Consolidação de Servidores de baixa plataforma em arquitetura zSeries e ambiente operacional z/VM-Linux.

Diretoria de Tecnologia

Diretoria de Tecnologia

Agenda

- Histórico
- Infra-estrutura atual
- Estrutura de filesystem compartilhado

Histórico

1999 - SETEMBRO: - instalação da primeira versão beta. Instalada em modo LPAR, uma única imagem Linux utilizando toda a partição, em uma máquina S/390.

2000 : Foi testado o VIF - Virtual Image Facility - Vários servidores numa única LPAR. A IBM decidiu descontinuar o produto.

2001 : O Banco do Brasil foi convidado pela IBM para participar do Programa ESP no qual foi testado o S.O. z/VM V4R2. Para esses testes foi dedicada uma LPAR de uma máquina zSeries 900, modelo 2064.

Histórico

2001

Projeto "Máquinas Virtuais Linux em arquitetura zSeries"

consolidar servidores de baixa plataforma localizados nas instalações do CCTBB provendo infra-estrutura de serviços e servidores Linux em máquinas zSeries, tirando proveito das características dessa plataforma

Histórico

2001

- alta disponibilidade;
- escalabilidade;
- capacidade de processamento;
- conectividade;
- otimização de I/O e
- compartilhamento de recursos.

Histórico

2001

Na partição de laboratório da máquina z900 foram testadas três distribuições:

- SuSe;
- RedHat e
- Conectiva.

Optou-se pela RedHat porque, na época, além de ser a mais aceita mundialmente foi a distribuição adotada pelo Banco para a nova plataforma de agências.

Histórico

2001

Nesse ambiente foram testados vários serviços e produtos:

- Proxy(Squid);
- DB2/UDB EE;
- DB2/UDB Connect EE;
- Servidor Intranet: Apache, TomCat e Java
- TSM Client, adotado como solução de backup;
- WebSphere AS;
- CVS;
- HiperSockets;
- VM-RTM;
- FCON/ESA;
- Compartilhamento de minidiscos;
- e aplicativos do Banco do Brasil.

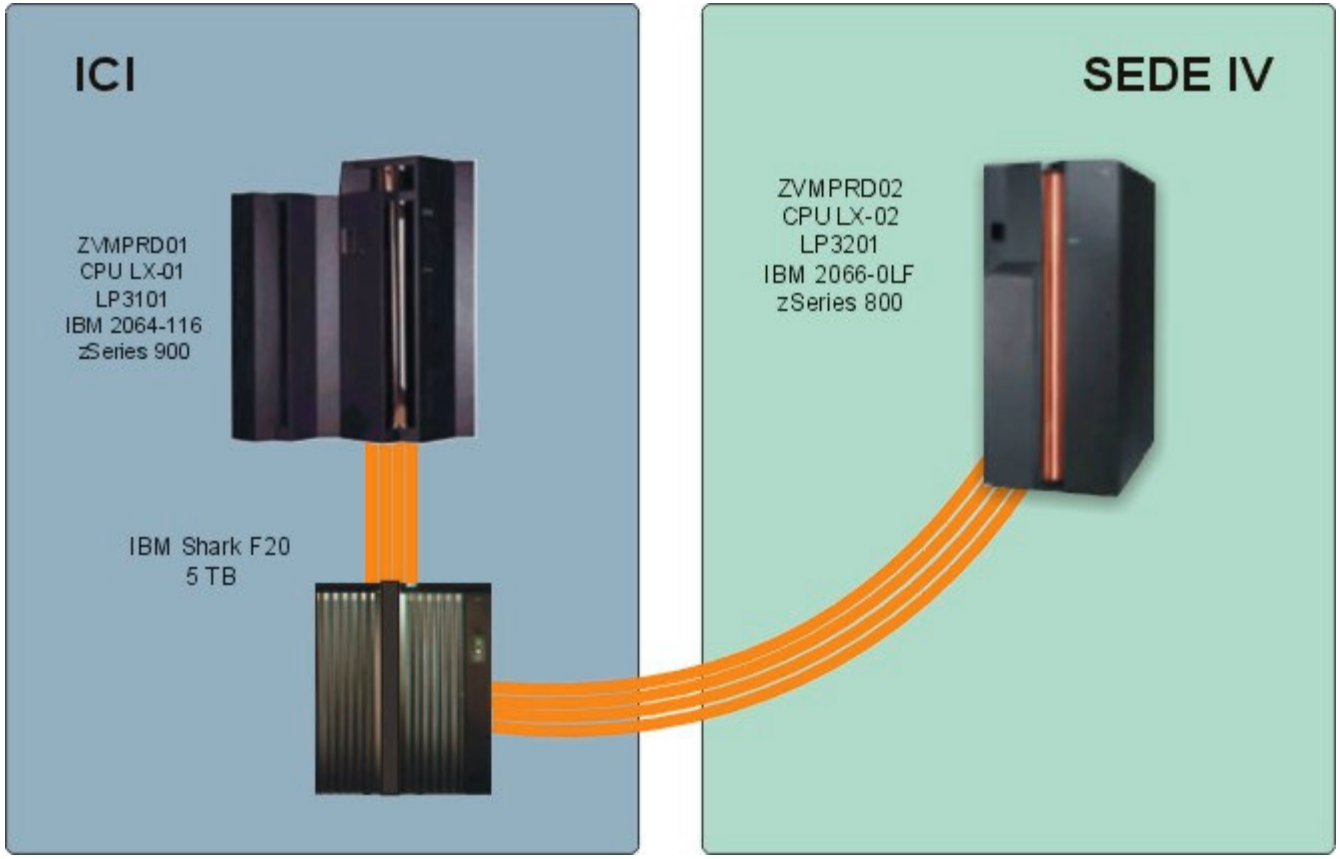
Histórico

2002 - O Banco do Brasil recebeu a máquina z800 (IBM 2066-0LF) que seria preparada para ser o ambiente de produção z/VM-Linux.

2002 - Março - Entra em produção a máquina z800 com os primeiros servidores Intranet.

Dentre os serviços testados, a solução de Servidor Intranet (RedHat 7.2, Apache, TomCat e DB2/UDB Connect e Java 1.3) era aquela que apresenta melhores condições de entrar em produção. Esses servidores atenderiam, no balanceamento de carga, juntamente com os atuais servidores da plataforma Intel que seriam substituídos gradativamente.

Infra-estrutura

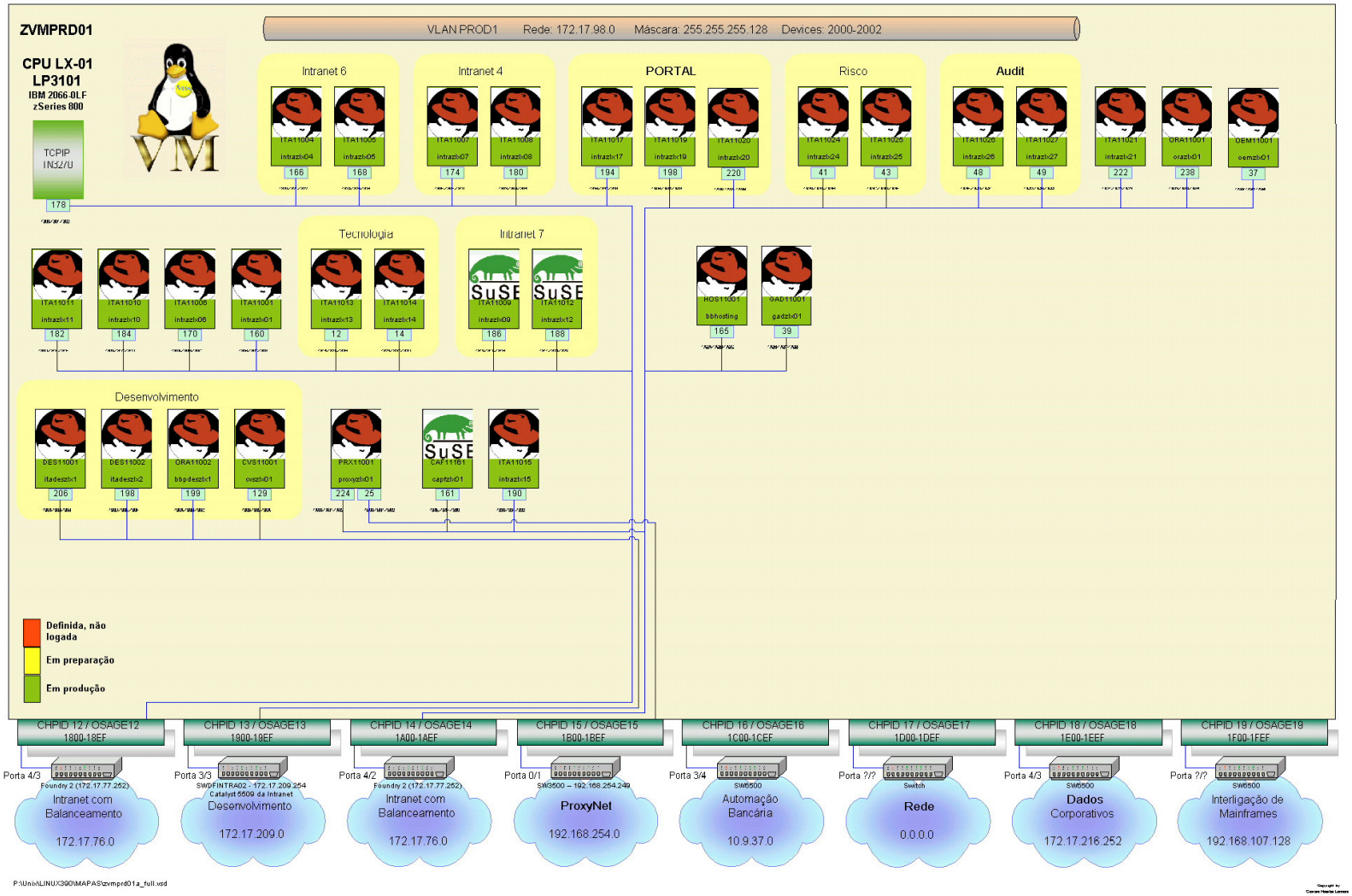


Infra-estrutura

z/VM Linux *(zSeries)*

GETEC 01 - Núcleo 12

Topologia de rede do ambiente de Produção ZVMPRD01

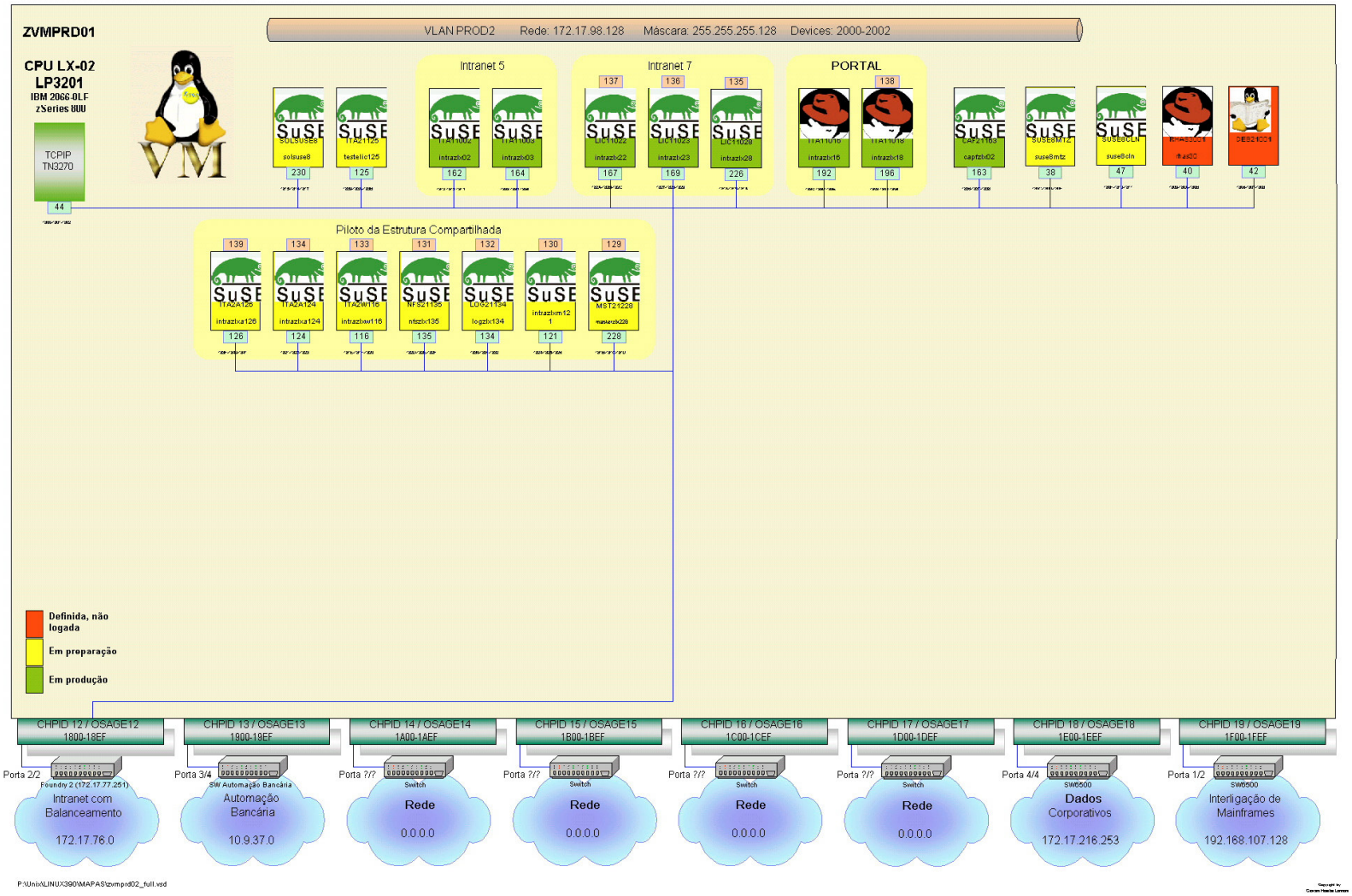


Infra-estrutura

z/VM Linux *(zSeries)*

GETEC 01 - Núcleo 12

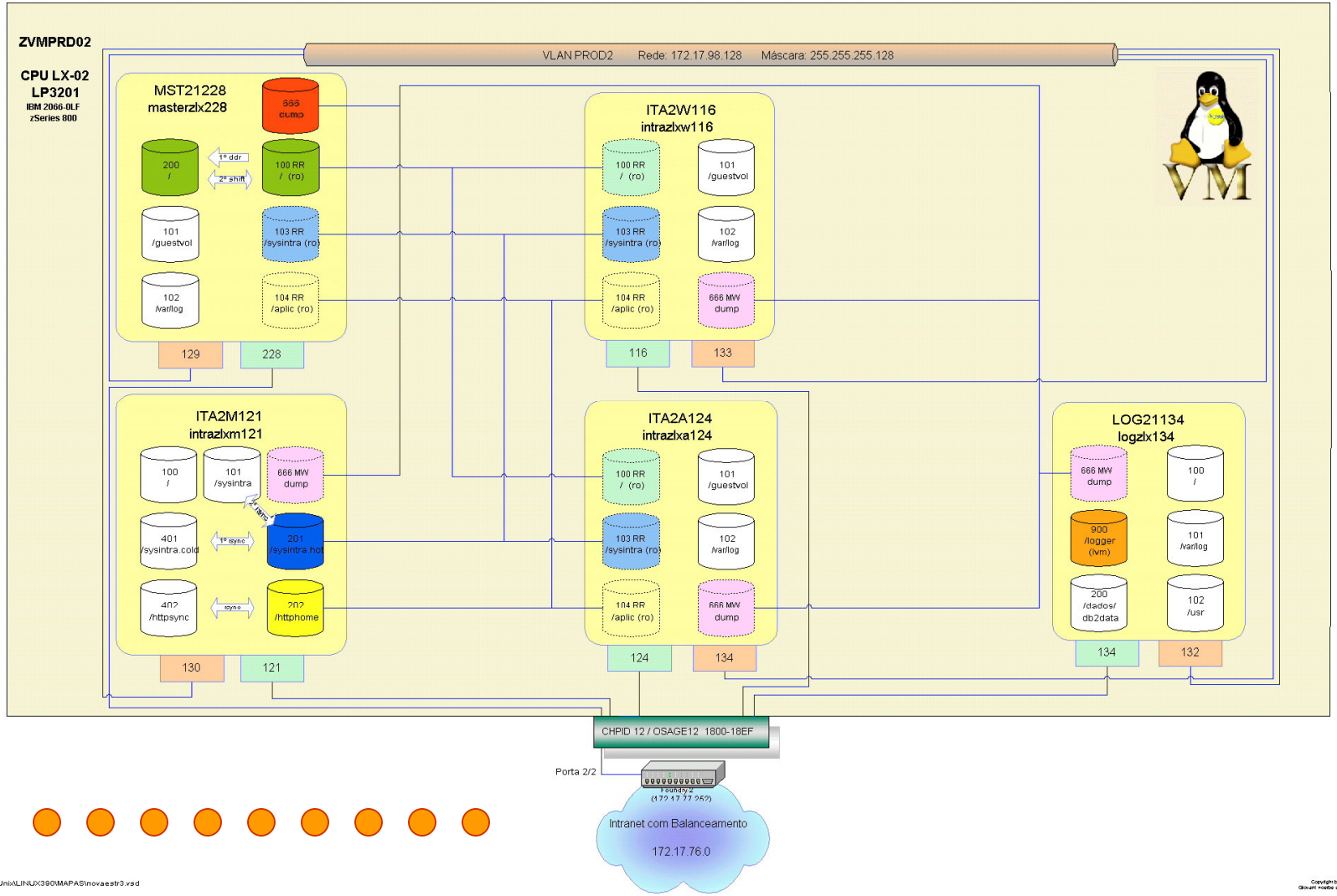
Topologia de rede do ambiente de Produção ZVMPRD02



Estrutura de filesystem compartilhado

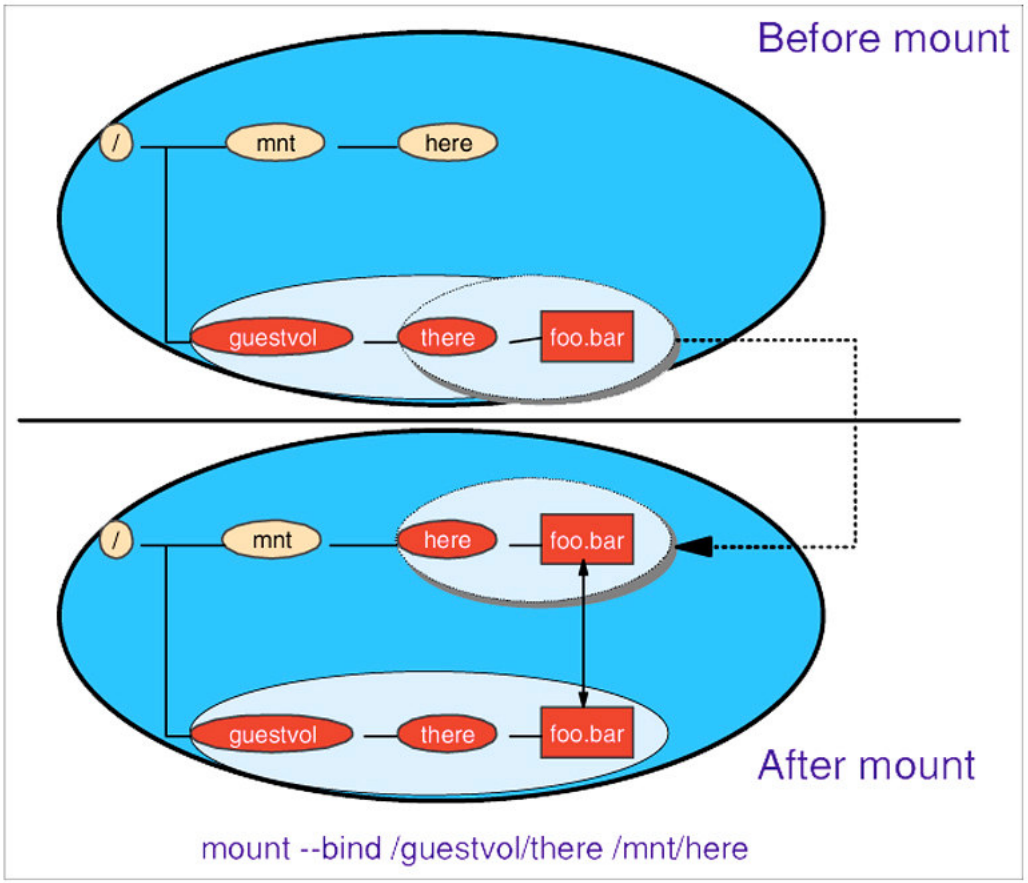
z/VM Linux (zSeries)
GETEC 01 - Núcleo 12

Estrutura Compartilhada do ambiente de Produção
ZVMPRD02



P:\Unix\LINUX390\MAPAS\novaestr3.vsd

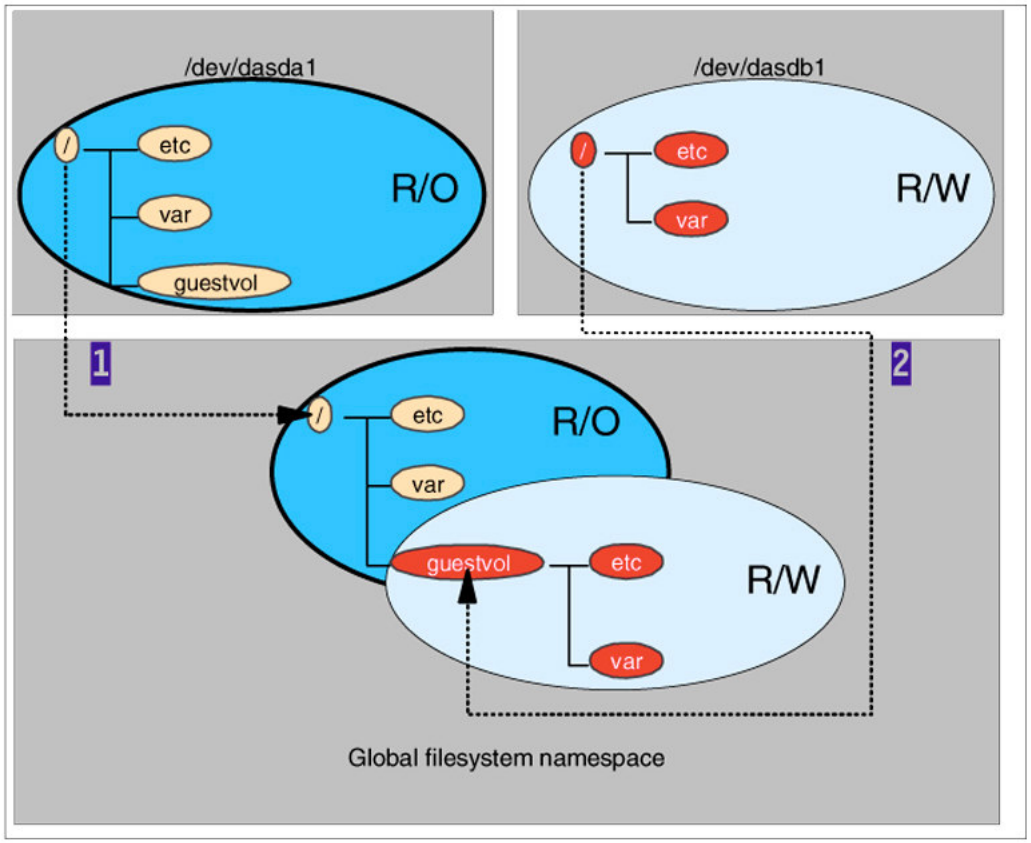
Estrutura de filesystem compartilhado



The behavior of bind mount

Large Scale Linux Deployment

Estrutura de filesystem compartilhado



Mounting disk partitions on a global filesystem namespace

Large Scale Linux Deployment

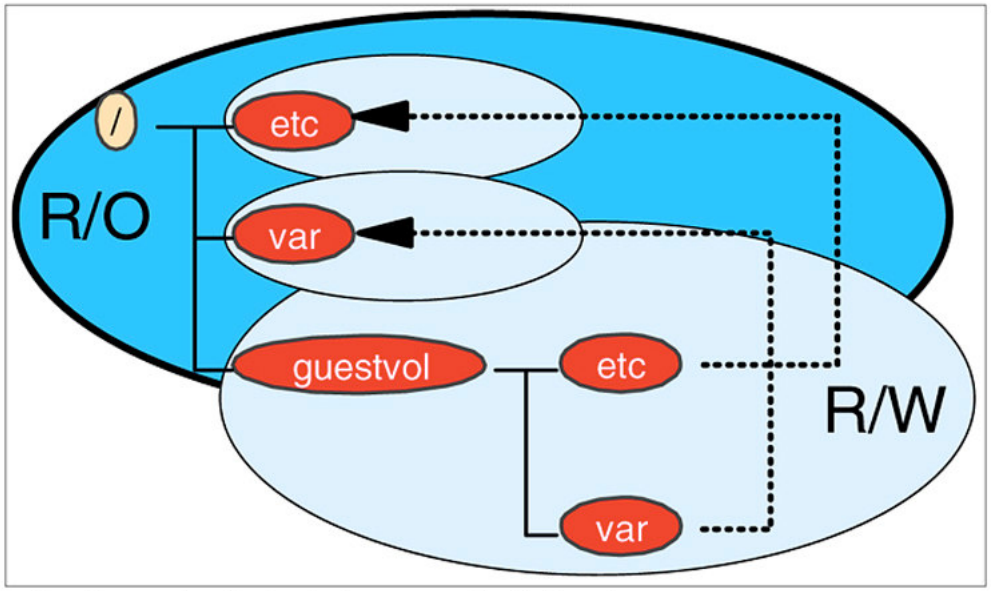
Estrutura de filesystem compartilhado

- Mount the read-write directories /guestvol/etc over the read-only /etc:

```
mount --bind /guestvol/etc /etc
```

- Mount the read-write /guestvol/var over the read-only /var:

```
mount --bind /guestvol/var /var
```

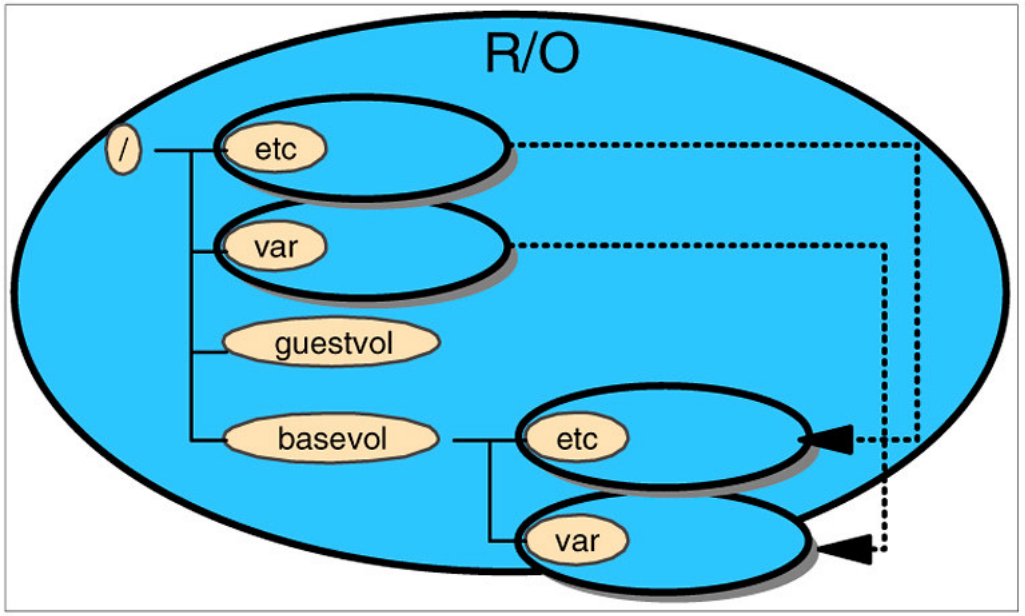


Mounting read-write directories on a read-only filesystem

Large Scale Linux Deployment

Estrutura de filesystem compartilhado

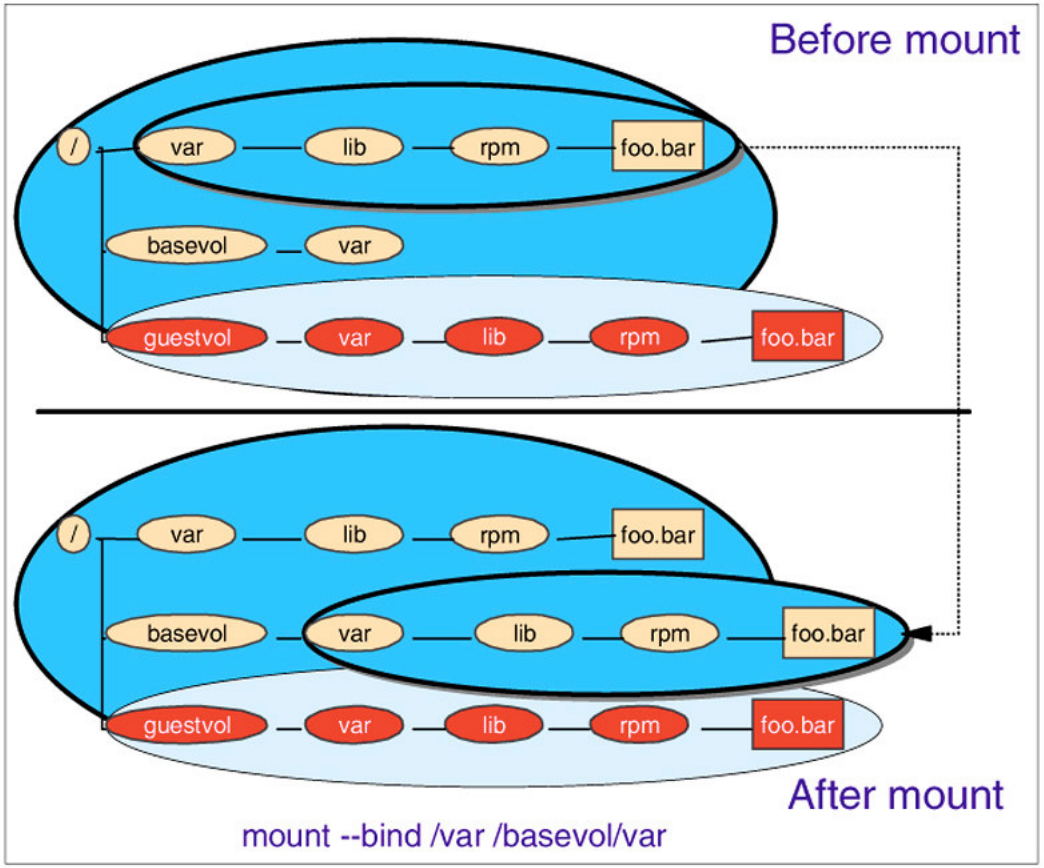
```
mount --bind /etc /basevol/etc
mount --bind /var /basevol/var
```



Preserving read-only directories using bind mounts

Large Scale Linux Deployment

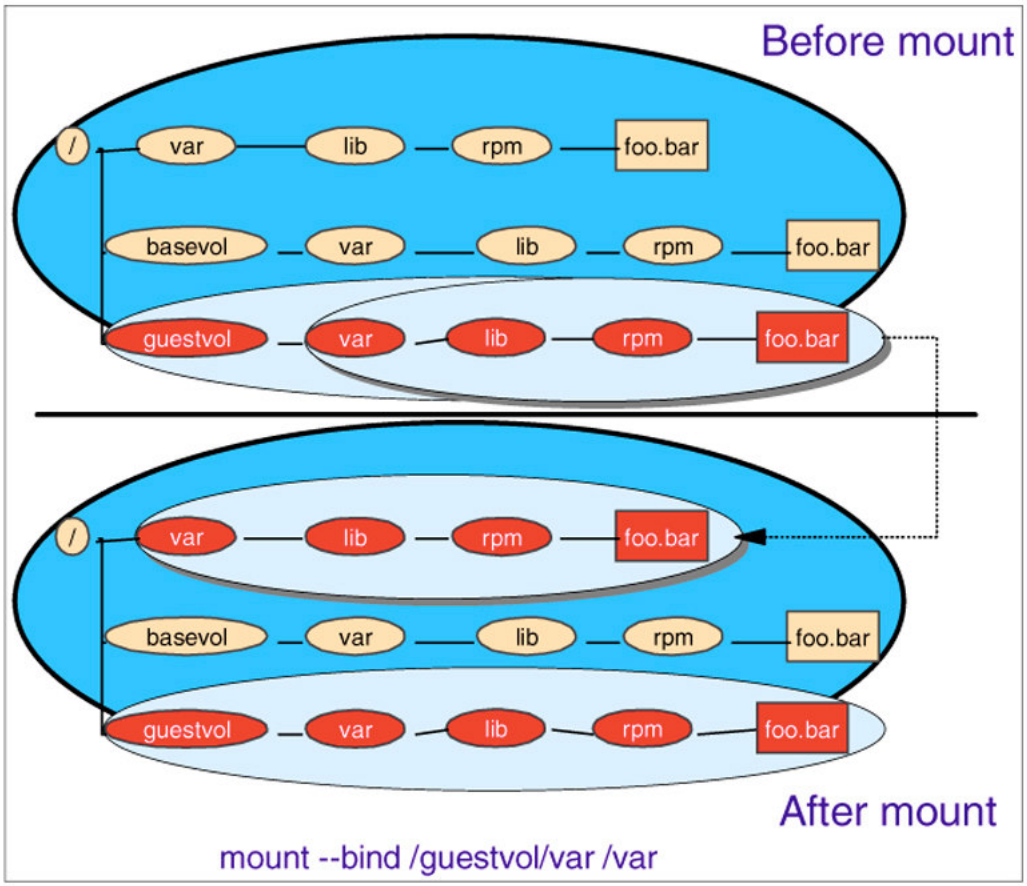
Estrutura de filesystem compartilhado



The effect of mount --bind /var /basevol/var

Large Scale Linux Deployment

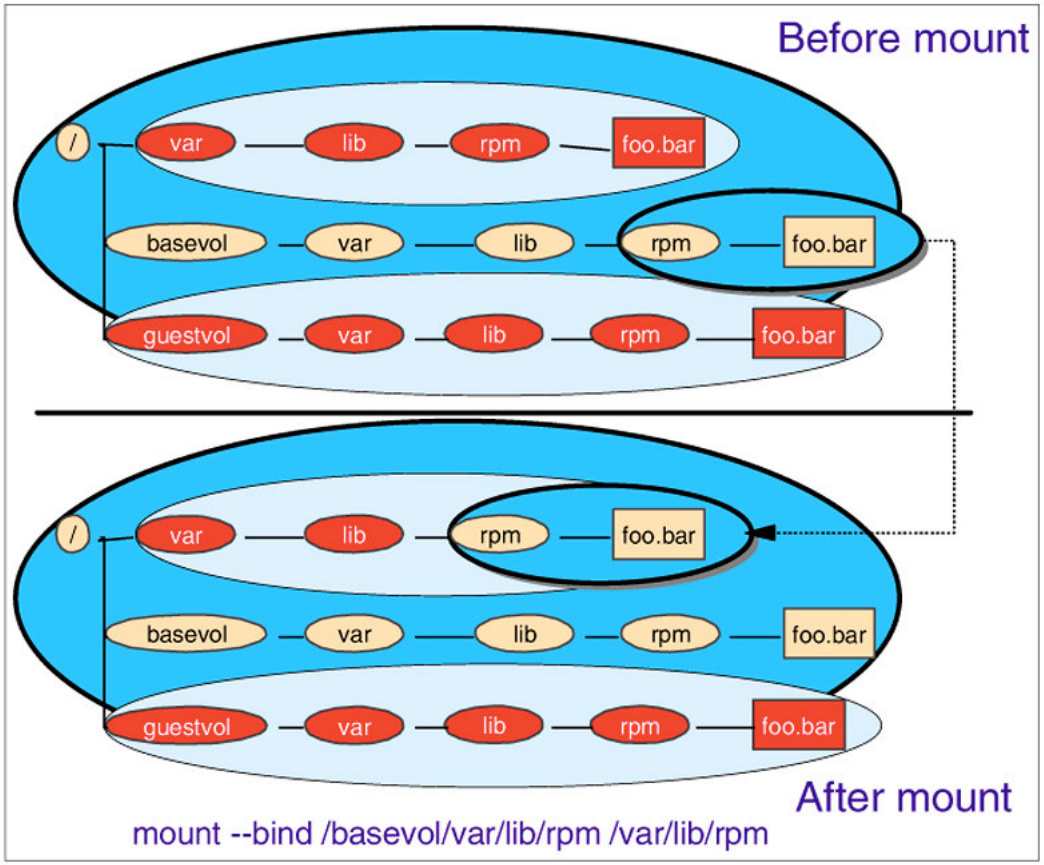
Estrutura de filesystem compartilhado



The effect of mount --bind /guestvol/var /var

Large Scale Linux Deployment

Estrutura de filesystem compartilhado



The effect of mount --bind /basevol/var/lib/rpm /var/lib/rpm

Large Scale Linux Deployment

Aplicação de Service Pack na máquina Master

- Clonar o disco 100 para o 200 e montá-lo;
- Editar o /etc/zipl.conf do disco 200, incluindo o mesmo como disco de boot;
- Executar o comando chroot para o mountpoint onde está montado o disco 200.
- Executar o comando zipl e sair com exit;
- Executar shutdown e ipl novamente na máquina Master;
- Inicializar a base de dados do Tripwire: > tripwire -initialize caminho_do_db
- Aplicar o ServicePack invocando o yast;
- Ao final do processo, executar o comando zipl conforme recomendado;
- Executar o Tripwire novamente para comparar a base de dados com a situação atual do filesystem: > tripwire -d database;
- Executar o shutdown e ipl;
- Elaborar script para sincronizar o /etc com o /guestvol/etc a partir da análise da lista de arquivos alterados no /etc e /var gerada pelo Tripwire;
- Editar o /etc/zipl.conf incluindo novamente o disco 100 como disco de boot e executar o comando zipl;
- Executar shutdown e LOGOFF na máquina Master;
- Editar o USER DIRECT alternando os endereços dos minidisco 100 e 200. Executar o comando DISKMAP para conferir e colocar o novo diretório online com o comando DIRECTXA;
- Executar shutdown e logoff nas demais máquinas;
- Executar LOGON na máquina Master;
- Executar LOGON e IPL nas demais máquinas;

Retornar

Aplicação Service Pack em Máquinas Cliente

```
masterzlx228:/basevol/etc/init.d # cat boot.aplicaSP
#! /bin/sh

if [ ! -d /etc/ServicePack ] ; then
   mkdir /etc/ServicePack/
   touch /etc/ServicePack/lista
fi

if [ ! -e /etc/ServicePack/lista ] ; then
   touch /etc/ServicePack/lista
fi

diff -q /basevol/etc/ServicePack/lista /etc/ServicePack/lista
rc=$?

if [ ${rc} -eq 1 ] ; then
   diff  /basevol/etc/ServicePack/lista /etc/ServicePack/lista | awk '{} { if (NR > 1)  print $2 }' | \

   while read servicepack ; do
if [ ! -d /etc/ServicePack/$servicepack ] ; then
         mkdir /etc/ServicePack/${servicepack}
         SINC=/basevol/etc/ServicePack/${servicepack}/sincroniza
         if [ -x $SINC ] ; then
            . $SINC /etc/ServicePack/${servicepack}
         fi
      fi
      echo $servicepack >> /etc/ServicePack/lista
   done
fi
#   grep -q $servicepack /etc/ServicePack/lista ;
#   rc=$?
#   if [ ${rc} -eq 0 ]; then exit ; fi
#   DIR=/basevol/etc/ServicePack/${servicepack}
#   if [ -s $DIR/sincroniza ] ; then

masterzlx228:/basevol/etc/init.d #
```

User Direct

```
USER MST21228 ALBATROZ 256M 256M G
 INCLUDE LXDFLT3
 CRYPTO APVIRT
 ACCOUNT 1 LINUXOP
 LINK LINUXOP 191 191 RR
 DEDICATE 1000 181C
 DEDICATE 1001 181D
 DEDICATE 1002 181B
 SPECIAL 2000 HIPER 3 SYSTEM PROD2
 MDISK 300 FB-512 V-DISK 150000 MR READ     WRITE    MULTIPLE
 MDISK 301 FB-512 V-DISK 150000 MR READ     WRITE    MULTIPLE
 MDISK 200 3390 00001 3338 VMDE49  RR READ     WRITE    MULTIPLE
 MDISK 100 3390 00001 3338 VMDE4A  MR READ     WRITE    MULTIPLE
 MDISK 101 3390 00001 1000 VMDEB0  MR READ     WRITE    MULTIPLE
 MDISK 102 3390 01001 2338 VMDEB0  MR READ     WRITE    MULTIPLE
 MDISK 666 3390 00001 3338 VMDE44  MW READ     WRITE    MULTIPLE
 LINK ITA2M121 201 103 RR
 LINK ITA2M121 202 104 RR
```

User Direct

```
USER ITA2M121 ALBATROZ 256M 256M G
 INCLUDE LXDFLT3
 XSTORE 20M
 CRYPTO APVIRT
 ACCOUNT 1 LINUXOP
 LINK LINUXOP 191 191 RR
 DEDICATE 1000 1824
 DEDICATE 1001 1825
 DEDICATE 1002 1826
 SPECIAL 2000 HIPER 3 SYSTEM PROD2
 MDISK 100 3390 00001 3338 VMDE37  MR READ    WRITE    MULTIPLE
 MDISK 101 3390 00001 3338 VMDE38  MR READ    WRITE    MULTIPLE
 MDISK 201 3390 00001 3338 VMDE3C  MR READ    WRITE    MULTIPLE
 MDISK 401 3390 00001 3338 VMDE3E  MR READ    WRITE    MULTIPLE
 MDISK 202 3390 00001 10016 VMDE26 MR READ    WRITE    MULTIPLE
 MDISK 402 3390 00001 10016 VMDE27 MR READ    WRITE    MULTIPLE
 LINK MST21228 666 666 MW
```

User Direct

```
USER ITA2W116 ALBATROZ 256M 256M G
 INCLUDE LXDFLT3
 XSTORE 20M
 CRYPTO APVIRT
 ACCOUNT 1 LINUXOP
 LINK LINUXOP 191 191 RR
 DEDICATE 1000 181E
 DEDICATE 1001 181F
 DEDICATE 1002 1820
 SPECIAL 2000 HIPER 3 SYSTEM PROD2
 MDISK 300 FB-512 V-DISK 150000 MR READ    WRITE   MULTIPLE
 MDISK 301 FB-512 V-DISK 150000 MR READ    WRITE   MULTIPLE
 MDISK 101 3390 00001 1000 VMDE46  MR READ    WRITE   MULTIPLE
 MDISK 102 3390 01001 2338 VMDE46  MR READ    WRITE   MULTIPLE
 LINK MST21228 100 100 RR
 LINK ITA2M121 201 103 RR
 LINK ITA2M121 202 104 RR
```

Zipl.conf

```
masterzlx228:/etc # cat zipl.conf
# Generated by YaST2
[defaultboot]
default=ipl

[ipl]
target=/boot/zipl
image=/boot/kernel/image
ramdisk=/boot/initrd
parameters="dasd=100(ro),101-102,103-104(ro),666 root=/dev/dasda1 vmpoff=LOGOFF"

#[dumpdasd]
#target=/boot/zipl
#dumpto=/dev/dasdf1

#[dump_eckd]
#target=/boot/zipl
#dumpto=/dev/dasdf1
masterzlx228:/etc #
```

Fstab

```
masterzlx228:/etc # cat fstab
/dev/dasda1            /                 ext3       defaults,ro          0 0
/dev/dasdb1            /guestvol         ext3       defaults             1 2
/guestvol/dev          /dev              ext3       bind                 1 2
/guestvol/tmp          /tmp              ext3       bind                 1 2
/guestvol/home         /home             ext3       bind                 1 2
/guestvol/root         /root             ext3       bind                 1 2
/var                   /basevol/var      ext3       bind                 1 2
/guestvol/var          /var              ext3       bind                 1 2
/basevol/var/lib/rpm   /var/lib/rpm      ext3       bind                 1 2
/etc                   /basevol/etc      ext3       bind                 1 2
/guestvol/etc          /etc              ext3       bind                 1 2
/dev/dasdc1            /var/log          ext3       defaults             1 2
/dev/dasdd1            /sysintra         ext3       defaults,ro          0 2
/dev/dasde1            /usr/aplic        ext3       defaults,ro          0 2
/dev/dasdf1            swap              swap       defaults             1 2
/dev/dasdg1            swap              swap       defaults             1 2
proc                   /proc             proc       defaults             0 0
masterzlx228:/etc #
```

proc/dasd/devices

```
masterzlx228:/etc # cat /proc/dasd/devices
0100(ECKD) at ( 94:  0) is dasda  (ro): active at blocksize: 4096, 600840 blocks, 2347 MB
0101(ECKD) at ( 94:  4) is dasdb      : active at blocksize: 4096, 180000 blocks, 703 MB
0102(ECKD) at ( 94:  8) is dasdc      : active at blocksize: 4096, 420840 blocks, 1643 MB
0103(ECKD) at ( 94: 12) is dasdd  (ro): active at blocksize: 4096, 600840 blocks, 2347 MB
0104(ECKD) at ( 94: 16) is dasde  (ro): active at blocksize: 4096, 1802880 blocks, 7042 MB
0300(DIAG) at ( 94: 20) is dasdf      : active at blocksize: 512, 150000 blocks, 73 MB
0301(DIAG) at ( 94: 24) is dasdg      : active at blocksize: 512, 150000 blocks, 73 MB
masterzlx228:/etc #
```

Conteúdo do guestvol e basevol

```
masterzlx228:/ # ls -la /guestvol
total 80
drwxr-xr-x    9 root     root         4096 Jul 14 11:47 .
drwxr-xr-x   22 root     root         4096 Aug  2 10:50 ..
drwxr-xr-x    9 root     root        36864 Oct 19 09:45 dev
drwxr-xr-x   59 root     root         4096 Oct 19 09:44 etc
drwxr-xr-x    3 root     root         4096 Dec  2  2003 home
drwx------    2 root     root        16384 May  2 19:58 lost+found
drwx------    9 root     root         4096 Oct 19 11:30 root
drwxrwxrwt   13 root     root         4096 Oct 19 12:00 tmp
drwxr-xr-x   19 root     root         4096 May  2 21:43 var
masterzlx228:/ # ls -la /basevol
total 16
drwxr-xr-x    4 root     root         4096 Jul  7 16:58 .
drwxr-xr-x   22 root     root         4096 Aug  2 10:50 ..
drwxr-xr-x   37 root     root         4096 Aug  2 16:22 etc
drwxr-xr-x   14 root     root         4096 Jul  7 15:48 var
masterzlx228:/ #
```

Conteúdo do service pack

```
masterzlx228:/basevol/etc/ServicePack # ls -la
total 32
drwxr-xr-x    4 root     root         4096 Aug  2 15:43 .
drwxr-xr-x   37 root     root         4096 Aug  2 16:22 ..
-rw-r--r--    1 root     root            8 Jul 26 11:51 lista
-rwx------    1 root     root          921 Aug  2 15:43 sincroniza
-rwx------    1 root     root          545 Jul 30 14:18 sincroniza.old
drwxr-xr-x    2 root     root         4096 Jul 30 14:19 sp2
drwxr-xr-x    2 root     root         4096 Aug  2 15:29 sp3
-rwxr-xr-x    1 root     root          586 Jul 26 14:44 tw
masterzlx228:/basevol/etc/ServicePack # ls -la sp2
total 100
drwxr-xr-x    2 root     root         4096 Jul 30 14:19 .
drwxr-xr-x    4 root     root         4096 Aug  2 15:43 ..
-rw-r--r--    1 root     root           93 Jul 20 12:00 added
-rw-r--r--    1 root     root         3659 Jul 20 12:00 added_links
-rw-r--r--    1 root     root         1869 Jul 20 12:00 changed
-rw-r--r--    1 root     root            0 Jul 20 12:00 deleted
-rw-r--r--    1 root     root         3659 Jul 20 12:00 deleted_links
-rwx------    1 root     root          545 Jul 21 10:37 sincroniza.old
-rw-------    1 root     root        67931 Jul 19 17:38 tw.db_masterzlx228
masterzlx228:/basevol/etc/ServicePack #
```

Sincroniza

```
masterzlx228:/basevol/etc/ServicePack # cat sincroniza
#! /bin/sh

if [ $# -eq 0 ] ; then
   echo "Informe o diretório."
else
   SDIR=/basevol${1}
#   SDIR=${1}

   if [ -s ${SDIR}/added_links ] ; then
      if [ -s ${SDIR}/deleted_links ] ; then
         cp ${SDIR}/added_links ${1}/added_links.aux
         > ${1}/added_links.tmp
         cat ${SDIR}/deleted_links | cut -c60- | while read delfile ; do
            grep -h -v $delfile ${1}/added_links.aux > ${1}/added_links.tmp
            cp ${1}/added_links.tmp ${1}/added_links.aux
             rm -v $delfile 1 >> ${1}/deleted.log 2>> ${1}/deleted_error.log
         done

         cat ${SDIR}/added_links | cut -c60- | while read addfile ; do
            echo -n "$addfile ===> "
#            echo $addfile | sed s/[0-9][0-9]/../g

            echo $addfile | sed s/[0-9][0-9]/../g | while read delfile ; do
               grep -h $delfile ${1}/deleted.log | cut -c60-
            done
         done
      fi
   fi
fi
masterzlx228:/basevol/etc/ServicePack #
```

TW

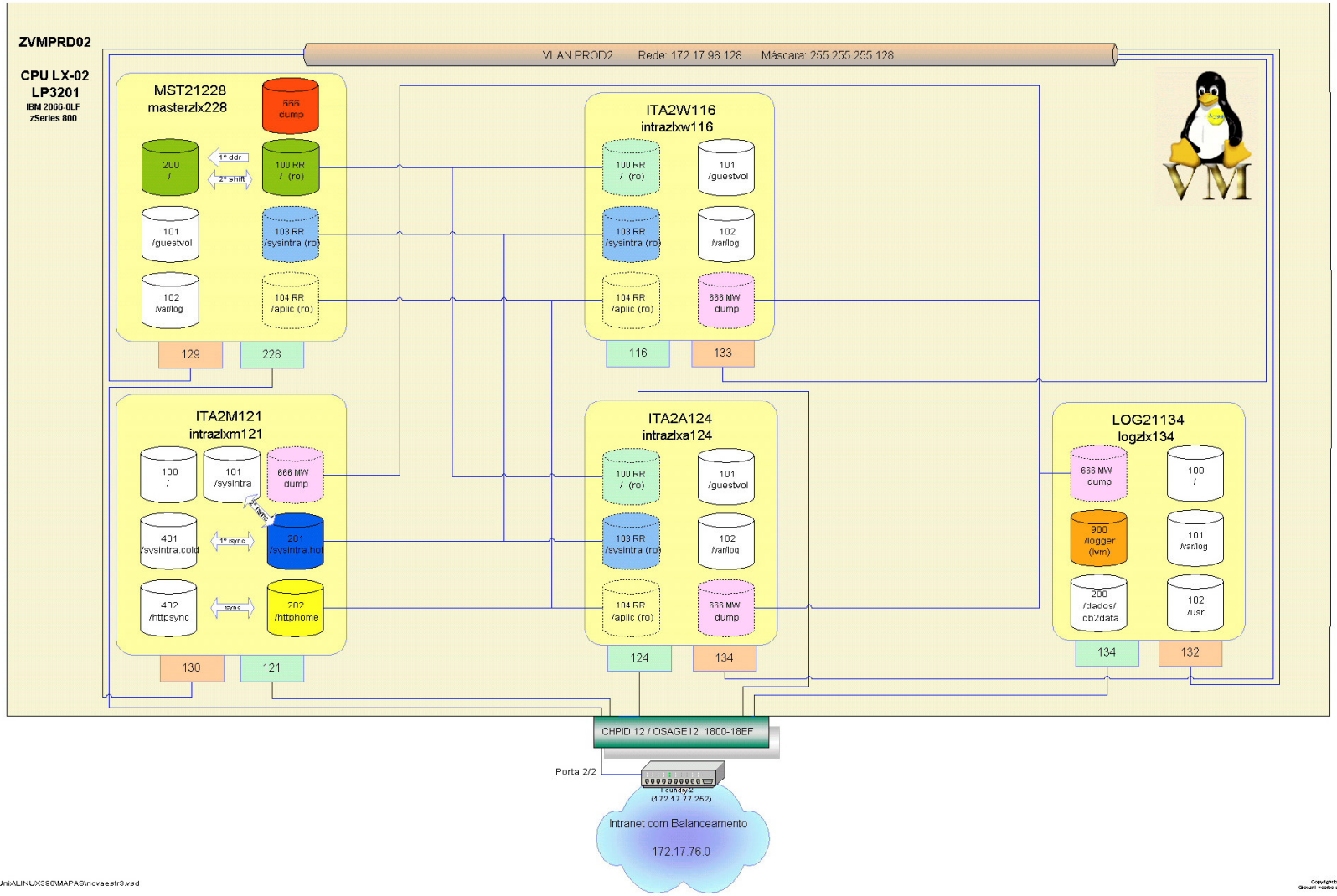
```
masterzlx228:/basevol/etc/ServicePack # cat tw
#! /bin/sh
if [ $# -eq 0 ] ; then
   echo "Informe a versão do último Service Pack aplicado. "
  else
   DIR=/etc/ServicePack/sp$1
   if [ ! -d $DIR ] ; then
      mkdir $DIR
   fi
   tripwire -d $DIR/tw.db_masterzlx228 > $DIR/lista
   cat $DIR/lista | grep ^added | grep -v ^"added:   l" > $DIR/added
   cat $DIR/lista | grep ^"added:   l" > $DIR/added_links
   cat $DIR/lista | grep ^deleted | grep -v ^"deleted: l" > $DIR/deleted
   cat $DIR/lista | grep ^"deleted: l" > $DIR/deleted_links
   cat $DIR/lista | grep ^changed > $DIR/changed
   cp /etc/ServicePack/sincroniza $DIR
fi


masterzlx228:/basevol/etc/ServicePack #
```

Estrutura de filesystem compartilhado

z/VM Linux (zSeries)
GETEC 01 - Núcleo 12

Estrutura Compartilhada do ambiente de Produção
ZVMPRD02



P:\Unix\LINUX390\MAPAS\novaestr3.vsd

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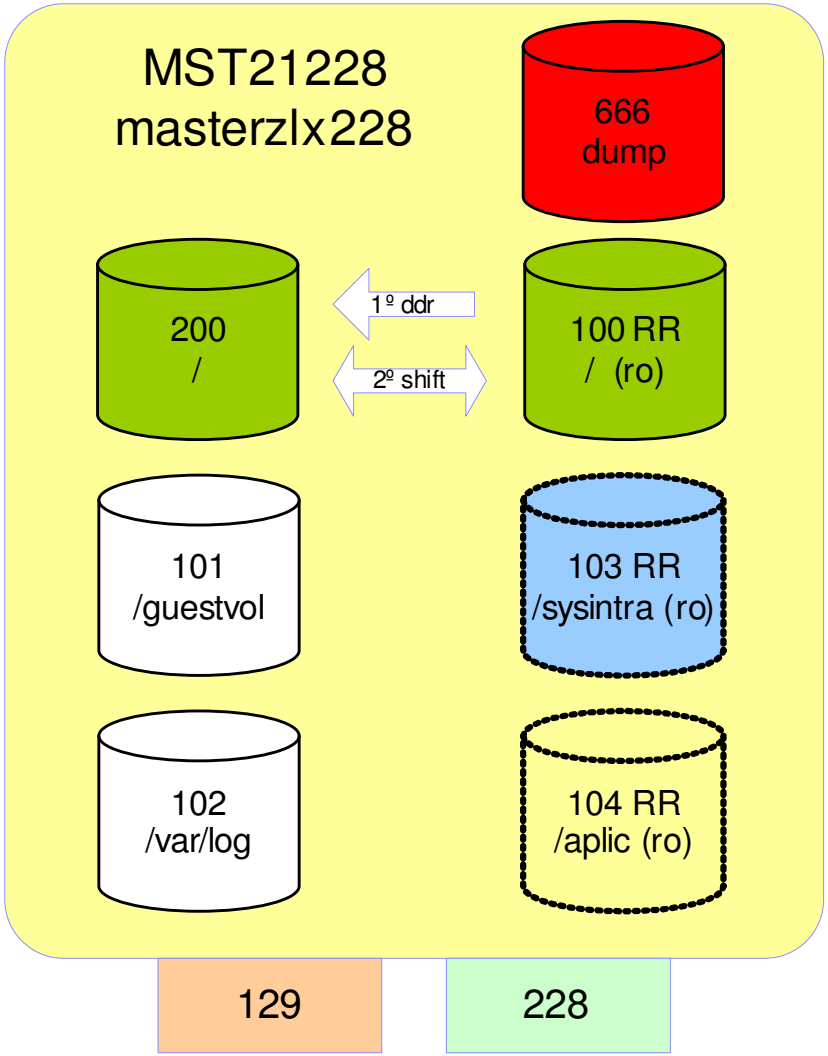
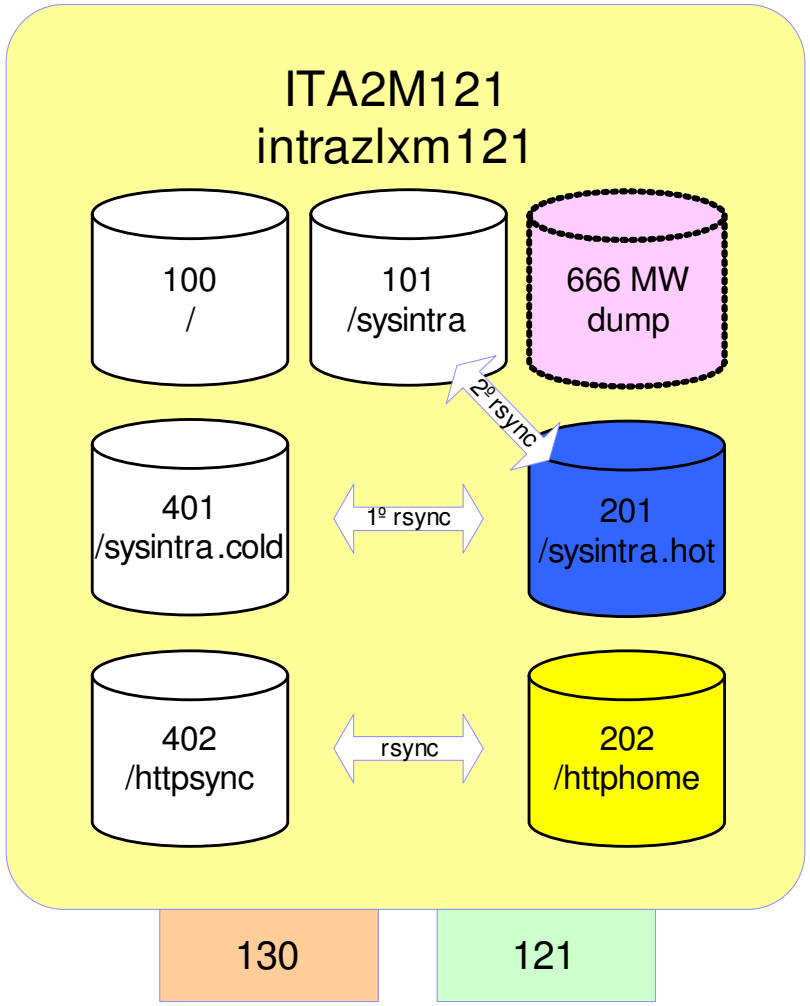
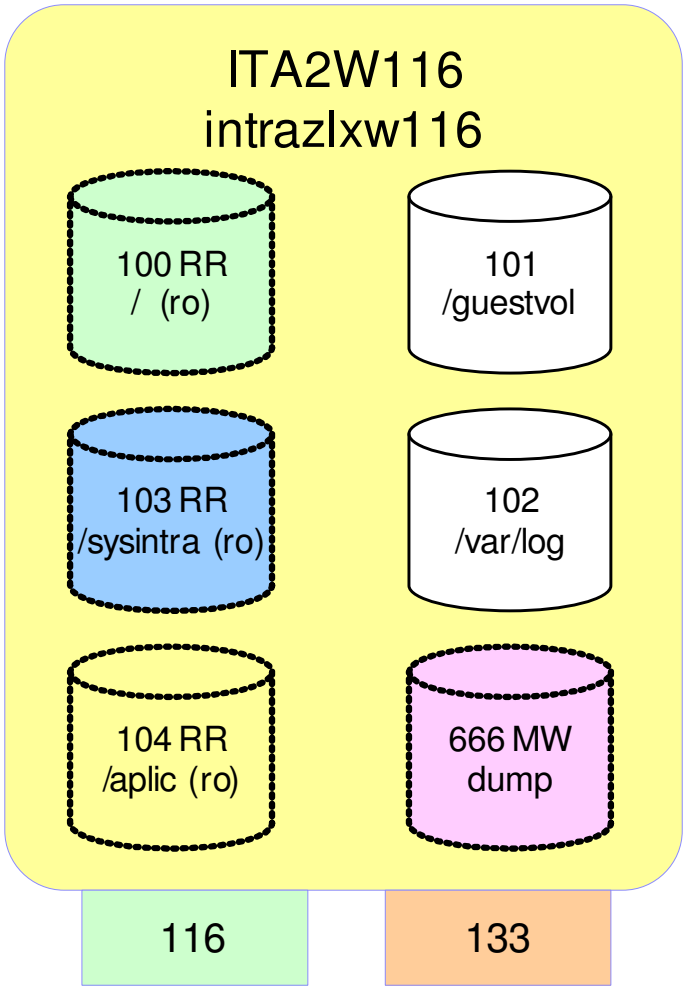
Máquina MASTER



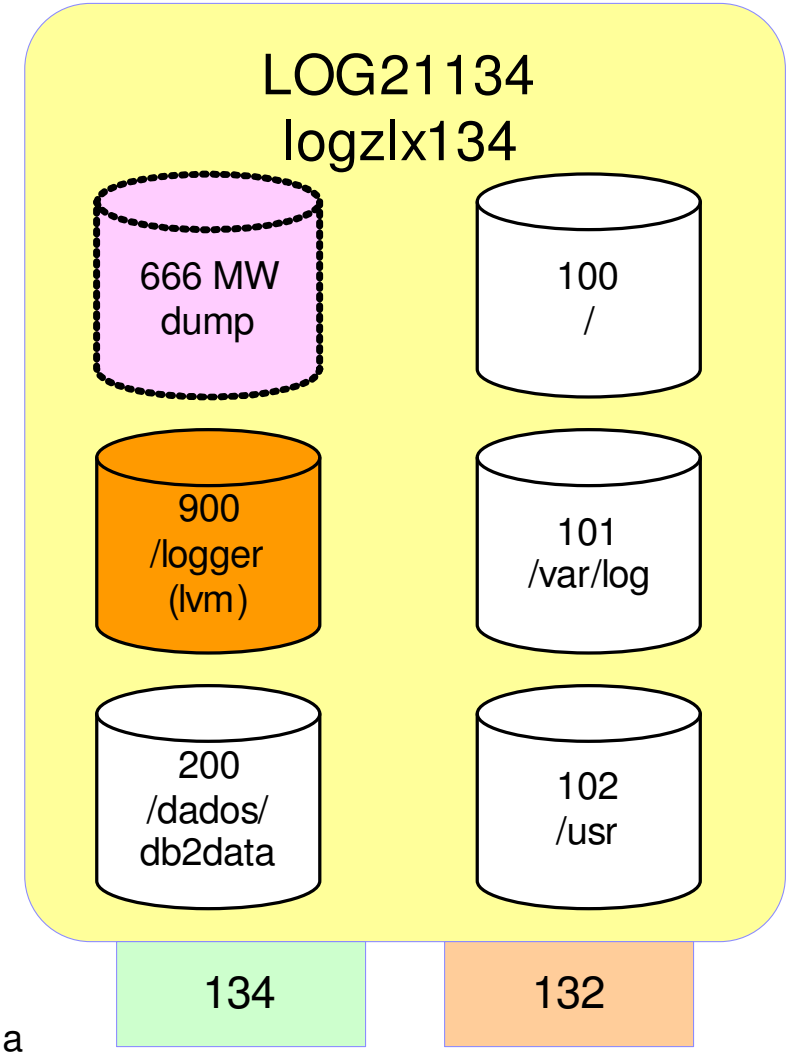
Máquina de Manutenção



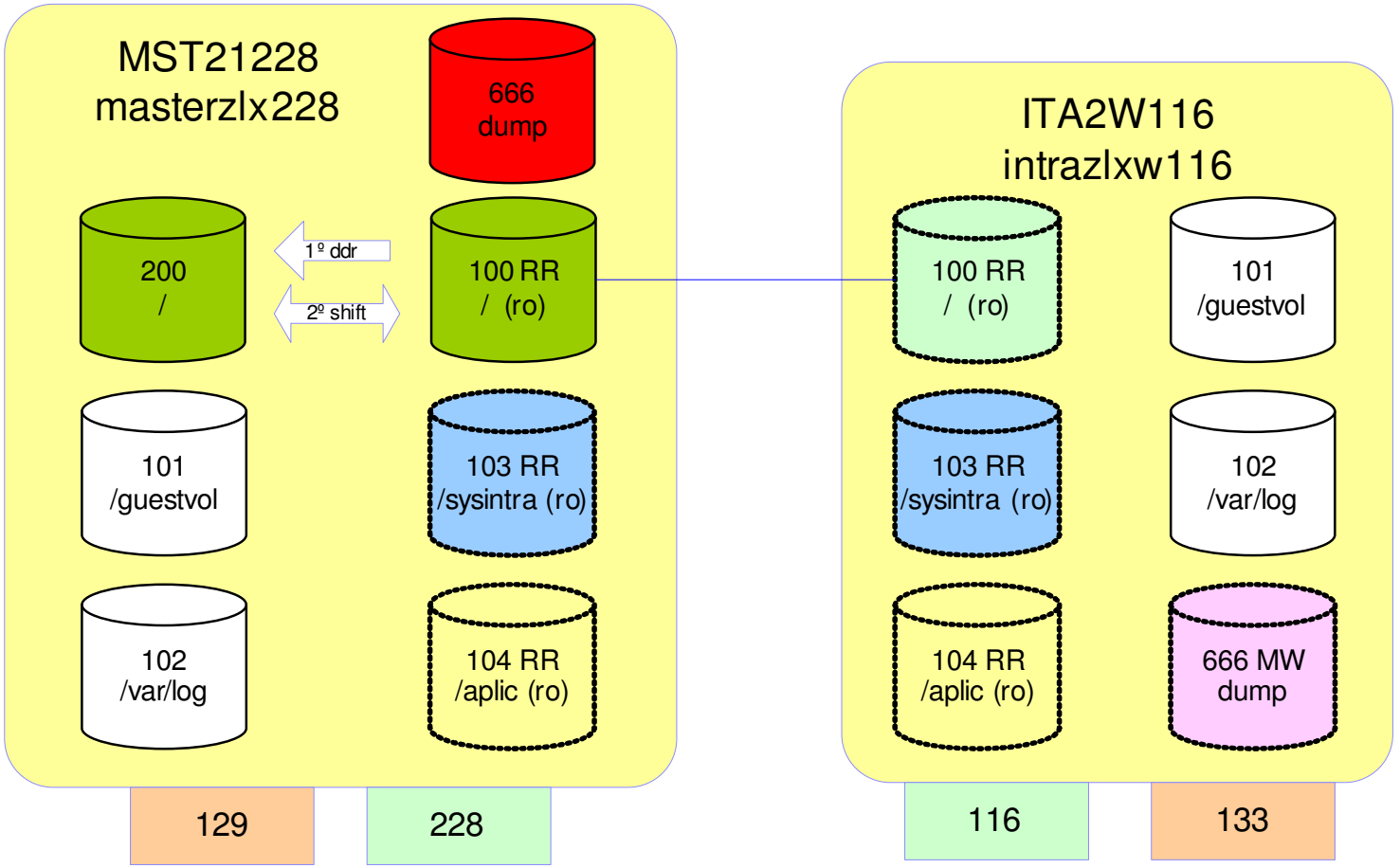
Máquinas Web Server e Application Server



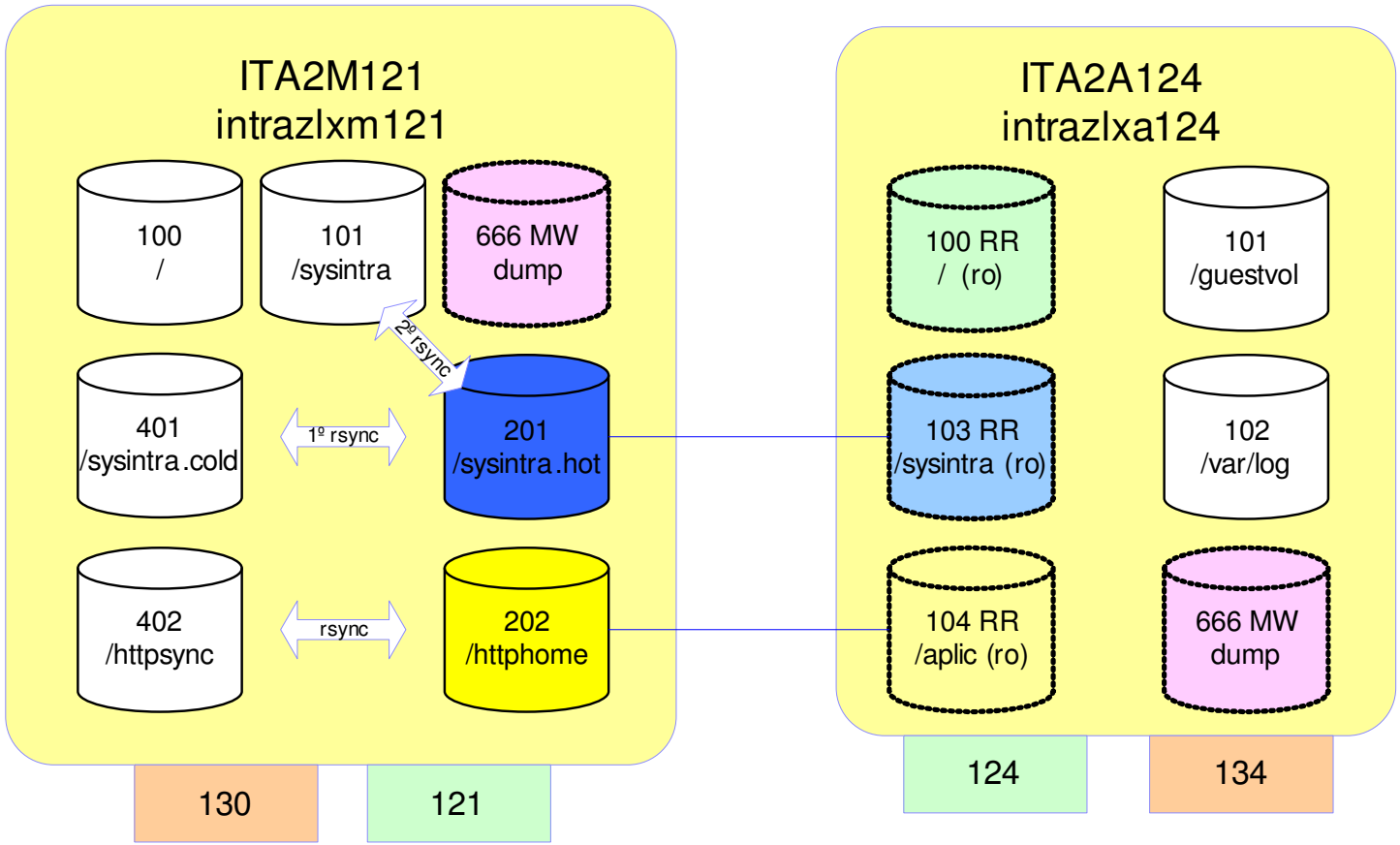
Máquina de LOG



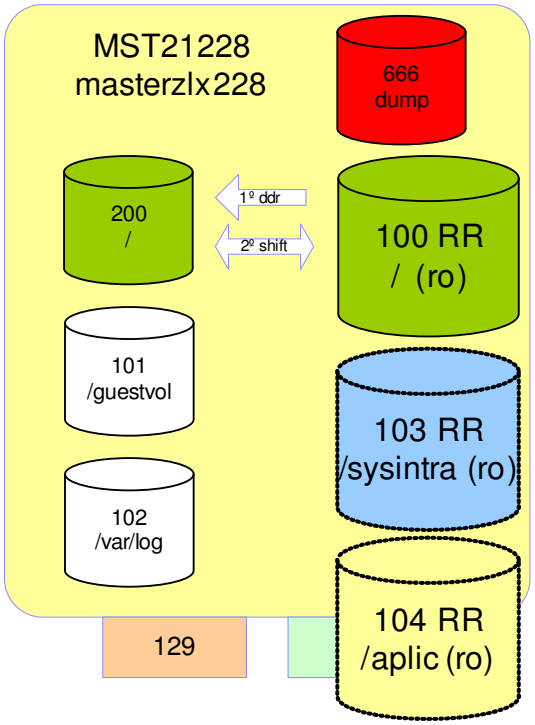
Link da máquina master



Links da máquina de manutenção

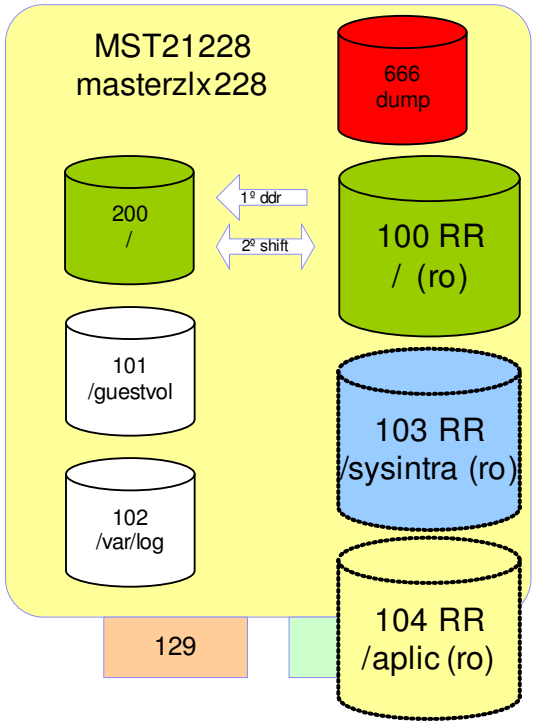


USER DIRECT



USER MST21228 ALBATROZ 256M 256M G
INCLUDE LXDFLT3
CRYPTO APVIRT
ACCOUNT 1 LINUXOP
LINK LINUXOP 191 191 RR
DEDICATE 1000 181C
DEDICATE 1001 181D
DEDICATE 1002 181B
SPECIAL 2000 HIPER 3 SYSTEM PROD2
MDISK 300 FB-512 V-DISK 150000 MR READ WRITE MULTIPLE
MDISK 301 FB-512 V-DISK 150000 MR READ WRITE MULTIPLE
MDISK 100 3390 00001 3338 VMDE49 **RR** READ WRITE MULTIPLE
MDISK 200 3390 00001 3338 VMDE4A MR READ WRITE MULTIPLE
MDISK 101 3390 00001 1000 VMDEB0 MR READ WRITE MULTIPLE
MDISK 102 3390 01001 2338 VMDEB0 MR READ WRITE MULTIPLE
MDISK 666 3390 00001 3338 VMDE44 MW READ WRITE MULTIPLE
LINK ITA2M121 201 103 RR
LINK ITA2M121 202 104 RR

zipl.conf

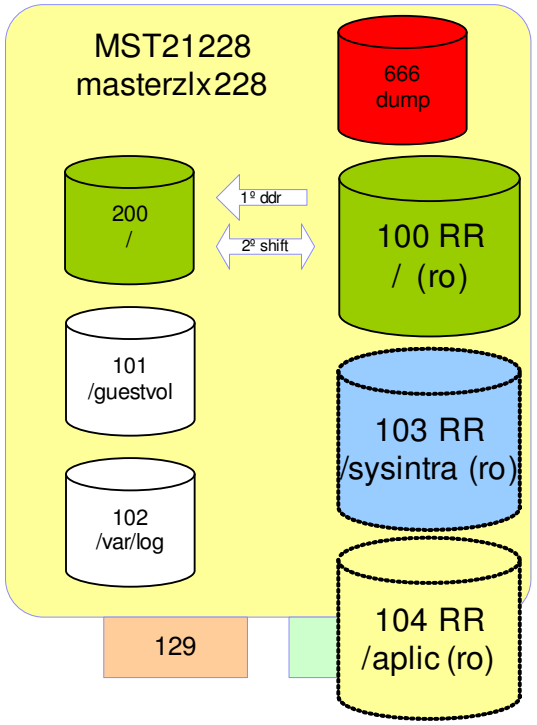


masterzlx228:/etc # cat zipl.conf
Generated by YaST2
[defaultboot]
default=ipl

[ipl]
target=/boot/zipl
image=/boot/kernel/image
ramdisk=/boot/initrd
parameters="dasd=100(ro),101-102,103-104(ro),666
root=/dev/dasda1 vmpoff=LOGOFF"

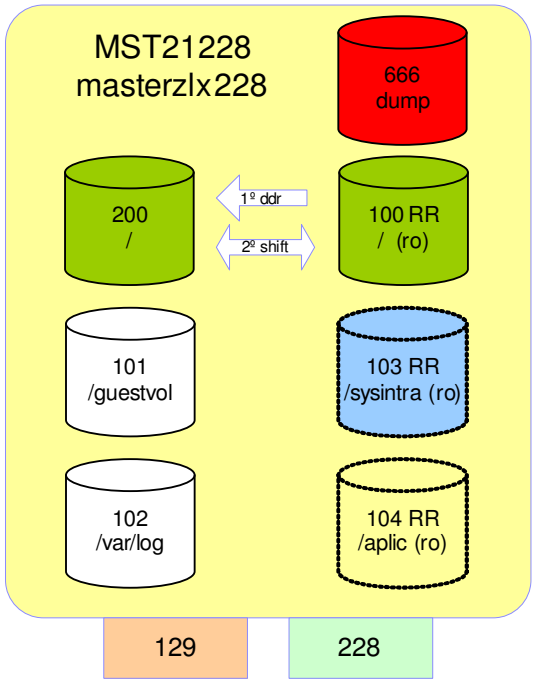
masterzlx228:/etc #

/proc/dasd/devices




```
masterzlx228:/etc # cat /proc/dasd/devices

0100(ECKD) at ( 94:  0) is dasda(ro)
0101(ECKD) at ( 94:  4) is dasdb
0102(ECKD) at ( 94:  8) is dasdc
0103(ECKD) at ( 94: 12) is dasdd(ro)
0104(ECKD) at ( 94: 16) is dasde(ro)
0300(DIAG) at ( 94: 20) is dasdf
0301(DIAG) at ( 94: 24) is dasdg

masterzlx228:/etc #
```

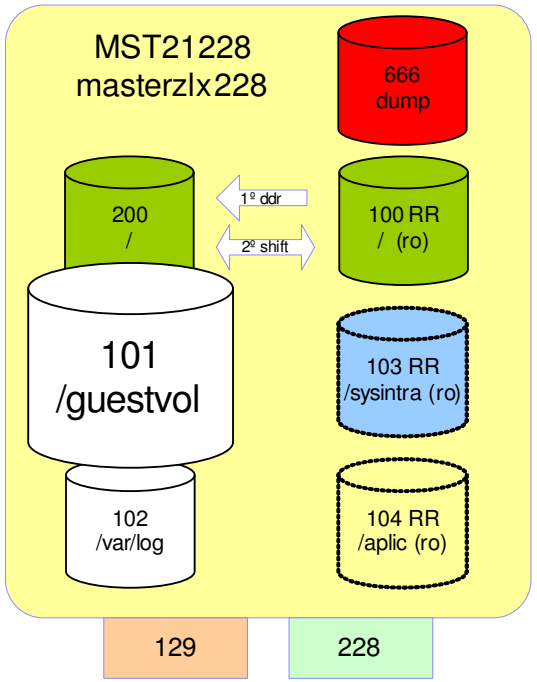
fstab




```
masterzlx228:/etc # cat fstab
```

```
/dev/dasda1    /              ext3 defaults,ro 0 0
/dev/dasdb1    /guestvol      ext3 defaults    1 2
/dev/dasdc1    /var/log       ext3 defaults    1 2
/dev/dasdd1    /sysintra      ext3 defaults,ro 0 2
/dev/dasde1    /usr/aplic     ext3 defaults,ro 0 2
#
/guestvol/dev          /dev          ext3 bind        1 2
/guestvol/tmp          /tmp          ext3 bind        1 2
/guestvol/home         /home         ext3 bind        1 2
/guestvol/root         /root         ext3 bind        1 2
#
/var                   /basevol/var  ext3 bind        1 2
/guestvol/var          /var          ext3 bind        1 2
/basevol/var/lib/rpm   /var/lib/rpm  ext3 bind        1 2
#
/etc                   /basevol/etc  ext3 bind        1 2
/guestvol/etc          /etc          ext3 bind        1 2
#
#
/dev/dasdf1            swap          swap defaults    1 2
/dev/dasdg1            swap          swap defaults    1 2
proc                   /proc         proc defaults    0 0

masterzlx228:/etc #
```

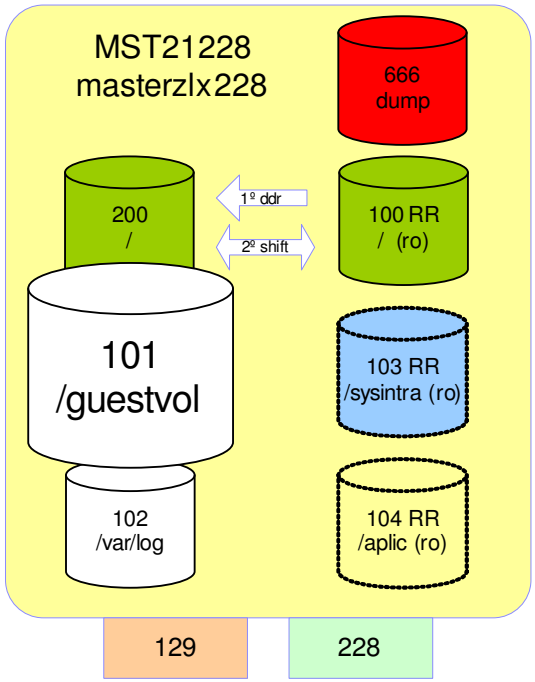
Conteúdo dos diretórios guestvol e basevol




```
masterzlx228:/ # ls -la /guestvol

drwxr-xr-x root root .
drwxr-xr-x root root ..
drwxr-xr-x root root dev
drwxr-xr-x root root etc
drwxr-xr-x root root home
drwx------ root root lost+found
drwx------ root root root
drwxrwxrwt root root tmp
drwxr-xr-x root root var
```

```
masterzlx228:/ # ls -la /basevol

drwxr-xr-x root root .
drwxr-xr-x root root ..
drwxr-xr-x root root etc
drwxr-xr-x root root var

masterzlx228:/ #
```

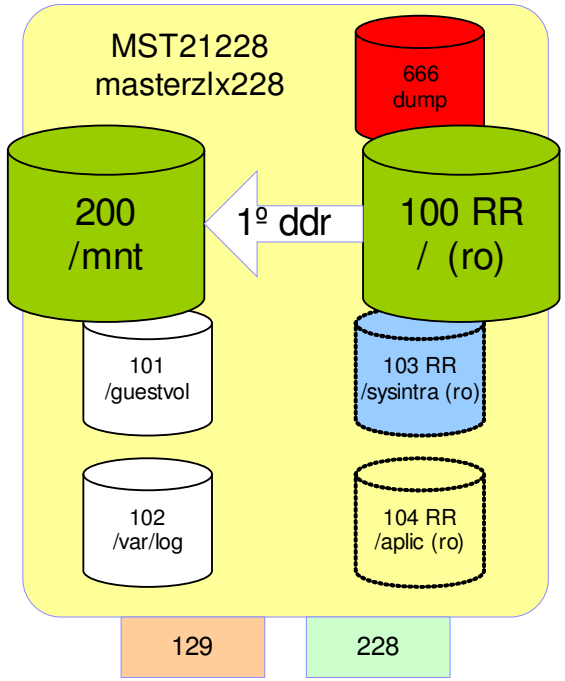
bind mounts do filesystem /guestvol




```
masterzlx228:/etc # cat fstab

/dev/dasda1          /            ext3 defaults,ro 0 0
/dev/dasdb1          /guestvol    ext3 defaults    1 2
/dev/dasdc1          /var/log     ext3 defaults    1 2
/dev/dasdd1          /sysintra    ext3 defaults,ro 0 2
/dev/dasde1          /usr/aplic   ext3 defaults,ro 0 2
#
/guestvol/dev  /dev           ext3 bind        1 2
/guestvol/tmp  /tmp           ext3 bind        1 2
/guestvol/home /home          ext3 bind        1 2
/guestvol/root /root          ext3 bind        1 2
#
/var           /basevol/var ext3 bind        1 2
/guestvol/var  /var          ext3 bind        1 2
/basevol/var/lib/rpm /var/lib/rpm ext3 bind 1 2
#
/etc           /basevol/etc ext3 bind        1 2
/guestvol/etc  /etc          ext3 bind        1 2
#
#
/dev/dasdf1          swap         swap defaults    1 2
/dev/dasdg1          swap         swap defaults    1 2
proc                 /proc        proc defaults    0 0

masterzlx228:/etc #
```

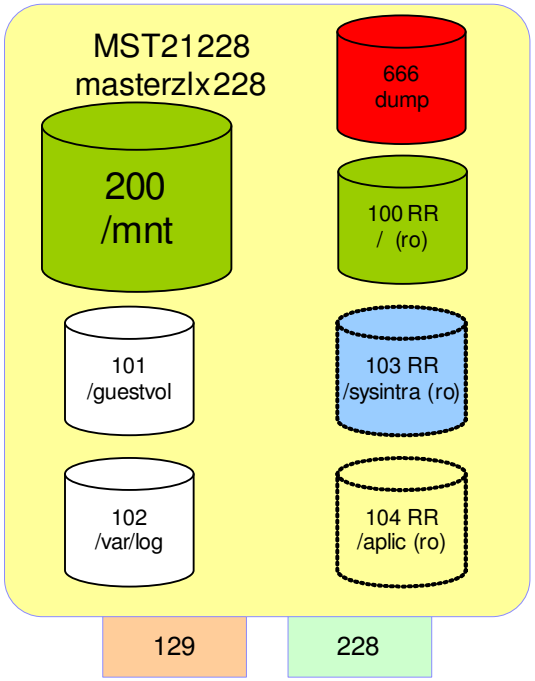
Aplicação de Service Pack na máquina Master

- Clonar o disco 100 para o 200 e montá-lo;



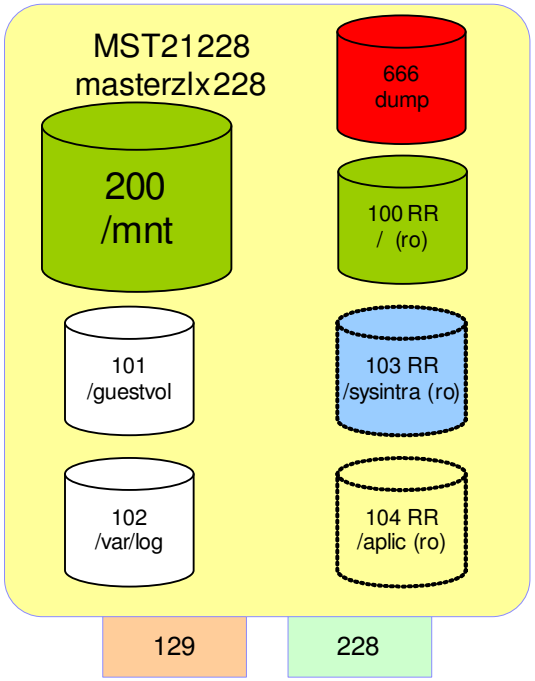
Aplicação de Service Pack na máquina Master

- Substituir o disco 100 pelo 200 no /etc/zipl.conf sem a flag (ro);



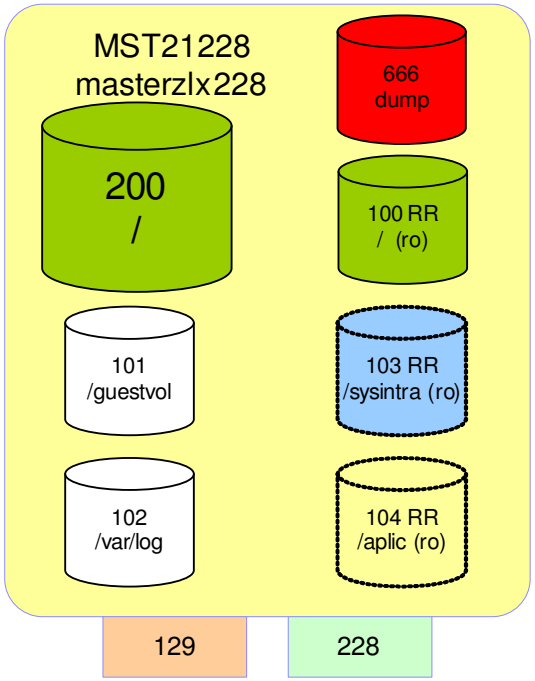

```
masterzlx228:/etc # cat zipl.conf
# Generated by YaST2
[defaultboot]
default=ipl

[ipl]
target=/boot/zipl
image=/boot/kernel/image
ramdisk=/boot/initrd
parameters="dasd=200,101-102,103-104(ro),666
root=/dev/dasda1 vmpoff=LOGOFF"

masterzlx228:/etc #
```

Aplicação de Service Pack na máquina Master



- # chroot /mnt (mountpoint do disco 200)
- # zipl
- # exit
- # shutdown -h now

Aplicação de Service Pack na máquina Master



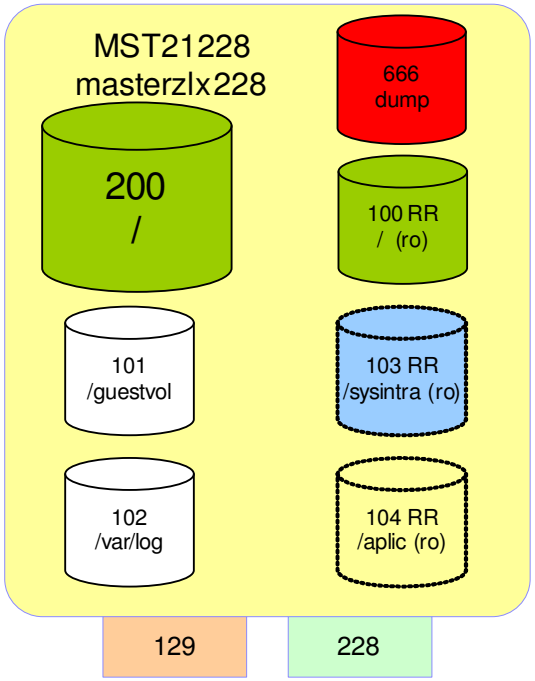
- ipl 200 clear

- # tripwire -initialize tw.db_masterzlx228
- # yast
- # zipl
- # tripwire -d tw.db_masterzlx228 > dif_db

```
masterzlx228:/etc # cat tw.config

/etc +pnugs12-imac3456789
```

- # shutdown -r now

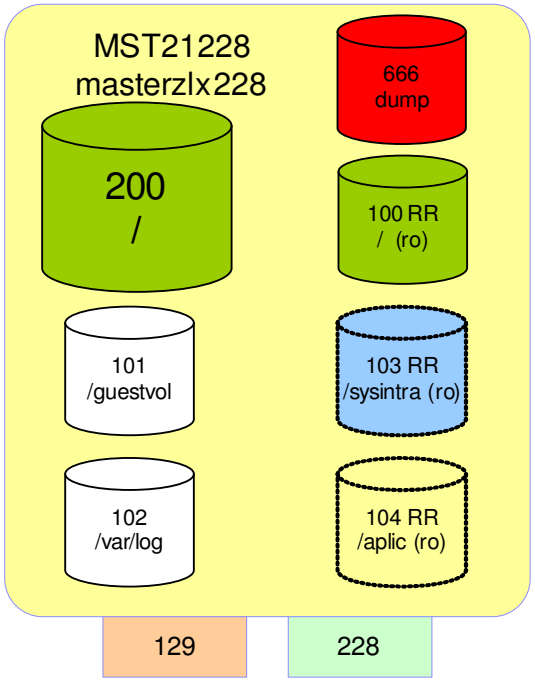
Aplicação de Service Pack na máquina Master



- Analisar saída do Tripwire
- Elaborar script para sincronizar o /etc

Aplicação de Service Pack na máquina Master

- Substituir o disco 200 pelo 100 no /etc/zipl.conf com a flag (ro);




```
masterzlx228:/etc # cat zipl.conf
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[defaultboot]
default=ipl

[ipl]
target=/boot/zipl
image=/boot/kernel/image
ramdisk=/boot/initrd
parameters="dasd=100(ro),101-102,103-104(ro),666
root=/dev/dasda1 vmpoff=LOGOFF"

masterzlx228:/etc #
```
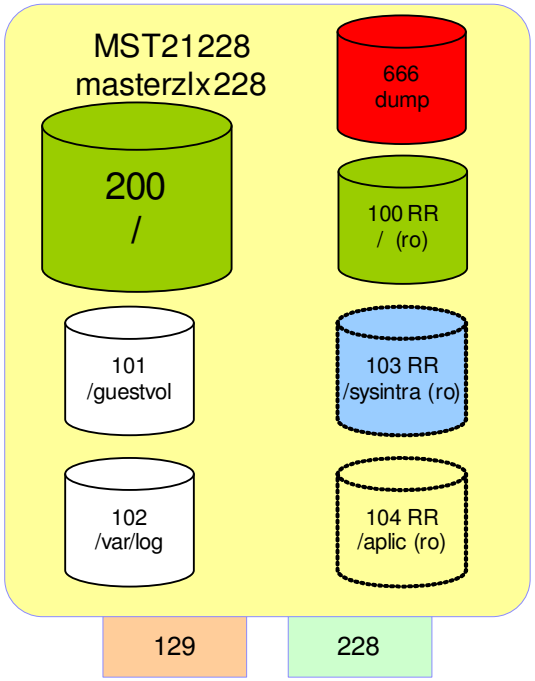
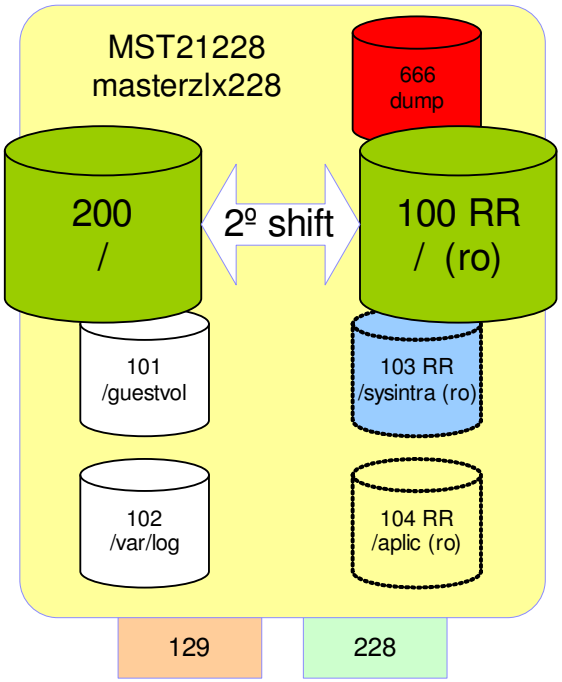

Aplicação de Service Pack na máquina Master



- # zipl
- #shutdown -h now
- #CP LOGOFF

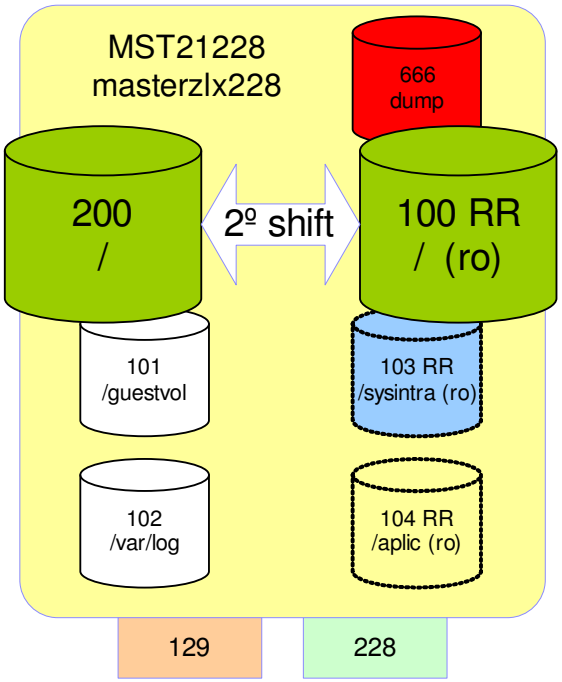
Aplicação de Service Pack na máquina Master

- X USER DIRECT



USER MST21228 ALBATROZ 256M 256M G
INCLUDE LXDFLT3
CRYPTO APVIRT
ACCOUNT 1 LINUXOP
LINK LINUXOP 191 191 RR
DEDICATE 1000 181C
DEDICATE 1001 181D
DEDICATE 1002 181B
SPECIAL 2000 HIPER 3 SYSTEM PROD2
MDISK 300 FB-512 V-DISK 150000 MR READ WRITE MULTIPLE
MDISK 301 FB-512 V-DISK 150000 MR READ WRITE MULTIPLE
MDISK 200 3390 00001 3338 VMDE49 **MR** READ WRITE MULTIPLE
MDISK 100 3390 00001 3338 VMDE4A **RR** READ WRITE MULTIPLE
MDISK 101 3390 00001 1000 VMDEB0 MR READ WRITE MULTIPLE
MDISK 102 3390 01001 2338 VMDEB0 MR READ WRITE MULTIPLE
MDISK 666 3390 00001 3338 VMDE44 MW READ WRITE MULTIPLE
LINK ITA2M121 201 103 RR
LINK ITA2M121 202 104 RR

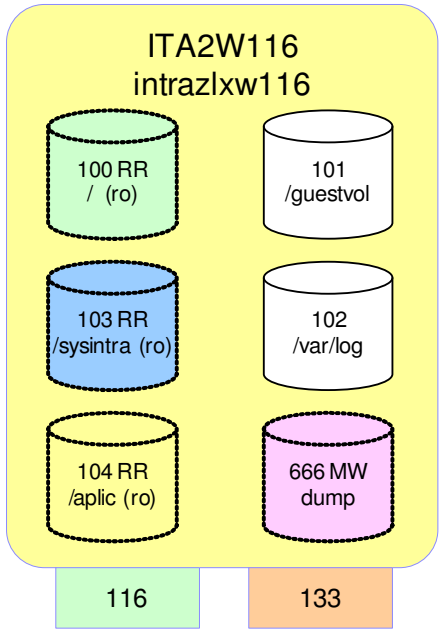
Aplicação de Service Pack na máquina Master

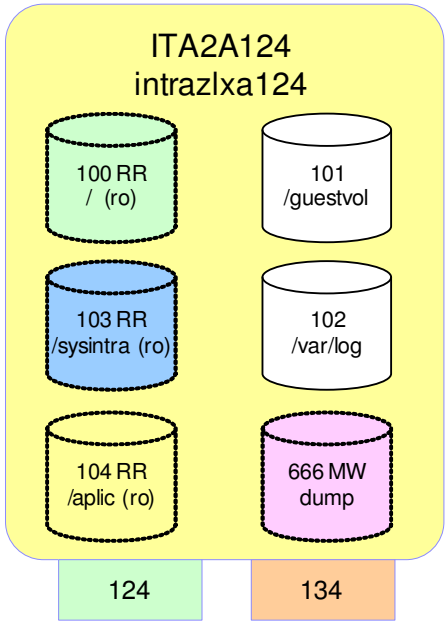


- DISKMAP USER
- DIRECTXA

Aplicação de Service Pack na máquina Master

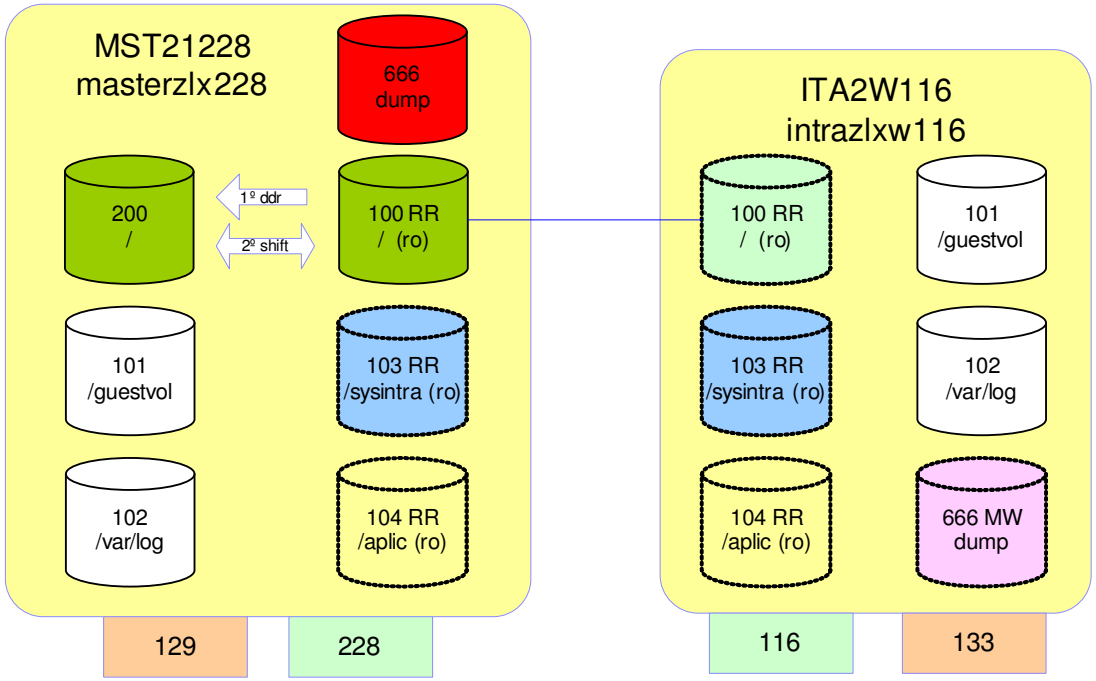
- # shutdown -h now
- # CP LOGOFF





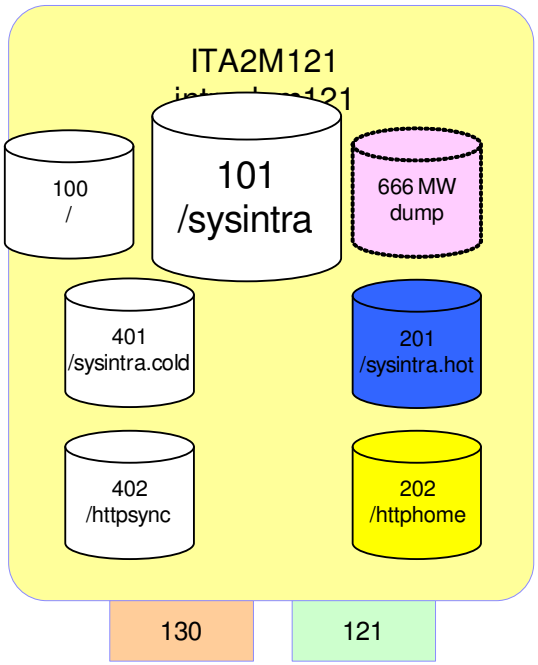
Aplicação de Service Pack na máquina Master

- XAUTOLOG ITA2W116
- Sincronização do /guestvol/etc



Atualização dos produtos e do conteúdo

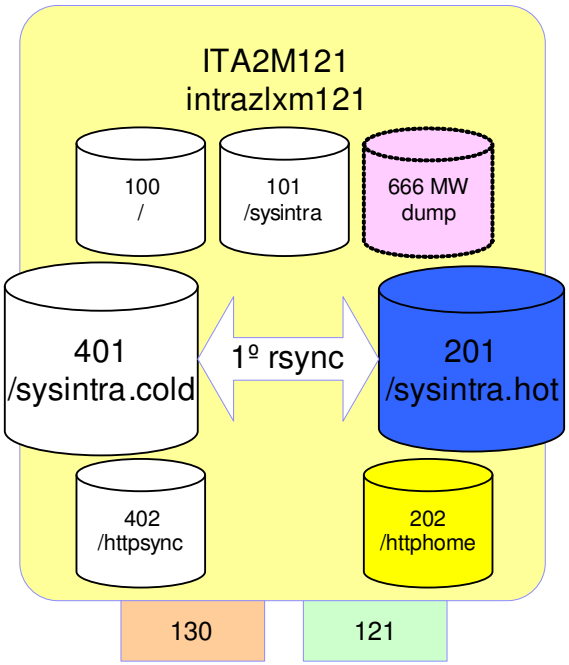
Máquina de Manutenção



- Atualização e homologação no disco de trabalho;

Atualização dos produtos e do conteúdo

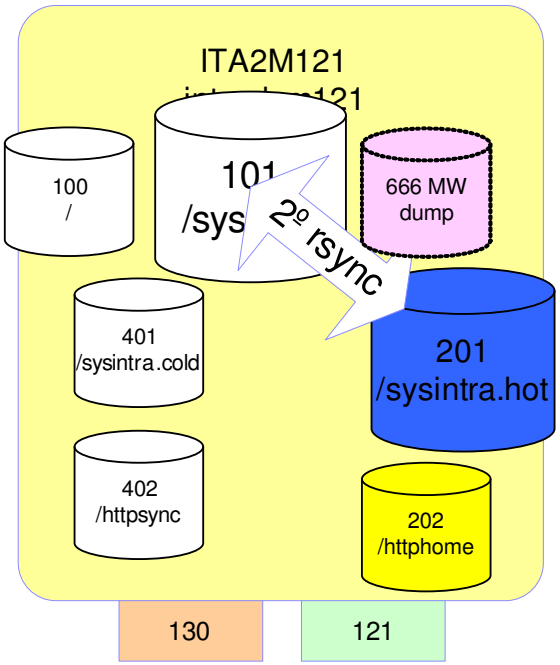
Máquina de Manutenção



- Remount do /sysintra.cold retirando a flag ro;
- Sincronizar o cold com o hot via rsync;
- Remount do /sysintra.cold retornando a flag ro;

Atualização dos produtos e do conteúdo

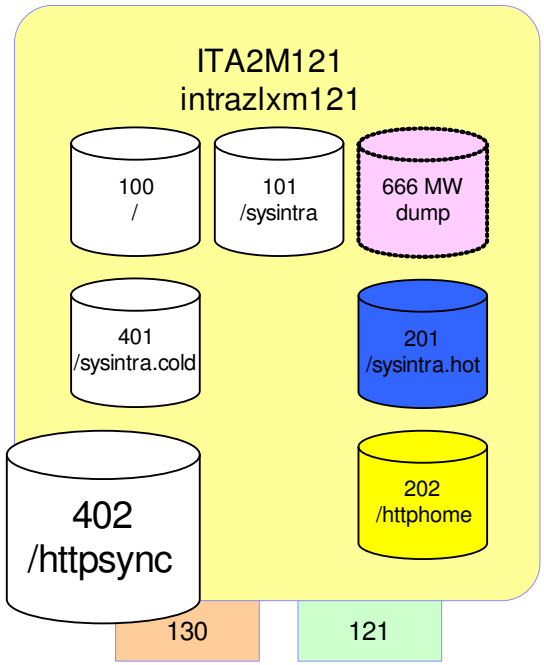
Máquina de Manutenção



- Remount do /sysintra.hot retirando a flag ro;
- Sincronizar o hot com o /sysintra via rsync;
- Remount do /sysintra.hot retornando a flag ro;

Atualização dos produtos e do conteúdo

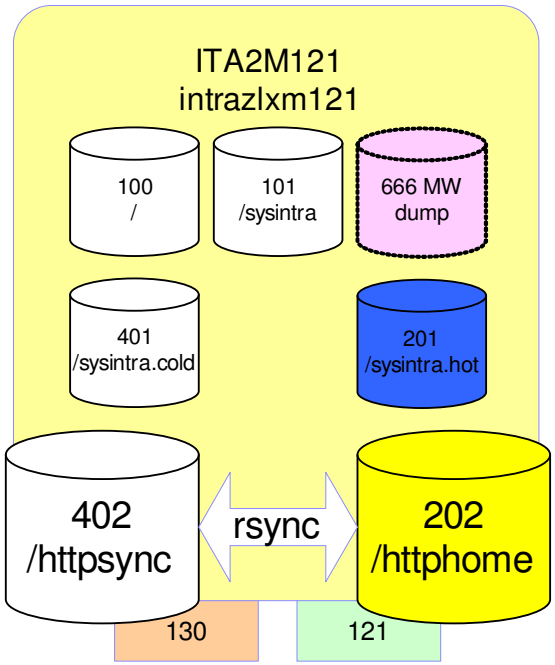
Máquina de Manutenção



- Atualizar o /httpsync com o ambiente de desenvolvimento via samba ou rsync;

Atualização dos produtos e do conteúdo

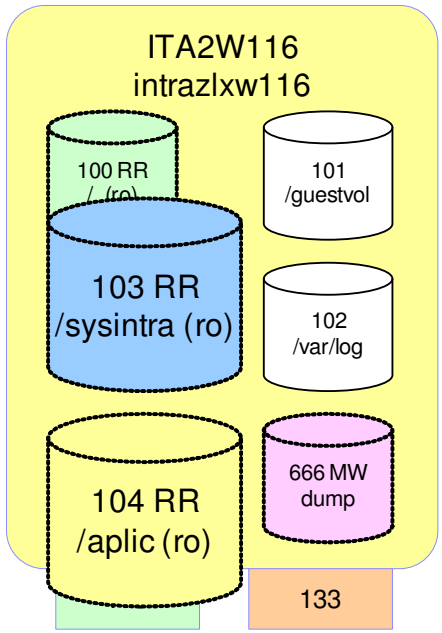
Máquina de Manutenção



- Remount do /httphome retirando a flag ro;
- Sincronizar o /httphome com o /httpsync via rsync;
- Remount do /httphome retornando a flag ro;

Atualização dos produtos e do conteúdo

Máquinas WebServer e Application Server



- Parar as aplicações e produtos
- Desmontar e montar os filesystems
- Subir os produtos e as aplicações

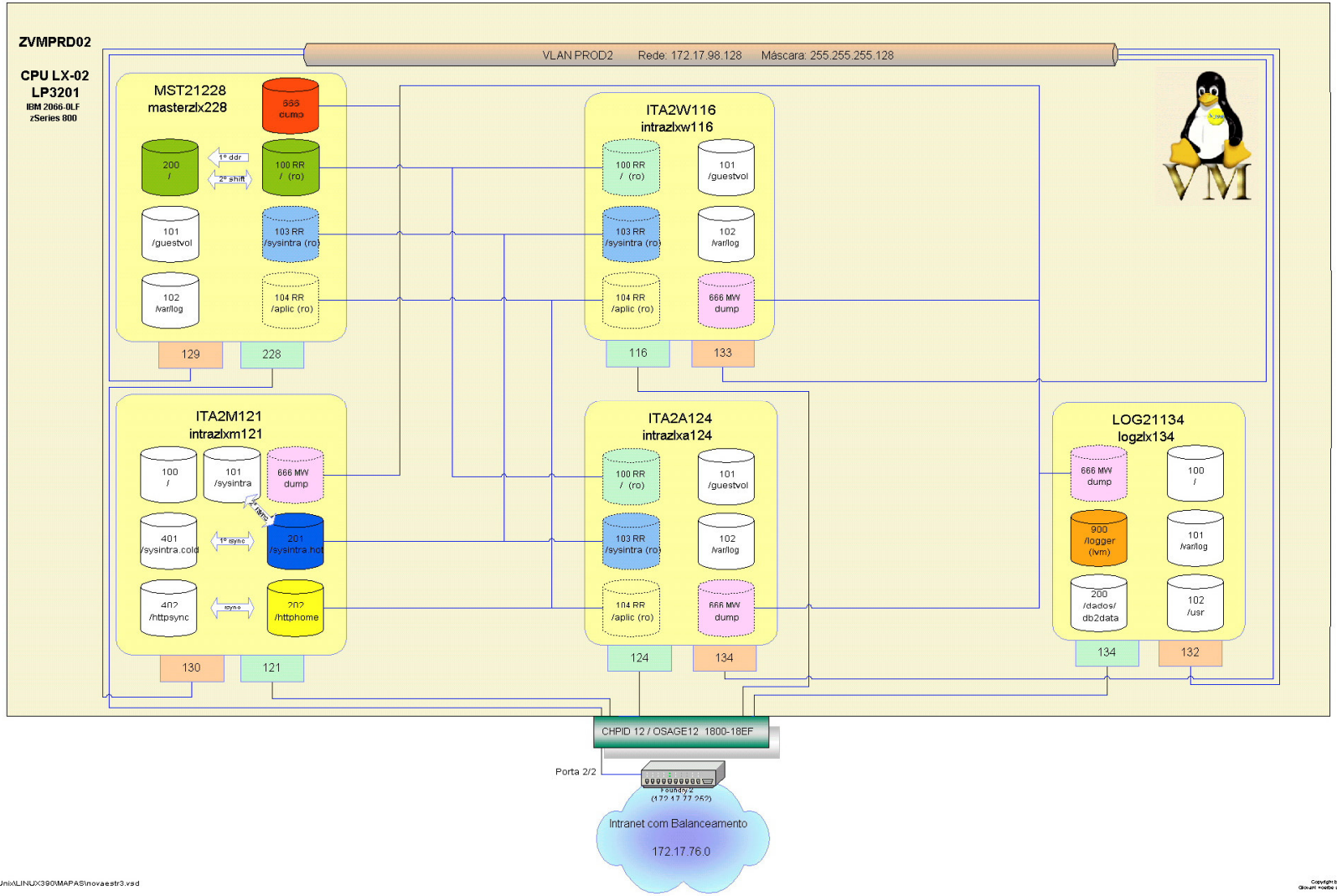
Vantagens

- Simplificação do processo de atualização do S.O. , produtos e conteúdo;
- Compartilhamento independente dos recursos de rede;
- Economia de storage;
- Enxugamento dos backups;
- Centralização dos Logs e estatística;
- Simplificação do processo de clonagem;

Estrutura de filesystem compartilhado

z/VM Linux (zSeries)
GETEC 01 - Núcleo 12

Estrutura Compartilhada do ambiente de Produção
ZVMPRD02



P:\Unix\LINUX390\MAPAS\novaestr3.vsd

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(61)310-6404

Diretoria de Tecnologia