LoadMaster Hardware

KEMP | APPLICATION DELIVERY

Data Sheet

Scalable high-performance application delivery

KEMP LoadMaster hardware Application Delivery Controllers (ADC) offer the scalability, feature depth and security required to enable resilient delivery of a wide range of application workloads for organizations of all sizes and capabilities. LoadMaster simplifies application delivery with easy management via web UI, API and KEMP 360 Central with a compelling TCO and outstanding customer support.

The Benefits of KEMP LoadMaster

Resilient

LoadMaster can enhance application availability and resilience with the option for Highly Available (HA) paring of appliances and geographic server load balancing (GSLB) removing single points of failure in the data center and also across data centers. Application server health checks enable redirection of traffic to healthy servers and the optional KEMP 360 Vision service provides 24/7 proactive support to ensure continuous application availability.

Secure

As the access point for applications, LoadMaster provides authentication and attack mitigation services to prevent malicious and unauthorized access to application resources. The Edge Security Pack (ESP) enables pre-authentication of clients (LDAP, Active Directory, RADIUS and SAML) while the Web Application Firewall (WAF) offers continuous application level protection through daily rule updates.

Easily Managed

LoadMaster appliances can be managed via the intuitive web UI, via API (PowerShell/RestFUL) or via KEMP 360 Central. Application templates simplify deployment and optimization, while the API provides an easy way to automate configuration and management tasks whether through DevOPS toolsets or operational frameworks.

Scalable

As application delivery demands grow, LoadMaster can scale by clustering multiple appliances together into a single ADC entity. As well as scaling to meet increasing capacity requirements, clustering also provides resilience as the failure of a cluster member is gracefully handled with remaining members continuing to provide service.

Low Cost of Ownership

LoadMaster delivers performance and functionality at a compelling price point when measured against the key metrics of SSL transactions per second, application throughput and active connections. Coupled with the low operational overheads delivered by features such as application templates and our world class customer support services, organizations can achieve significant TCO reductions on application delivery.

Fully Featured

LoadMaster includes a comprehensive set of features to enable deployment of application delivery and interfaces and API to integrate with existing authentication, logging, management and provisioning systems.

Feature Subscriptions

LoadMaster subscriptions offer flexibility, simplicity and value to meet your application delivery requirements and challenges. Subscriptions are annual and can be upgraded and downgraded as application delivery demands change for maximum flexibility. The tiers are mapped to common customer challenges and requirements, simplifying the task of selecting the appropriate feature set and support levels. This also offers additional value of up to 40% when compared to individually selecting features.

LoadMaster Feature Subscription Tiers

Each subscription tier adds to the features and services delivered by lower tiers as follows.

Standard	**Enterprise** *Incl. Standard Features*	**Enterprise Plus** *Incl. Enterprise Features*
10x5 Customer Support	24x7 Customer Support	WAF with rule updates
Software Updates	Edge Security Pack (ESP)	GSLB with IP Reputation
Security Patches	Intrusion Prevention	Floating License
L4-L7 Application Delivery	KEMP 360 Vision	
	KEMP 360 Central	

Features

L4-L7 Application Delivery

General

- Server Load Balancing (SLB) for TCP/UDP based protocols
- TLS (SSL) Offload
- Layer 7 Content Switching
- Transparent caching for HTTP/HTTPS
- Compression of static and dynamic HTTP/HTTPS content
- HTTP/2 Support
- Up to 1000 Virtual and 1000 Real Servers
- NAT-based forwarding
- Support for Direct Server Return (DSR) configurations
- Configurable S-NAT support
- VLAN Trunking (802.1Q)
- Link interface bonding (802.3ad)
- IPv6 support for addressing and features
- IPv6 - IPv4 bidirectional conversion

Health Checking

- Aggregated health checks
- ICMP health checking
- Layer 7 checking against any target server port
- Active/Hot Standby configurations for High Availability
- Stateful Failover
- Scale-out Clustering
- Aggregated health checks

Session Persistence

- Source IP (L4)
- TLS (SSL) SessionID (L4)
- HTTP/HTTPS Browser-session (L7)
- HTTP/HTTPS WebClient-session (L7)
- RDP Login ID (L7)
- Port Following for mixed HTTP/HTTPS sessions
- Session reconnection for Microsoft RDS

Scheduling and Balancing Methods

- SDN Adaptive
- Round Robin
- Weighted Round Robin
- Least Connection
- Weighted Least Connection
- Agent-based Adaptive
- Chained Failover (Fixed Weighting)
- Source-IP Hash
- Layer 7 Content Switching
- Global Server Load Balancing (GSLB)
- AD Group based traffic steering

SSL/TLS Features

- Configurable TLS (1.0, 1.1, 1.2) and SSL (2.0, 3.0)
- Support for EV (Extended Validation) certificates
- OCSP certificate validation
- Server Name Identification (SNI) support
- Support for up to 1,000 TLS (SSL) certificates
- Automated TLS (SSL) certificate chaining

- Certificate Signing Request (CSR) generation
- FIPS 140-2 Level 1 (Level 2 on FIPS models)
- STARTTLS mail protocols (POP3, SMTP, IMAP)

Administration

- Change auditing
- Web User Interface (WUI)
- SSH & physical console
- RESTful and PowerShell APIs
- VMware vRealize Orchestrator
- Context based help (WUI)
- Real time display of performance and availability
- Application templates
- Remote syslogd support
- Automated configuration backup
- Selective restore of configuration
- Connection draining
- Comprehensive logging and reporting
- SNMP support
- Diagnostic shell with in-line tcpdump

Security

- Permit /Deny Access Control Lists
- IP address filtering
- IPsec Tunnel support
- DDoS mitigation, including L7 rate based attacks
- IPSec VPN to Azure, AWS and vCloud Air public clouds
- Authenticated NTP

Edge Security Pack

- Microsoft TMG replacement
- Pre-Authentication
- Multi-Domain authentication & SSO
- X.509 client certificate authentication
- Custom login forms
- Two factor authentication
- SAML, Active Directory, RADIUS & LDAP
- Forms to Forms based authentication
- CAC/PIV Authentication

Intrusion Prevention

- Snort Compatible IPS
- Permit/Deny IP by address
- Automated IP reputation updates for GSLB

KEMP 360 Central

- LoadMaster Configuration Management
- Automated LoadMaster backups
- Centralized & scheduled firmware updates
- LoadMaster logfile consolidation
- Performance Management
- 3rd party ADC support

KEMP 360 Vision

- 24/7 Automated issue escalation service
- Proactive issue management
- Integrated with KEMP Support ticketing

Web Application Firewall (WAF)

- Real-time application threat mitigation
- Daily rule updates
- Threats Mitigated
  - Cookie tampering
  - Cross site request forgery
  - Cross site scripting
  - Data loss prevention
  - SQL Injection
- PCI-DSS Section 6.6 compliance

Global Server Load Balancing (GSLB)

Scheduling and Balancing

- Round Robin
- Weighted Round Robin
- Chained Failover (Fixed Weighting)
- Regional
- Real Server Load
- Location Based

Security

- Black List (Access Control List)
- IP reputation filtering with automatic updates
- DDoS mitigation

Health Checking & Failover

- ICMP health checking of server farm machines
- Layer 4 TCP checking
- Automatic reconfiguration for defective real server
- Active/Active High Availability

Specifications

	LM-X3	LM-X15
Subscription Tiers Supported	All	All
Performance		
Application throughput (Layer 4)	3.6Gbps	15.8 Gbps
Application throughput (Layer 7)	3.4Gbps	15 Gbps
SSL TPS (2K Keys)	1,700	12,000
Concurrent Layer 4 Connections	8,600,000	35,000,000
Concurrent Layer 7 Connections	125,000	262,500
Layer 7 HTTP requests/sec	69,000	175,000
Hardware Platform		
CPU	Intel Pentium G440 @3.3GHz	Intel Xeon E3-1275 @ 3.8GHz
Memory (RAM Size)	8GB	32GB
Storage	500GB HDD	2 x 500GB HDD (RAID 1)
Hardware SSL Acceleration	No	Cavium Nitrox III CNN3530-500-NHB-2.0-G
Gigabit Ethernet Ports	8	16
10 Gigabit Ports (SFP+)	N/A	4
VGA Ports	1	1
Console Ports	1 RJ45	1 RJ45
Rack Size	1U	1U
Dimensions	438 x 300 x 44mm (17.2 x 11.81 x 1.7 in)	438 x 470 x 44mm (17.2 x 18.5 x 1.7 in)
Weight	17.63lbs /8Kg	26.01lbs / 11.8kg
Storage Temperature	-4 to 167 °F (-20 to 75 °C)	-4 to 167 °F (-20 to 75 °C)
Operating Temperature	32 to 104 °F (0 to 40 °C)	32 to 104 °F (0 to 40 °C)
Storage Humidity	10% to 90% non-condensing	10% to 90% non-condensing
Operating Relative Humidity	10% to 90% non-condensing	10% to 90% non-condensing
Max Altitude in Operational Mode	Not over 5000 meters	Not over 5000m
Max Altitude in Non-Operational Mode	Not over 5000 meters	Not over 5000m
Input Voltage and Frequency Ranges	100-240VAC, 50-60Hz, 6-3A	100-240VAC, 50-60Hz, 8-4A (Per Inlet)
Redundant Power Supply	No	Yes
Max power supply	300W	2 x 450W
Total Power Consumption (W)	125.4W	165.27W
Total Amp Drawn (A)	14.55A	16.37A
Power Dissipation	125.4W	165.27W
Heat Output (BTU)	427.6 BTU	563.57 BTU
Acoustic Noise (dB)	59.4	62.7
Certification & Compliance		
FIPS	FIPS 140-2 Level 1 NIST Cert 2473	FIPS 140-2 Level 1 NIST Cert 2473
UL	UL 60950-1, 2nd Edition, 2011-12-19 CAN/CSA-C22.2 No. 60950-1-07,Amd 1:2011, Amd 2:2014	UL 60950-1, 2nd Edition, 2011-12-19 CAN/CSA-C22.2 No. 60950-1-07,Amd 1:2011, Amd 2:2014
IEC	IEC 60950-1(ed.2), IEC 60950-1(ed.2);am1, IEC 60950-1(ed.2);am2 EN 60950-1:2006 / A11:2009 / A1:2010 / A12:2011 / A2:2013 AS/NZS 60950.1:2015;	IEC 60950-1(ed.2), IEC 60950-1(ed.2);am1, IEC 60950-1(ed.2);am2 EN 60950-1:2006 / A11:2009 / A1:2010 / A12:2011 / A2:2013 AS/NZS 60950.1:2015;
CE	EN 55032 : 2015+AC:2016-07 (Class A) EN 55024 : 2010+A1:2015 (Class A) EN 61000-3-2 : 2014 IEC 61000-4-2 : 2008	EN 55032 : 2015+AC:2016-07 (Class A) EN 55024 : 2010+A1:2015 (Class A) EN 61000-3-2 : 2014 IEC 61000-4-2 : 2008
FCC	FCC Part 15:2017, Subpart B, Class A Canada ICES-003 Issue 6(June 2016), Class A	FCC Part 15:2017, Subpart B, Class A Canada ICES-003 Issue 6(June 2016), Class A
VCCI	VCCI-CISPR 32:2016	VCCI-CISPR 32:2016
RoHS Directive 2011/65/EU	Yes	Yes
WEEE	Yes	Yes
REACH	Yes	Yes

Specifications

	LM-8000	LM-8020
Subscription Tiers Supported	All	All
Performance		
Application throughput (Layer 4)	21 Gbps	31.4 Gbps
Application throughput (Layer 7)	20 Gbps	30.0 Gbps
SSL TPS (2K Keys)	16,000	30,000
SSL TPS (1K Keys)	25,000	46,000
Concurrent Layer 4 Connections	75,800,000	75,800,000
Concurrent Layer 7 Connections	525,000	525,000
Layer 7 HTTP requests/sec	380,000	450,000
Hardware Platform		
CPU	Intel Xeon, E5-2640v4 @2.4GHz; 10C/20T	2 x Intel Xeon E5-2687Wv4 @3.0GHz; 12C/24T
Memory (RAM Size)	64GB	64GB
Storage	1TB HDD	1TB HDD
Hardware SSL Acceleration	1x Cavium CNN3550-C20-NHB-2.0-G	1x Cavium CNN3550-C20-NHB-2.0-G
Gigabit Ethernet Ports	0	0
10 Gigabit Ports (SFP+)	6	8
VGA Ports	2	2
Console Ports	1 DB9 (male)	1 (DB9 male)
Rack Size	2U	2U
Dimensions (with Bezel)	482.4 x 716.0 x 87.3mm (19.0 x 28.2 x 3.4 in)	482.4 x 716.0 x 87.3mm (19.0 x 28.2 x 3.4 in)
Weight	55.12lbs / 25kg	55.12lbs / 25kg
Storage Temperature	-40 to 149 °F (-40 to 65°C)	-40 to 149 °F (-40 to 65°C)
Operating Temperature	50 to 95 °F (10 to 35 °C)	50 to 95 °F (10 to 35 °C)
Storage Humidity	5% to 95% non-condensing	5% to 95% non-condensing
Operating Relative Humidity	10% to 80% non-condensing	10% to 80% non-condensing
Max Altitude in Operational Mode	10000 feet (3048 meters)	10000 feet (3048 meters)
Max Altitude in Non-Operational Mode	39370 feet (12000 meters)	39370 feet (12000 meters)
Input Voltage and Frequency Ranges	200 - 240 VAC; 47-63Hz	200 - 240 VAC; 47-63Hz
Redundant Power Supply	Yes	Yes
Max power supply	2 x 495W	2 x 750W
Total Power Consumption (W)	171W	468W
Total Amp Drawn (A)	13.0 – 6.0 A	10.0 A
Power Dissipation	20 - 25W	40 - 45W
Heat Output (BTU)	1908	2843
Acoustic Noise (dB)	Idle 15, Standby 29, Stressed 31	Idle 15, Standby 29, Stressed 31
Certification & Compliance		
FIPS	FIPS 140-2 Level 1 NIST Cert 2473	FIPS 140-2 Level 1 NIST Cert 2473
UL	UL 60950-1, 2nd Edition, 2011-12-19 CSA C22.2 No. 60950-1-07, 2nd Ed., 2011-12	UL 60950-1, 2nd Edition, 2011-12-19 CSA C22.2 No. 60950-1-07, 2nd Ed., 2011-12
IEC	IEC 60950-1:2005 ed2 +A1:2009 EN 60950-1:2006 +A1:2010 +A2:2013 +A11:2009 +A12:2011	IEC 60950-1:2005 ed2 +A1:2009 EN 60950-1:2006 +A1:2010 +A2:2013 +A11:2009 +A12:2011
CE	EN 55022:2010 EN 55024:2010 EN 61000-3-2:2006 +A1:2009 +A2:2009 EN 61000-3-3:2008	EN 55022:2010 EN 55024:2010 EN 61000-3-2:2006 +A1:2009 +A2:2009 EN 61000-3-3:2008
FCC	US CFR Title 47, FCC Part 2, 15 ANSI C63.4 2009 Canadian ICES-3(A)/NMB-3(A), Issue 5	US CFR Title 47, FCC Part 2, 15 ANSI C63.4 2009 Canadian ICES-3(A)/NMB-3(A), Issue 5
VCCI	2013-04 ClassA / Classification code A1	2013-04 ClassA / Classification code A1
RoHS Directive 2011/65/EU	Yes	Yes
WEEE	Yes	Yes
REACH	Yes	Yes

Specifications

	LM-8020M	LM-8020-FIPS
Performance		
Application throughput (Layer 4)	31.4 Gbps	31.4 Gbps
Application throughput (Layer 7)	30.0 Gbps	30.0 Gbps
SSL TPS (2K Keys)	30,000	9,000
SSL TPS (1K Keys)	46,000	N/A
Concurrent Layer 4 Connections	300,000,000	75,800,000
Concurrent Layer 7 Connections	3,000,000	525,000
Layer 7 HTTP requests/sec	450,000	450,000
Hardware Platform		
CPU	2x Intel Xeon E5-2687Wv4 @3.0GHz; 12C/24T	2x Intel Xeon E5-2687Wv4 @3.0GHz; 12C/24T
Memory (RAM Size)	256GB	64GB
Storage	1TB HDD	1TB HDD
Hardware SSL Acceleration	1x Cavium CNN3550-C20-NHB-2.0-G	1x Cavium CN1620-NFBE3-3.0-FW2.2-G
Gigabit Ethernet Ports	0	0
10 Gigabit Ports (SFP+)	8	8
VGA Ports	2	2
Console Ports	1 (DB9 male)	1 (DB9 male)
Rack Size	2U	2U
Dimensions (with Bezel)	482.4 x 716.0 x 87.3mm (19.0 x 28.2 x 3.4 in)	482.4 x 716.0 x 87.3mm (19.0 x 28.2 x 3.4 in)
Weight	55.12lbs / 25kg	55.12lbs / 25kg
Storage Temperature	-40 to 149 °F (-40 to 65°C)	-40 to 149 °F (-40 to 65°C)
Operating Temperature	50 to 95 °F (10 to 35 °C)	50 to 95 °F (10 to 35 °C)
Storage Humidity	5% to 95% non-condensing	5% to 95% non-condensing
Operating Relative Humidity	10% to 80% non-condensing	10% to 80% non-condensing
Max Altitude in Operational Mode	10000 feet (3048 meters)	10000 feet (3048 meters)
Max Altitude in Non-Operational Mode	39370 feet (12000 meters)	39370 feet (12000 meters)
Input Voltage and Frequency Ranges	200 - 240 VAC; 47-63Hz	200 - 240 VAC; 47-63Hz
Redundant Power Supply	Yes	Yes
Max power supply	2 x 750W	2 x 750W
Total Power Consumption (W)	470W	470W
Total Amp Drawn (A)	10.0 A	10.0 A
Power Dissipation	40 - 45W	40 - 45W
Heat Output (BTU)	2843	2843
Acoustic Noise (dB)	Idle 15, Standby 29, Stressed 31	Idle 15, Standby 29, Stressed 31
Certification & Compliance		
FIPS	FIPS 140-2 Level 1 NIST Cert 2473	FIPS 140-2 Level 2 NIST Cert 2316 FIPS 140-2 Level 1 NIST Cert 2473
UL	UL 60950-1, 2nd Edition, 2011-12-19 CSA C22.2 No. 60950-1-07, 2nd Ed., 2011-12	UL 60950-1, 2nd Edition, 2011-12-19 CSA C22.2 No. 60950-1-07, 2nd Ed., 2011-12
IEC	IEC 60950-1:2005 ed2 +A1:2009 EN 60950-1:2006 +A1:2010 +A2:2013 +A11:2009 +A12:2011	IEC 60950-1:2005 ed2 +A1:2009 EN 60950-1:2006 +A1:2010 +A2:2013 +A11:2009 +A12:2011
CE	EN 55022:2010 EN 55024:2010 EN 61000-3-2:2006 +A1:2009 +A2:2009 EN 61000-3-3:2008	EN 55022:2010 EN 55024:2010 EN 61000-3-2:2006 +A1:2009 +A2:2009 EN 61000-3-3:2008
FCC	US CFR Title 47, FCC Part 2, 15 ANSI C63.4 2009 Canadian ICES-3(A)/NMB-3(A), Issue 5	US CFR Title 47, FCC Part 2, 15 ANSI C63.4 2009 Canadian ICES-3(A)/NMB-3(A), Issue 5
VCCI	2013-04 ClassA / Classification code A1	2013-04 ClassA / Classification code A1
RoHS Directive 2011/65/EU	Yes	Yes
WEEE	Yes	Yes
REACH	Yes	Yes