUSE Silver

For TELEHOUSE Silver services, the customer will receive notification of validated events. A TELEHOUSE Analyst will consult the Management Action Plan for this event. The MAP dictates that the analyst will perform the following:

- Verify that the standby load balancer is active
- Contact the customer with the information gathered

On average, the initial response time is less than five minutes.

TELEHOUSE Gold

For TELEHOUSE Gold services, the same load balancer event is evaluated and diagnosed to determine the probable cause for the event. A TELEHOUSE Primary Analyst will consult the troubleshooting steps in the Management Action Plan and perform the following:

- Log on to the device and verify that the load balancer traffic is functioning properly
- Verify whether the problem is hardware related by visual inspection from local personnel



TELEHOUSE Silver, Gold, Platinum Support Overview	Silver	Gold	Platinum
→ 24x7 Support Center coverage	✓	✓	✓
→ Event correlation and validation with correlation engine technology	✓	✓	✓
→ Customer portal (system health, ticket reports, performance reports)	✓	✓	✓
→ Ticket tracking, communication, notification and escalation management	✓	✓	✓
→ Management Action Plans with validation and notification steps	✓	✓	✓
→ Incident management (detection, classification, notification, recording, and closure)	✓	✓	✓
→ Project management for installation	✓	✓	✓
→ ICMP interface traffic analysis reports	✓	✓	✓
→ Near real-time interface traffic analysis reports	✓	✓	✓
→ SNMP device status monitoring	✓	✓	✓
→ Failover event monitoring	✓	✓	✓
→ Vulnerability notifications as per CERT and SANS	✓	✓	✓
→ Management Action Plans with validation, troubleshooting, resolution and escalation steps		✓	✓
→ Monitor ticket activity (24 hour report) and work to reduce false-positive and non-critical items		✓	✓
→ SNMP device health metric monitoring and reporting		✓	✓
→ SNMP interface performance metric monitoring and reporting		✓	✓
→ Customer defined thresholds for SNMP device health and interface metrics		✓	✓
→ Analysis of device configuration and consultation		✓	✓
→ Analysis of device OS upgrade and consultation		✓	✓
→ Project management resource assigned for installation and ongoing account maintenance			✓
→ Network Engineer for enterprise account management with complete understanding of architecture			✓
→ Remote administration (with customer approval and change management*)			✓
→ Remote diagnosis and remediation of device health issues			✓
→ Remote diagnosis and remediation of interface performance issues			✓
→ Availability, trend, and performance analysis			✓
→ Recommendations on upgrades or changes to increase efficiency			✓
→ Recurring issue root-cause analysis and resolution implementation			✓
→ Device configuration backup management on a recurring schedule			✓
→ Analysis of device configuration and optimization (with customer approval and change management*)			✓
→ Analysis of device OS upgrade and implementation (with customer approval and change management*)			✓
→ Vendor escalation in response to hardware component failure*			✓
→ Change management coordination, review, risk assessment and justification*			✓
→ Release management planning, deployment and acceptance*			✓

*TELEHOUSE provides change management for all objects that are contracted under the Platinum support option. This includes both TELEHOUSE and customer initiated changes.

For objects not under TELEHOUSE management, such as custom code or content, TELEHOUSE will perform the change control activities and documentation steps normally associated with change management only if the Enterprise Change Management option is purchased separately. For further details, please refer to the Change Management Technical Specification.

Advanced load balancing is not configured as a default. If these features are desired, the customer should contact the TELEHOUSE Network Engineer to request the appropriate configuration changes.



Support Options Summary TELEHOUSE Silver

Infrastructure and Application Monitoring

- Customer Portal Access*
- Project Management*
- Incident Management (Validation, Notification, and Escalation)
- Reporting

TELEHOUSE Gold

Infrastructure and Application Resolution

- All the features of Silver, plus
- Incident Resolution
- Proactive Problem Identification
- Configuration Identification
- Reporting and Analysis

TELEHOUSE Platinum

Infrastructure & Application Management. All the features of Gold, plus

- Problem Management (Error Control, Root Cause Analysis)
- Change Management
- Configuration Management
- Release Management
- Reporting and Proactive Services (Performance Tuning, Customized Services)

* Please see the Consulting Services technical specification for details.

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- Once the cause is determined, follow escalation to the customer

In addition, the SOC Analyst will analyze device configurations and make recommendations to optimize performance and stability.

TELEHOUSE Platinum

For TELEHOUSE Platinum services, a TELEHOUSE Network Engineer will resolve the issue, if possible to do so, through remote administration. If the Network Engineer determines that the cause for the issue is hardware component failure, then the Network Engineer will escalate the issue to the hardware vendor according to the customer's support contract. The Network Engineer will follow instructions in the MAP and perform the following:

- Contact the hardware vendor with device and contract information
- Coordinate with local IDC resources to receive and install new device, and return failed device or component
- Restore configuration from backup
- Verify functionality of the device
- Communicate with the customer throughout the process.

Consulting Services for Silver, Gold and Platinum

TELEHOUSE will perform the following activities as part of its engagement service:

- Audit and document site requirements
- Establish and maintain Virtual Private Network (VPN) connectivity
- Deploy Client Agent management tools
- Configure the customer portal for customers to view performance trends and analysis

These services are detailed in the technical specification for TELEHOUSE Consulting Services.

Version and Patch Support Policy:

TELEHOUSE supports vendor-supported software versions defined as those versions that are under maintenance and being patched by the vendor.

Customers must have maintenance agreements in place and systems should be patched to within six months of the vendor's most recent available patches.

Exceptions to this as well as overall supported applications, will only be considered on a special approval basis and will require an engineering review and contract addendum.