



6 Reasons You Need to Replace your Load Balancer



Maarten Labadie – Country Manager



Agenda

- Load Balancing overzicht
- Iets over F5 / Citrix
- Is het de juiste oplossing voor u?
- Waarom Kemp
- Summary



Wat is Load Balancing?

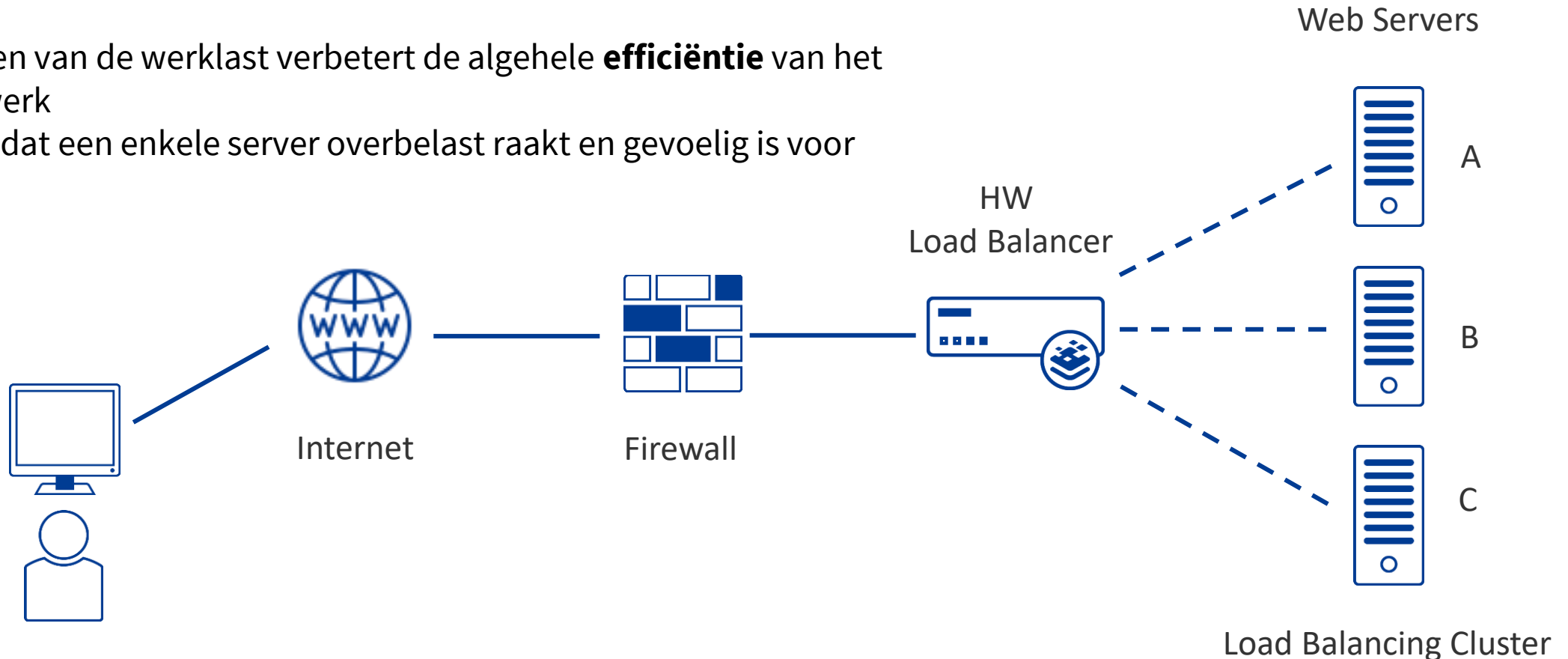
Application Delivery Controller (ADC)/ Load Balancer overzicht

- Load balancers voor het eerst geïntroduceerd in 1997 - *Cisco Local Director*
- ADC- term geïntroduceerd ~ 2004 - Een ADC is een load balancer met additionele geavanceerde functies zoals Web Application Firewall (WAF), Authenticatie en Firewall
- Bijna alle klanten waar Application Delivery Controller gevraagd lijkt zoeken eigenlijk naar een load balancer

**Load balancing is een belangrijke technologie voor de Digitale
Transformatie**

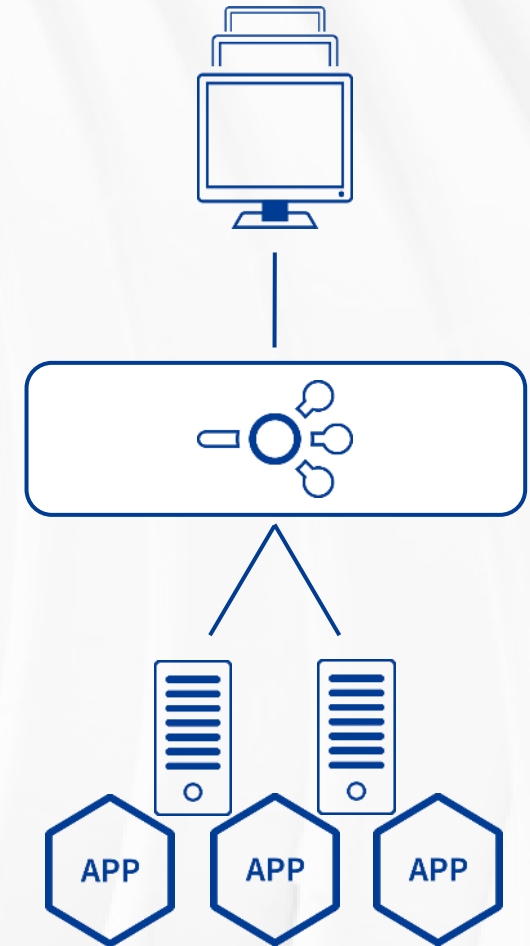
De basics van load balancing

- Server load balancing **verdeelt** de werklast van een server over twee of meer servers
- SLB **versnelt de verwerking**, zodat er in dezelfde tijd meer werk wordt gedaan
- Het verdelen van de werklast verbetert de algehele **efficiëntie** van het servernetwerk
- **Voorkomt** dat een enkele server overbelast raakt en gevoelig is voor **storingen**



De functie van Load balancing

- **Server Load Balancing (SLB)**
 - Reverse proxy voor beheer van (grote) aantallen servers
 - Applicatie health checks en distributie van algoritmes
- **Global Server Load Balancing (GSLB)**
 - DNS management voor beschikbaarheid van websites
 - Site health checks voor dynamische DNS respons



Cloud and Virtualization Require Load Balancing

- Scalability



- Availability



- Agility





Citrix en F5

Over Citrix

- Grote IT product vendor
- 2020 revenue – US\$3.1 miljard
- ~8200 medewerkers
- Producten: Workspace, SD-WAN, ADC, etc.
- Een breed IT portfolio
- De Citrix ADC is de load balancer vanuit de overname in 2005 van Netscaler



Citrix **ADC**
(formerly NetScaler)



Over F5 Networks



- Legacy Application Delivery Controller (ADC) vendor
- 2020 omzet – US\$2.51
- ~4500 mensen in dienst
- Producten: BIG-IP, NGINX+, WebSafe
- Uitgebreid product portfolio

iSeries platform
Hardware appliances



Virtual Edition (VE)
Software image



Viprion
Chassis hardware



F5 Load Balancing Under the Hood

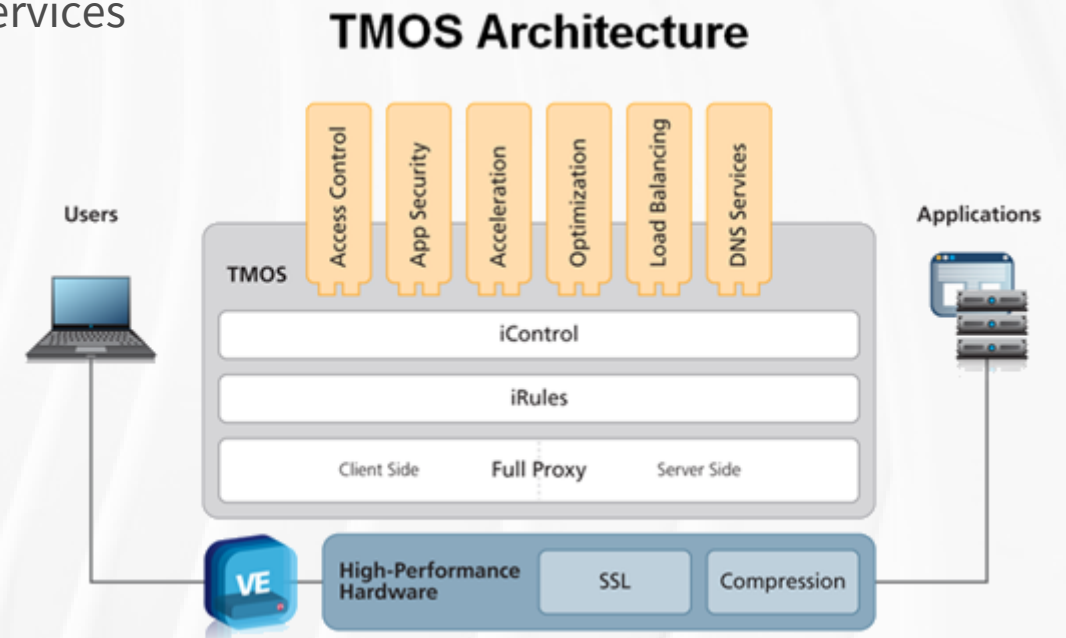
BIG-IP and TMOS

BIG-IP

- Platform for all F5 Application Delivery Controller (ADC) services
- Single code build
- Product/modules activated through license keys

TMOS (Traffic Management Operating System)

- Customized Linux code engine for BIG-IP products
- Has FPGA hardware support
- Includes control plane management (iControl)



F5... More Than What You Need?

LTM

- BIG-IP Local Traffic Manager (LTM)
-Server Load Balancing

DNS

- BIG-IP DNS – formerly Global Traffic Manager (GTM)
-Global Server Load Balancing

AFM

- BIG-IP Advanced Firewall Manager (AFM)
-Network firewall

APM

- BIG-IP Access Policy Manager (APM)
-Edge authentication

ASM

- BIG-IP Application Security Manager (ASM)
-Web Application Firewall (WAF)

***Not included:

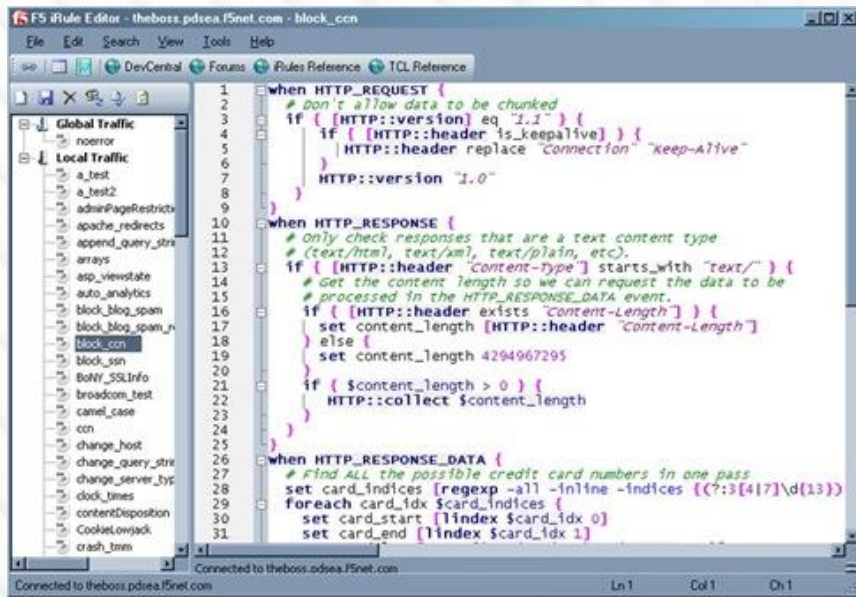
BIG-IP Carrier Grade NAT (CGNAT)

BIG-IP Policy Enforcement Manager (PEM)

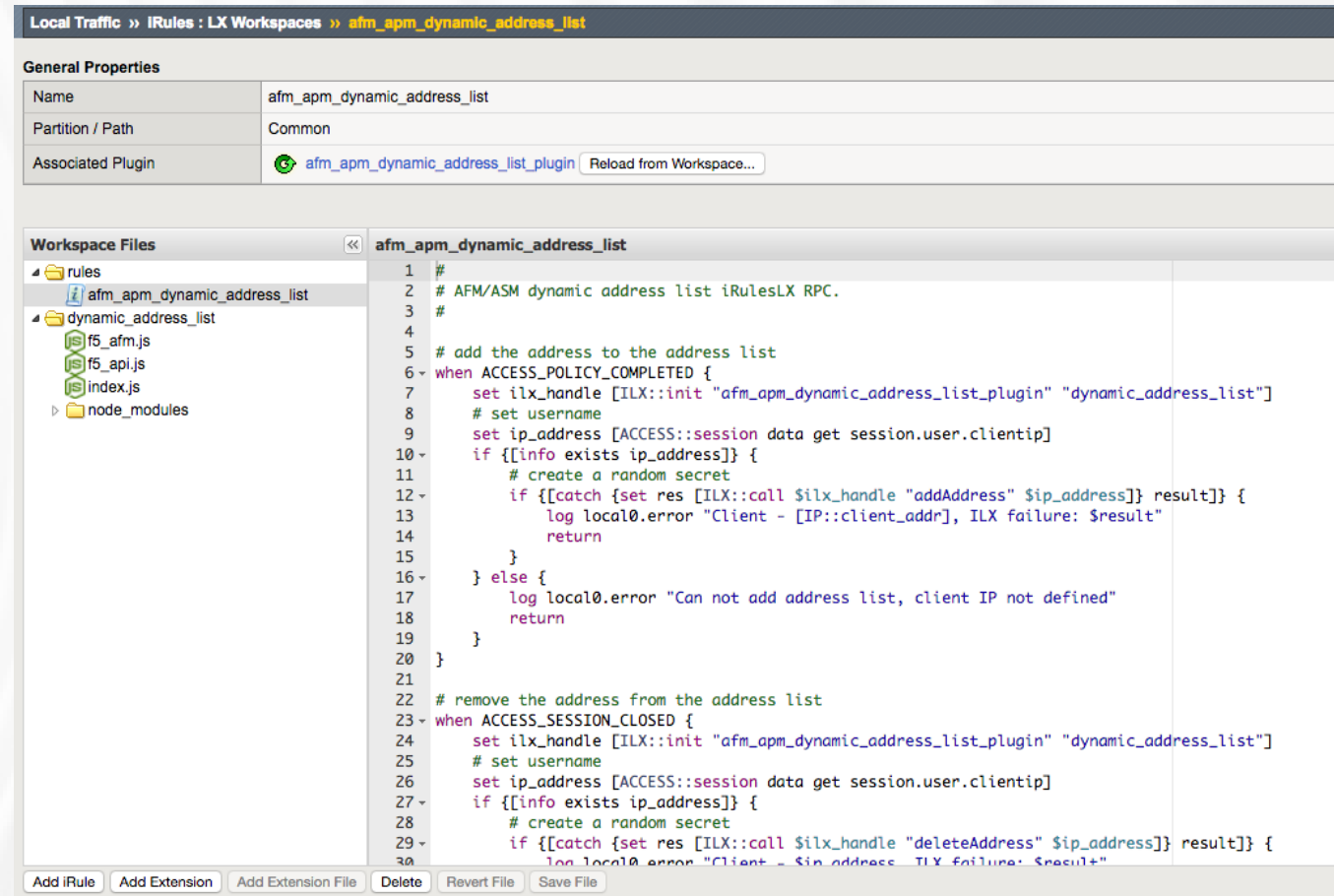
iRules – Advanced Programming Needed?

Data Plane programmability

- 80% of F5 systems have iRules configured
- Original iRules (TCL-based) and new iRules LX (Node.js-based)
- Expert programmer needed to support



```
1 when HTTP_REQUEST {
2     # don't allow data to be chunked
3     if { [HTTP::version] eq "1.1" } {
4         if { [HTTP::header is_keepalive] } {
5             HTTP::header replace "connection" "keep-Alive"
6         }
7     }
8     HTTP::version "1.0"
9 }
10
11 when HTTP_RESPONSE {
12     # only check responses that are a text content type
13     # (text/html, text/xml, text/plain, etc).
14     if { [HTTP::header "Content-type"] starts_with "text/" } {
15         # Get the content length so we can request the data to be
16         # processed in the HTTP_RESPONSE_DATA event.
17         if { [HTTP::header exists "Content-Length" ] } {
18             set content_length [HTTP::header "Content-Length"]
19         } else {
20             set content_length 4294967295
21         }
22         if { $content_length > 0 } {
23             HTTP::collect $content_length
24         }
25     }
26 }
27
28 when HTTP_RESPONSE_DATA {
29     # Find ALL the possible credit card numbers in one pass
30     set card_indices [regexp -all -inline -indices {(?:3[417]\d{13})}
31     foreach card_idx $card_indices {
32         set card_start [lindex $card_idx 0]
33         set card_end [lindex $card_idx 1]
```



```
Local Traffic >> iRules : LX Workspaces >> afm_apm_dynamic_address_list

General Properties
Name: afm_apm_dynamic_address_list
Partition / Path: Common
Associated Plugin: afm_apm_dynamic_address_list_plugin [Reload from Workspace...]

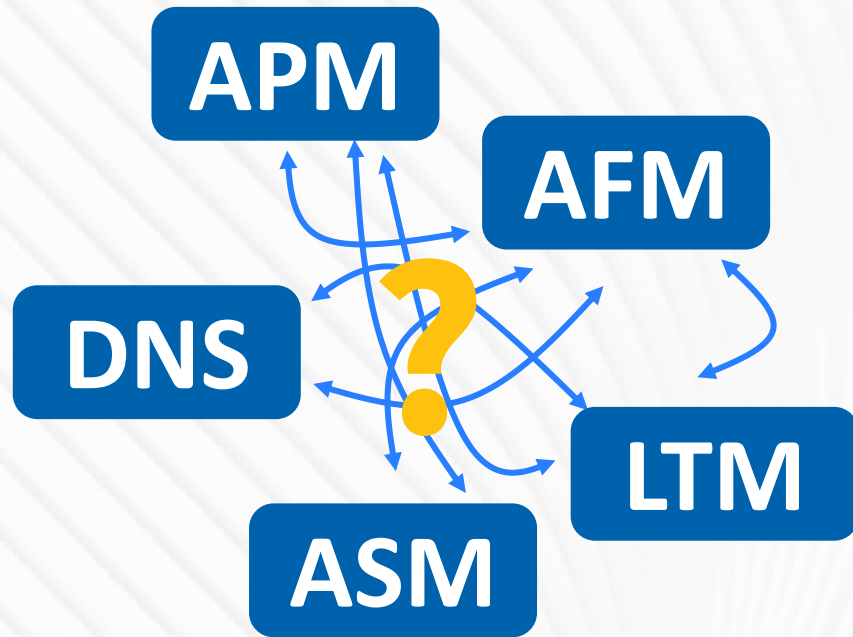
Workspace Files
afm_apm_dynamic_address_list
├── rules
│   └── afm_apm_dynamic_address_list
├── dynamic_address_list
│   ├── f5_afm.js
│   ├── f5_api.js
│   └── index.js
└── node_modules

1 #
2 # AFM/ASM dynamic address list iRulesLX RPC.
3 #
4 #
5 # add the address to the address list
6 when ACCESS_POLICY_COMPLETED {
7     set ilx_handle [ILX::init "afm_apm_dynamic_address_list_plugin" "dynamic_address_list"]
8     # set username
9     set ip_address [ACCESS::session data get session.user.clientip]
10    if {[info exists ip_address]} {
11        # create a random secret
12        if {[catch {set res [ILX::call $ilx_handle "addAddress" $ip_address]} result]} {
13            log local0.error "Client - [IP::client_addr], ILX failure: $result"
14            return
15        }
16    } else {
17        log local0.error "Can not add address list, client IP not defined"
18        return
19    }
20 }
21
22 # remove the address from the address list
23 when ACCESS_SESSION_CLOSED {
24     set ilx_handle [ILX::init "afm_apm_dynamic_address_list_plugin" "dynamic_address_list"]
25     # set username
26     set ip_address [ACCESS::session data get session.user.clientip]
27     if {[info exists ip_address]} {
28         # create a random secret
29         if {[catch {set res [ILX::call $ilx_handle "deleteAddress" $ip_address]} result]} {
30             log local0.error "Client - $ip_address, ILX failure: $result"
31         }
32     }
33 }
```

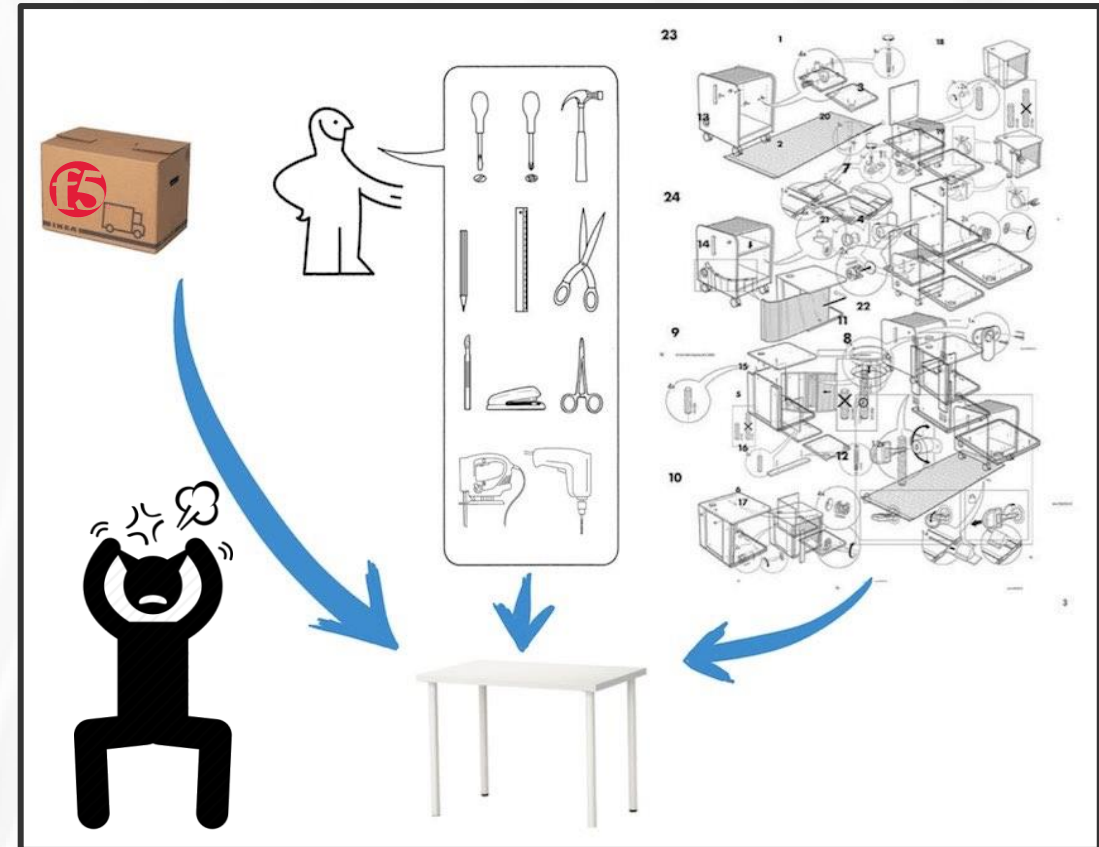


6 Reasons to Replace Your F5 or Citrix Load Balancer

Reden #1: Complexiteit



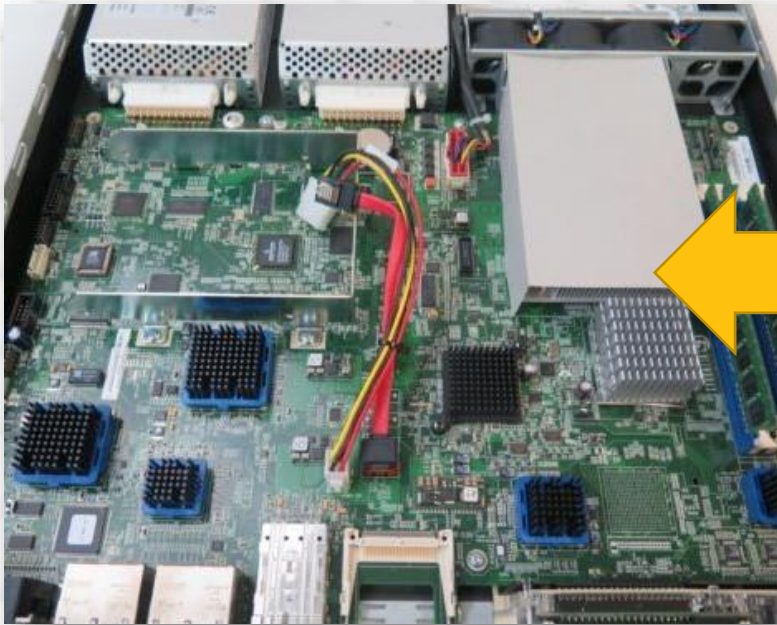
Meerdere componenten staan 'aan'
of ze gebruikt worden of niet



Moeilijk te configureren en beheren

Reason #2: Afhankelijkheid van custom hardware

Hardware maakt gebruik van proprietary IC's



Reason #3: iRules Require Advanced Programming

iRules = Data Plane programmability

- F5 defers development to iRules (i.e., HTTP redirect)
- ‘Alles’ kan maar dat heeft een prijs
- Maakt een fulltime expert programmeur noodzakelijk

```
1. when RULE_INIT {
2.     set static::mseconds 10000
3.     set static::maxdupreq 10
4. }
5. when CLIENT_ACCEPTED {
6.     set dup_req 0
7.     set last_req ""
8. }
9. when HTTP_REQUEST {
10.    if { $last_req equals "" } {
11.        set last_req [HTTP::uri]
12.        set dup_req 0
13.    }
14.    elseif { $last_req == [HTTP::uri] } {
15.        incr dup_req
16.        after $static::mseconds { if { $dup_req > 0 } { incr dup_req -1 } }
17.        if { $dup_req > $static::maxdupreq } {
18.            log "Killing suspected Mirai at [IP::client_addr]"
19.            TCP::respond "HTTP/1.0\r\n200 OK\r\nLocation: http\r\n\r\n"
20.            TCP::close
21.        }
22.    }
23.    else {
24.        set dup_req 0
25.    }
26. }
```


Reason #4: F5 and Citrix zijn duurder



citrix



Model	LM-X15	MPX-8905	i2800
Throughput (Gbps)	15	5	10
SSL TPS	12000	8000	4300
Concurrent connections	35M	N/A	14M
geschatte listprijs	€ 9.800	€ 44.000	€ 27.900



50%+ betere performance voor

35% prijs



citrix



200%+ betere performance voor



78% prijs

Voor een volledig vergelijking kijk op: <https://kemp.ax/compare-kemp-f5-big-ip-citrix-netscaler-virtual-load-balancers/>

Reason #5: Eigenlijk wil ik alleen load balancen

Wij schatten dat 90% procent van alle projecten alleen goede load balancing (en WAF) nodig heeft

Wat ik nodig heb



Wat me verkocht wordt



25.000+
klanten

60.000+
applicatie
deployments

Reason #6: Lack of True Network Telemetry

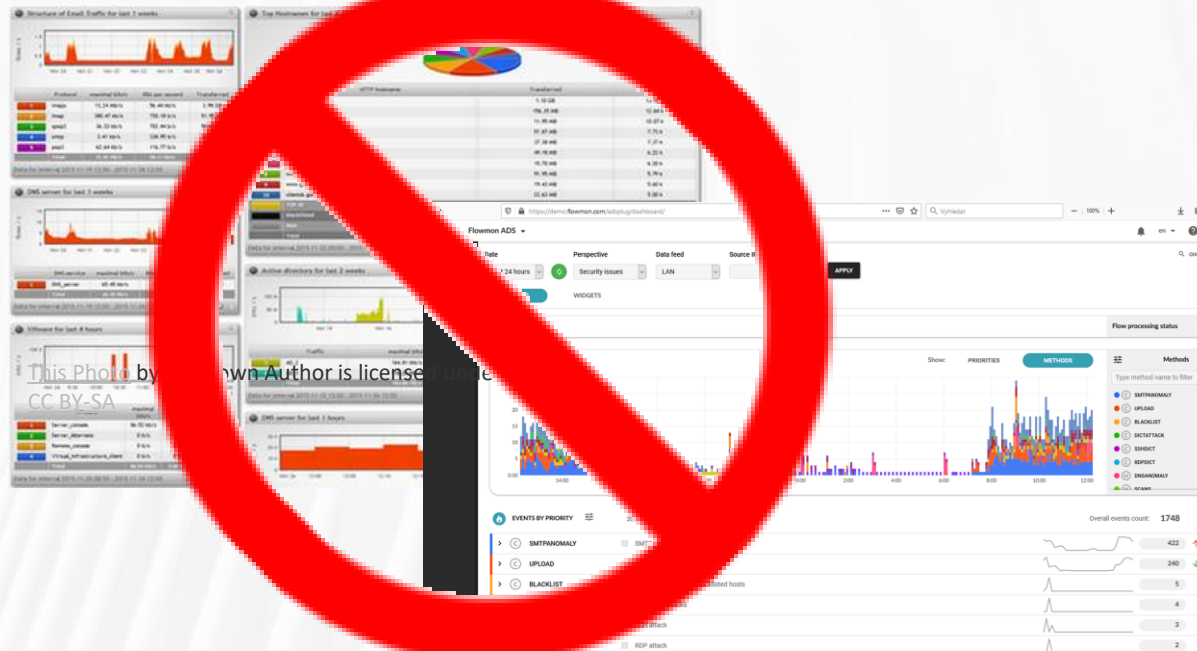
F5 **only** ondersteunt alleen sFlow



NetFlow

IPFix

jFlow



Bonus Reason #7: Support klanttevredenheid

Kemp is de best gewaardeerde load balancer



5/5 ★★★★★

“Kemp LoadMaster is a strong product, easy to use, and great support.”

Over 300 customer reviews!

The screenshot shows the Gartner Peer Insights page for Application Delivery Controllers (ADCs). The page features a search bar, navigation links, and a list of products. The top product listed is Kemp LoadMaster, which has a 5-star rating and 307 reviews. A quote from a customer is displayed: "Flexible and Easy to use product with industry leading customer support!". Below this, there is a section for F5 BIG-IP, which has a 4.5-star rating and 194 reviews. A quote from a customer is displayed: "Best ADC in the market, simply brilliant!".

<https://www.gartner.com/reviews/market/application-delivery-controllers>

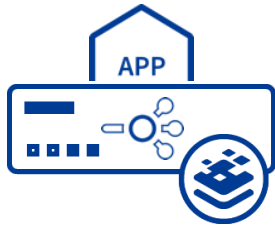




Waarom Kemp?

How Kemp Ups the Load Balancing Game

Simple, Easy-to-Use
Products



Eenvoudige
deployment en
opties

Network
Telemetry Built-In



Transparantie
en **inzicht**
bij beheer van
applicaties

Unmatched Value
& Cost Savings



4x performance
per €
vergeleken
met F5 &
Citrix

World-Class
Technical
Support



99%+
klant-
tevredenheid

Seamless iRules Migration and Application Templates

Professional Services om te migreren van iRules naar Kemp

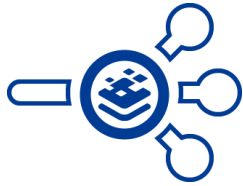


Applicatie templates maken configuratie eenvoudig



De meest flexibele load balancing licenties in de markt

Virtual Load Balancers



Load balancing software die draait op de standard hypervisors voor cloud en datacenters

Cloud Load Balancers



Cloud load balancing voor public cloud infrastructuur inclusief AWS and Azure

Hardware Load Balancers



Een uitgebreide familie van high-performance hardware met een unieke prijs/prestatie verhouding

Key Takeaways



- Kemp is **load balancing** met alle noodzakelijke functionaliteit
- Kemp is gefocust de primaire **load balancing behoefte**
- Kemp heeft **netwerk telemetry ingebouwd**
- Kemp heeft **betere prijs/prestatie verhouding**
- Kemp heeft de **beste klantwaardering** en **klantondersteuning**



- F5 heeft een zeer **uitgebreid** product portfolio
- F5 focust op **meer dan load balancing**
- F5 producten zijn **gecompliceerd** qua configureren en beheer
- F5 is **> %100** duurder dan Kemp (list prijzen)
- F5 is **niet** de meest gewaardeerde load balancer op Gartner Peer Insights



- Citrix focuses on **Workspace** (virtualization)
- Citrix ADC is **gecompliceerd**
- Citrix is **duur** voor load balancing
- Citrix is **niet** de best gewaardeerde load balancer op Gartner Peer Insights

Is it time for a change?

Download Trial Software:
<https://kemp.ax/try>

Trial Options



Virtual

Test our Virtual LoadMaster VLM-MAX, delivering uncapped application Throughput and SSL TPS. The performance achieved is dependent on the allocated system resources. The trial includes our our award-winning technical phone support, configuration, and deployment help.

[Download Now](#)



Hardware

Evaluate any of our hardware LoadMasters free of charge. Try the model that best fits your needs & environment. If you like it, we'll send you a license. If not, simply send it back!

[Try a Box](#)



Cloud

Optimized for Hybrid and Public Cloud deployments, Kemp's Cloud LoadMasters are available for Microsoft Azure, Amazon Web Services and VMware vCloud Air.

[Choose Your Platform →](#)



Thank You

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