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Cloning Linux with z/VM

Session 9206

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This Session

- Cloning Concepts
- Overview of MAINVIEW for VM Systems Cloning
- Evolution and Development
- Related Info and Contact Info

MAINVIEW for VM System Cloning == VCT

About Us ...

- About BMC
  - 3270 Optimizer, 1980
  - z/OS biz, "distributed" biz, but always BSM
  - MAINVIEW, Patrol, Control/*, Remedy, Marimba, …
- About Rick
  - VM/SP 1982, VM/HPO, VM/XA, VM/ESA, and … z/VM!
  - Unix circa 1985 (UTS on VM)
  - Linux since 0.99, even for development (UFT)


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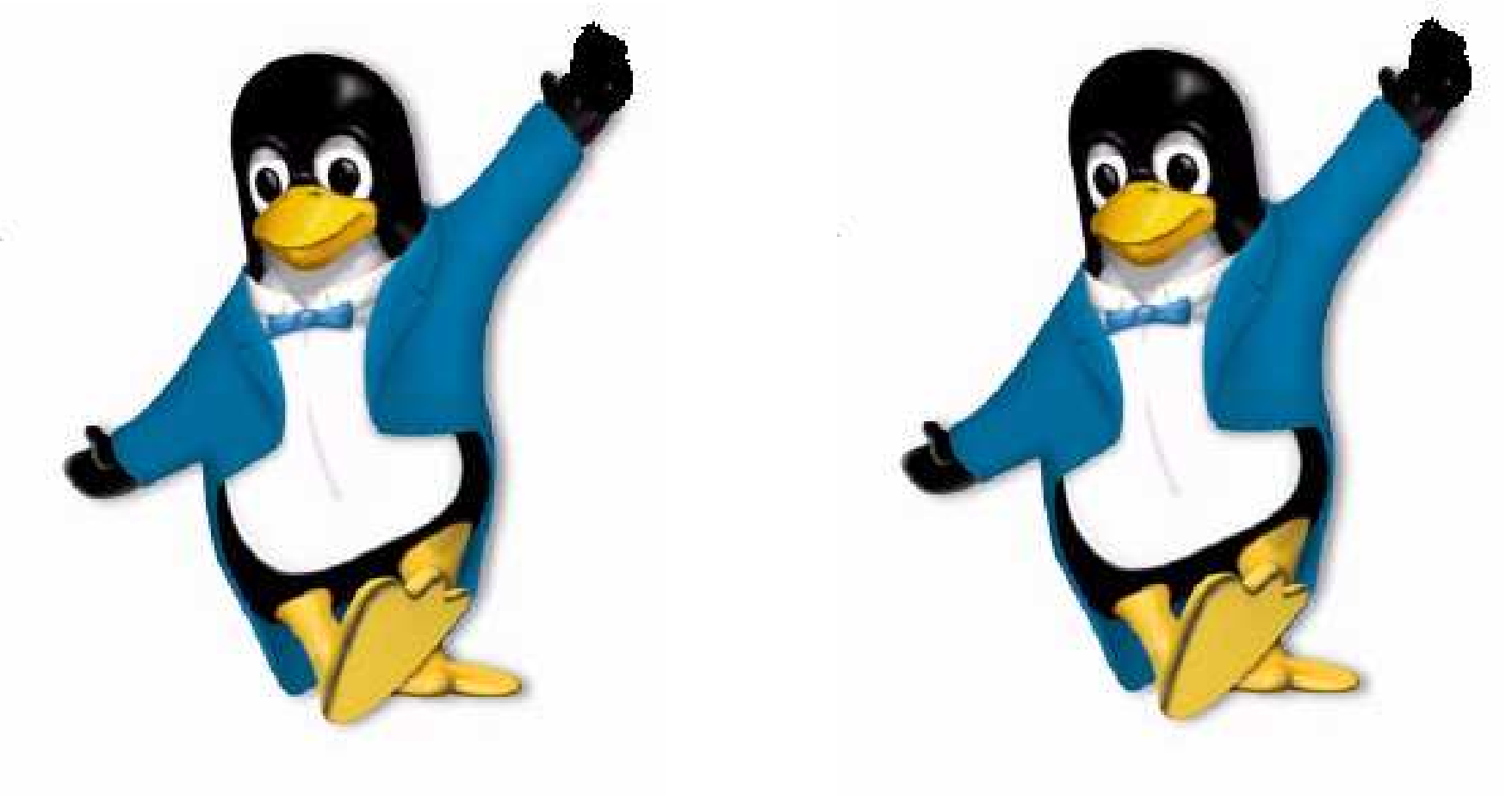
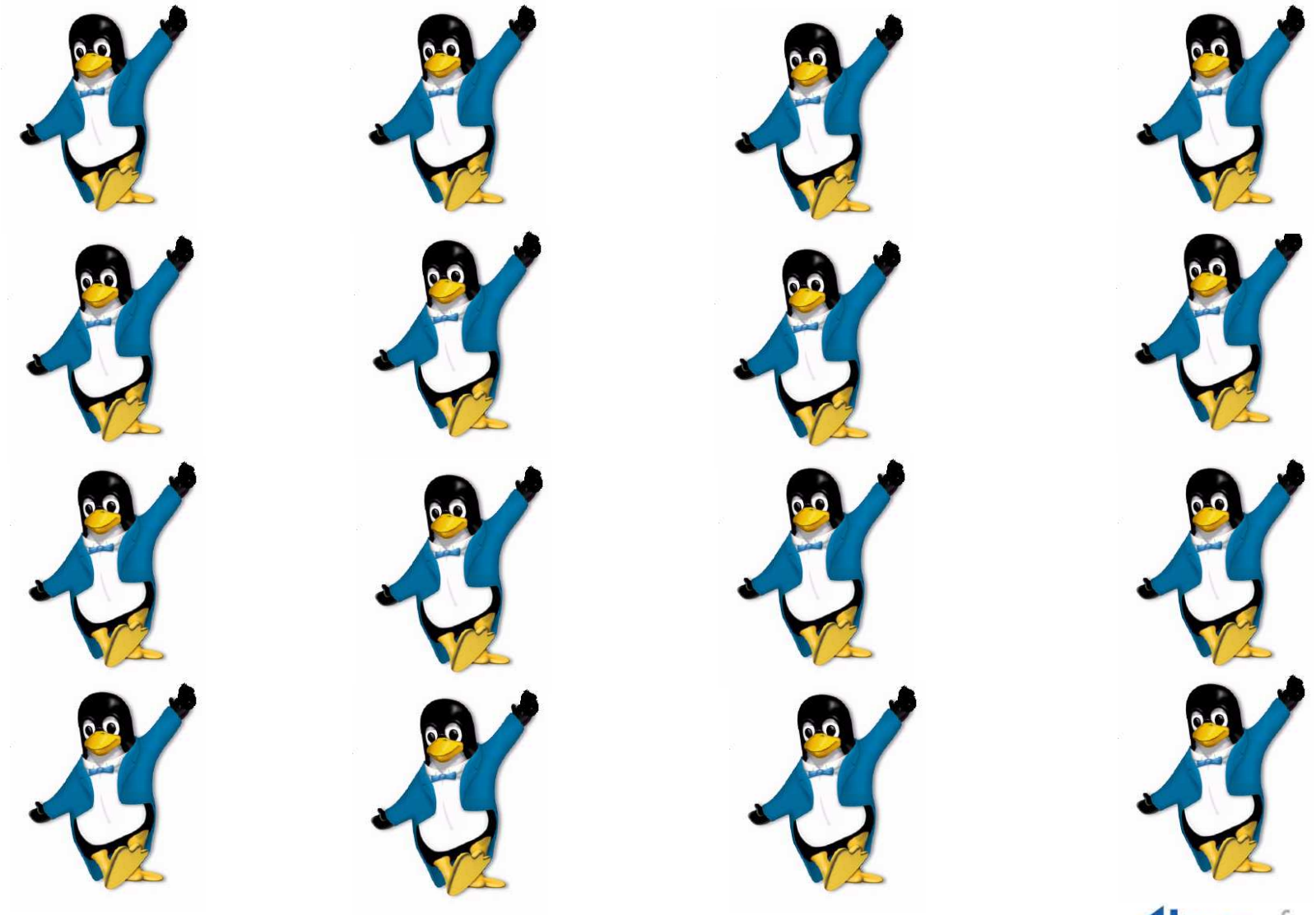
Linux Cloning – made easy

Linux Cloning – made easy



Linux Cloning – made easy

Linux Cloning – made easy



V12N is the new game

- I18N == InternationalizatioN
- V12N == VirtualizatioN

Please don't speak with your mouth full! ☺

The Cloning Life of a System Administrator

- Create v-machine and install Linux
  - This is a lot of work you don't want to repeat
- Define second v-machine like first
- Copy all "private" disks
- Arrange networking for the clone
- Within the newly cloned image, set new identity
  - Requires guest OS knowledge or participation

MAINVIEW for VM System Cloning

True Cloning from a single screen – not just a disk copier

- Create and configure new CP Directory entry
- Creates and copies all mini-disks (not links)
- Modifies and activates TCP/IP network connections
- Autolog the newly cloned image
  - Modifies the Linux image configuration and network files
  - Reboots to bring in new configuration

- **Result – a fully operational clone ready for work**

MAINVIEW for VM System Cloning

Key Benefits

- Independent of MAINVIEW architecture
  - Does not require MVS
- Centralizes and simplifies z/VM cloning
- Eases the pain of using DirMaint or VM:Secure as standalone utilities
- Complements 3rd party VM systems management tools
- Increases the productivity of the IT staff

MV for VM Systems Cloning – Value Prop

- Simplifies the process of cloning systems, enabling the IT staff (distributed as well as mainframe) to clone Linux instances without having detailed knowledge of z/VM.
- Lowers the operational cost of managing z/VM and improves the "time to clone" by 90 percent, enabling the IT staff to be more productive.
- Reduces the manual complexity of DirMaint & VM:Secure from over 20 steps to a single input screen.
- Priced to sell- Low cost & flat across all zSeries IFL groups.

MAINVIEW for VM Systems Cloning

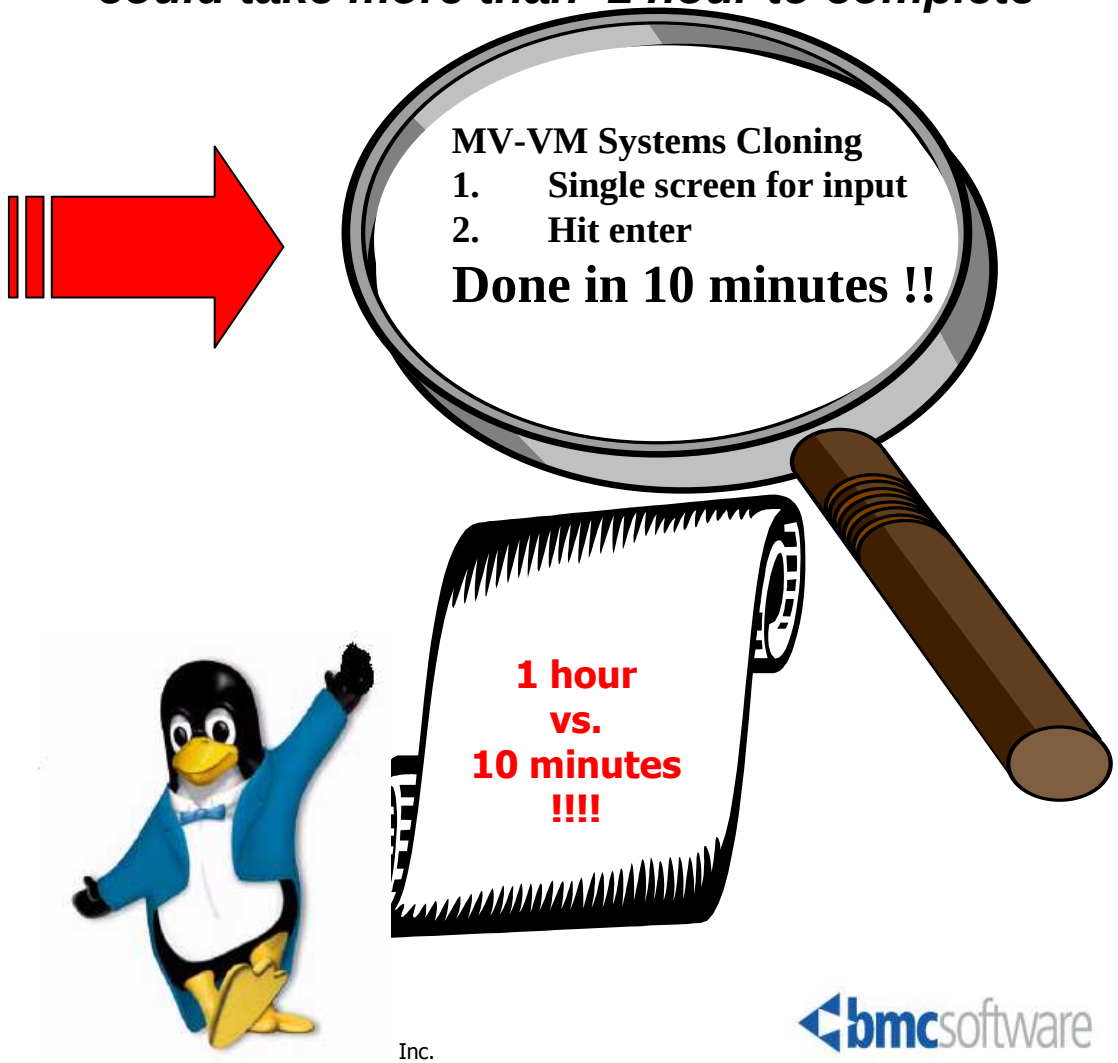
Top Features

- Ease of use for the expert as well as the novice
- Solves a critical provisioning pain-point
  - Uses DirMaint or VM:Secure behind the scene!
- Centralized management for z/VM
- Scalable and secure
- Offers 3 interfaces (Web, GUI, CMS 3270)
- Provides an API for customer product integration
- Low price point
- Complements 3rd party VM monitors

Need to clone?-
We've got you covered!

1. Create VM user account
2. Assign mini-disk to VM user account
3. ?- minidisks same size (source-target)
4. Same? –use DDR under VM
5. Different sized copy under linux
   1. dasdfmt
   2. fdasd
   3. Create filesystem –ext2/3
   4. mkReiserFS
   5. Mount new filesystem
   6. Copy from the old filesystem:tar or cpio
6. RH or Novell-SuSE ?
   1. mkinitrd
   2. chccwdev –e <devno>
   3. Adjust /etc/zipl.conf
   4. zipl
7. Adjust vaiables: hostname, network, config files
8. Network additions or modifications
9. Shutdown & reboot

Cloning a Linux partition has over 19 steps and could take more than 1 hour to complete



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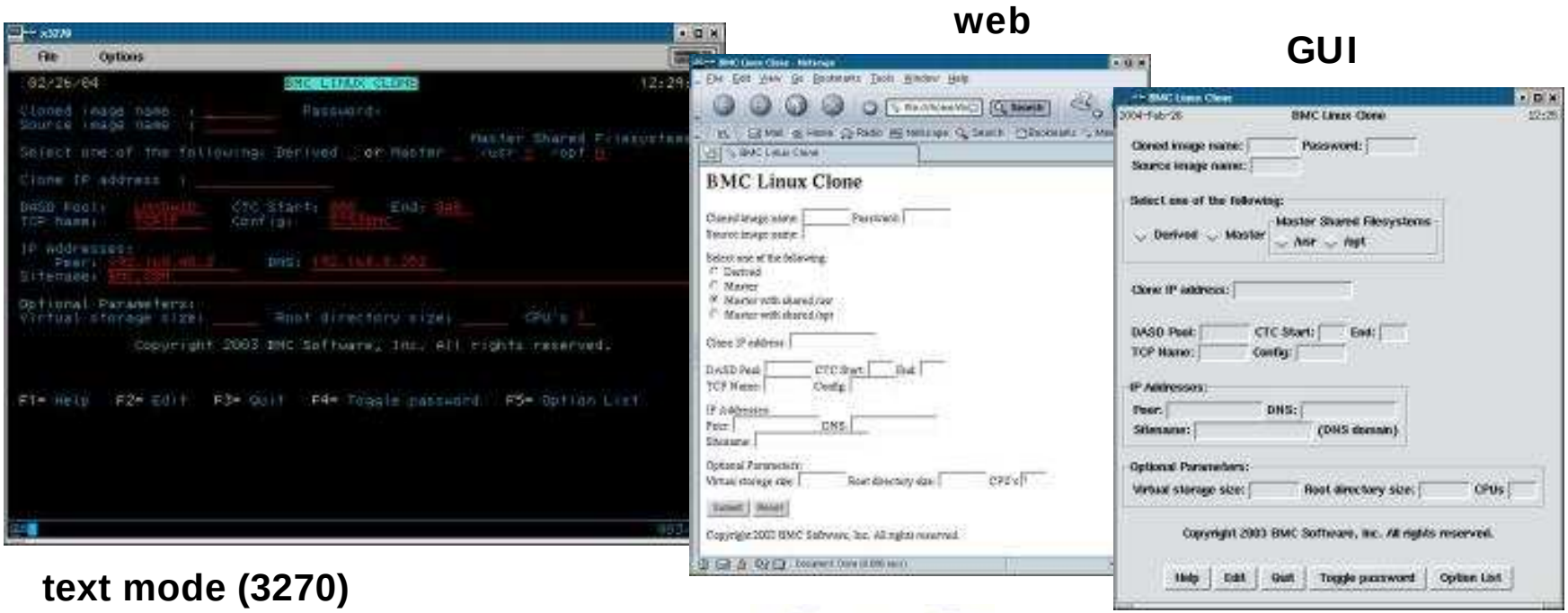
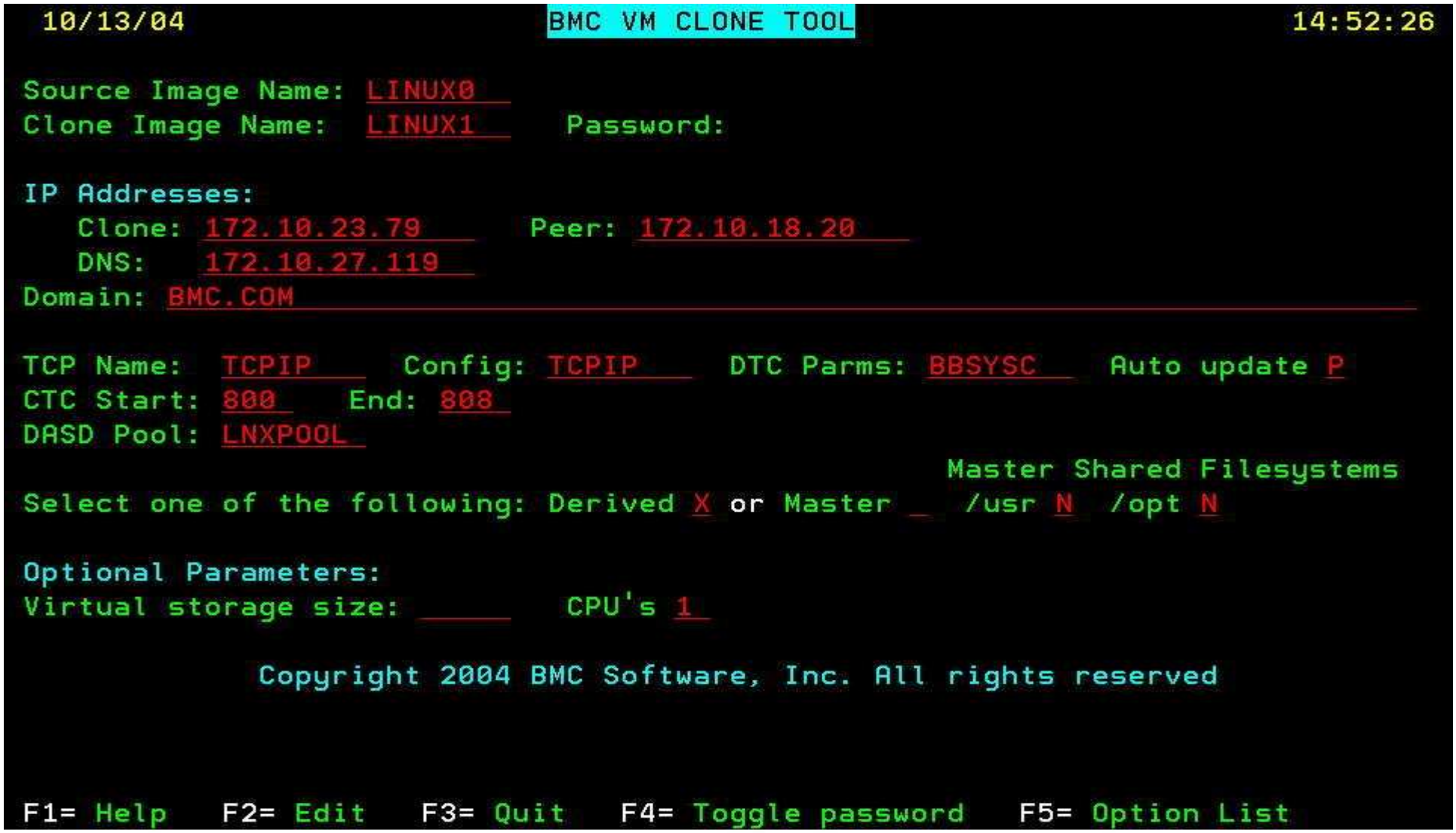
VCT User Interfaces ...



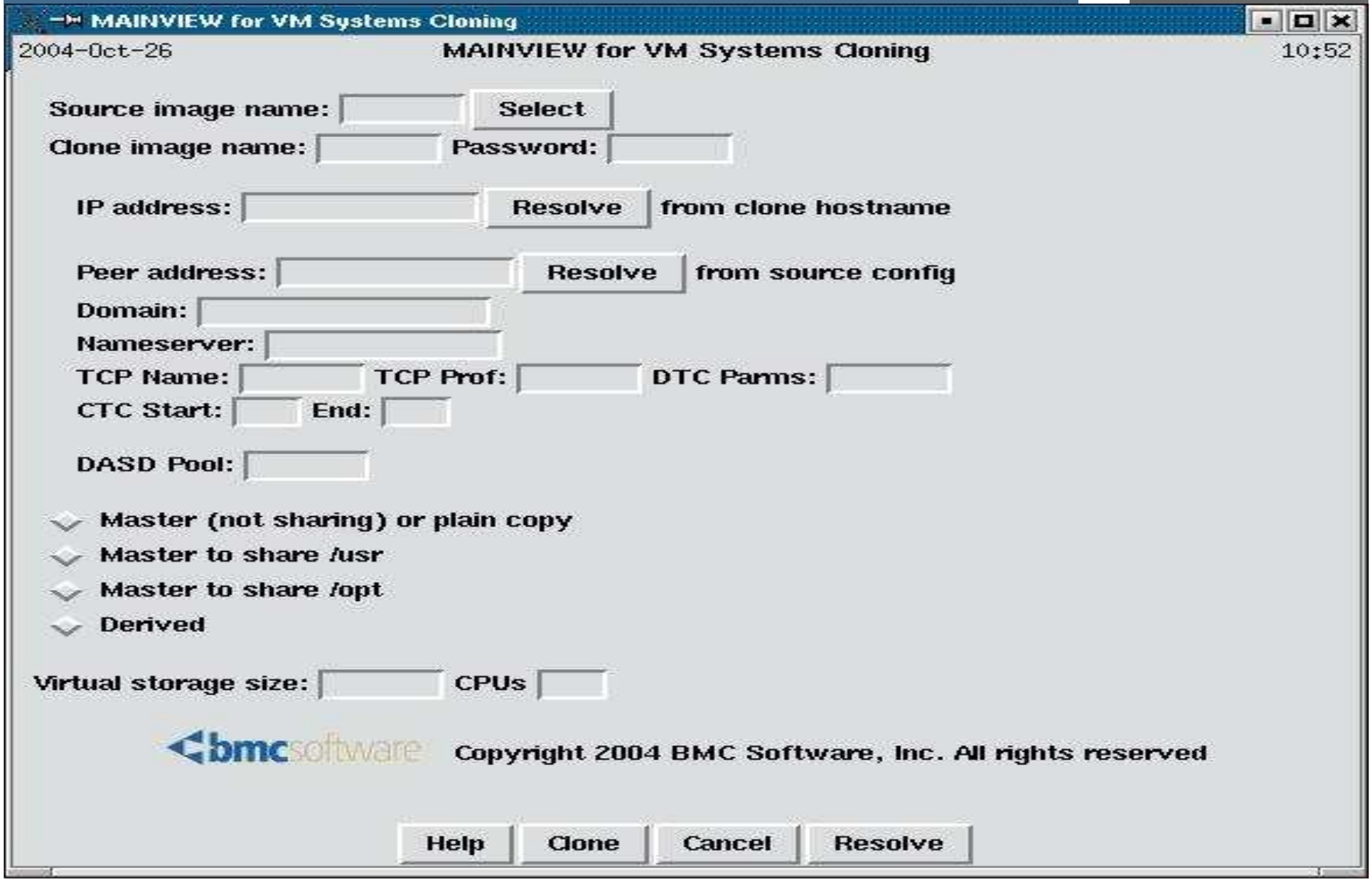
text mode (3270)

- HTML/REXX/Pipes web interface
- Tcl/Tk based GUI interface
- use the same engine as text mode uses

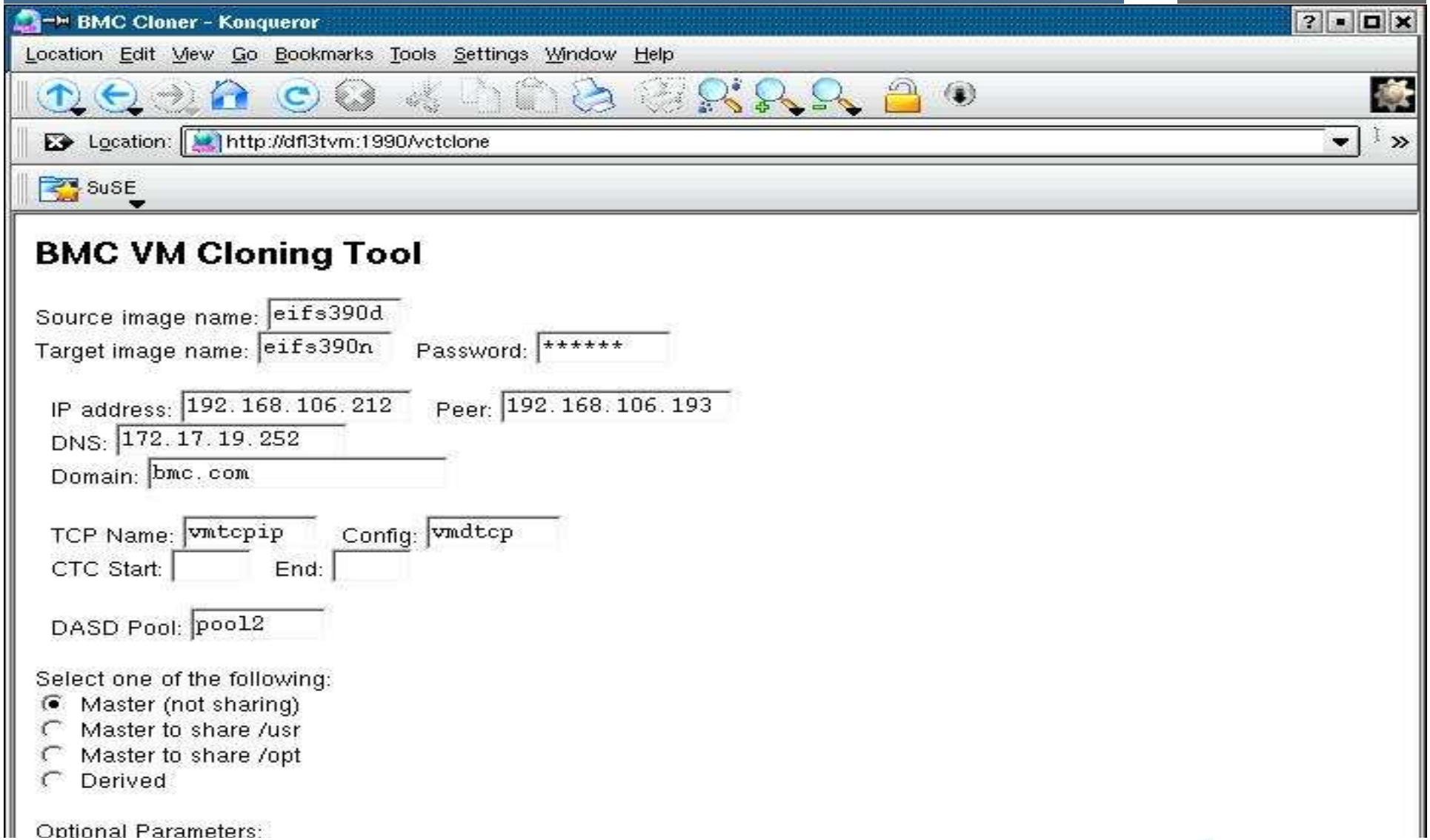
Cloning via 3270



Cloning via GUI



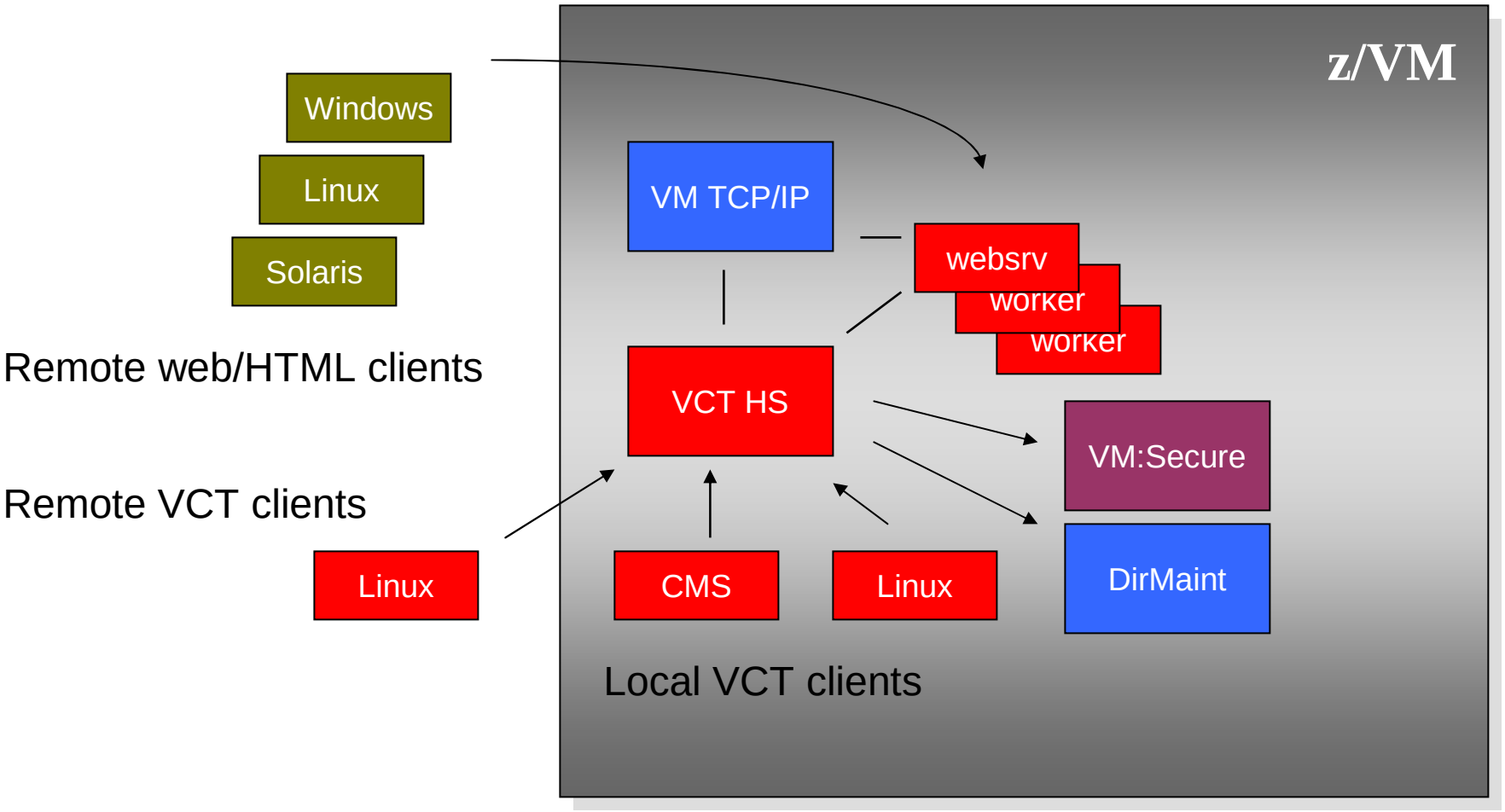
Cloning via HTML Form (Web Form)



MAINVIEW for VM Systems Cloning

- Can be called via API using languages such as:
  - REXX (both CMS and Regina), Perl, Tcl
- Create, view, delete and maintain Linux instances via the API
- Utilizes standard hypervisor utilities
  - DirMaint, VM:Secure
- Start/Stop Linux instances (Start/Stop *any* guest OS)
- Guest networking via VM TCP/IP or GLAN or VSWITCH
- Manage VM user accounts via API
  - create,view,modify,delete

VCT Hypervisor Server



VCT HS Configuration

```
************************************************************
* CONFIGURATION FILE FOR VCTHSRVR                          *
************************************************************
ACCESS 100 LOG
KEEP 5 LOG FILES
KEEP 5 STATUS DAYS
DIRECTORY VMSECURE VMSECURE POOL1 POOL2
TCPIP TCPIP 1333
GRANT ADMINISTRATOR TO MAINT @VMC @SYSCBMC @syslexia
GRANT ADMINISTRATOR TO troth rtroth lwd ldinwidd ldw lwetmore
grant administrator to @powhatan @tenforward @superman
grant administrator to @cowboys @texans @eifp390 @eifalpha
grant administrator to @color scarl jasmith chap pkloves kearp
grant administrator to rhiggin jott kminter mkarier
GRANT OPERATOR TO MAINT
IDENTIFY SERVERS  VCTHSRVR
IDENTIFY WORKERS  VCTHSWK1
IDENTIFY WEBSERVERS  VCTHSWEB:1990 troth:1990
```

VCT Client Configuration

```
# default
VCTHSRVR='VCTHSRVR VCTHSRVR'
export VCTHSRVR

# via IUCV
VCTHSRVR='vmid service'
export VCTHSRVR

# via TCP/IP
VCTHSRVR='vmhost vcthsport'
export VCTHSRVR
```

MAINVIEW for VM Systems Cloning

- Uses CP Directory for all v-machine definitions
  - Does not require a separate database
  - Exception: "hostinfo" files on 191 disk
- HS runs entirely on z/VM
  - Does not require Linux
  - Embedded web server for CGI
- Independent clients for CMS and Linux
- Client/Server using TCP/IP or IUCV
- Linux component installs via RPM

VCT Language Comparison

REXX (CMS and Regina)

```
rc = vcths("start",vmid,"REPLYVAR")
If rc ^= 0 Then Say replyvar
```

Tcl/Tk


```
vcths start vmid
```

Perl

```
$rc = vcths("start","$vmid","REPLYVAR");
print "$REPLYVAR\n";
```

The Clone Identity …

- GHINFO function in VCT
- File on 191 minidisk

```
NAME=MYLINUX1
IPADDR=1.2.3.4
NAMESERVER=1.2.3.1
  …
```

CMS FS for Identity File

- HS runs CMS
- Source must have a 191 (CMS formatted)
- ***vmid*** **HOSTINFO** (plain text, var=value)
- Not limited to Linux clones

AF_IUCV for HS connect and Identity Function

- Socket Family for Linux
- Same as CMS AF_IUCV
  - Compare to AF_INET
- Client Only
- Not limited to VCT product
- Module Source (next release)

AF_IUCV versus AF_INET

```
#include <sys/types.h>
#include <sys/socket.h>

int s1;   /* file descriptor for the socket */
struct sockaddr_iucv sadr;   /* “address” */

s1 = socket(AF_IUCV,SOCK_STREAM,0);
/* … fill-in the sockaddr … */
rc = connect(s1,&sadr,sizeof(sadr));
/* … now do reads and writes … */
close(s1);
```

The MAINVIEW VM-Linux Advantage

- MAINVIEW for VM Systems Cloning
- MAINVIEW for Linux Servers
- MAINVIEW Performance Assurance

- Provisioning
- Monitoring
- Capacity planning

Who to Contact

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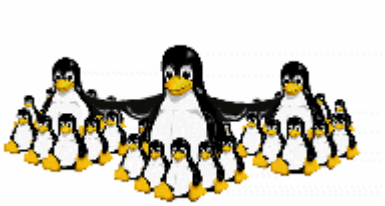
Please take a free copy. Leave your business card if you would like to be contacted with more information.

Who to Contact



l I Love z/VM!

So put another RSU on, baby!

I love z/VM!

Make those penguins dance for me!

100 thousand penguins dance for me!