

IBM Systems & Technology Group

A Tour of www.vm.ibm.com

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Brian K. Wade, bkw@us.ibm.com

IBM z/VM Webmaster

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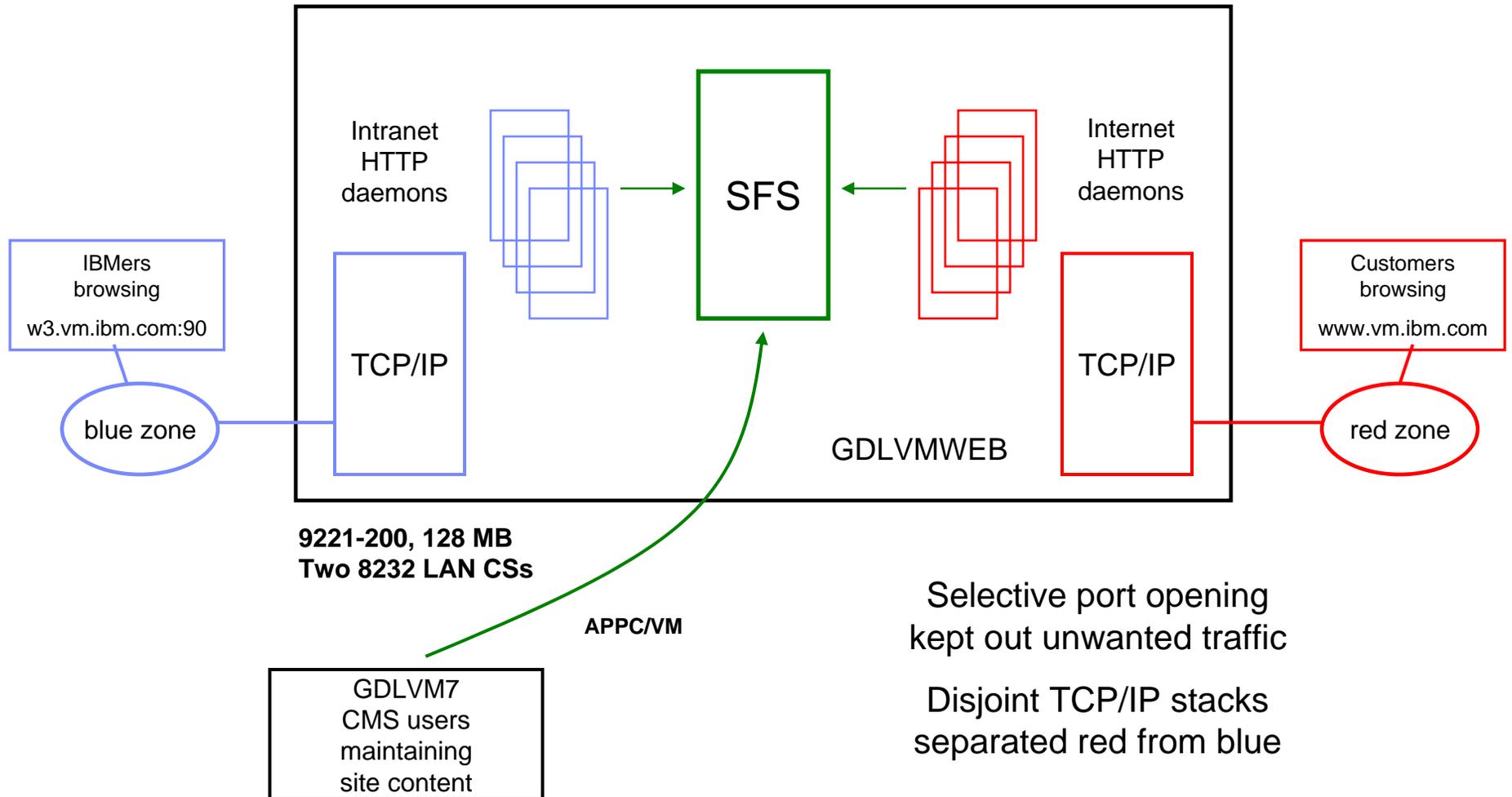
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A Long Time Ago, We Wanted a “VM Home Page”

- **For what? Marketing material, technical publications, downloads, ...**
- **Hey, let's use what we know... and already have available right here**
 - HTML is just another markup language – we know markup -- we'll just write it with XEDIT
 - We'll need site automation, but we have Rexx and CMS Pipelines
 - We'll need a decent file system, but the CMS Shared File System is perfect for this
 - We had a shareware web server that ran on CMS
 - We had a T1 Internet connection, a spare modest System/390, and VM/ESA
- **We built ourselves a small web server running on VM and CMS**
 - A CMS Shared File System server to hold the site's content
 - Two disjoint TCP/IP stacks:
 - One side facing the Internet, for customers
 - The other side facing toward IBM, for an internal shadow of the content, for browsing performance
 - Two sets of CMS-based web servers, pulling content from SFS
 - An APPC/VM connection to our production VM system, where the content developers worked
- **This structure:**
 - Demonstrated how customers could adapt their VM systems to new uses
 - Let us safely maintain and serve content, in a manner that **updates are visible immediately**

How We Started, Spring 1996

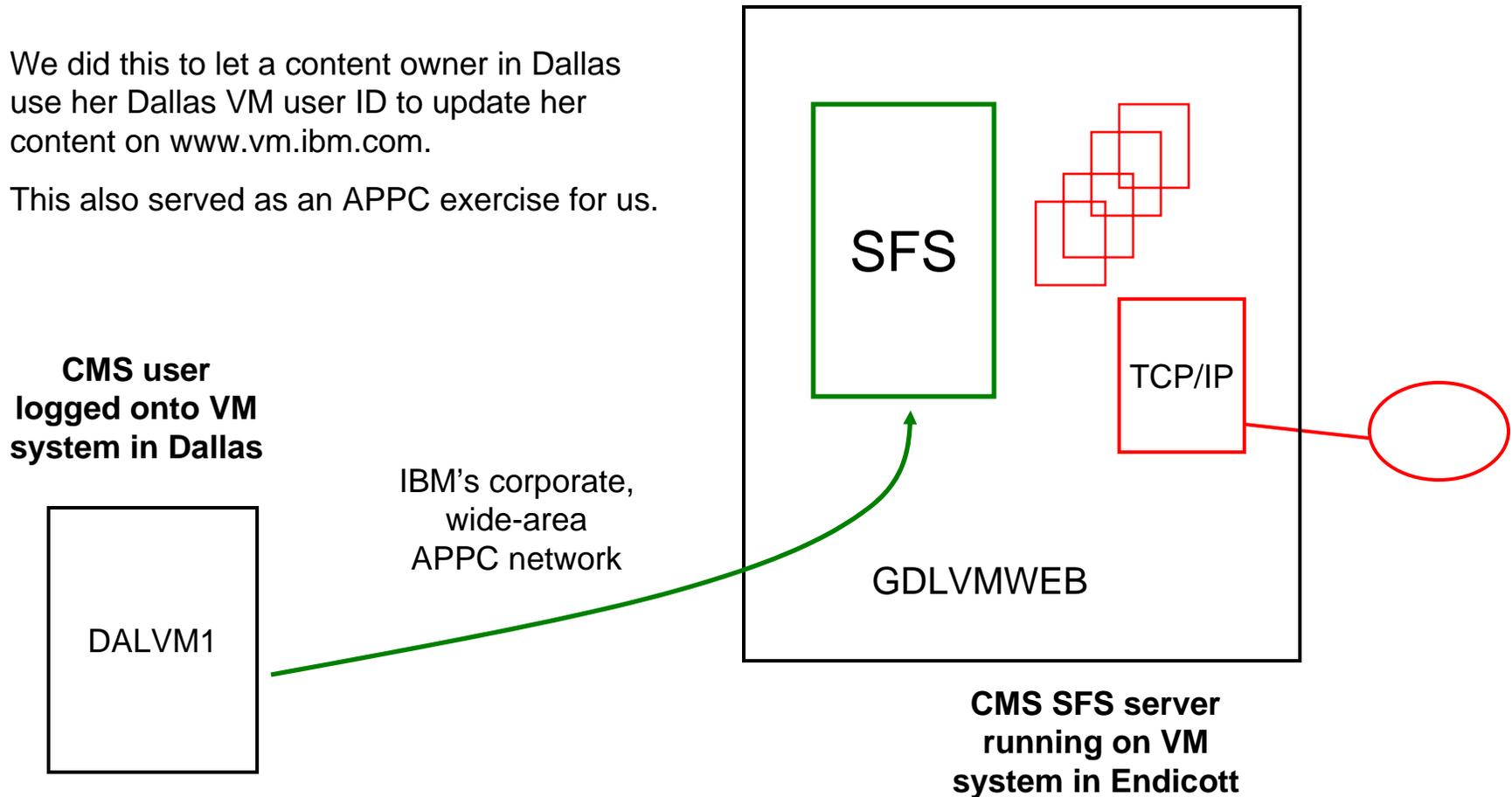
edslink4.eds.com - - [07/May/1996:13:08:22 -04.00] "GET /newmini.gif HTTP/1.0" 200 -



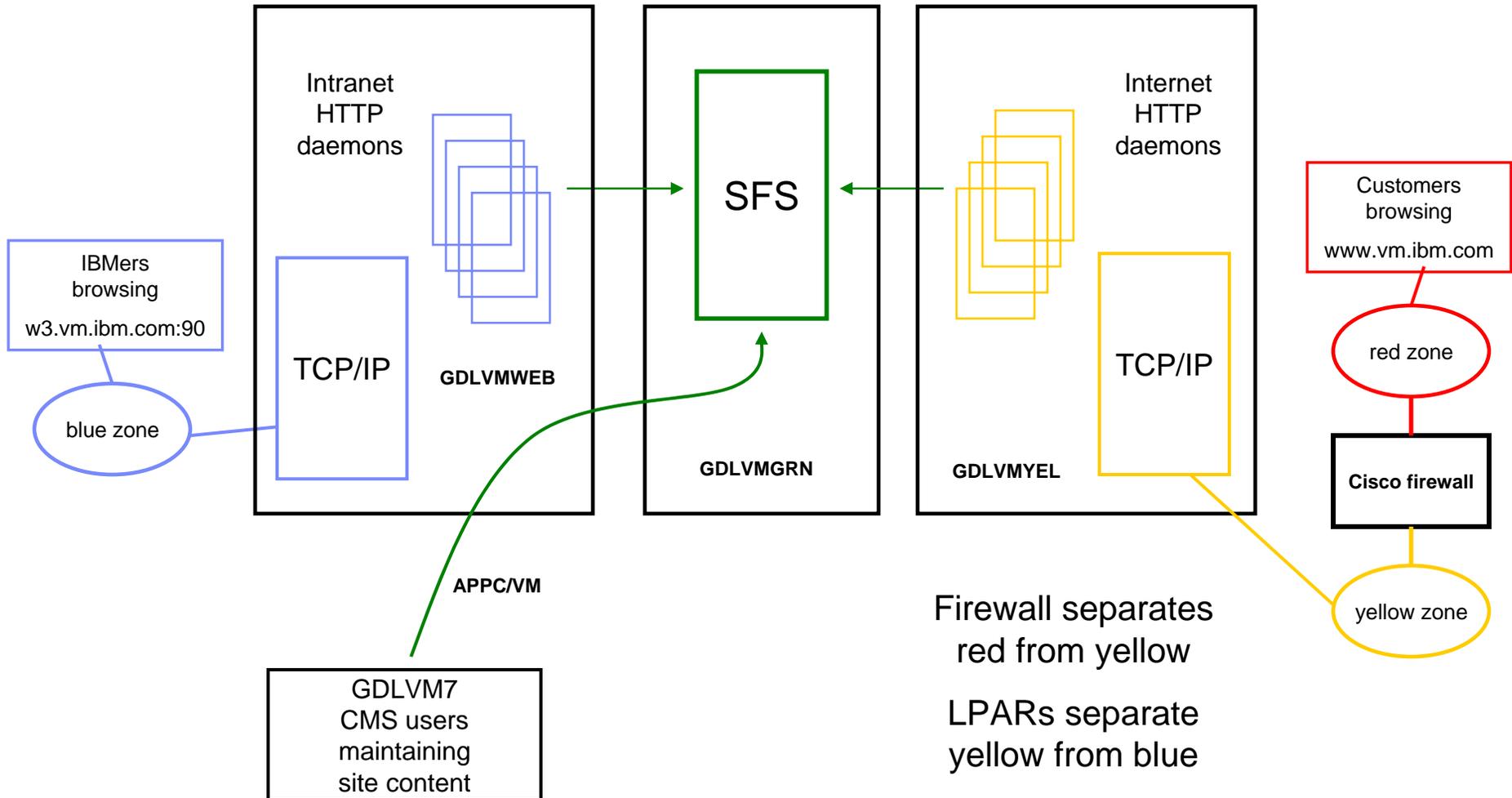
We Even Did *This* Once

We did this to let a content owner in Dallas use her Dallas VM user ID to update her content on www.vm.ibm.com.

This also served as an APPC exercise for us.



Hi, We're From Corporate, and We're Here to Help You



The CMS Shared File System is the Key

URI	SFS Directory
/	VMHOME:EWEBADM.VMPAGE
/zvm610	VMHOME:EWEBADM.VMPAGE.ZVM610
/devpages	VMHOME:EWEBADM.VMPAGE.DEVPAGES
/devpages/bkw	VMHOME:EWEBADM.VMPAGE.DEVPAGES.BKW
/perf	VMHOME:EWEBADM.VMPAGE.PERF
/perf/tips	VMHOME:EWEBADM.VMPAGE.PERF.TIPS
/events	VMHOME:EWEBADM.VMPAGE.EVENTS

What The Content Developer Sees

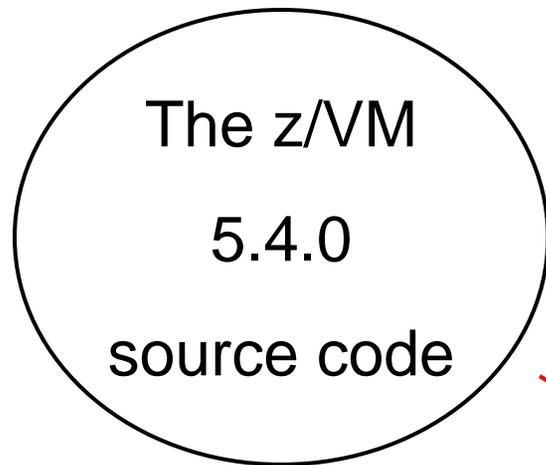
```

Session B - [43 x 80]
File Edit View Communication Actions Window Help
BKM FILELIST A0 Y 169 Trunc=169 Size=123 Line=1 Col=1 Alt=0
Directory = VMHOME:EMEBADM.VMPAGE.DEVPAGES.BKM
Cmd Filename Filetype Fm Format Recl Records Blocks Date Time
BBUILD $LOG B1 Y 47 14 1 2009-11-17 20:00:06
CPG $LOG B1 Y 62 40 1 2009-11-16 05:00:03
INDEX IX-FILES B1 Y 63 13 1 2009-11-15 21:00:05
LINMON VMARC B1 F 80 425 9 2009-11-11 10:05:08
00000016 IX-WORDS B1 F 32 1062 9 2009-11-08 21:00:04
TESTCASE HTML B1 Y 424 439 5 2009-11-04 10:11:17
00000012 IX-WORDS B1 F 32 244 2 2009-10-25 21:00:46
00000013 IX-WORDS B1 F 32 136 2 2009-10-25 21:00:46
00000014 IX-WORDS B1 F 32 60 1 2009-10-25 21:00:46
00000006 IX-WORDS B1 F 32 816 7 2009-10-25 21:00:45
00000007 IX-WORDS B1 F 32 547 5 2009-10-25 21:00:45
00000008 IX-WORDS B1 F 32 450 4 2009-10-25 21:00:45
00000009 IX-WORDS B1 F 32 508 4 2009-10-25 21:00:45
00000010 IX-WORDS B1 F 32 57 1 2009-10-25 21:00:45
00000003 IX-WORDS B1 F 32 1900 15 2009-10-25 21:00:44
00000005 IX-WORDS B1 F 32 650 6 2009-10-25 21:00:44
00000002 IX-WORDS B1 F 32 984 8 2009-10-25 21:00:43
00000001 IX-WORDS B1 F 32 95 1 2009-10-25 21:00:42
64ENCODE HTML B1 Y 424 265 4 2009-10-23 10:01:11
CONTACT HTML B1 Y 424 254 4 2009-10-23 10:01:10
INDEX HTML B1 Y 424 462 5 2009-10-23 10:01:10
LINMON HTML B1 Y 424 828 8 2009-10-23 10:01:10
MONOFFER HTML B1 Y 424 347 4 2009-10-23 10:01:10
MONRQST HTML B1 Y 424 364 5 2009-10-23 10:01:10
MONSIMP HTML B1 Y 424 352 4 2009-10-23 10:01:10
MONWRITE HTML B1 Y 424 336 4 2009-10-23 10:01:10
MONW2 HTML B1 Y 424 309 4 2009-10-23 10:01:10
REDIR HTML B1 Y 424 246 4 2009-10-23 10:01:10
TRSOURCE HTML B1 Y 424 283 4 2009-10-23 10:01:10
VMBASICS HTML B1 Y 424 253 4 2009-10-23 10:01:10
VMHOME4A TRAILER B1 Y 121 33 1 2009-10-23 10:01:08
VMHOME TRAILER B1 Y 121 42 1 2009-10-23 10:01:07
VMHOME4A HEADER B1 Y 424 141 2 2009-10-23 10:01:07
VMHOME HEADER B1 Y 424 197 3 2009-10-23 10:01:06
1= Help 2= Refresh 3= Quit 4= Cancel 5= Sort(dir) 6= Sort(size)
7= Backward 8= Forward 9= FL /n 10= Share 11= XEDIT/LIST 12= Cursor
====>
XEDIT 1 File
13:28:14 Enter your response in vscreen XEDIT
MA b 04/001
Connected to remote server/host gdlvm7.endicott.ibm.
    
```

Content developers on GDLVM7 just use CMS tools to do their work.

Notice the files of filetype **HTML** in this FILELIST snapshot.

Programmatically Generated Content

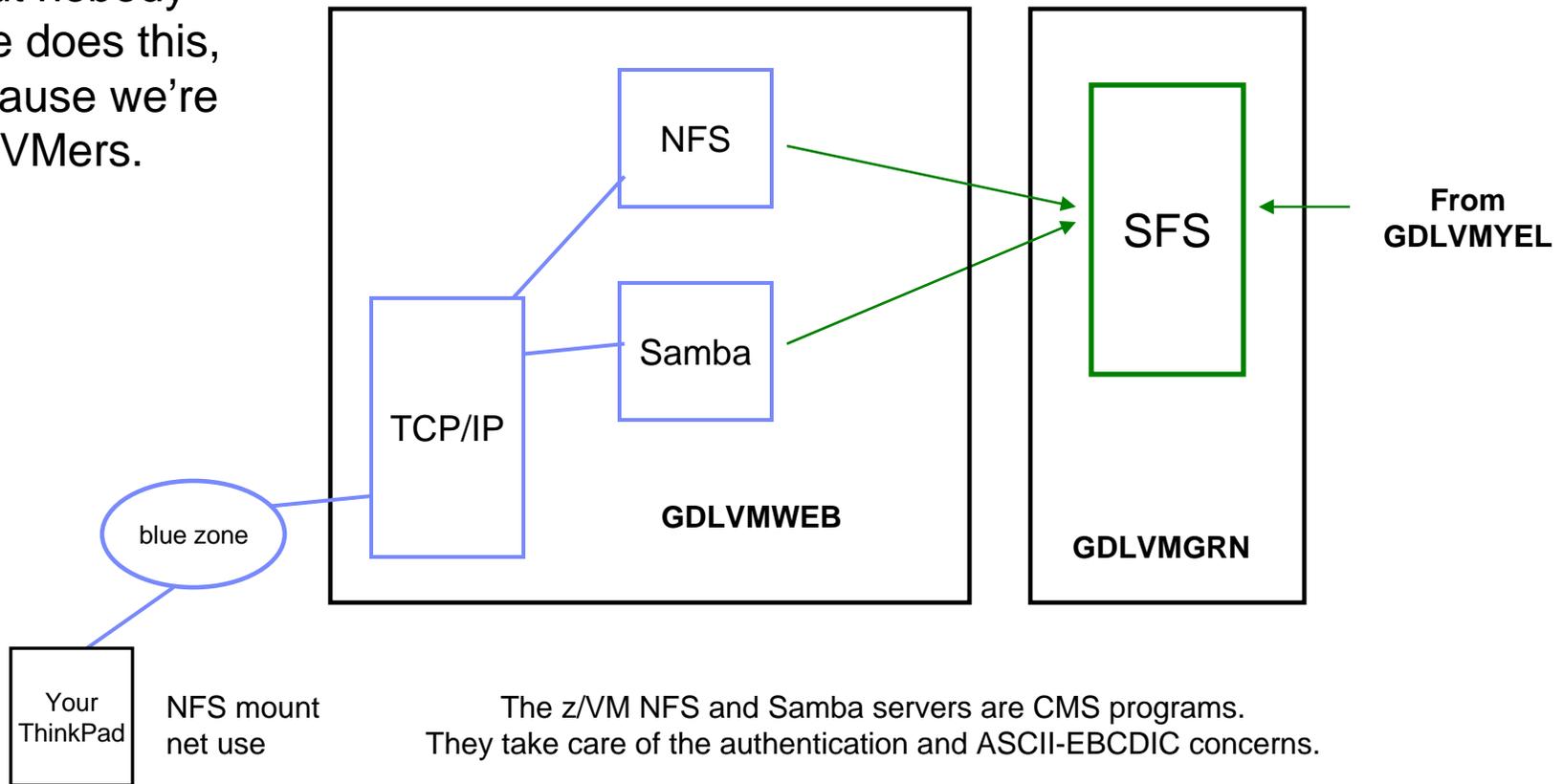


A Rexx exec that
processes our source

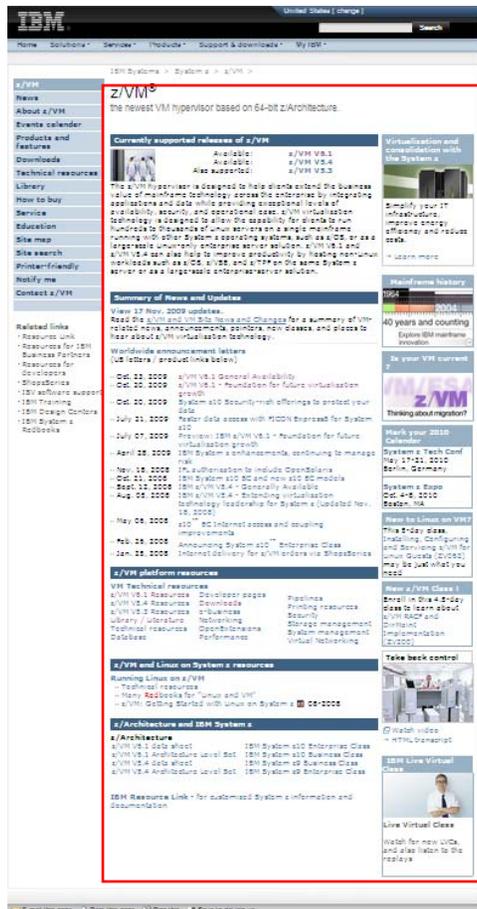
VMDBK HTML
VMHOME:EWEBADM.VMPAGE.PUBS.CP540
Known to you as **/pubs/cp540/vmdbk.html**

If You Insist... Content Development with PC Tools

But nobody here does this, because we're VMers.



A Web Page is Both Look-and-Feel and Content



To write their content, our authors fill in an HTML template.

The template implements the corporate-mandated look and feel for ibm.com.

Our automation can refresh all of the site's HTML files with a new template whenever we want.

The automation uses CMS tools, such as Rexx and CMS Pipelines.

This lets us immediately deploy corporate-mandated look-and-feel changes with no effort from content developers.

Inside the HTML File

```
<html>
<head>
<meta...
<meta...
...
</head>
<!-- BEGIN HEADER -->
... I own this ...
<!-- BEGIN CONTENT -->
... Pam owns this ...
<!-- END CONTENT -->
... I own this ...
```

A pipeline takes this apart:

1. Extracts the red parts that Pam owns
2. Reassembles the red stuff into the new blue stuff that came from Corporate
3. Rewrites the HTML file

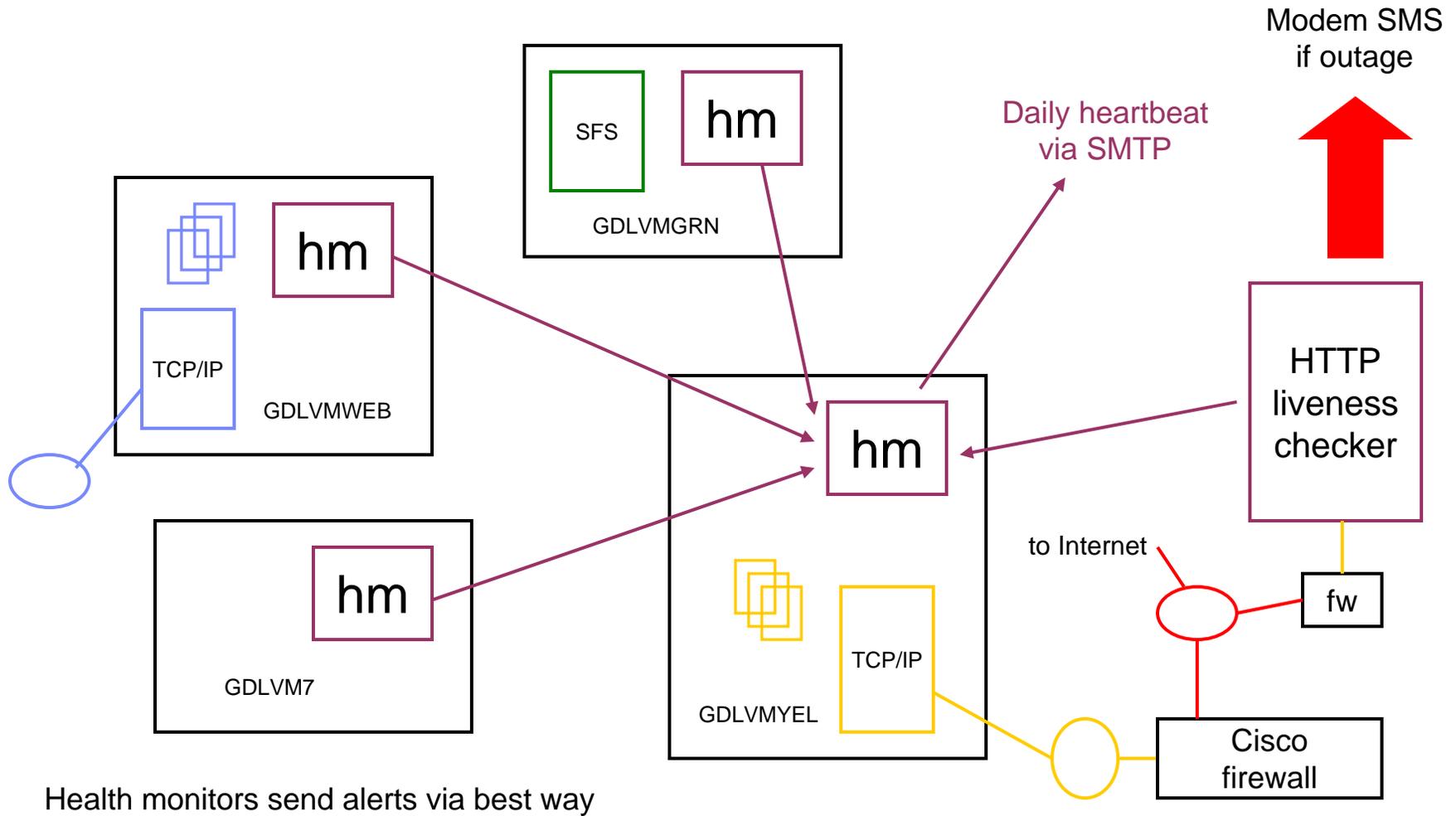
Kinds of Content on www.vm.ibm.com

- **Marketing materials: announcements, brochures, ...**
- **Formal product literature: manuals and reports**
- **Listings and descriptions of available z/VM patches**
- **Informal product literature: many “hints and tips” articles**
- **Detailed references: data structure descriptions**
- **Conference calendar**
- **Electronic seminar support materials**
- **Any z/VM developer can have a personal page**
- **We can refresh any of this immediately**

Some Advantages of a CMS-based Web Server

- **Nobody tries to attack you, because they're all busy attacking Windows, or Apache on Linux.**
- **Even if they try to attack, their tricks don't work, because they're written to assume a different daemon.**
- **Your web server daemon runs in a class G virtual machine, and it has no write authority to SFS. Even if hackers break the server, they're fenced.**
- **Want to do CGIs? It's Rexx and Pipelines. Simple, simple, simple.**
- **It's very easy to access your corporate data.**
- **CMS is a very lightweight guest. Those 40 years of tuning and evolution go a long way.**

Health Monitoring



Health monitors send alerts via best way

Activity Display

```

Session B - [65 x 145]
File Edit View Communication Actions Window Help
EnterpriseWeb/VM on GDLVNYEL 2009-11-19 15:19:12 EST up @23:49:52 forcing @
Userid S <-Txct> <-PTime> <-STime> <-Client_IP--> URL
EMEB001 0 0 23:49:52
EMEB002 0 0 23:49:52
EMEB003 0 0 23:49:52
EMEB004 1 0:00:00 0:20:41 66.147.154.3 /pubs/cp44064/0BJSTMT.HTML
EMEB005 0 0 23:49:52
EMEB006 0 0 23:49:52
EMEB007 0 0 23:49:52
EMEB008 0 0 23:49:52
EMEB009 0 0 23:49:52
EMEB010 0 0 23:49:52
EMEB011 0 0 23:49:52
EMEB012 0 0 23:49:52
EMEB013 0 0 23:49:52
EMEB014 0 0 23:49:52
EMEB015 0 0 23:49:52
EMEB016 0 0 23:49:52
EMEB017 0 0 23:49:52
EMEB018 0 0 23:49:52
EMEB019 0 0 23:49:52
EMEB020 0 0 23:49:52
EMEB021 0 0 23:49:52
EMEB022 0 0 23:49:52
EMEB023 0 0 23:49:52
EMEB024 0 0 23:49:52
EMEB025 0 0 23:49:52
EMEB026 0 0 23:49:52
EMEB027 0 0 23:49:52
EMEB028 1 0:00:00 3:15:19 91.204.225.76 /gif/upgrade.gif
EMEB029 1 0:00:00 3:15:19 91.204.225.76 /ned_148x75.jpg
EMEB030 0 0:00:00 3:15:19 91.204.225.76 /cell_408miv.gif
EMEB031 0 0:00:00 3:15:19 91.204.225.76 /gif/pdf.gif
EMEB032 9 0:00:00 11:04:19 171.150.194.11 /devpages/JELLIOTT/images/evrnt8.gif
EMEB033 144 0:00:00 0:52:55 95.119.91.58 /gif/31UPDAT.GIF
EMEB034 197 0:00:00 0:02:04 205.172.134.23 /gif/pdf.gif
EMEB035 112 0:00:00 0:11:12 66.147.154.3 /NFS/os2bfs.html
EMEB036 42 0:00:00 0:52:55 95.119.91.58 /gif/fm_c.gif
EMEB037 430 0:00:00 0:01:13 166.73.20.25 /ned_148x75.jpg
EMEB038 950 0:00:00 0:00:00 12.104.244.6 ?
EMEB039 3357 0:00:00 0:00:00 12.104.244.6 /gif/C.gif
EMEB040 16163 0:00:00 0:00:00 12.104.244.6 /zvm540/index.html

Group DCt TIP PIP <---Last_Peak---> <-Txct> RR t/m TCTM RR t/m PR t/m <Ccnt> <MCnt> <LastHit> <-Last_Client-> LastURL
EMEB0 40 2 8 2009-11-19 14:14:53 21295 14.9 4 41.0 115.0 0 0 0:00:00 12.104.244.6 /gif/C.gif

Last 10 Log Records (disk: F W C for EMEB0)
2009-11-19 14:11:38: I EMEB0 new PR 115.00
2009-11-19 14:14:53: I EMEB0 new PIP 8
2009-11-19 10:10:05: I EMEB0 new PR 56.00
2009-11-18 19:17:29: I EMEB0 new PIP 8
2009-11-18 19:17:28: I EMEB0 new PIP 8
2009-11-18 19:17:26: I EMEB0 new PIP 7
2009-11-18 19:04:53: I EMEB0 new PIP 7
2009-11-18 18:28:42: I EMEB0 new PR 45.00
2009-11-18 18:32:00: I EMEB0 new PR 46.00
2009-11-18 18:28:59: I EMEB0 new PR 36.59
    
```

This is just a little activity display to show what the CMS web servers are doing.

It's a gee whiz display, mostly.

Speeds and Feeds

- **IBM z900, 2064-116, 32 GB, 16 engines, 2 small OSAs, ESCON**
 - It's a little big for the job, but we would have scrapped it otherwise!
- **Three z/VM partitions, each one 2-3 GB and 4 engines**
- **One IBM 2105-F20 DASD server, holding about 100 2-GB volumes**
- **Web daemons: 40 yellow, 16 blue, each a 64 MB CMS**
- **About 15,000 HTML pages, 650 PDFs, and 500 downloads**
- **About 4 GB of site content**
- **About 25,000 HTTP transactions per day**
- **Performance: CPUs 1%, memory 2%, DASD 1.5 msec, mostly cached in z900 memory**

Summary

- **We used what we had**
- **We built something that's both useful and usable**
- **Rock-solid System z and z/VM let me sleep at night**
 - Systems run unattended almost all the time
 - I can't remember the last unplanned outage
- **Good example for our customers**
- **Shepherding the site is my privilege and pleasure**