KEMP 360 Vision

Product Overview

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1 Introduction

KEMP 360 Vision is a proactive application delivery monitoring and visibility service provided by KEMP to help customers optimize their application Infrastructure. The KEMP LoadMaster Application Delivery Controller (ADC) is in the ideal place in a network to provide an optimal view of application state. Metrics such as traffic load, server health, system throughput, concurrent connections, interface statistics, load distribution and system resource utilisation provide the information needed to determine the health of application delivery.

Along with current application state, historical metrics provide valuable information in both evaluating the long-term health of application delivery, as well as optimization and capacity planning.

KEMP 360 Vision utilises metrics collected to enable proactive health monitoring, customer alerts, data reporting, capacity planning and configuration optimization. KEMP 360 Vision takes customer support to a new level by proving 24x7x365 active monitoring of the customer's ADC and proactively informing customers of potential application delivery issues. In the event of an application delivery issue, you will be notified by your chosen method, or methods, (by phone, email and/or SMS and a KEMP support engineer will be engaged for assistance. This ensures minimum time to resolution and this proactive approach allows a large proportion of issues to be resolved before any potential service outages or user impacts occur.

1.1 Document Purpose

The purpose of this document is to provide an overview of the KEMP 360 Vision product. For further details, please refer to the **KEMP 360 Vision, Feature Description**.

1.2 Intended Audience

This document is of relevance to application owners as well as network and platform specialists who are responsible for application delivery.

2 Architecture

The KEMP 360 Vision architecture is simple – it is built around the KEMP 360 Vision Monitor; a device deployed into the customer network to monitor the LoadMaster application delivery controller. KEMP 360 Vision uses Simple Network Management Protocol (SNMP) to perform monitoring. Communication over a Secure Shell (SSH) session from the KEMP 360 Vision Monitoring Center to the KEMP 360 Vision Monitor allows the KEMP 360 Vision Monitoring Center to be alerted of any issues that may require attention.

The diagrams below show the infrastructure of a LoadMaster deployment with and without KEMP 360 Vision.

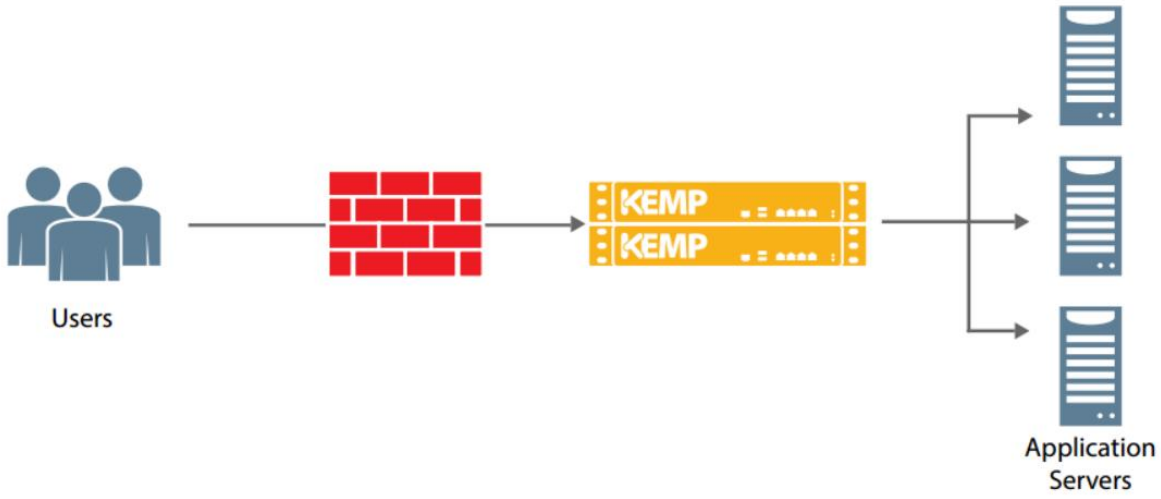

Figure 2-1: Typical LoadMaster topology

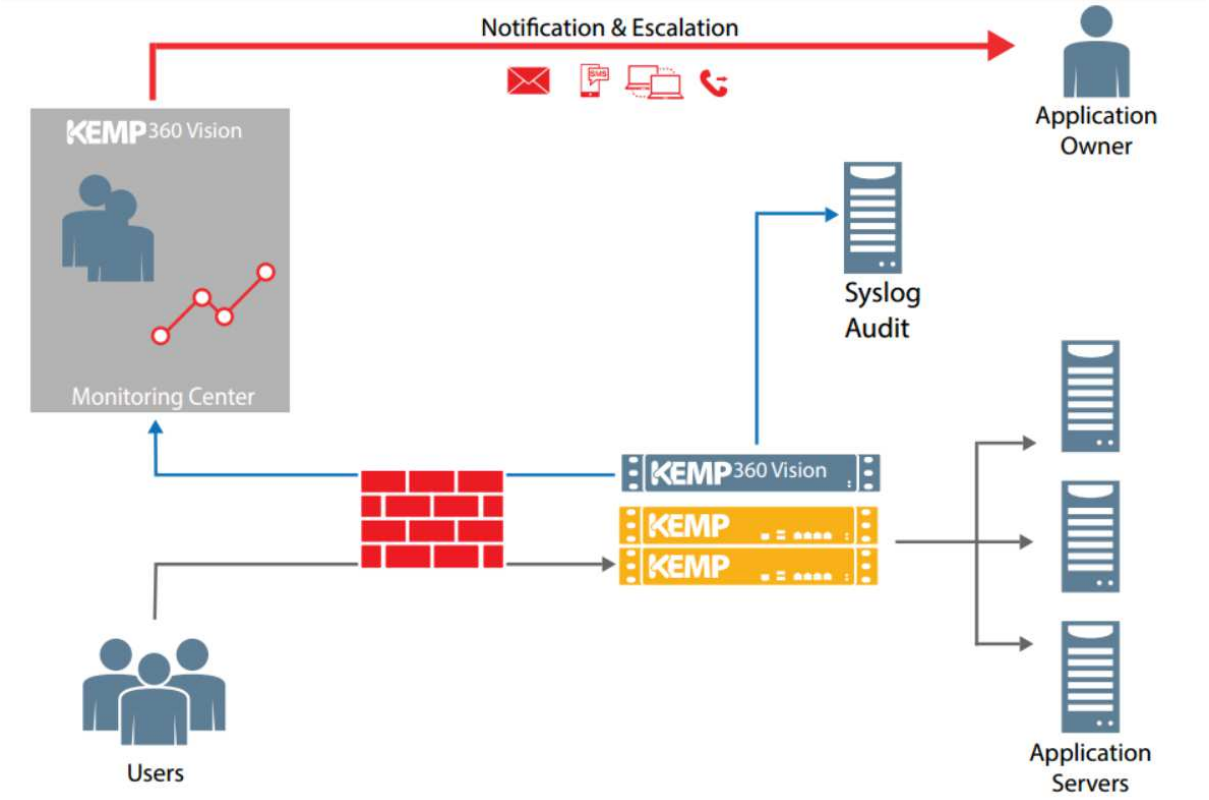

Figure 2-2: Typical KEMP 360 Vision topology

The above diagram shows the KEMP 360 Vision Monitoring Center outside the customer's network. The KEMP 360 Vision monitor is the blue box (called KEMP 360 Vision) that sits within the customer's network.

3 Sample Scenarios

Below are three examples to illustrate the benefit of KEMP 360 Vision's proactive application delivery monitoring.

3.1 Scenario 1

Without KEMP 360 Vision

The KEMP LoadMaster is load-balancing a HTTP/HTTPS service across multiple Real Servers. Clients find the site unreachable on occasions (typically at around midnight every night) but service is typically restored shortly afterwards. There are no customer support tickets logged with KEMP customer support.

With KEMP 360 Vision

The KEMP LoadMaster is load-balancing a HTTP/HTTPS service across multiple Real Servers. KEMP 360 Vision Checks detect a LoadMaster High Availability (HA) failover has occurred. KEMP 360 Vision also detects as a brief loss of reachability to the Shared IP address of the cluster due to the failover event. A notification is sent to the customer and a remote diagnostics session is arranged with a KEMP Support Engineer. During the remote session, a KEMP Support Engineer observes that there is high level of disruption on the network being used for high availability checks, resulting in a Master-Master state across the LoadMaster HA pair. This is due to excessive east-west traffic on the network caused by server backups taking place at this time. The KEMP Support Engineer recommends network changes to reduce disruption caused by backups and changes to the HA check timeouts.

3.2 Scenario 2

Without KEMP 360 Vision

The KEMP LoadMaster is load-balancing Microsoft Exchange for a large organization. Over time as the organization grows, users notice that at certain periods email updates take a little longer than expected. Due to the high number of employees travelling and requiring email access on the go, the organisation decides to make email available on the go using ActiveSync - implemented using SSL offloading and re-encryption on the LoadMaster. This causes issues for a number of users accessing their email. Because no issues are apparent on the Exchange Server, the administrator logs a customer support ticket with KEMP Customer Support. Investigation shows that the transactions per second are very close to the device limits and the KEMP Support Engineer recommends an upgrade to a higher capacity LoadMaster to meet the growth in user traffic. This happens during an emergency maintenance window and the issue is resolved.

With KEMP 360 Vision

The KEMP LoadMaster is load-balancing Microsoft Exchange for a large organization. The KEMP 360 Vision Monitor detects that Transactions Per Second (TPS) and SSL transactions are exceeding warning levels (though still within LoadMaster capabilities). The customer is notified of this and a remote diagnostics session is arranged with a KEMP Support Engineer. The analysis indicates a high level of traffic and, after consultation with the customer, it is agreed that the traffic going through the LoadMaster increased considerably since initial deployment. The customer also indicates plans for adding support for external ActiveSync email access. A capacity planning exercise is performed in order to account for future traffic growth. Based on this, it is determined that an upgrade be performed during a maintenance window scheduled for the following month along with implementation of ActiveSync services. This upgrade completes successfully and resolves the user performance issues.

3.3 Scenario 3

Without KEMP 360 Vision

The KEMP LoadMaster is load-balancing requests for an application across multiple web servers. Intermittently, certain users have to re-authenticate during their sessions. In response to the issue, a customer support ticket is created to investigate the reason for the re-authentication requests. Debugging and logging is configured to gather more information. After a reoccurrence, the investigation into the issue shows the reason for the connections dropping is due to servers failing health checks and that these failures are caused by high traffic load to individual servers. Logging suggests that traffic is not being balanced across all servers equally. The solution is to change the load-balancing scheduling method. This results in traffic being spread more equally across the servers. This means no sessions are dropped and no re-authentication is required.

With KEMP 360 Vision

The KEMP LoadMaster is load-balancing requests for an application across multiple web servers. Intermittently, certain users may have to re-authenticate during their sessions. On the first occurrence of this, the KEMP 360 Vision Monitor detects a Real Server failure. The customer is notified of this and a remote diagnostic session is arranged with a KEMP Support Engineer. The KEMP Support Engineer examines the connection status and concludes that the number of connections sent to one server is much more than the others. The Support Engineer concludes that to resolve the load-balancing issue, the scheduling method should be changed.

4 Monitoring

KEMP 360 Vision monitors on a 24x7x365 basis and can be broken into the categories listed below. Checks occur every minute ensuring a fast response to any unexpected states observed.

4.1 KEMP 360 Vision Monitor and LoadMaster Reachability

KEMP 360 Vision Monitor uses a wide range of checks to ensure that the LoadMaster (or LoadMasters) being monitored are available. The KEMP 360 Vision Monitor performs these LoadMaster availability checks across different layers of the OSI stack to ensure full end-to-end reachability. The available checks comprise of HTTP, SSH and Internet Control Message Protocol (ICMP), also known as PING. If any of these checks fail, it indicates a potential issue on the network that could affect the operation of KEMP 360 Vision or escalation of issues.

4.2 System Health

The KEMP 360 Vision Monitor system health checks indicate when CPU load and system memory on the LoadMaster exceed warning or critical values. This provides an indication of possible excessive system load as well as detection of capacity limits being reached.

4.3 Application Transactions

The KEMP 360 Vision Monitor transaction checks monitor the volume of both SSL and L4/L7 TPS on the LoadMaster. As these are typically the most common cause of capacity limits being reached, this information allows for proactive LoadMaster scaling before reaching hard limits. The thresholds are configured by KEMP Support.

4.4 High Availability

The KEMP 360 Vision Monitor HA checks monitor HA state and events to ensure stable operation. High availability of the LoadMaster is vital in providing application uptime. Non-functioning high availability between a LoadMaster pair in HA mode can be detected and repaired, preferably before any event occurs requiring failover. Root cause of failover issues are investigated and excessive switchover issues are highlighted for action. As a result, swift addressing of these will increase total application uptime.

4.5 Application Status

The KEMP 360 Vision Monitor Virtual Service status checks indicate if any Virtual Services are in a non-healthy state, for example if they are down. The KEMP 360 Vision Monitor Real Server status indicates when one or more Real Servers used by a Virtual Service are failing health checks. These alarms are imperative to indicate application availability and possible instability of applications or servers. As a result, swift addressing of these will increase total application uptime.

4.6 Application Statistics

The KEMP 360 Vision Monitor application statistics indicate any unexpected statistics or abnormal traffic loads through the LoadMaster based on the LoadMaster model. KEMP 360 Vision monitors both concurrent active connections as well as rate of new connections and compares them to LoadMaster or customer-defined thresholds to indicate levels that may require attention.

4.7 Interface Statistics

The KEMP 360 Vision Monitor interface checks provide advanced information on interface status and statistics to determine any unusual throughput rates on the LoadMaster as well as interface errors and discards. These provide for indication of link congestion, unexpected peaks or malfunctioning network device. Interface errors allows proactive detection of local link problems that could otherwise go undetected.

5 Alerts

When any of the monitored metrics indicate a non-healthy state, an event is triggered. Depending on the severity of event, the customer is alerted by email, SMS as well as a call from a KEMP 360 Support Engineer.

In both cases, the customer is offered engagement with a KEMP Support Engineer typically through a remote diagnostics session. The proactive nature of this allows issues to be examined very soon after the alert, which provides for optimal resolution. The KEMP Support Engineer engagement allows issues to be addressed before any user impact.

References

Unless otherwise specified, the following documents can be found at http://kemptechnologies.com/documentation.

KEMP 360 Vision, Feature Description

Document History

Date	Change	Reason for Change	Version	Resp.
Sep 2016	Initial draft	First draft of document	1.0	LB

