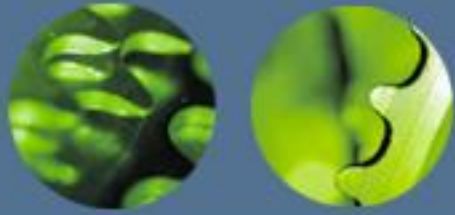




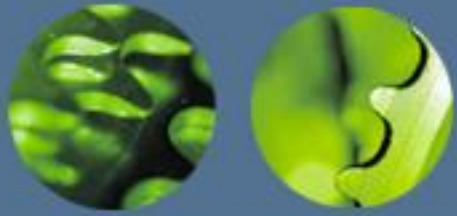
# Hypervisor level backup- następny poziom backupu dla środowiska VMware®

Marek Oczkowski  
Bank Zachodni WBK

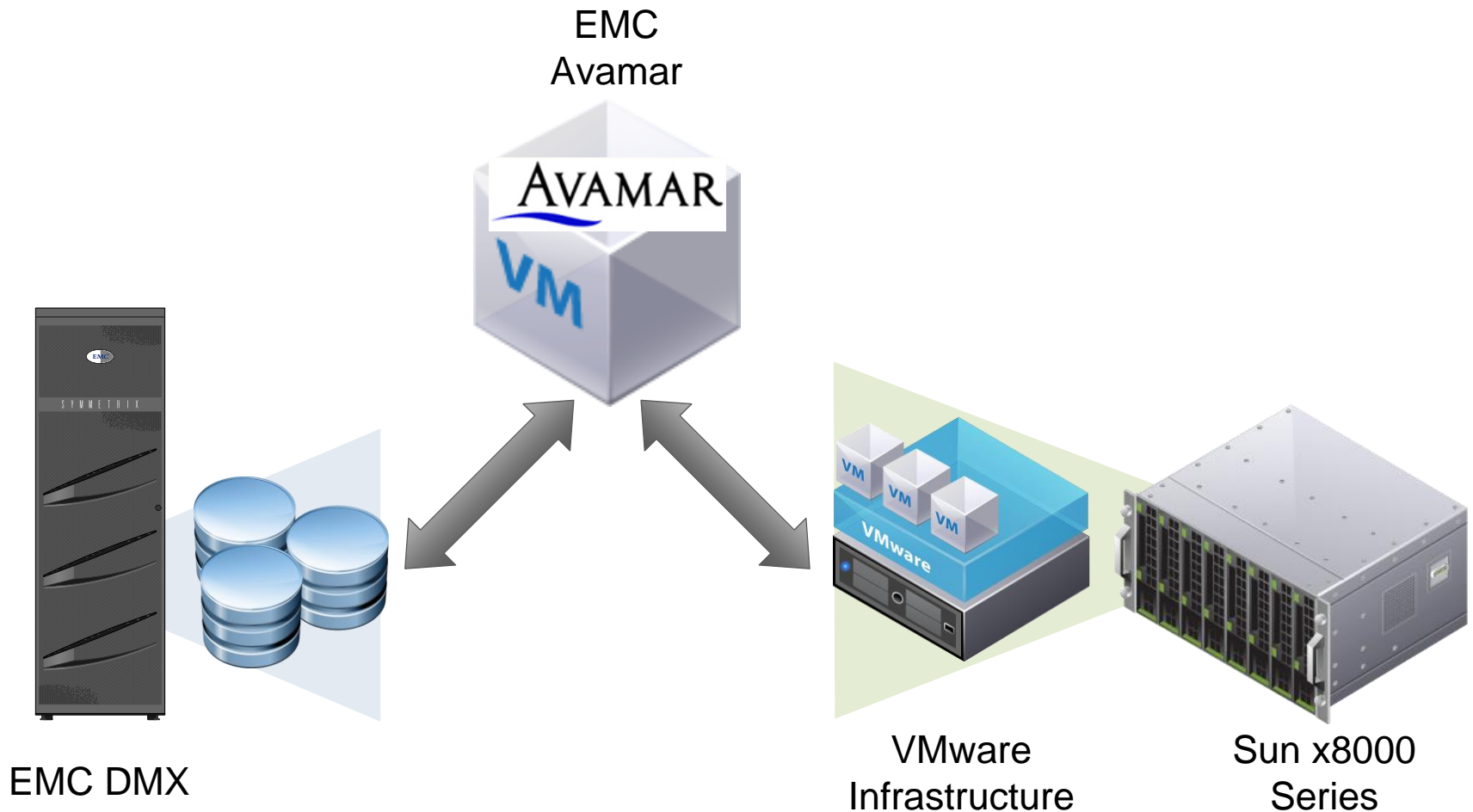


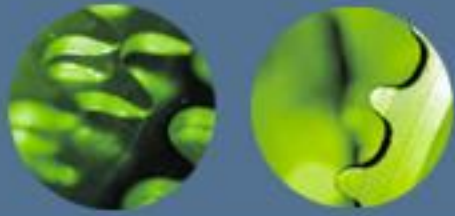
# Agenda

1. Wprowadzenie: schemat środowiska oraz VCB Proxy Backup
2. Idea rozwiązania Hypervisor Level Backup
3. Porównanie obu rozwiązań
4. Algorytm rozwiązania HLB
5. Wymogi HLB
6. Skrypty: omówienie procesu backupu i odtwarzania
7. Wydajność
8. Roadmap
9. Pytania

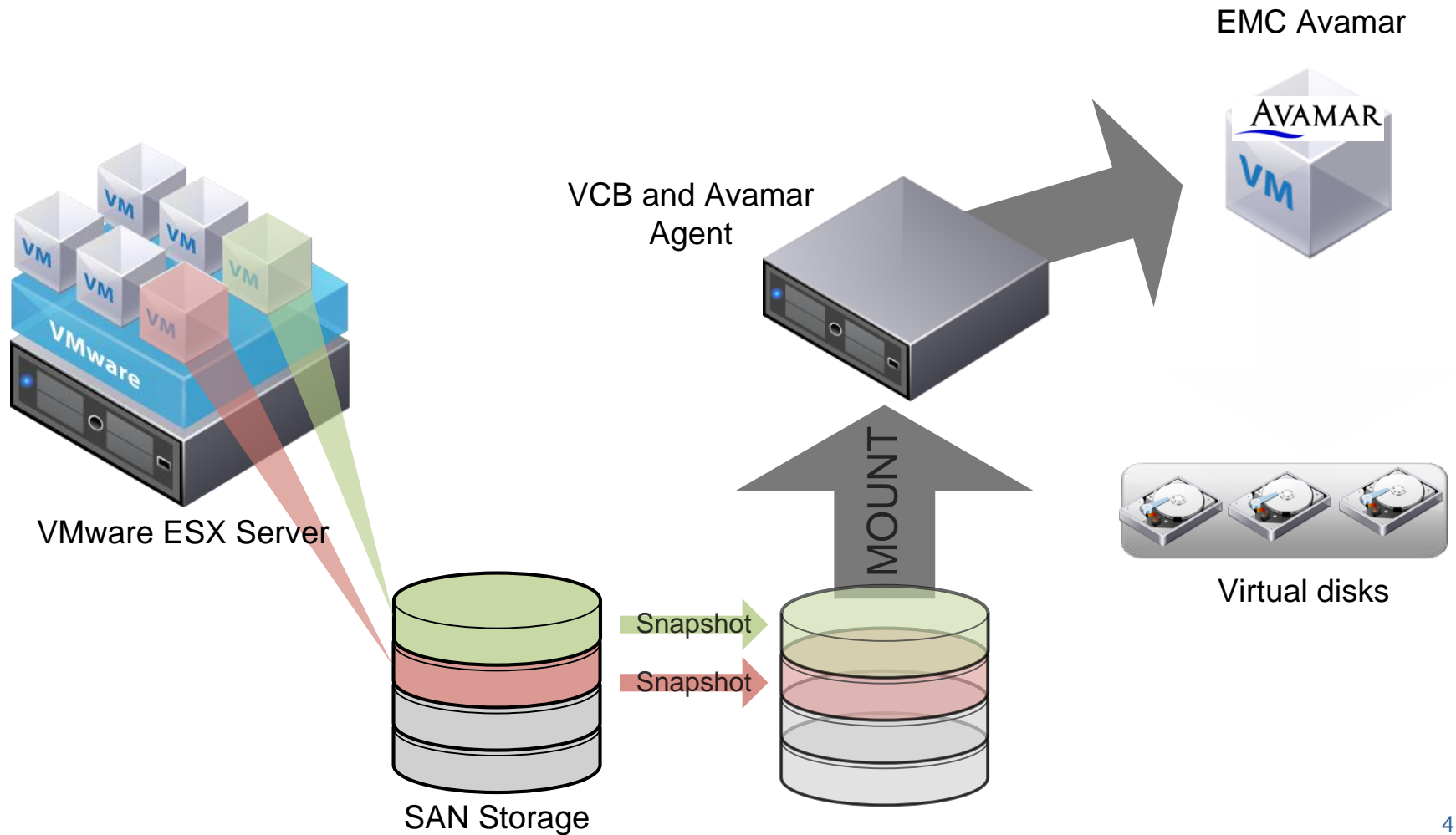


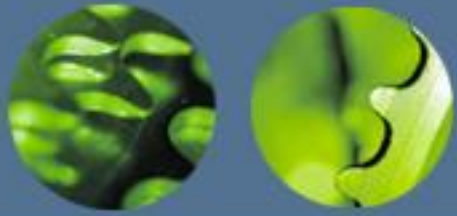
# Środowisko backupu



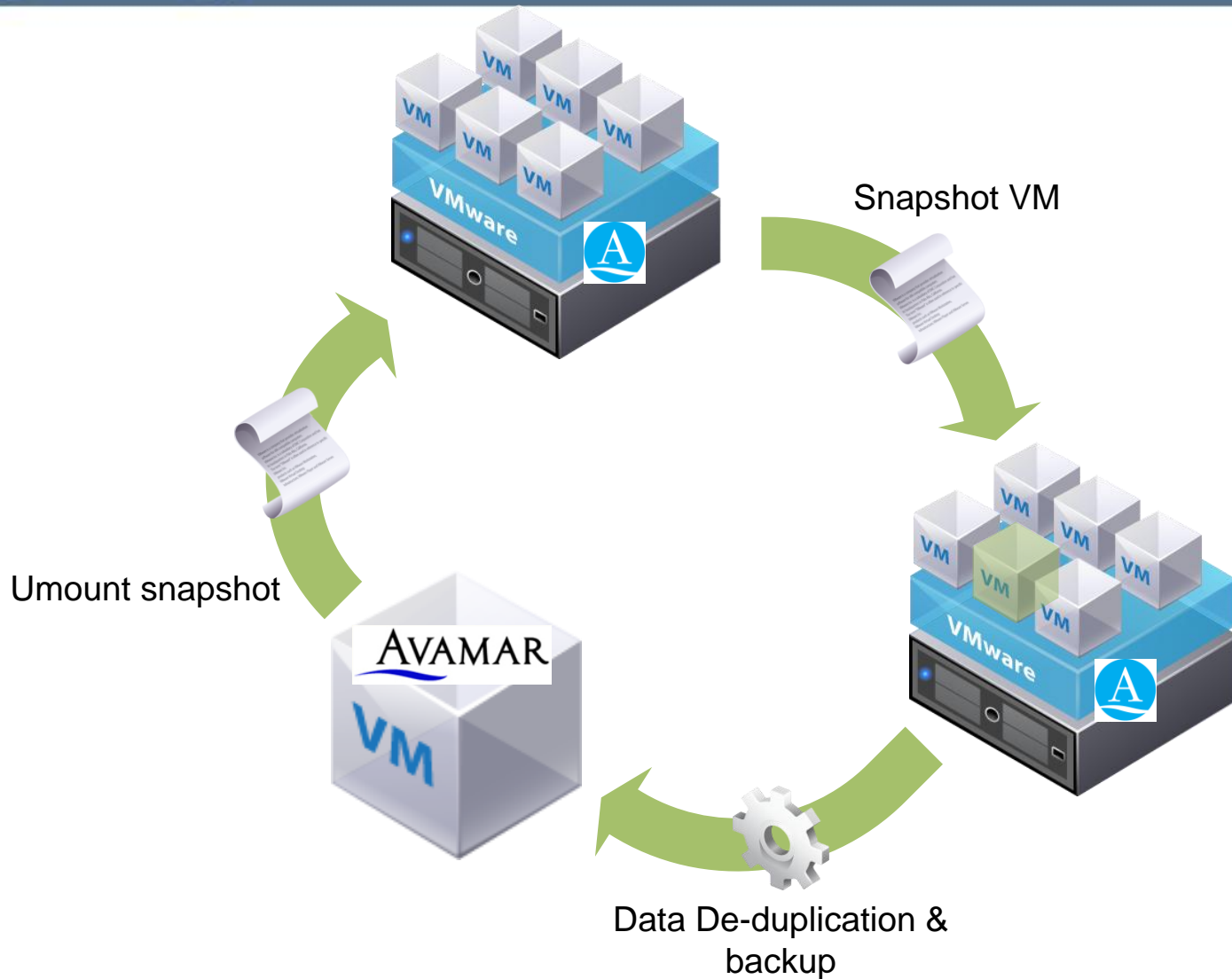


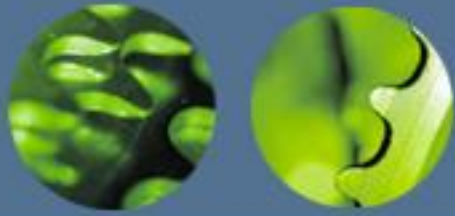
# VCB Proxy Backup





# Hypervisor level backup





# Porównanie obu rozwiązań

## VCB Proxy Backup

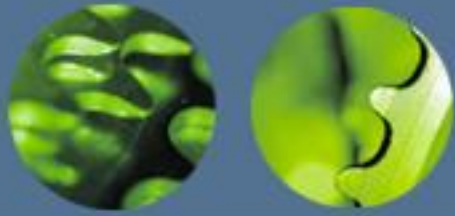
### Zalety

Wykorzystanie mechanizmów dostawcy wirtualizacji- pełna kompatybilność

### Wady

Wolna-kopiowanie obrazu maszyny wirtualnej

Droga-dedykowane dyski na bufor VCB



# Porównanie obu rozwiązań

## Hypervisor level backup

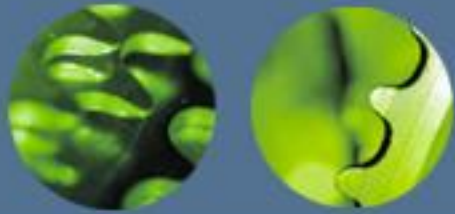
### Zalety

Szybka- nie wymaga kopiowania obrazu maszyny

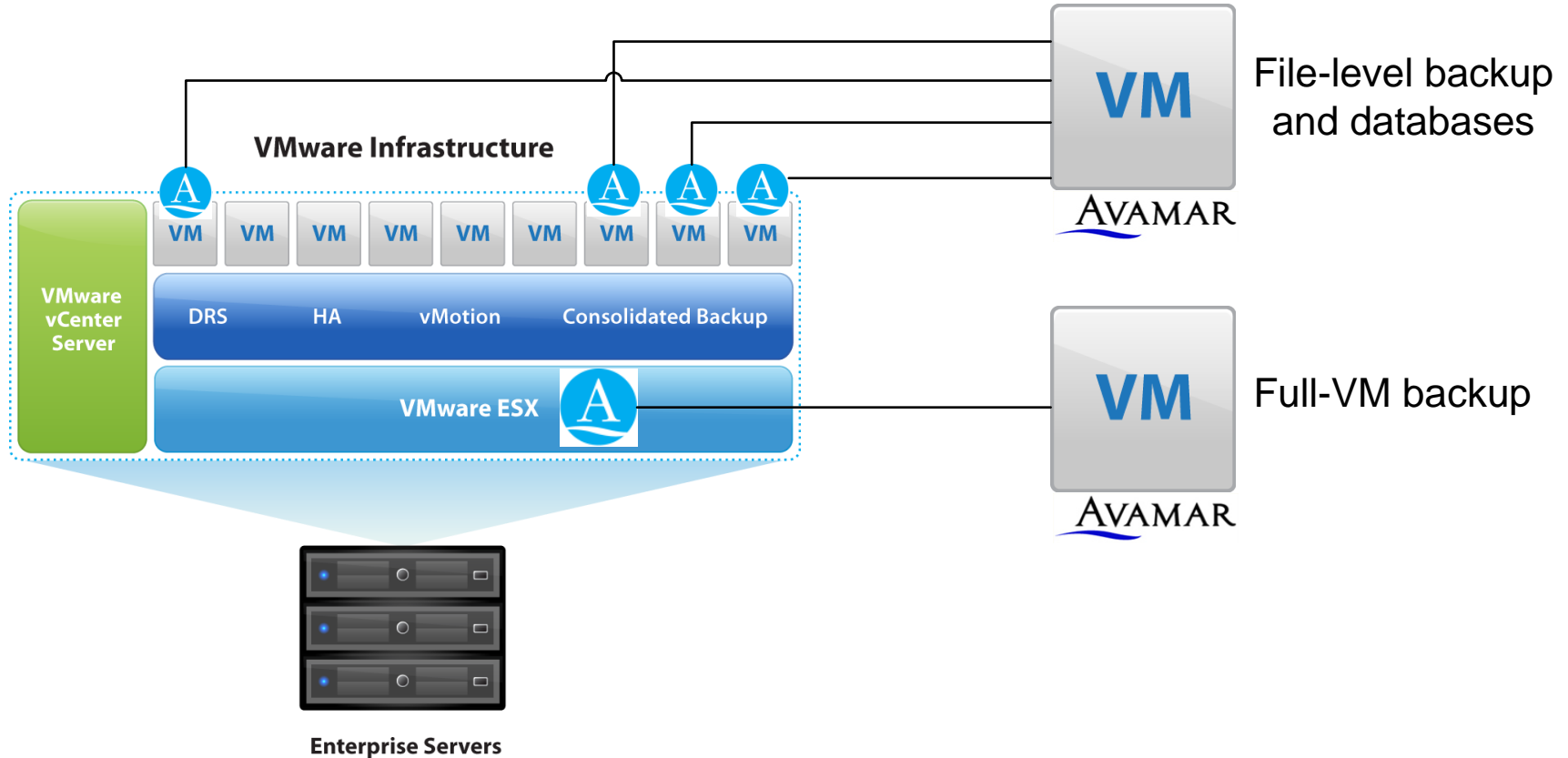
Tania w implementacji

### Wady

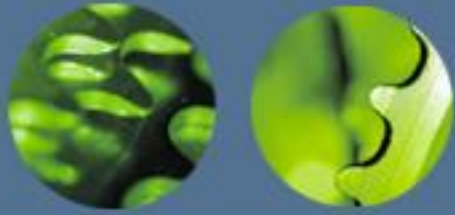
Rozwiązanie wstępnie przetestowane



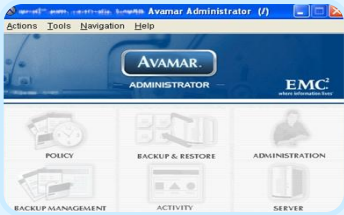
# Kompatybilność z mechanizmami VMware







# Korzyści



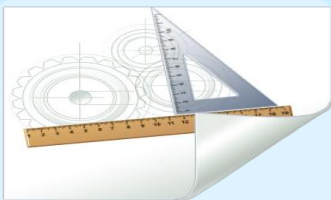
## Łatwość zarządzania

- Zarządzanie z jednej konsoli administratora całym środowiskiem backupu



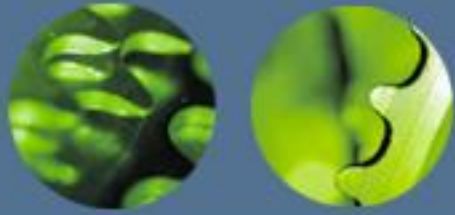
## Zwiększone bezpieczeństwo

- Szyfrowanie danych przed przestaniem przez sieć



## Skalowalność

- Możliwość skalowania całego rozwiązania poprzez dołączenie kolejnego węzła Avamar



# Algorytm

1

- Wylistowanie maszyn wirtualnych obecnych na hoście ESX

2

- Sprawdzenie czy któraś z maszyn ma być backupowana

3

- Stworzenie snapshotu

4

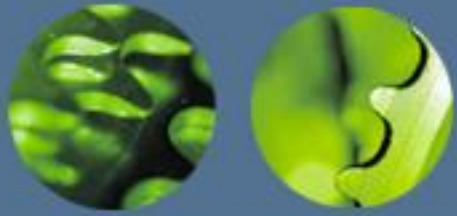
- Backup maszyny wirtualnej

5

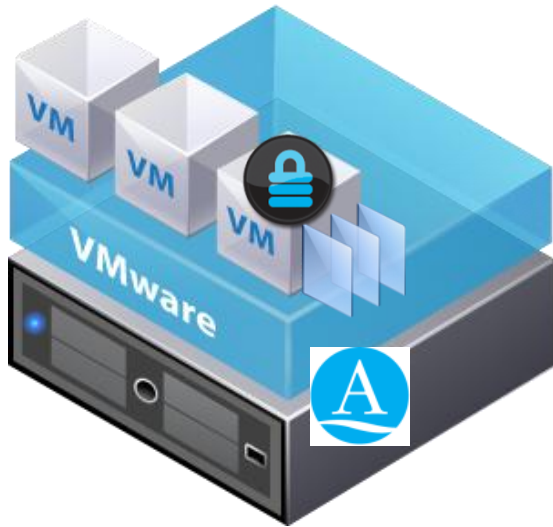
- Sprawdzenie czy maszyna posiada snapshot

6

- Usunięcie snapshotu



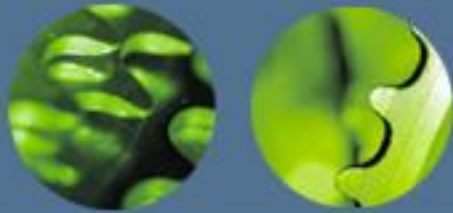
# Po co snapshot?



Inicjalizacja backupu

Backup





# Po co snapshot?

Select for Backup | Select for Restore

By Date | By File/Folder

Backup History

Backup(s) for month: < 2009 > < październik >

Pn	Wt	Śr	Cz	Pt	So	N
28	29	30	1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	1
2	3	4	5	6	7	8

Backups for październik 6

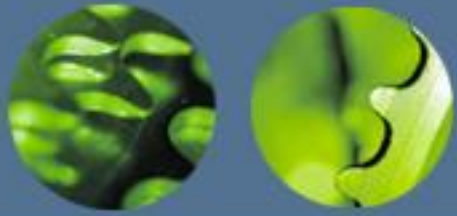
Number	Name	Time (CEST)
4		18:56:23
3		18:16:20
2		18:06:23
1		16:34:09

Contents of Backup named ESX\_wro55esx\_snap

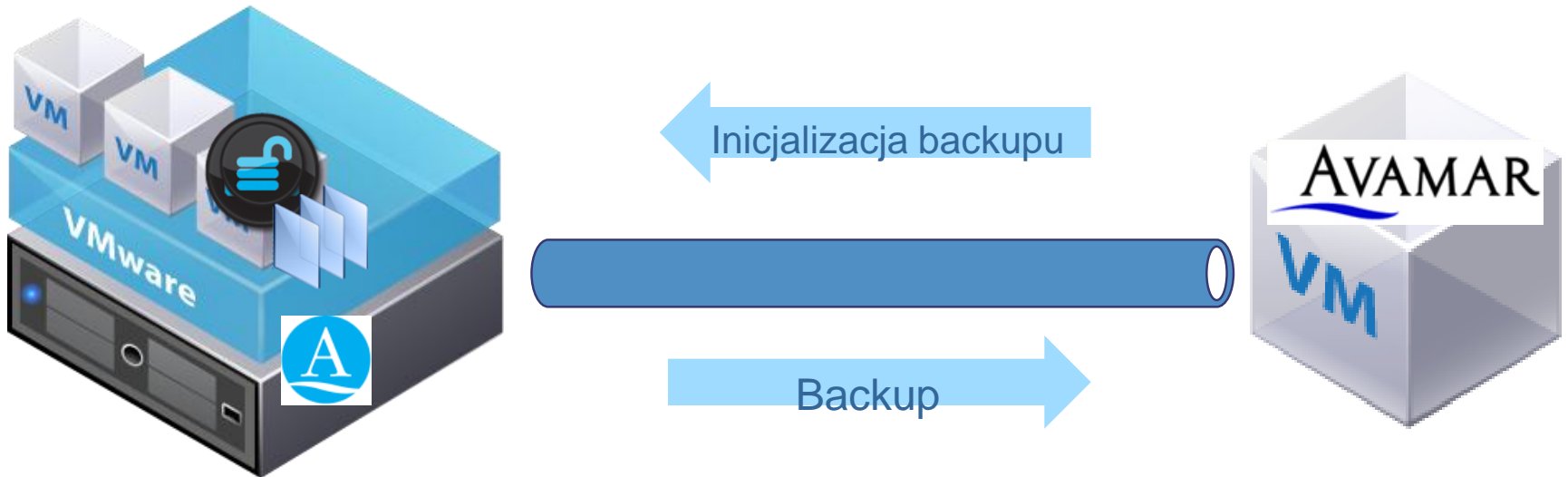
/vmfs/volumes/4a9b8a6e-3eca11a2-6a67-00144f0d8625/wro215ts/

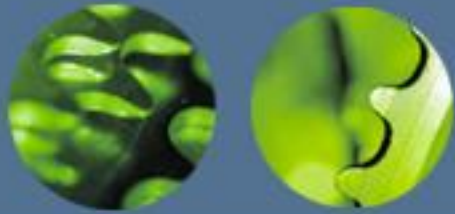
Select	Name	Date	Size	Type
<input type="checkbox"/>	vmware-32.log	2009-10-06 1...	40 573	
<input type="checkbox"/>	vmware-33.log	2009-10-06 1...	59 665	
<input type="checkbox"/>	vmware-34.log	2009-10-06 1...	106 482	
<input type="checkbox"/>	vmware-35.log	2009-10-06 1...	94 087	
<input type="checkbox"/>	vmware-36.log	2009-10-06 1...	93 524	
<input type="checkbox"/>	vmware-37.log	2009-10-06 1...	116 742	
<input type="checkbox"/>	vmware.log	2009-10-06 1...	36 859	
<input type="checkbox"/>	wro215ts.nvram	2009-10-06 1...	8 684	
<input type="checkbox"/>	wro215ts.vmdk	2009-10-06 1...	424	
<input type="checkbox"/>	wro215ts.vmsd	2009-10-06 1...	546	
<input type="checkbox"/>	wro215ts.vmx	2009-10-06 1...	2 734	
<input type="checkbox"/>	wro215ts.vmx	2009-10-06 1...	263	
<input type="checkbox"/>	wro215ts_1.vmdk	2009-10-06 1...	424	

/wro215ts/wro215ts-26bcf607.vswp" (code 16: Device or resource busy).  
 /wro215ts/wro215ts-flat.vmdk" (code 16: Device or resource busy).



# Po co snapshot?





# Po co snapshot?

Select for Backup | Select for Restore

By Date | By File/Folder

Backup History

Backup(s) for month: 2009 październik

Pn	Wt	Śr	Cz	Pt	So	N
28	29	30	1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	1
2	3	4	5	6	7	8

Backups for październik 7

Number	Name	Time (CEST)
6	ESX_wro215ts	12:53:46
5	ESX_wro215ts	12:16:50

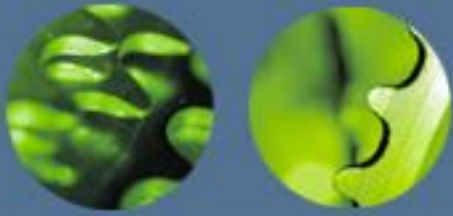
Contents of Backup named ESX\_wro55esx\_snap\_wro215ts

/vmfs/volumes/4a9b8a6e-3eca11a2-6a67-00144f0d8625/wro215ts/

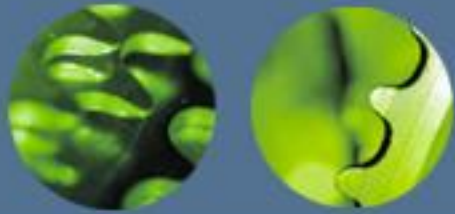
Select	Name	Date	Size	Type
<input type="checkbox"/>	vmware-34.log	2009-10-06 1...	106 482	
<input type="checkbox"/>	vmware-35.log	2009-10-06 1...	94 087	
<input type="checkbox"/>	vmware-36.log	2009-10-06 1...	93 524	
<input type="checkbox"/>	vmware-37.log	2009-10-06 1...	116 742	
<input type="checkbox"/>	vmware-38.log	2009-10-06 1...	52 184	
<input type="checkbox"/>	vmware-39.log	2009-10-06 1...	52 689	
<input type="checkbox"/>	vmware.log	2009-10-07 1...	161 363	
<input type="checkbox"/>	wro215ts-000001.vmdk	2009-10-07 1...	225	
<input type="checkbox"/>	wro215ts-26bcf607.hlog	2009-10-06 1...	37	
<input type="checkbox"/>	wro215ts-Snapshot8.vmsn	2009-10-07 1...	19 781	
<input type="checkbox"/>	wro215ts-flat.vmdk	2009-10-07 1...	10 737 418 240	
<input type="checkbox"/>	wro215ts.nvram	2009-10-06 1...	8 684	
<input type="checkbox"/>	wro215ts.vmdk	2009-10-07 1...	424	
<input type="checkbox"/>	wro215ts.vmsd	2009-10-07 1...	591	
<input type="checkbox"/>	wro215ts.vmx	2009-10-07 1...	2 794	
<input type="checkbox"/>	wro215ts.vmx	2009-10-07 0...	263	
<input type="checkbox"/>	wro215ts_1-000001.vmdk	2009-10-07 1...	228	
<input type="checkbox"/>	wro215ts_1-flat.vmdk	2009-10-06 1...	1 073 741 824	
<input type="checkbox"/>	wro215ts_1.vmdk	2009-10-07 1...	424	

```

/wro215ts-000001-delta.vmdk" (code 16: Device or resource busy).
/wro215ts-26bcf607.vswp" (code 16: Device or resource busy).
/wro215ts_1-000001-delta.vmdk" (code 16: Device or resource busy).
  
```



# SCRIPTS



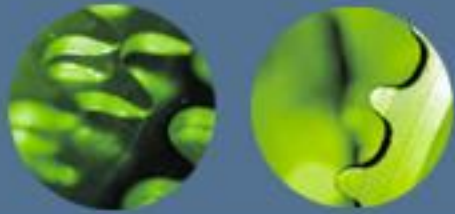
# Pre\_scripts

```
#!/bin/bash echo "wyszukiwanie maszyn"#!/bin/bash
#initial_back #snap_request
echo "--initi i=1 echo "--snap_request--"
while [ $VM_present_lines
echo "maszyn VM_present_lline=`echo "tworzenie snapshotu..."
echo "$ (vmwar #alternatywne wylusinfo=`echo "Snapshot wykonany przez system backupu Avamar dnia $2" `
#VM_present_lline=`create_snap=`vmware-cmd $1 createsnapshot $2 "$info" `
VM_present_sline=`if [ "$create_snap" == "createsnapshot($2 $info) = 1" ]; then
VM_present_li },, #snap_request_answer.tmp- plik odpowiedzi
touch $VM_pre j=1 echo "***OK***" | tee snap_request_answer.tmp
echo "zapis c while [ $VM_backup_else
vmware-cmd -l VM_backup_lir echo "***FAILED***" | tee snap_request_answer.tmp
echo "***OK***" if [ $VM_pres exit 1
#stworzenie listingiem } echo "fi
#touch VM_pre VM_snap
echo "$VM_pre #wywola...
/usr/local/av $VM_snap_request $1 /usr/local/avamar/etc/scripts/snap_request
snap_request
snap_answer=`cat snap_request_answer.tmp`

if [ $snap_answer = "***OK***" ]; then
sed -i
"$i"'s/'"$VM_present_sline"'/'"$VM_present_sline OK_snap"'/' $1
else
sed -i
"$i"'s/'"$VM_present_sline"'/'"$VM_present_sline FAILED_snap"'/' $1
exit 1
```

compare\_backup





# Post\_scripts

```
while [ $VSM_present_lines -ge $i ]; do          #!/bin/bash
VM_present_lline=`head -n$i $VSM_present        #snap_remove
echo "--snap_remove--"

#VM_present_lline_1c- sciezka do .vmx
VM_present_lline_1c=`echo $VSM_present_1 echo "usuwanie snapshotu..."
remove_snap=`vmware-cmd $1 removesnapshots`

#VM_present_lline_2c- flaga snapshotu          if [ "$remove_snap" == "removesnapshots() = 1" ]; then
VM_present_lline_2c=`echo $VSM_present_1      echo "***OK**" | tee snap_remove_answer.tmp
else
    if [ "$VSM_present_lline_2c" = "OK"        echo "***FAILED**" | tee snap_remove_answer.tmp
        echo -e "znaleziono snapsho          exit 1
$VSM_present_lline"                          fi
#wywołanie usuniecia snapshotu
/usr/local/avamar/etc/scripts/snap_remove    snap_remove
$VSM_present_lline_1c
remove_answer=`cat snap_remove_answer.tmp`
VM_present_sline=`echo $VSM_present_lline | awk -F/
'{ print $6 }'`
if [ $remove_answer == "***OK**" ]; then
    sed -i
"$i"'s/'"$VSM_present_sline"'/'"$VSM_present_sline OK_ument"'/'
$VSM_present_list
else
    sed -i
"$i"'s/'"$VSM_present_sline"'/'"$VSM_present_sline FAILED_ument"'/'
$VSM_present_list
    exit 1
fi
rm -f snap_remove_answer.tmp
fi
```

initial\_ument



2009-10-07 12:50:34 avtar Info <5916>: Executing run-at-start '/usr/local/avamar/etc

2009-10-07 12:50:36 avtar Info <6031>: Begin STDOUT from run-at-start:

--initial\_backup

maszyny wirtualne obecne na hoscie

/vmfs/volumes/499967ca-a2d7d6ba-455b-0015c5893d51

/vmfs/volumes/4909685f-96d60d26-7dbe-00144f0c9ecb

/vmfs/volumes/4909685f-96d60d26-7dbe-00144f0c9ecb

/vmfs/volumes/483bc1f5-b529a9fa-6835-00144f0c9ecb

/vmfs/volumes/49b7621a-890d02d9-e20e-00144f0d568d

/vmfs/volumes/492d9361-10e2ded1-32ec-00144f0c9ecb

/vmfs/volumes/499967ca-a2d7d6ba-455b-0015c5893d51

/vmfs/volumes/48abfdf7-8a01bbf8-calb-00144f0d7dff

/vmfs/volumes/4a9b8a6e-3ecalla2-6a67-00144f0d8625

/vmfs/volumes/4a9b8a6e-3ecalla2-6a67-00144f0d8625

zapis do pliku 09\_10\_1

\*\*OK\*\*

--compare\_backup--

wyszukiwanie maszyn d

\*\*znalazlem wro215ts.

--snap\_request--

tworzenie snapshotu..

\*\*RAPORT\*\*

/vmfs/volumes/499967ca-a2d7d6ba-455b-0015c5893d51

\*\*RAPORT\*\*

/vmfs/volumes/4909685f-96d60d26-7dbe-00144f0c9ecb

/vmfs/volumes/4909685f-96d60d26-7dbe-00144f0c9ecb

/vmfs/volumes/4909685f-96d60d26-7dbe-00144f0c9ecb

/vmfs/volumes/4909685f-96d60d26-7dbe-00144f0c9ecb

/vmfs/volumes/483bc1f5-b529a9fa-6835-00144f0c9ecb

/vmfs/volumes/49b7621a-890d02d9-e20e-00144f0d568d

/vmfs/volumes/492d9361-10e2ded1-32ec-00144f0c9ecb

/vmfs/volumes/49b7621a-890d02d9-e20e-00144f0d568d

/vmfs/volumes/499967ca-a2d7d6ba-455b-0015c5893d51

/vmfs/volumes/492d9361-10e2ded1-32ec-00144f0c9ecb

/vmfs/volumes/48abfdf7-8a01bbf8-calb-00144f0d7dff

2009-10-07 12:53:48 avtar Info <6032>: End of STDOUT

2009-10-07 12:53:48 avtar Info <5917>: Back from run-at-end, exit code 0

2009-10-07 12:50:37 avtar Info <6032>: End of STDOUT

2009-10-07 12:50:37 avtar Info <5917>: Back from run-at-start, exit code 0

2009-10-07 12:50:37 avtar Info <5946>: File system character encoding is UTF-8.

2009-10-07 12:50:37 avtar Info <5588>: - Creating process lock file "/usr/local/avar

2009-10-07 12:50:37 avtar Info <0000>: Starting back up at 2009-10-07 12:50:37 CEST

wro215ts-000001-delta.vmdk" (code 16: Device or resource busy).

wro215ts-26bcf607.vswp" (code 16: Device or resource busy).

wro215ts\_1-000001-delta.vmdk" (code 16: Device or resource busy).

Options

default-traversal=

allnodes=false

checkcache=false

debug=false

filecachemax=8

force=false

hashcachemax=1

informationals=2

label=

one-file-system=fa

repaircache=false

run-at-end-exit=tru

run-at-end=initial\_

run-at-start-exit=tru

run-at-start=initial\_

statistics=false

throttle=0

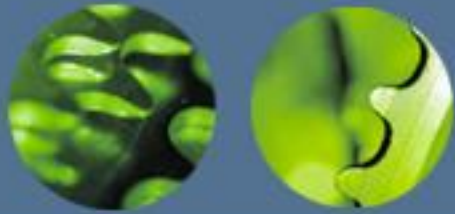
verbose=0

Znaleziono snapshot do usuniecia

wro215ts.vmx OK\_snap OK\_umount

log\_part2

log\_part1



# Przywracanie z backupu

CPU:  
Memory:  
Memory Overhead:

Snapshots for wro215ts\_restore

wro215ts\_restore

Virtual Machine Message

msg.uuid.moved: The location of this virtual machine's configuration file has changed since it was last powered on.

If the virtual machine has been copied, you should create a new unique identifier (UUID). If it has been moved, you should keep its old identifier.

If you are not sure, create a new identifier.

What do you want to do?

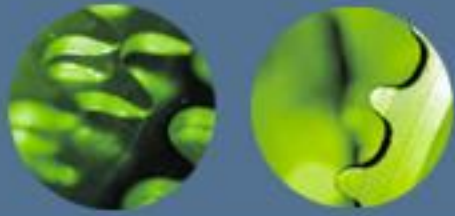
- Create
- Keep
- Always Create
- Always Keep
- Cancel

OK

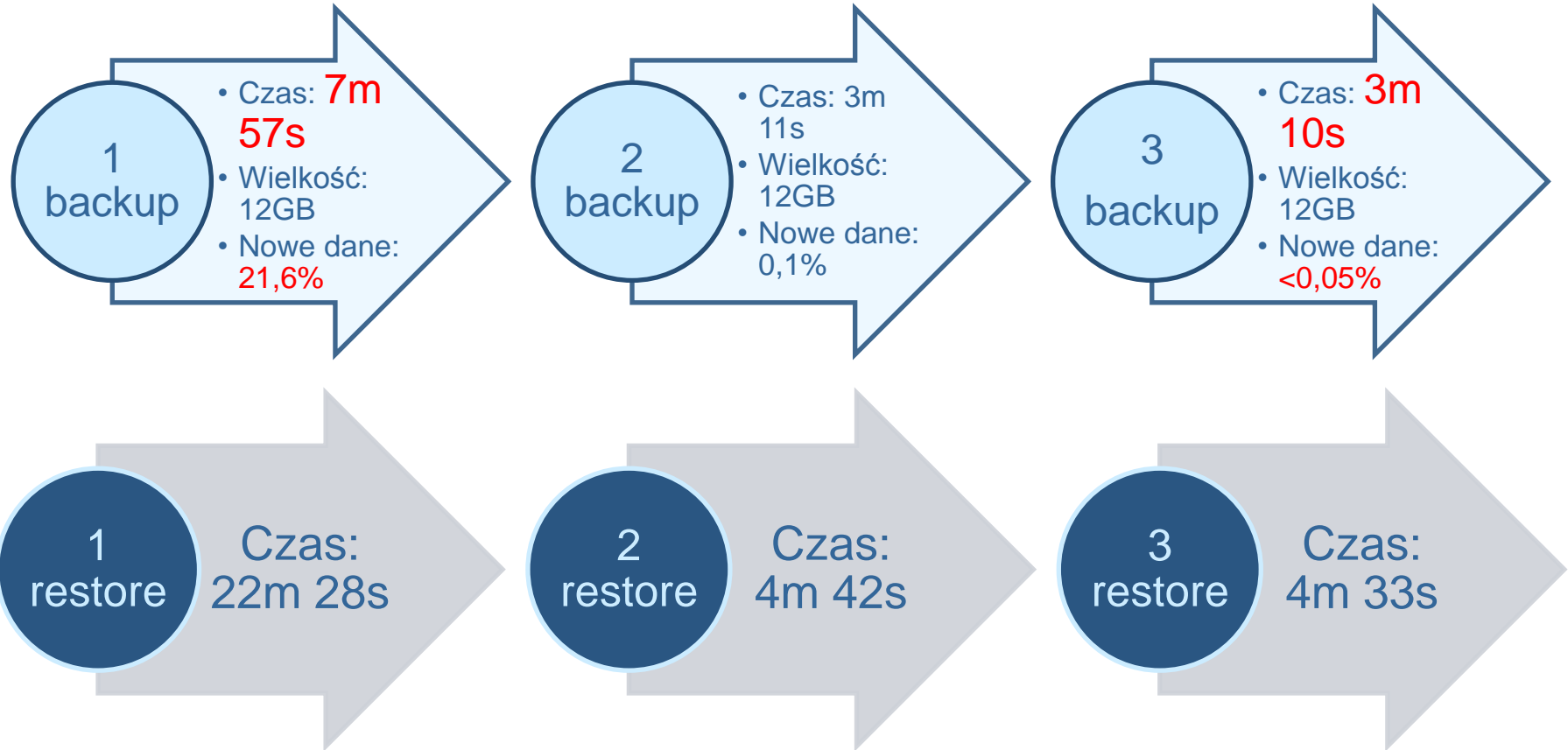
General Resources

Close help

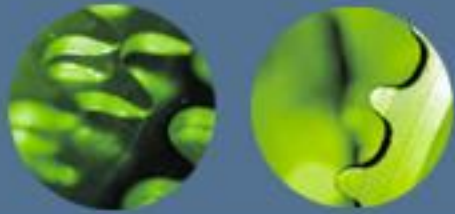
UUID  
rejestracja w VC



# Wydajność







# Roadmap

AST\_ADM:  
AST\_CHG [REM...  
AST\_MOD [ON]...  
AST\_OWN:  
AST\_SRV:  
AST\_SUP:  
AST\_TYP [PRO]...  
BCK\_DBN [ON]...  
BCK\_DBP [ON]...  
BCK\_FIL [ON]O...  
BCK\_FVM [1D]1...  
IP4\_ADR:  
PER\_DR [ON]O...  
PER\_HA [ON]O...  
PER\_HDD [R.10]...  
PER\_LVL [724]...  
RSQ\_CPU [PCS]...  
RSQ\_HDD [GB]...  
RSQ\_RAM [MB]...  
Notes: Testy Avamar Marek

Edit Custom Attributes

Attributes

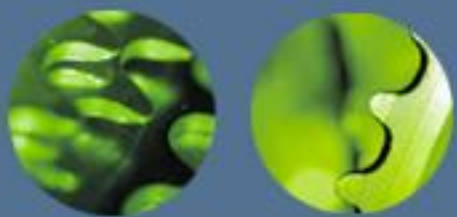
Adding an attribute will apply the attribute to all the virtual machines in the inventory.

Name	Value	Type
BCK_DBN [ON OFF]		Virtual Machine
BCK_DBP [ON OFF]		Virtual Machine
BCK_FIL [ON OFF]		Virtual Machine
BCK_FVM [1D 1M 1Q 1Y]		Virtual Machine

Notes

Testy Avamar Marek Oczkowski

Buttons: Add, Remove, Help, OK, Cancel



# Pytania



