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Focus op Security Governance:

Privileged Account Management

Security Information & Event Management

Bob Lannoy
Kristof Verslype

Onderzoek
Maart 2012

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Agenda

- Context & trends
- Information Security Governance
- Privileged Account Management
- Security Information & Event Management

Context

2.3 million consumer financial records stolen

Former Fidelity National Information Services broker sold information

LEADER (U.S.) | JANUARY 25, 2008

French Bank Rocked by Rogue Trader

Société Générale Blames $7.2 Billion in Losses On a Quiet 31-Year-Old

Former Sys Admin Gets 8 Years for Computer Sabotage

By The Associated Press • 12/14/2006

A former UBS PaineWebber systems administrator was sentenced Wednesday to eight years and one month in prison for attempting to profit by detonating a "logic bomb" program that prosecutors said caused millions of dollars in damage to the brokerage's computer network in 2002.

Feds: IT admin plotted to erase Fannie Mae

'Server Graveyard' narrowly averted

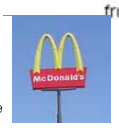
By Dan Goodin in San Francisco • Get more from this author

Posted in Crime, 29th January 2009 20:18 GMT

A fired computer engineer for Fannie Mae has been arrested and ch malicious software script designed to permanently destroy millions of from all 4,000 servers operated by the mortgage giant.

Fired techie created virtual chaos at pharma company

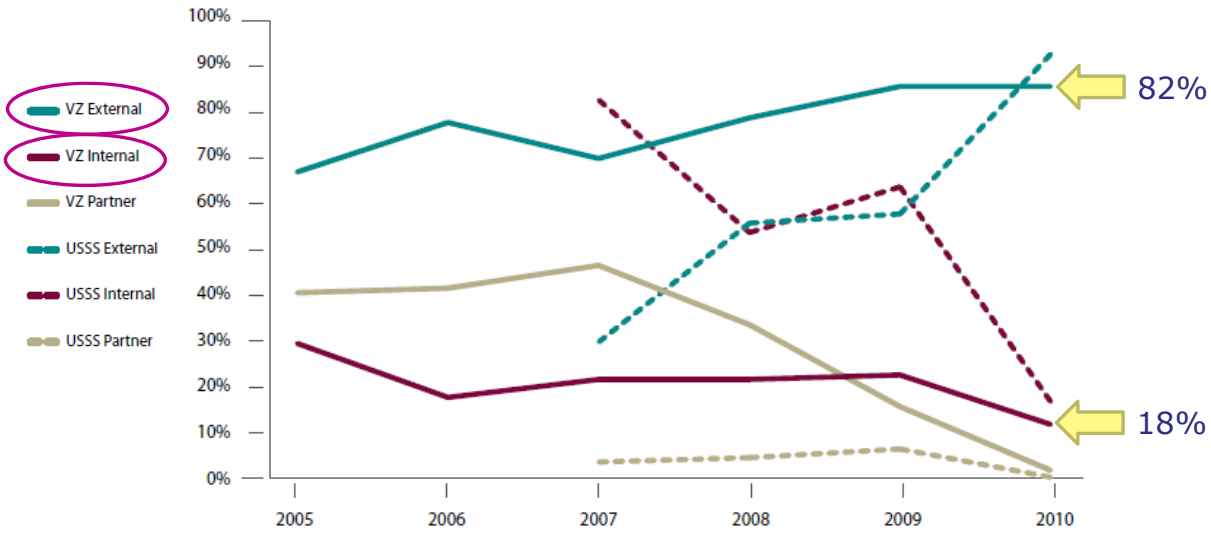
A former IT staffer has pleaded guilty to using a secret vSphere console to wipe company servers



Wikileaks Afghanistan: leak inquiry centres on US intelligence analyst

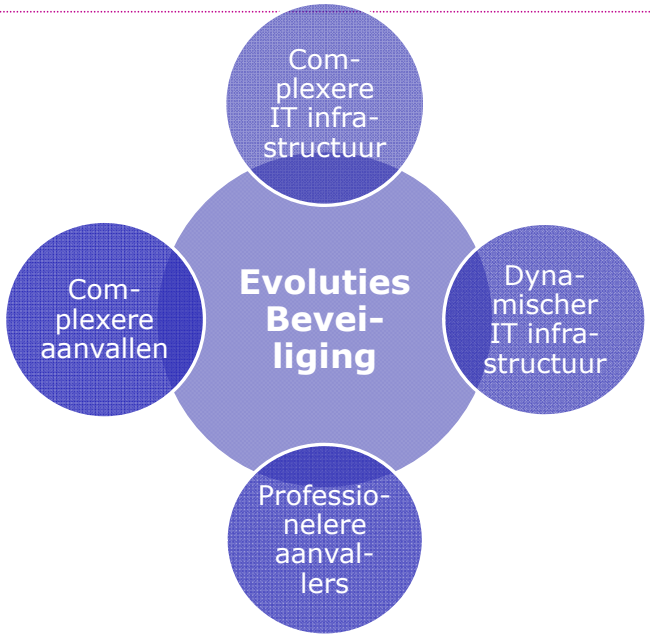
The investigation into the biggest leak in US military history centres on a US Army intelligence analyst who allegedly boasting online that he was going to reveal "the truth" about the war in Afghanistan.

Beveiligingsincidenten
Statistieken (1/4)



Verizon data breach report 2011

Information security trends (1/3)



Information security trends (2/3)

Gartner (29 november 2011)

Information Security Governance
Aanpak (1/2)

Information Security
Governance & Management

Beleid / Processen

Implementatie / Tools

Information Security Governance
Aanpak (2/2)

Preventie
- Ontradend
- Informerend

PAM, SIEM

Detectie
- Fysiek
- Virtueel

SIEM

Verhindering
- Fysiek
- Virtueel

PAM

Reactie
- Bestraffend
- Technisch

SIEM

Information Security Governance
Technische veiligheidsmaatregelen (1/4)

Beheer van gebruikers & rechten
- Provisioning / deprovisioning
- Entitlements (access)
- Geprivilegieerde accounts

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Inform
Techni

A, A2A

PAM - SIEM

by & Kristof Verslype - Onc

Securit
ligheid

Agenda

- Context & trends
- Information Security Governance
- Privileged Account Management
  - Wat is het?
  - Aanpak
  - Software & demo's
  - Niet-toolgebonden aspecten
  - Conclusies
- Security Information & Event Management

Insider Threat (1/2)

- Doelbewust
  - Al dan niet uitgebreide toegangsrechten
  - Hacking technieken (privilege escalation)
  - Toegang tot gevoelige data/systemen

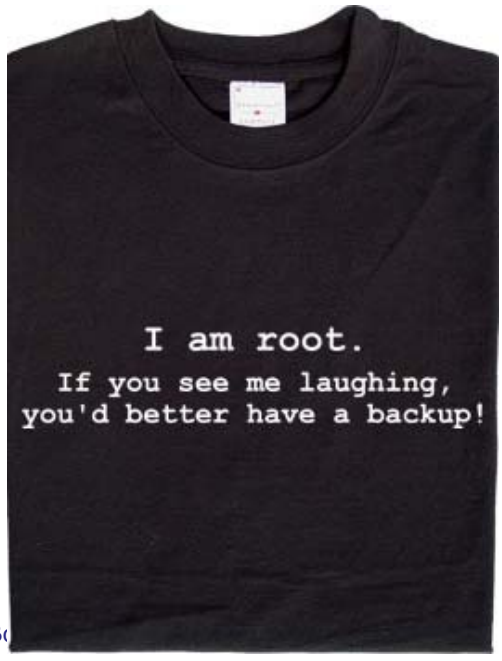
- Onbewust
  - Gewone gebruikers met (teveel) rechten
  - Gevoelige gegevens meenemen/verliezen
  - (Doel van hack-aanval)

Insider Threat (2/2)

- Insider threat ~ 20 à 40 % incidenten
  - 10 à 20% doelbewust ➔ ~ 5%

⚠ Impact omgekeerd evenredig

Wat is "Privileged account management"?



Wat is "Privileged account management"?
Termen & acroniemen

Privileged Access Account Identity User Management

PAM
PIM
PUM

Super User Privilege Management	SUPM
Application to Application Password Management	AAPM
Shared-Account/Software-Account Password Management	SAPM
Privileged Account Activity Management	PAAM

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Wat is "Privileged account management"?
Termen & acroniemen

- Privileged Account
- Shared-Account/Software Account
- Application to Application
- Activity

Wat is "Privileged account management"?
Privileged account / Shared-account

Gewone account
Gebruiker met eigen credentials (uid/pw, eid/pin, …)
Gebonden aan gebruiker
Gebruiker is 'verantwoordelijk'

Privileged account / Shared-account
Account met hogere rechten
Niet gebonden aan gebruiker
Gedeeld met verschillende gebruikers
Beheeraccounts software/hardware

Wat is "Privileged account management"?
Privileged account / Shared-account

- Voorbeelden
  - OS: Administrator (Windows), root (Linux)
  - DB : SYS / SYSTEM (Oracle), …
  - Virtualisatiesoftware console
  - Netwerk toestellen
  - Service accounts, …

Wat is "Privileged account management"?
Application to Application

- Wachtwoorden in applicaties
  - Toegang tot database
  - Communicatie tussen toepassingen
- Opslag wachtwoord
  - Embedded
  - Configuratiebestand

Wat is "Privileged account management"?
Activity

- Logging van activiteit van gebruiker
  - Wie / waar / wanneer
  - Session logging
- Ondersteuning voor audit / compliance

Wat is "Privileged account management"?
Probleem (1/2)

- Default accounts met vast wachtwoord
- Gedeeld ➔ groep gebruikers
  - Hoe wordt het gedeeld?
  - Veiligheid/bescherming van wachtwoord
    Complexiteit, vernieuwing na x tijd, …
- Operaties met die account ➔ wie was het?
- Mensen die bedrijf verlaten, wachtwoord veranderd?
- Gebruik van virtualisatie of private cloud, vergroot mogelijke schade

Wat is "Privileged account management"?
Probleem (2/2)

- **Risico's**
  - Verlies van confidentiële gegevens
  - Serviceonderbrekingen
  - Imagoschade

Aanpak
Principes

Gewone account

Tijdelijke verhoging van rechten

Administrator

Administratie account naast gewone account
One-time passwords
Toegang tot shared account in noodsituaties

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Aanpak
Software

- Privilege elevation in OS
  - Sudo (Linux), Runas (Windows)
  - Role based Access Control (Solaris)
  - Specifieke softwarepakketten (Windows, Linux)

DEMO - Sudo

- Privilege elevation: "*sudo <commando>*"
- Configuratie in "*sudoers*" bestand
- Configuratie is niet zonder gevaren
- Centralisatie configuratie mogelijk (LDAP)
- I/O logging (sedert 1.7.3)
- Plugin architectuur (sedert 1.8), met bijvoorbeeld plugin van *Quest Privilege manager for sudo*

Aanpak
Software

bevondtrust

ca technologies

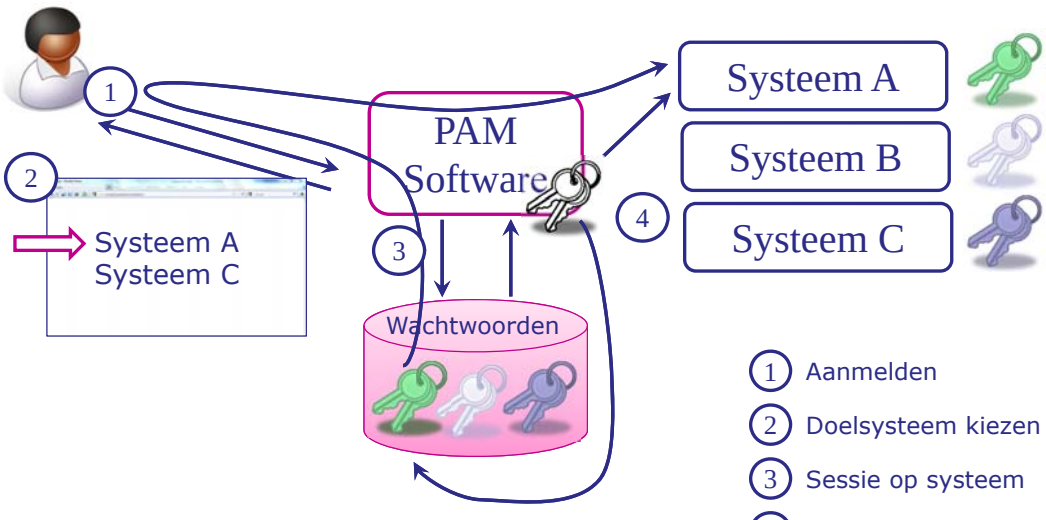
Cyber-Ark

LIEBERMANSOFTWARE

QUEST SOFTWARE

...

Software
Werkingsprincipe



1. Aanmelden
2. Doelsysteem kiezen
3. Sessie op systeem
4. Wijziging wachtwoord

Software
Eigenschappen

- Centrale wachtwoord database
- ~ Agent-less
- Connectoren
  - Productspecifieke connectoren
  - SSH, Telnet
  - HTTP(S)
  - ODBC
  - …
- Robuust & veilig
  - Encryptie
  - Disaster recovery
  - High availability
- Appliance of software

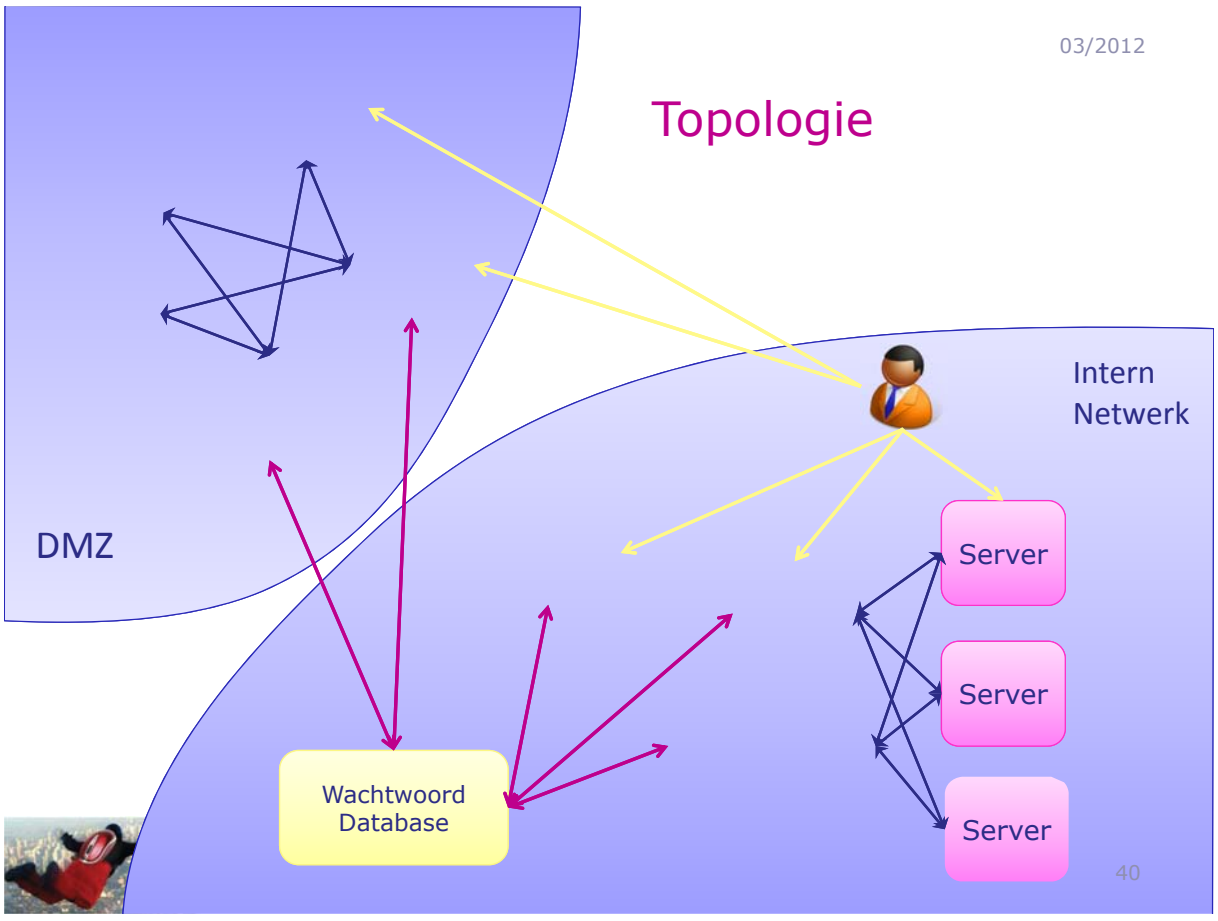
Software
Eigenschappen

- Discovery
  - Identificeren van *privileged accounts*
  - Via AD, DNS, portscan, CMDB, …
- Beheer PW
  - Automatisch wijzigen (policy)
  - Coördinatie / orchestratie
  - Consistentie controle
- Toegangscontrole
  - Gebruikersinformatie
  - Context
  - Workflow

Software
Eigenschappen

- Wachtwoorden gebruiker
  - Tonen
  - Copy/paste buffer
  - Sessie openen
  - Privilege elevation
- Wachtwoorden toepassing
  - PAM API
  - Authenticatie !!
- Rapportering/logging
  - Algemene logging
  - Session recording
  - Rapport
- Integratie ticket-systeem (ITIL)

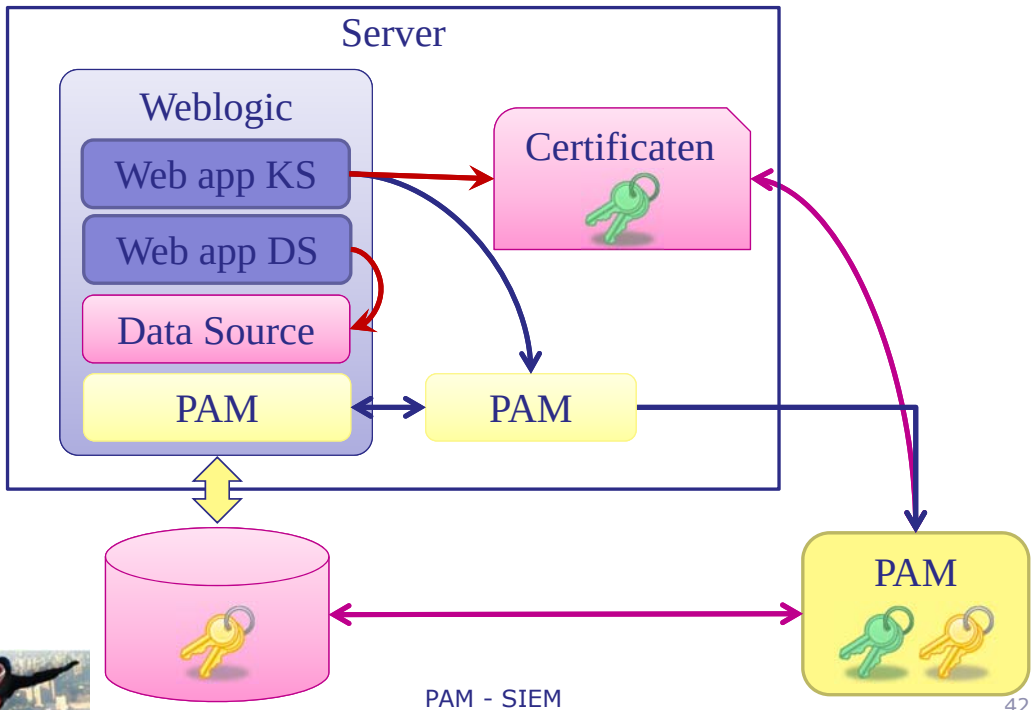
Topologie



DEMO - PAM-tool

- Windows
- Unix
- Database

DEMO - toepassingen



Software
Vaststellingen (1/2)

- Redelijk vlot voor standaardsystemen
  - Scripting voor tuning van command prompts
- Soms browserafhankelijk gedrag
- Topologie heeft invloed op implementatie
  - firewall die (Windows) traffiek blokkeert
- Veranderend serverpark
  - koppeling met tool nodig (API)
- Gelijktijdig gebruik zelfde gedeelde account 

Software
Vaststellingen (2/2)

- Integratie in applicaties
  - ➔ complexiteit ↑ (API, deployments)
  - ➔ geen wachtwoordbeheer meer in app
- Wachtwoord caches & wijzigingen
  - Account lockout
  - Tuning
- Huidige aanpak elk team (Windows, Unix, DB, …) verschillend

PAM = project

Software
Prijsmodellen

- / eindgebruiker
- Software
  - / Softwareinstantie
  - / Appliance
- Wachtwoorden
  - / beheerd wachtwoord
  - / beheerde server
- Session recording
  - / server
  - Concurrent sessions

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  - Conclusies
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Niet-toolgebonden aspecten

- Ken uw (nieuw) personeel
- Opleidingen: maak mensen bewust van risico's
- Segregation-of-duties: combinatie van taken geeft aanleiding tot risico
- Monitoring/logging naar extern systeem beheerd door andere personen

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Conclusies (1/3)

- Beperk de risico's en neem beheer van privileged accounts in handen
- PAM deel van groter geheel
  - Klassiek Identity/Access management
  - Monitoring
  - …
- PAM ≠ 1 tool
  - Beleid / policies / processen / technologie
  - Segregation-of-duties
  - Bewustmaking gebruikers
  - Auditproces (gescheiden van IT)

Conclusies (2/3)

- Zonder PAM-tool
  - Minimum : Wachtwoord / systeem
  - Administrators ≠ shared accounts
  - Gewone gebruikers: "sudo"
  - Wachtwoordenlijst beveiligen
  - Wachtwoorden veranderen
  - Automatisatie/centralisatie beheer
  - Logging / monitoring

Conclusies (3/3)

- Met PAM-tool
  - Risico maximaal beperkt tot beheerder van tool
  - Let op gewenste functionaliteit
  - Impact van topologie/architectuur op kostprijs
  - Gebruiksvriendelijkheid van oplossing
  - Verhoging complexiteit <-> verhoging veiligheid
  - Beschikbaarheid
- Risico <-> Kost

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Agenda

- Context & trends
- Information Security Governance
- Privileged Account Management
- Security Information & Event Management
  - Basisprincipes
  - AlienVault
  - ArcSight
  - Managed SIEM
  - Tot slot

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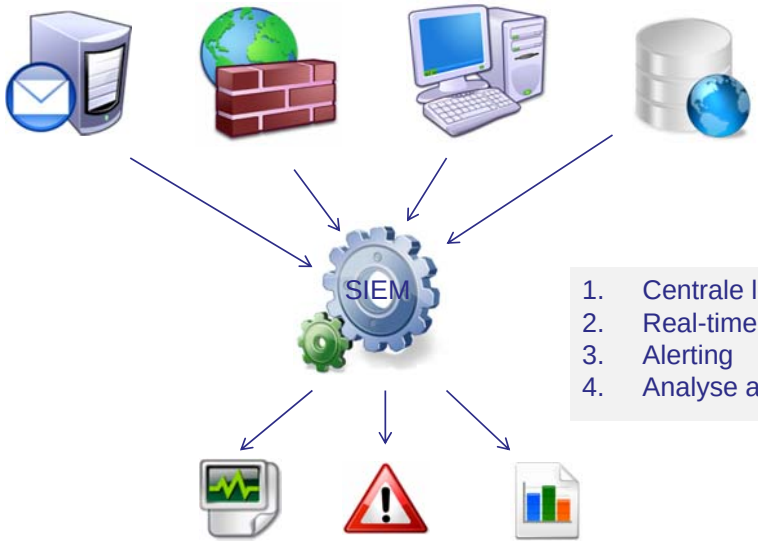
Uitdaging

- Miljoenen logs, slechts enkele incidenten...



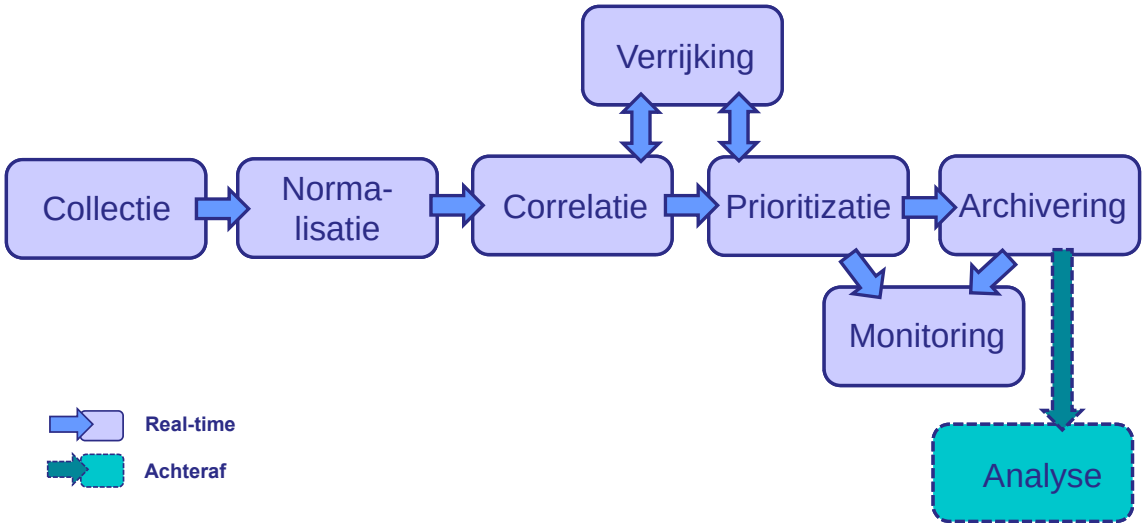
⇨ **Onmogelijk manueel**

De essentie

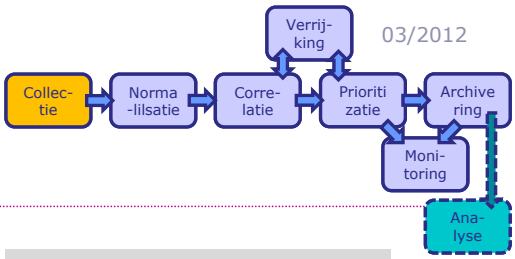


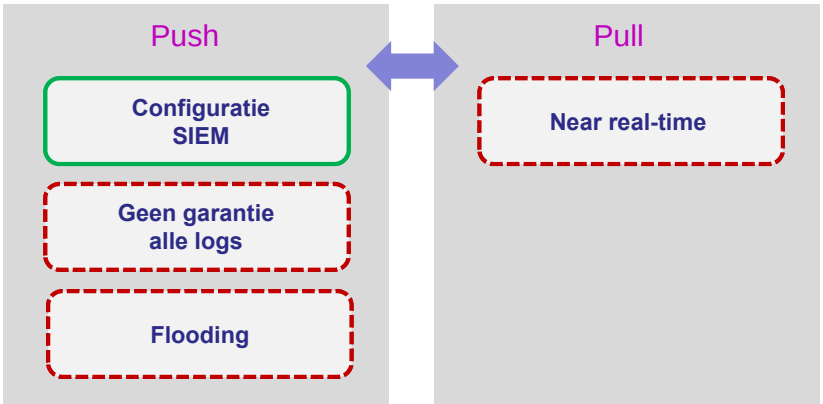
1. Centrale logging
2. Real-time monitoring
3. Alerting
4. Analyse achteraf

Verwerkingsproces



Collectie





- ⇨ **Ondersteunt SIEM de bron?**
- ⇨ **Soms agent op device nodig**
- ⇨ **Meestal push**

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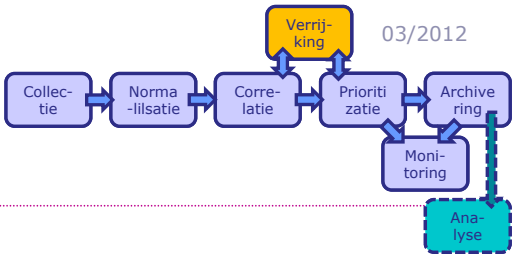
Verrijking



03/2012

*"Mar 20 08:44:35 **192.168.56.41** sshd[263] Accepted pass for **krive** from **216.101.197.234** port 56946 ssh2"*

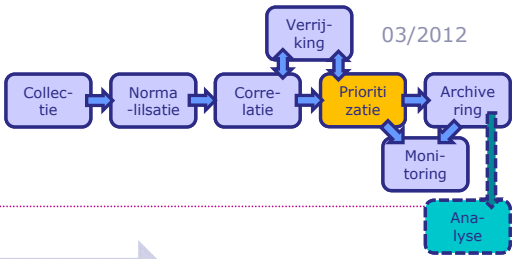
⇨ **Externe bronnen**: DNS, user directories, …

192.168.56.41
- name: Zeus
- group: database servers
- location: SC 03.174

krive
- name: Kristof Verslype
- group: Onderzoek
- role: jr. onderzoeker
- since: 01/12/2011

172.16.254.1
- location: Beijing, China
- domain: kp.cn

Prioritizatie

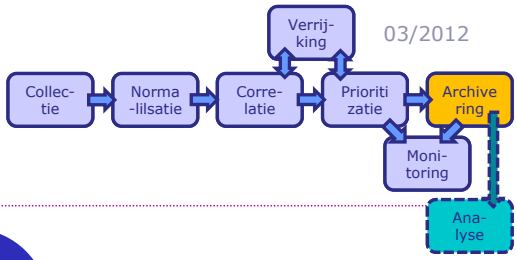


03/2012

Waarde asset	• Client computer • Kritische server • Idealiter CMDB
Impact bij succes	• Toegang met beperkte privileges • root access • Onafhankelijk van waarde asset
Waarschijnlijkheid op succes	• 2 gefaalde SSH toegangen • 20000 gefaalde SSH toegangen
…	

RISICO

Archivering



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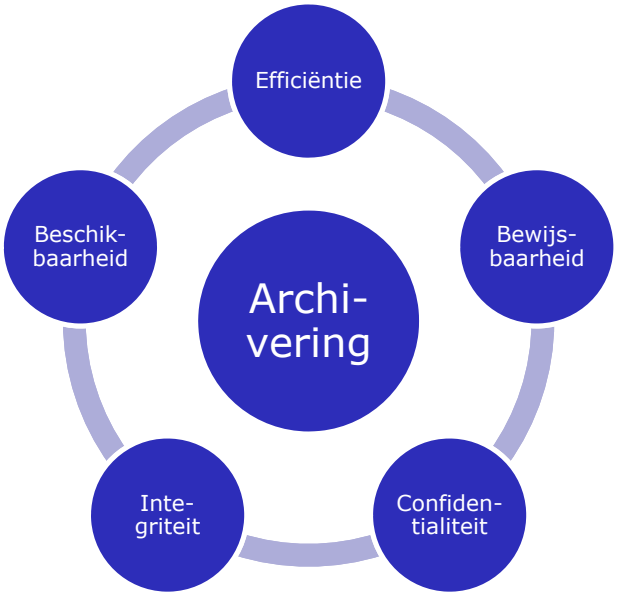
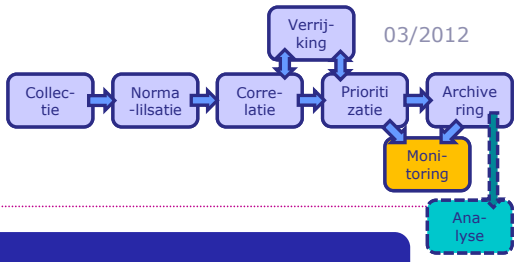


Monitoring



03/2012

Evalueren

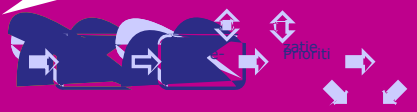
- Kwetsbaarheden
- Verdachte activiteit
- Incidenten

Dashboards

- Remote login
- Idealiter enkele high-priority events

Alarm

- Dashboard
- E-Mail, SMS, …



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Evolutie

SIEM 1.0: Perimeter

- Firewall
- IDS/IPS
- Application server

SIEM 2.0: Interne netwerk

- Client computers
- Printers
- …

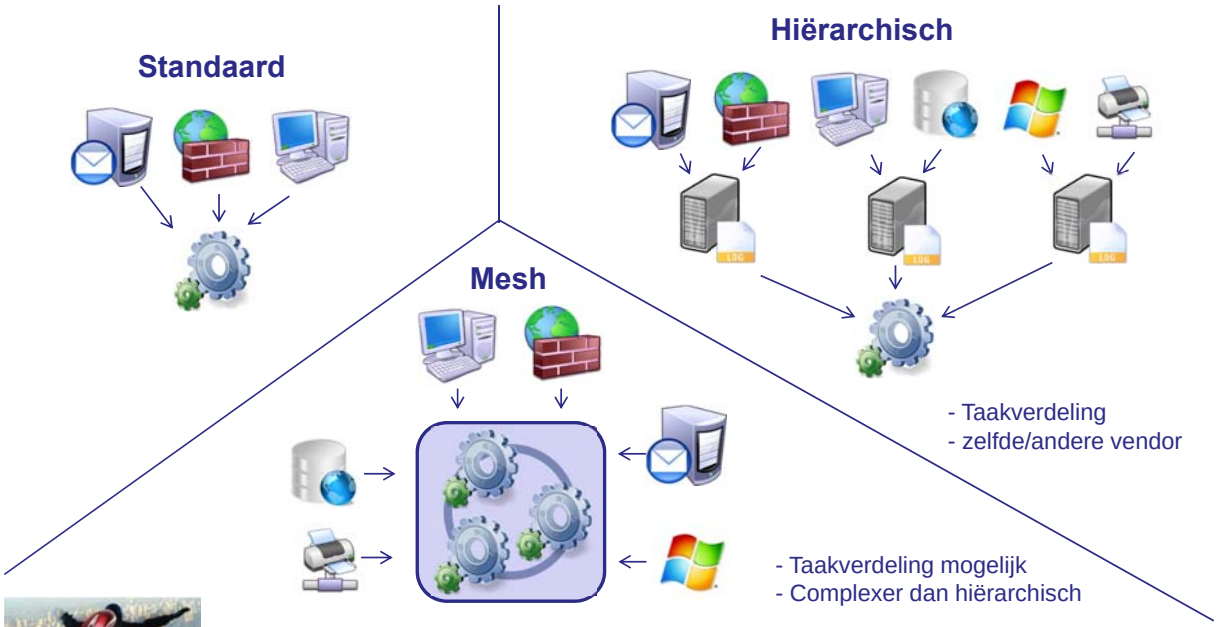
SIEM 3.0: users & data

- Hoger niveau

SIEM 4.0: Business intelligence

- Bedrijfsprocessen
- Meer dan enkel security

Topologie



Beschikbare systemen

	IBM	QRadar
	McAfee	NITROVIEW
➡	hp	ArcSight (An HP Company)
	RSA EMC²	RSA enVision
➡	alienvault	alienvault
	...	

alienvault

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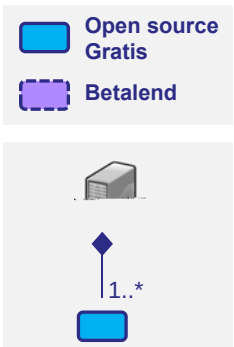
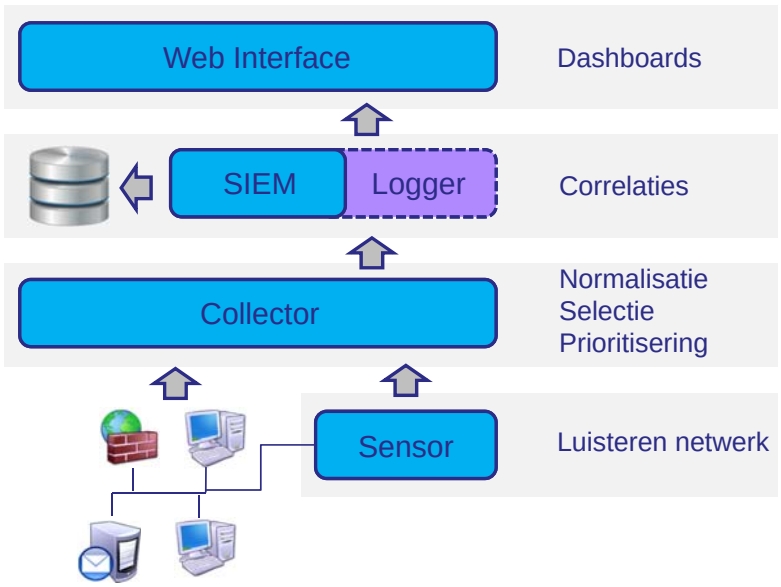
alienvault

Componenten





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alienvault

Bouwblokken

OCS next generation inventory

Nagios

SNORT

Open source

Integratie in AlienVault

Inprotect

P0f

NFSen/NFDump

ntop

Passive Asset Detection System

osvdb

OSSEC

OpenVAS

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Correlaties (1/3)

DoS	Spoofing	MAC address change
Reconnaissance	Traffic	Torrent
Command execution	/etc/passwd access	SSL tunnel
Flooding	Malware infection/activity	…

vel 3
failed
ications
level 4

Normalisatie (plugins)

```
event_type=event
regexp=(?P(\w{3}\s\w{3}\s\d{2}:\d{2}:\d{2}\s\w{4})|(\w{3}\s+\d{1,2}\s\d{2}:\d{2}:\d{2}))(\]|\s).*\s\[(?P(emerg|alert|crit|error|warn|notice|info|debug))\] (\[client (?P\S+)\] )(?P.*)
date={normalize_date($date)}
plugin_sid={translate($type)}
src_ip={$src}
userdata1={$data}
```

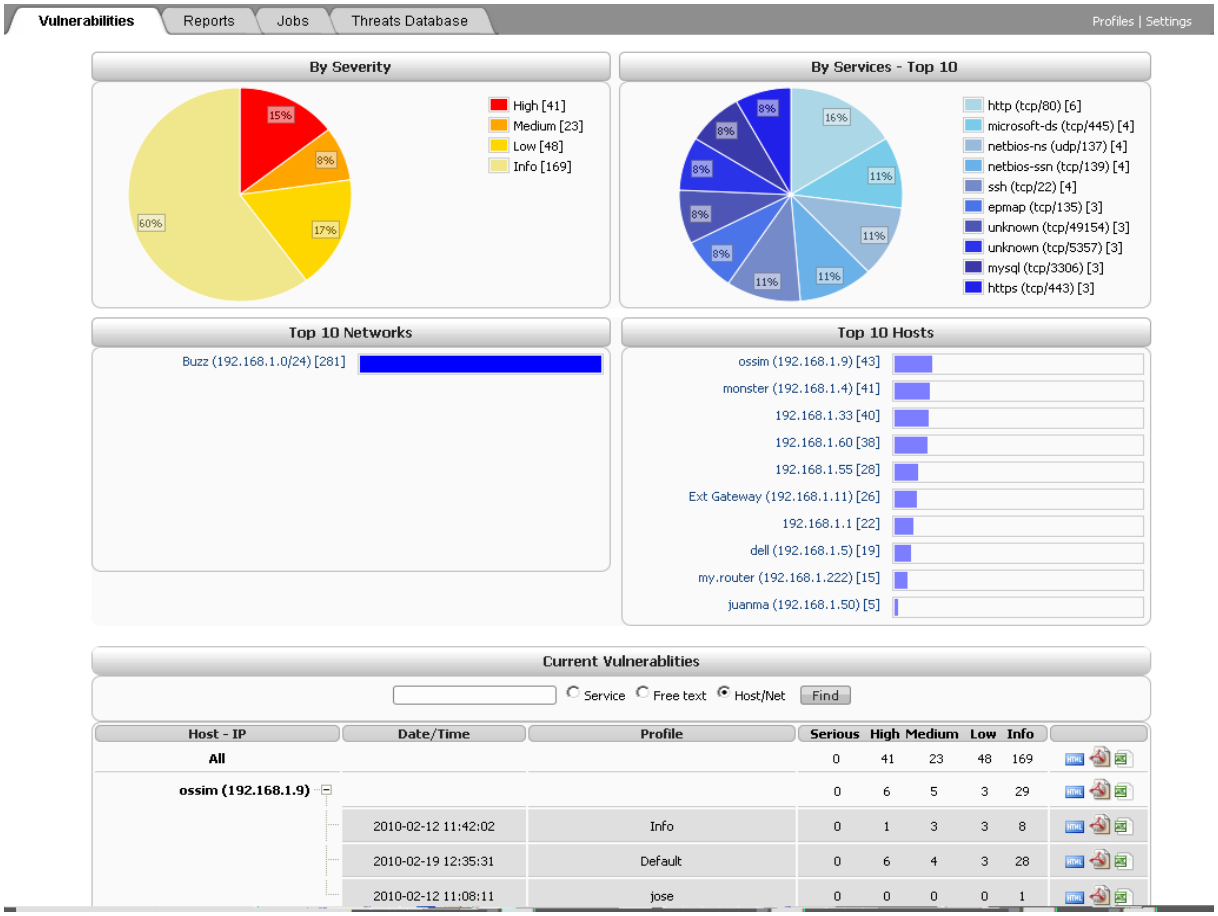
Ondersteuning 2395 bronnen

Geen DAM, PAM, …

Geen GUI

Screenshots

- Overzicht
- Alarmen
- Kwetsbaarheden



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alienvault

Aandachtspunten

Configuratie

- Setup Bronnen (syslog)
- Asset info
- Correlatieregels
- Plugins(normalisatie)

Krachtige servers

- Normaliseren
- Correleren

ArcSight™ An HP Company

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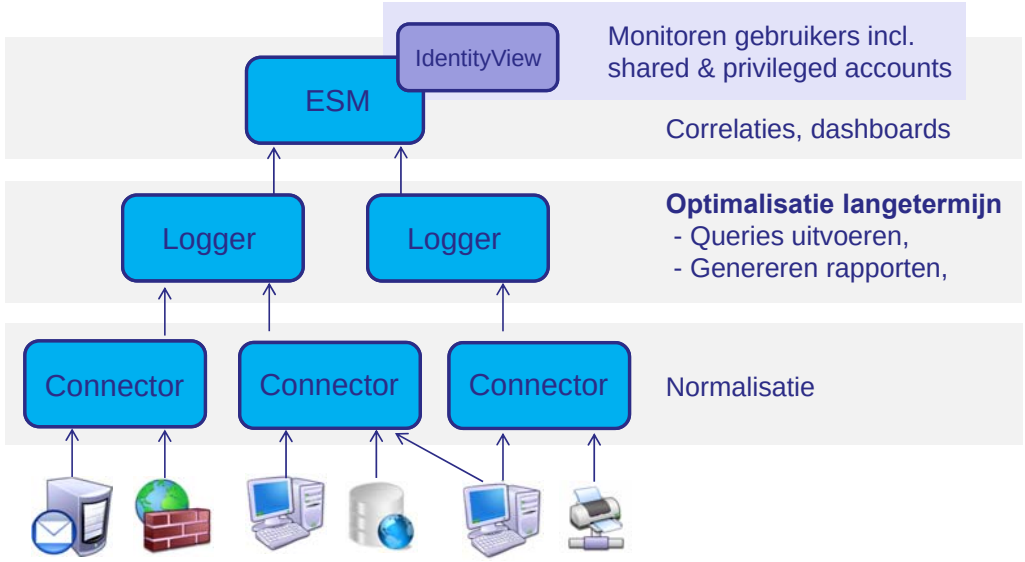
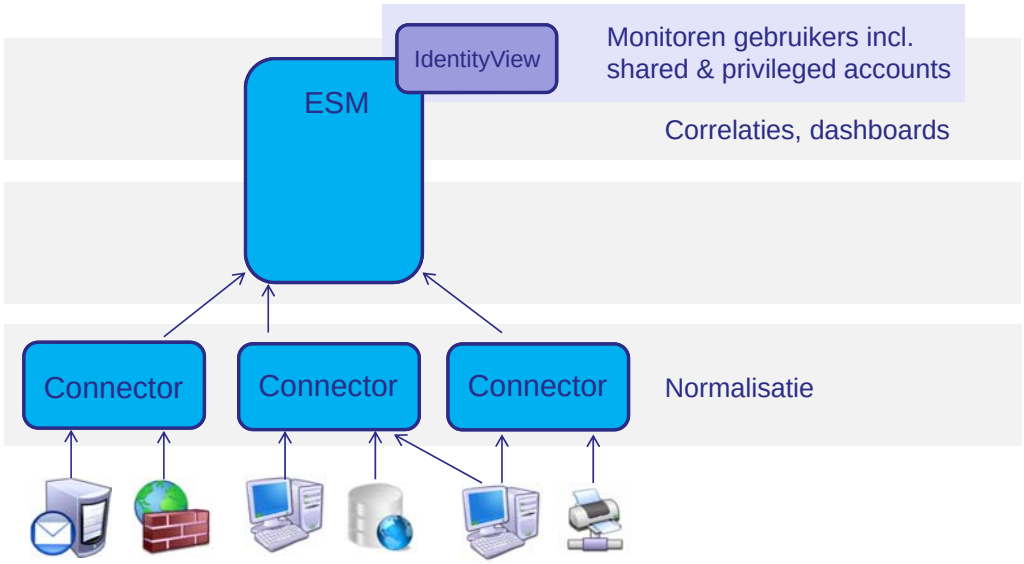
ArcSight An HP Company

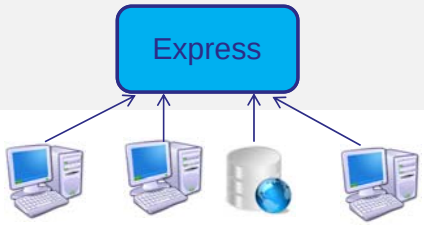
Componenten (1/3)



Componenten (2/3)

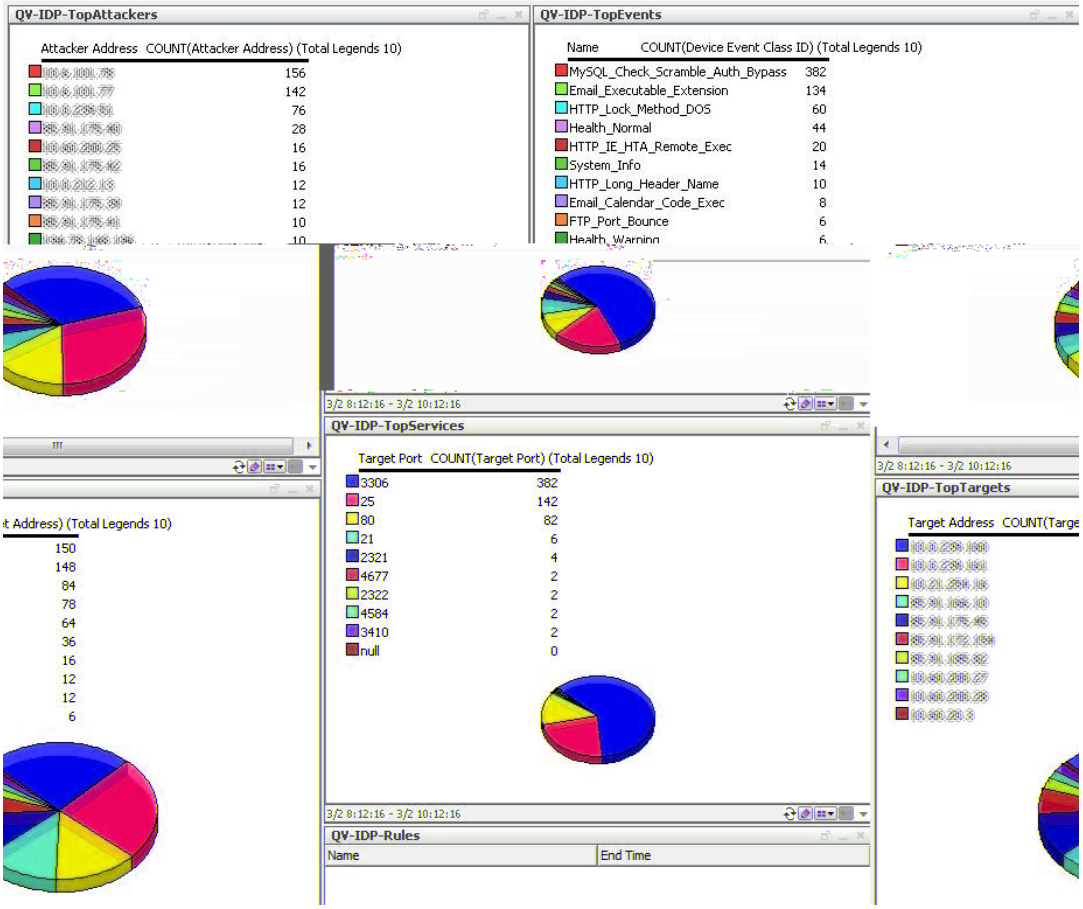


Componenten (3/3)



Screenshots

- Top-10
- Events
- Actuele aanvallen
- Statistieken

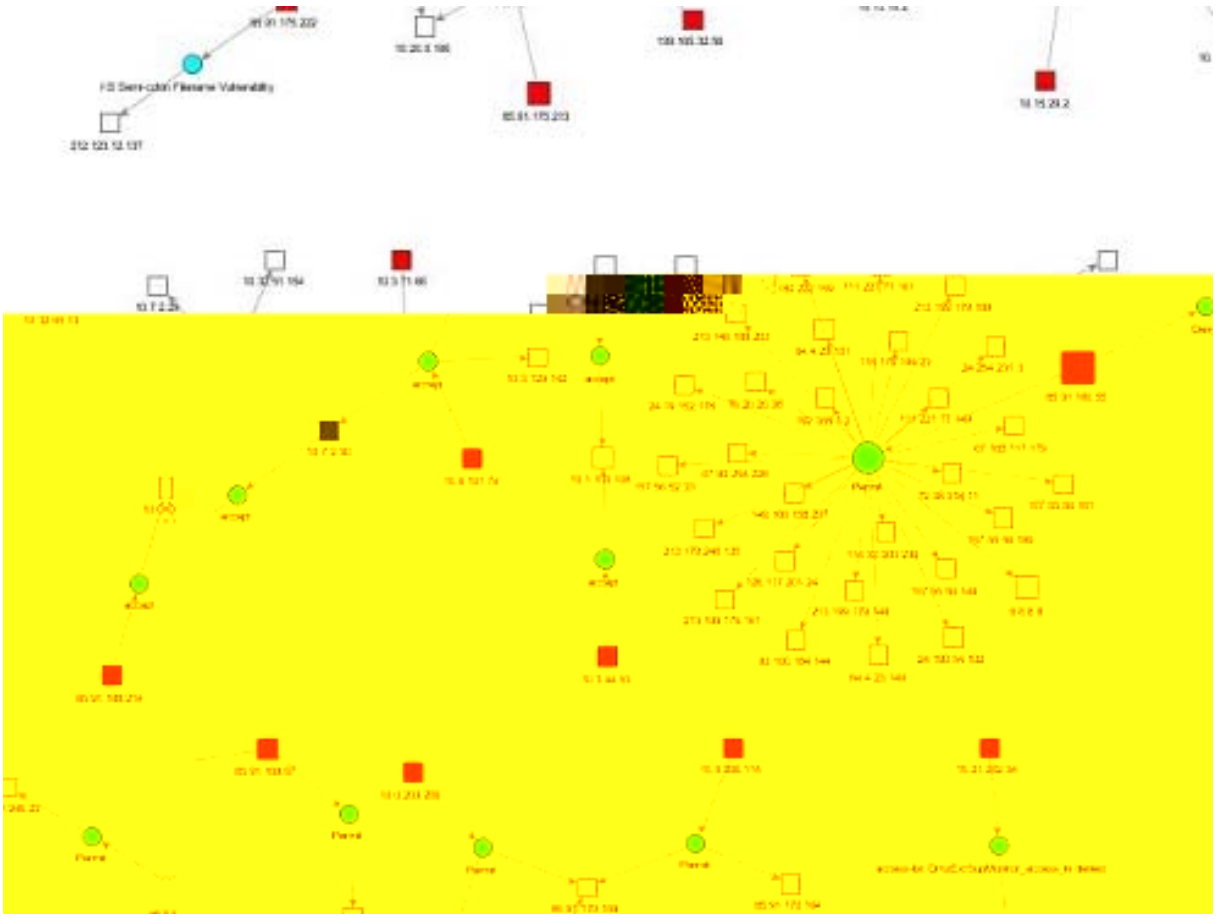


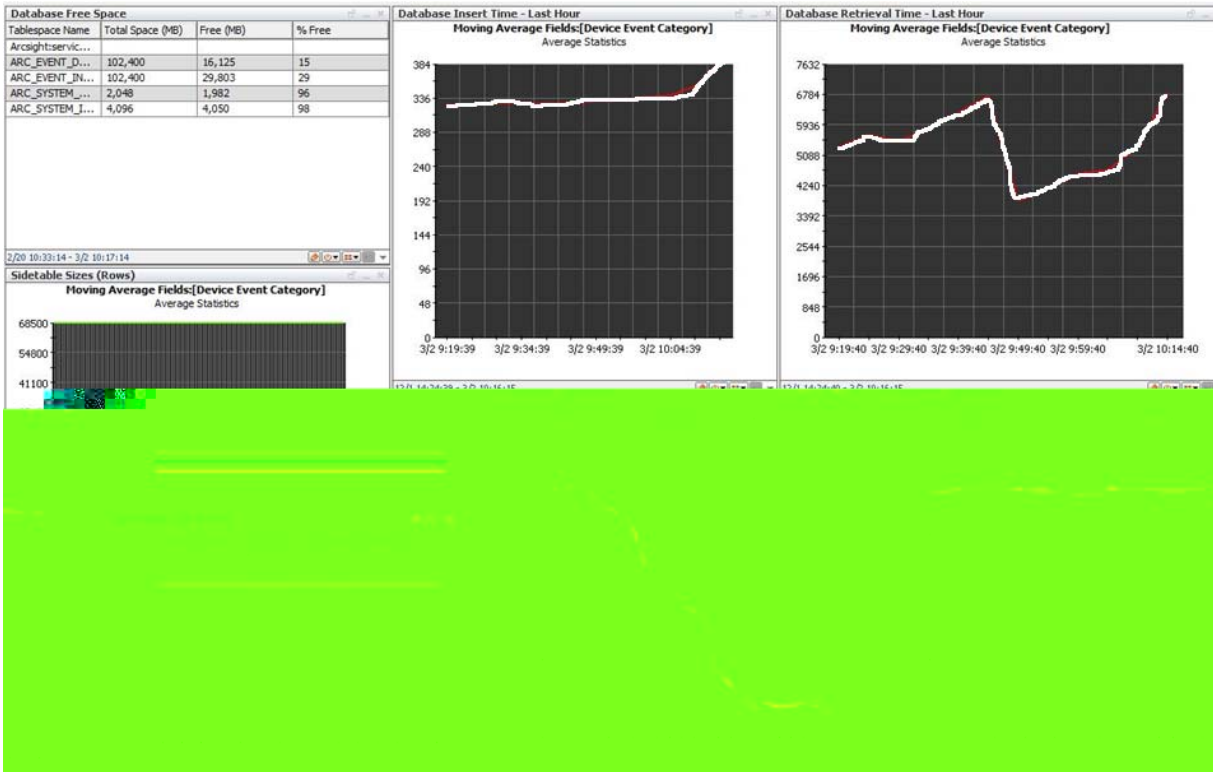
Start Time: 2 Mar 2012 09:43:47 CET
End Time: 2 Mar 2012 11:43:47 CET
Filter: Agent ID = "IBM SiteProtector"
Inline Filter: No Filter
Verified Rules: No Rule

Very High:	2
High:	237
Medium:	1,430
Low:	56
Very Low:	0

Radar

Manager Receipt Time ↑ 1	End Time	Name	Attacker Address	Target Address	Priority
2 Mar 2012 10:04:44 CET	2 Mar 2012 10:13:14 CET	MySQL_Check_Scramble_Auth_Bypass	[redacted]	[redacted]	9
2 Mar 2012 10:04:44 CET	2 Mar 2012 10:13:14 CET	MySQL_Check_Scramble_Auth_Bypass	[redacted]	[redacted]	9
2 Mar 2012 10:04:44 CET	2 Mar 2012 10:13:20 CET	TCP_Port_Scan	[redacted]	[redacted]	5
2 Mar 2012 10:04:44 CET	2 Mar 2012 10:13:19 CET	TCP_Port_Scan	[redacted]	[redacted]	5
2 Mar 2012 10:04:44 CET	2 Mar 2012 10:12:18 CET	TCP_Port_Scan	[redacted]	[redacted]	5
2 Mar 2012 10:04:29 CET	2 Mar 2012 10:11:53 CET	TCP_Port_Scan	[redacted]	[redacted]	5
2 Mar 2012 10:04:29 CET	2 Mar 2012 10:12:55 CET	TCP_Port_Scan	[redacted]	[redacted]	5
2 Mar 2012 10:04:29 CET	2 Mar 2012 10:12:57 CET	TCP_Port_Scan	[redacted]	[redacted]	5
2 Mar 2012 10:04:29 CET	2 Mar 2012 10:11:58 CET	TCP_Port_Scan	[redacted]	[redacted]	5
2 Mar 2012 10:04:29 CET	2 Mar 2012 10:11:55 CET	TCP_Port_Scan	[redacted]	[redacted]	5
2 Mar 2012 10:04:29 CET	2 Mar 2012 10:11:58 CET	TCP_Port_Scan	[redacted]	[redacted]	5
2 Mar 2012 10:04:29 CET	2 Mar 2012 10:13:01 CET	TCP_Port_Scan	[redacted]	[redacted]	5
2 Mar 2012 10:04:29 CET	2 Mar 2012 10:12:59 CET	TCP_Port_Scan	[redacted]	[redacted]	5
2 Mar 2012 10:03:49 CET	2 Mar 2012 10:11:15 CET	TCP_Port_Scan	[redacted]	[redacted]	5
2 Mar 2012 10:03:49 CET	2 Mar 2012 10:12:17 CET	TCP_Port_Scan	[redacted]	[redacted]	5
2 Mar 2012 10:03:49 CET	2 Mar 2012 10:12:18 CET	TCP_Port_Scan	[redacted]	[redacted]	5
2 Mar 2012 10:03:49 CET	2 Mar 2012 10:12:18 CET	TCP_Port_Scan	[redacted]	[redacted]	5
2 Mar 2012 10:03:34 CET	2 Mar 2012 10:12:04 CET	TCP_Port_Scan	[redacted]	[redacted]	5
2 Mar 2012 10:03:29 CET	2 Mar 2012 10:12:11 CET	Connector Raw Event Statistics			3
2 Mar 2012 10:03:29 CET	2 Mar 2012 10:10:51 CET	TCP_Port_Scan	[redacted]	[redacted]	5
2 Mar 2012 10:03:29 CET	2 Mar 2012 10:11:53 CET	TCP_Port_Scan	[redacted]	[redacted]	5
2 Mar 2012 10:03:29 CET	2 Mar 2012 10:10:56 CET	TCP_Port_Scan	[redacted]	[redacted]	5
2 Mar 2012 10:03:29 CET	2 Mar 2012 10:10:53 CET	TCP_Port_Scan	[redacted]	[redacted]	5
2 Mar 2012 10:03:29 CET	2 Mar 2012 10:10:56 CET	TCP_Port_Scan	[redacted]	[redacted]	5





Functionaliteit (1/2)

Real-Time monitoring

- Aanpasbaar window (vb. 2u)
- 'Near-time' -> 2 à 5 min.

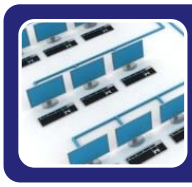
Reactie

- Triggeren zelf geschreven scripts
- Risico's!

Backup

- Standaard enkel in zelfde ESM
- NAS kan

Functionaliteit (2/2)



Asset management

- Import tool (kan beter)
- Momenteel nog veel manueel werk

User management

- Toegangsrechten
- Gepersonaliseerde rapporten
- Gepersonaliseerde dashboards

Filteren

- Device -> connector?
- Connector, logger -> ESM?
- ESM -> Archief?
- Dashboard -> user?

Kostenmodel

Compo-nent
- Appliance
- Virtual appliance
- Software

Hardware
- Aantal geactiveerde cores in appliance
- Eigen hardware
- …

Functio-naliteit
- Detectie low-and-slow attacks
- Langetermijn
- …

Bron device
- Per device
- Zou meevallen in totale prijs

Ervaringen

Meerwaarde

Beperkte overhead
< 5% netwerk

Anti-forensics
onmogelijk

Query kan lang duren
(zonder logger)

SIEM

- Investerings-kosten
- Onderhoud
- Expertise
- 24/7/364 monitoring

Managed Siem

MSSP (Managed Security Service provider)

Pro's & cons

- Quasi geen in-vesteringskosten
- SIEM Expertise
- Minder onderhoud
- Grotere security intelligence
- Schaalbaarheid
- Escalatie naar andere bedrijven
- 24/7/365 monitoring

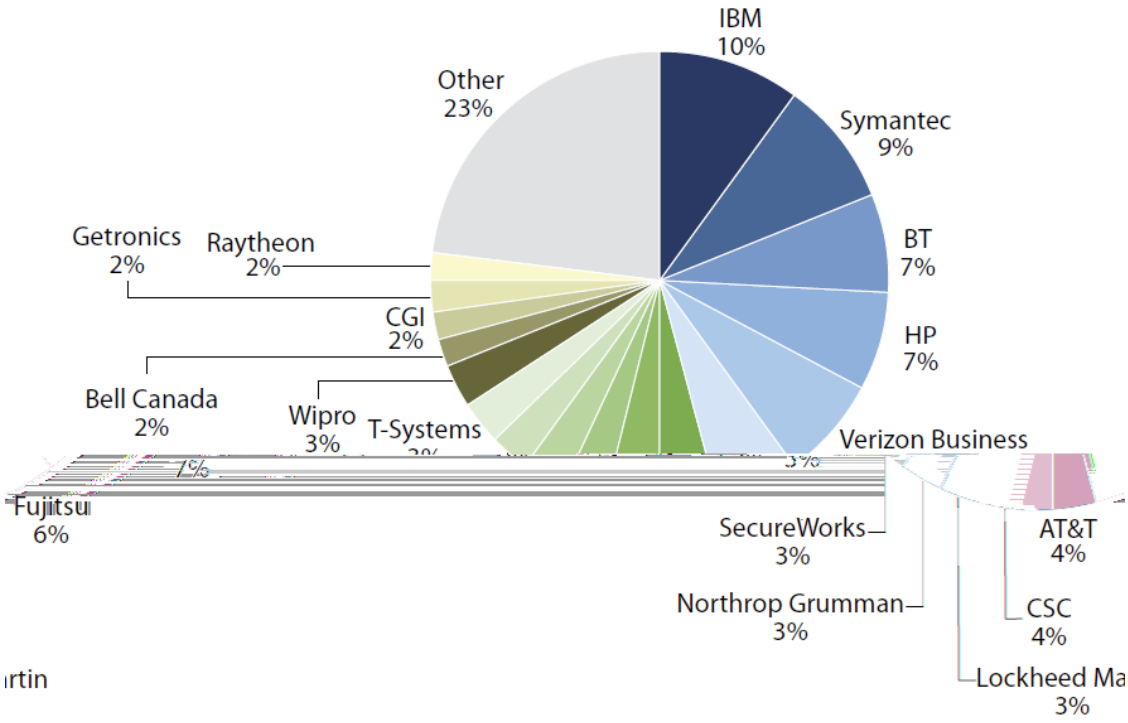
- Outsourcen Security
- Afhankelijkheid Internet
- Beperktere functionaliteit
- Beperktere HW/SW

- Beheers kosten?

Managed Security Services

Company managed	Co-managed	Provider managed
Bedrijf beheert eigen SIEM	Provider beheert SIEM in bedrijf	Logs -> provider
Monitoring & escalatie door bedrijf	Monitoring & escalatie door provider	Monitoring & escalatie door provider
Ondersteuning door provider	[Provider beheert deel hardware]	[Provider beheert deel hardware]
	Switch company managed kan	

Market Share Of Top Managed Security Services Providers



naged security service providers Source: Forrester estimate based on information provided by mar

2010 Source: Forrester Research, Inc.

Tot slot

Aandachtspunten

Business

- Incidence response plan
- Getrainde mensen
- Business requirements
- Draagvlak/ Betrokkenheid

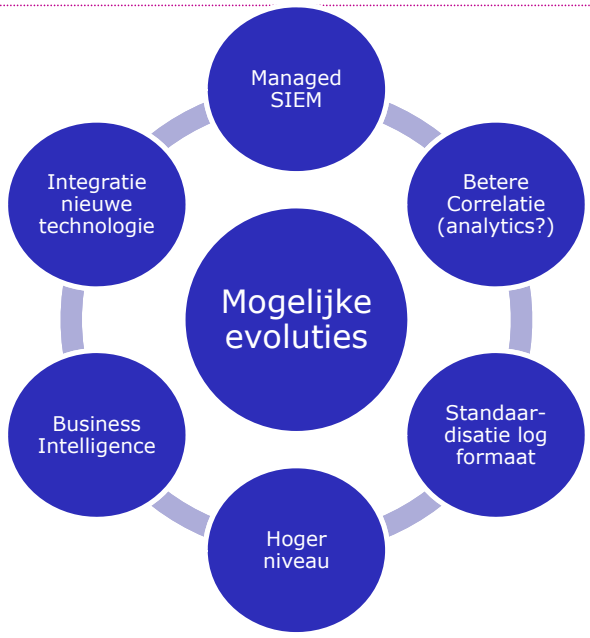
Infrastructuur

- Kennis infrastructuur
- Geen zwarte gaten
- Device klok synchronisatie
- Langetermijn opslag

Uitrol & gebruik

- Geen ‘plug & Play’
- Finetuning
- Documenteer
- Gefaseerde uitrol
- Onderhoud

Mogelijke evoluties



Vragen

Met dank aan
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Michel Brouyère

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Smals Onderzoek

Referenties
Publicaties Onderzoek

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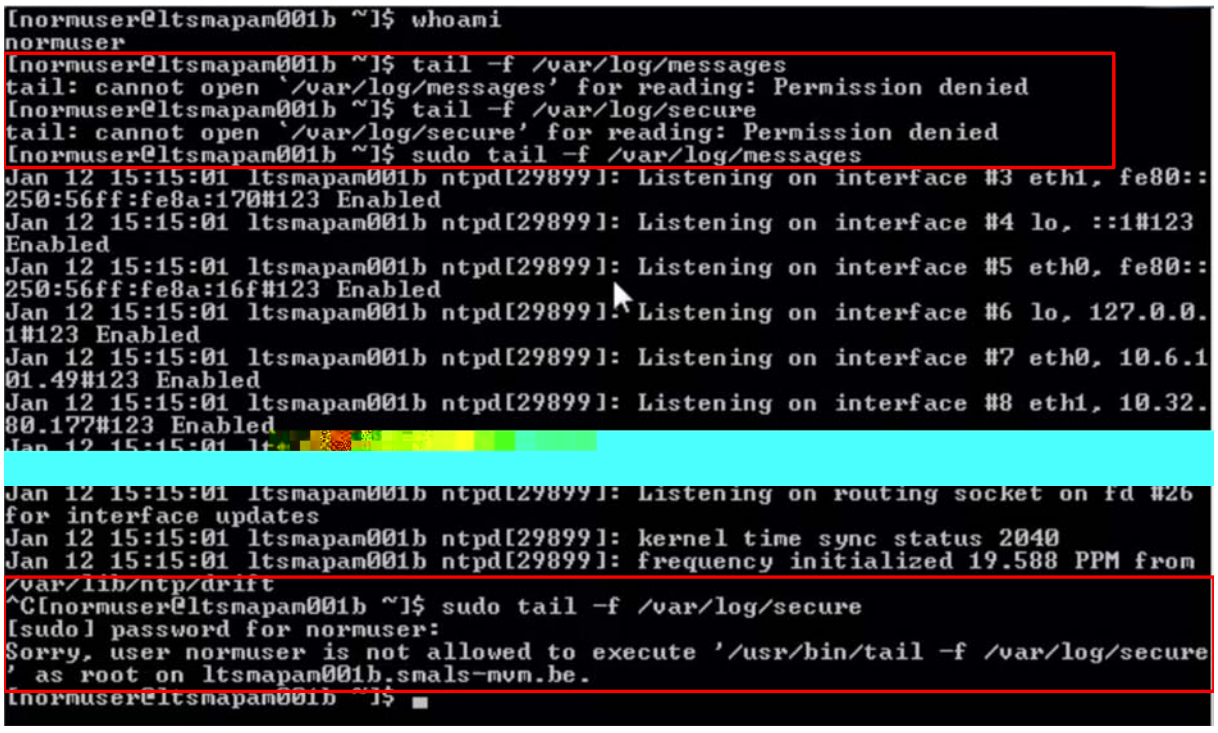
- "*Gebruikers- en toegangsbeheer*", B. Lannoy, 10/2005
- "*Beveiligde uitwisseling van gegevens*", M. Laloy, 05/2007
- "*Desktop Single Sign-On / Enterprise Single Sign-On*" B. Lannoy, 07/2007
- "*TrueCrypt v.5.1a - On-the-fly disk encryption software*", P. Jorissen, 05/2008
- "*Bescherming van de interne gegevens*", P. Jorissen, 02/2009
- "*La sécurisation des supports de données*", T. Baignères, 05/2010
- "*Gestion des certificats digitaux et méthodes alternatives de chiffrement*", J. Cathalo, 05/2011

Demo PAM

Sudo commando



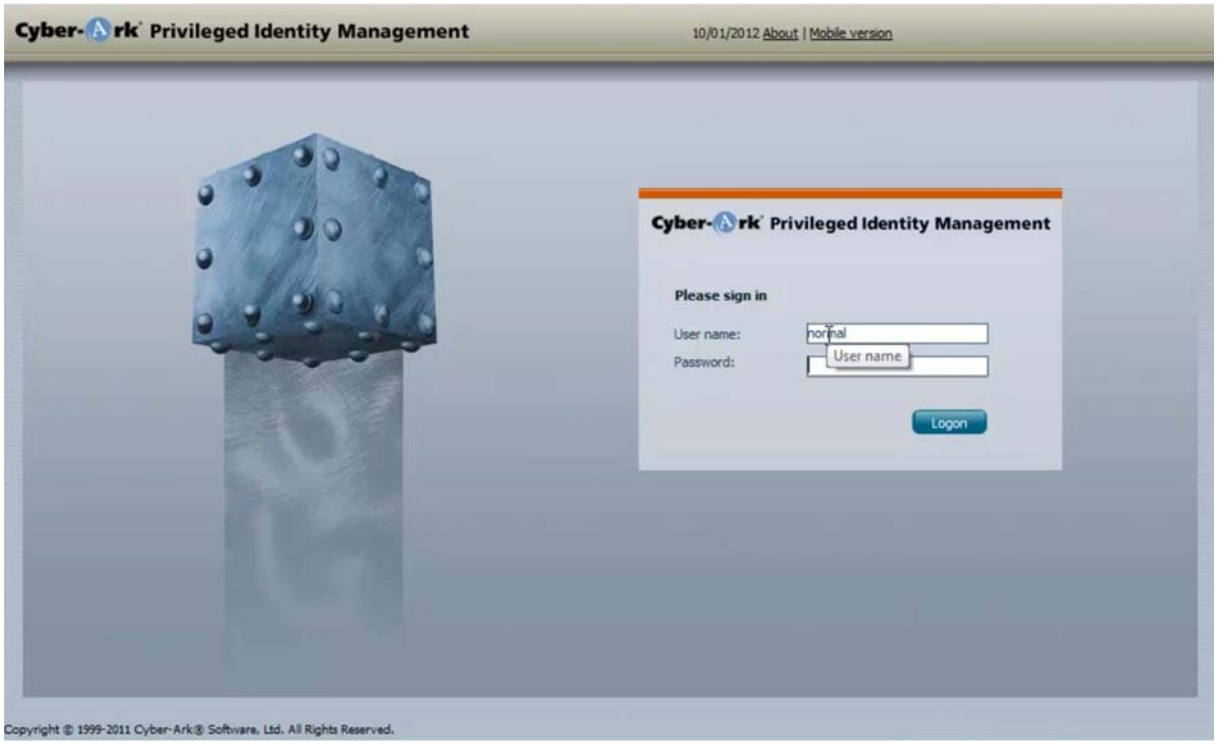
Sudo configuratie (sudoers)

```
# runas_alias --

# host_alias --

# cmnd_alias --
Cmnd_Alias CHECKRAIDCONF = /home/confmon/raidinfo/
Cmnd_Alias SHELLS = /bin/sh,/bin/bash,/bin/ash,/bin/bsh,/bin/ksh,/usr/bin/ksh,/u
sr/bin/pdksh,/bin/tcsh,/bin/csh
Cmnd_Alias SU = /bin/su
Cmnd_Alias CHECKSYSLOGS = /bin/cat /var/log/messages,/usr/bin/tail -f /var/log/m
essages
Cmnd_Alias REBOOT = /sbin/halt,/sbin/shutdown,/sbin/reboot,/sbin/init,/sbin/teli
nit
Cmnd_Alias PROCESSMGMT = /bin/kill
Cmnd_Alias SERVICEMGMT = /etc/init.d/
Cmnd_Alias TESTCMD = /bin/vi, /opt/scripts/testsudo.sh

Defaults:normuser log_input,log_output
# user_spec --
%confmon ALL = NOPASSWD: CHECKRAIDCONF
%operators ALL=(ALL) NOPASSWD: CHECKSYSLOGS, REBOOT, PROCESSMGMT, SERVICEMGMT
%localadmins  ALL=(ALL) NOPASSWD: ALL
root    ALL=(ALL) ALL
%wheel  ALL=(ALL) NOPASSWD: ALL
%ltsmapam001b-admins ALL=(ALL) NOPASSWD: ALL
%linux-admins ALL=(ALL) NOPASSWD: ALL
%ltsmapam001b-operators ALL=(ALL) NOPASSWD: CHECKSYSLOGS, REBOOT, PROCESSMGMT, S
ERVICEMGMT
%linux-operators ALL=(ALL) NOPASSWD: CHECKSYSLOGS, REBOOT, PROCESSMGMT, SERVICEM
GMT
%weblogic ALL=(weblo[redacted]
```

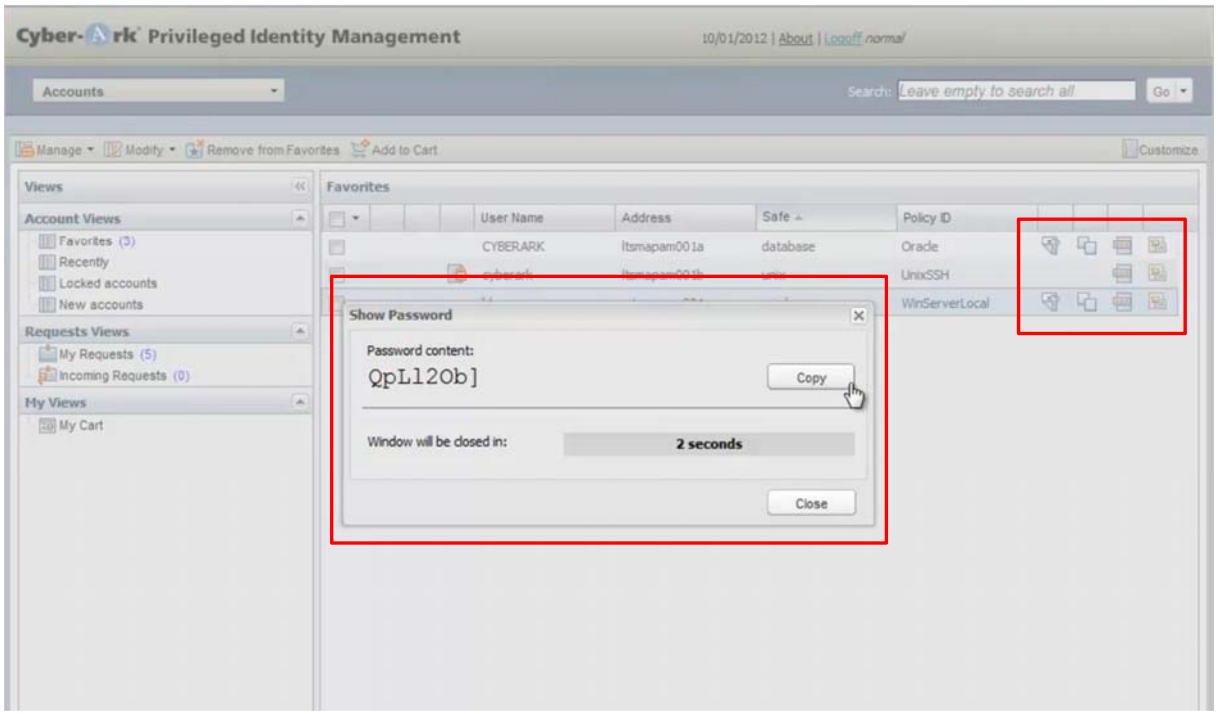
Sudo – shell escaping & noexec

```
root
[root@ltsmapam001b normuser]# tail /var/log/secure
Jan 12 15:12:47 ltsmapam001b sudo: normuser : command not allowed ; TTY=pts/3 ;
PWD=/home/normuser ; USER=root ; COMMAND=/usr/bin/tail -f /var/log/secure
Jan 12 15:13:34 ltsmapam001b sudo: normuser : TTY=pts/3 ; PWD=/home/normuser ; U
SER=root ; TSID=000002 ; COMMAND=/bin/vi
Jan 12 15:15:08 ltsmapam001b sudo: normuser : TTY=pts/3 ; PWD=/home/normuser ; U
SER=root ; TSID=000001 ; COMMAND=/usr/bin/tail -f /var/log/messages
Jan 12 15:15:39 ltsmapam001b sudo: pam_succeed_if(sudo:auth): requirement "user
= root" not met by user "normuser"
Jan 12 15:15:39 ltsmapam001b sudo: pam_succeed_if(sudo:auth): requirement "user
ingroup rsausers" not met by user "normuser"
Jan 12 15:15:39 ltsmapam001b sudo: pam_succeed_if(sudo:auth): requirement "user
notingroup ldap-rsausers" was met by user "normuser"
Jan 12 15:15:43 ltsmapam001b sudo: pam_sss(sudo:account): Access denied for user
 normuser: 10 (User not known to the underlying authentication module)
Jan 12 15:15:43 ltsmapam001b sudo: normuser : command not allowed ; TTY=pts/3 ;
PWD=/home/normuser ; USER=root ; COMMAND=/usr/bin/tail -f /var/log/secure
Jan 12 15:16:40 ltsmapam001b sudo: normuser : TTY=pts/3 ; PWD=/home/normuser ; U
SER=root ; TSID=000002 ; COMMAND=/opt/scripts/testsudo.sh
Jan 12 15:17:22 ltsmapam001b sudo: normuser : TTY=pts/3 ; PWD=/home/normuser ; U
SER=root ; TSID=000003 ; COMMAND=/bin/vi
[root@ltsmapam001b normuser]# exit
exit
[normuser@ltsmapam001b ~]$ sudo /bin/vi

Cannot execute shell /bin/bash


Cannot execute shell /bin/bash
[normuser@ltsmapam001b ~]$ sudo /opt/scripts/testsudo.sh
/opt/scripts/testsudo.sh: line 2: /usr/bin/tail: Permission denied
[normuser@ltsmapam001b ~]$
```

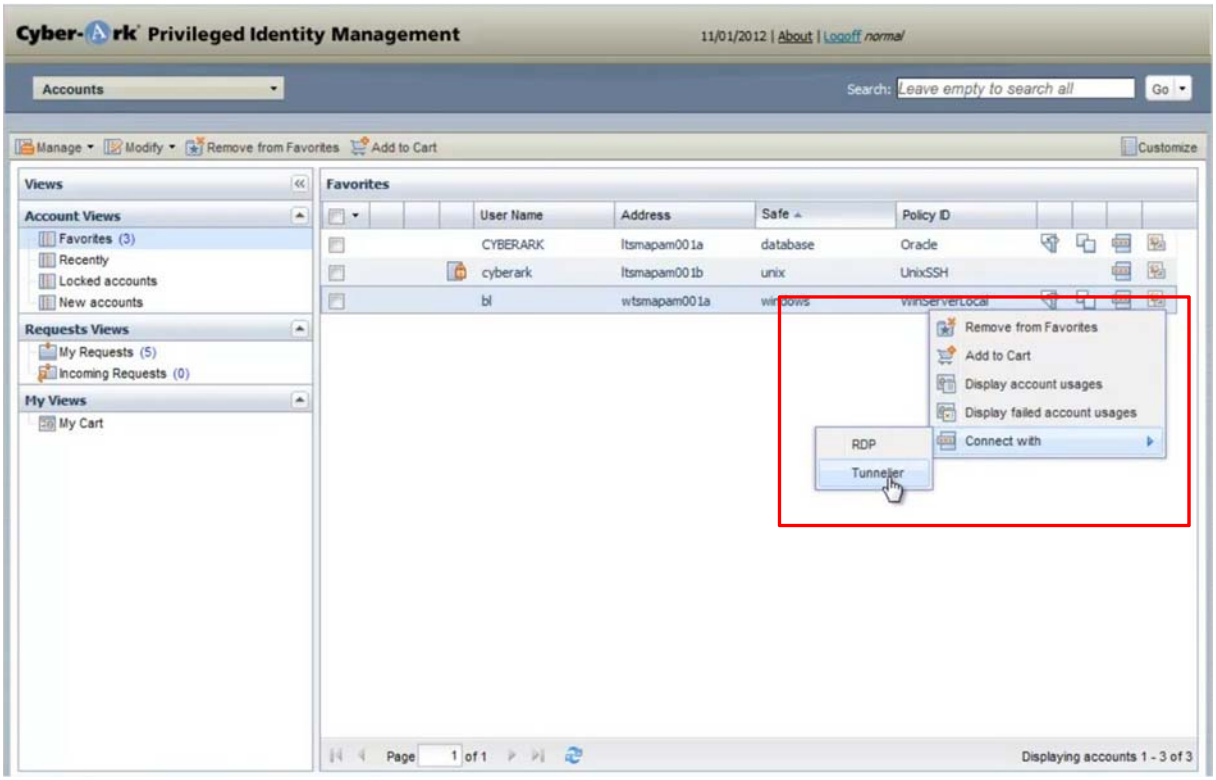
PAM-tool web-login



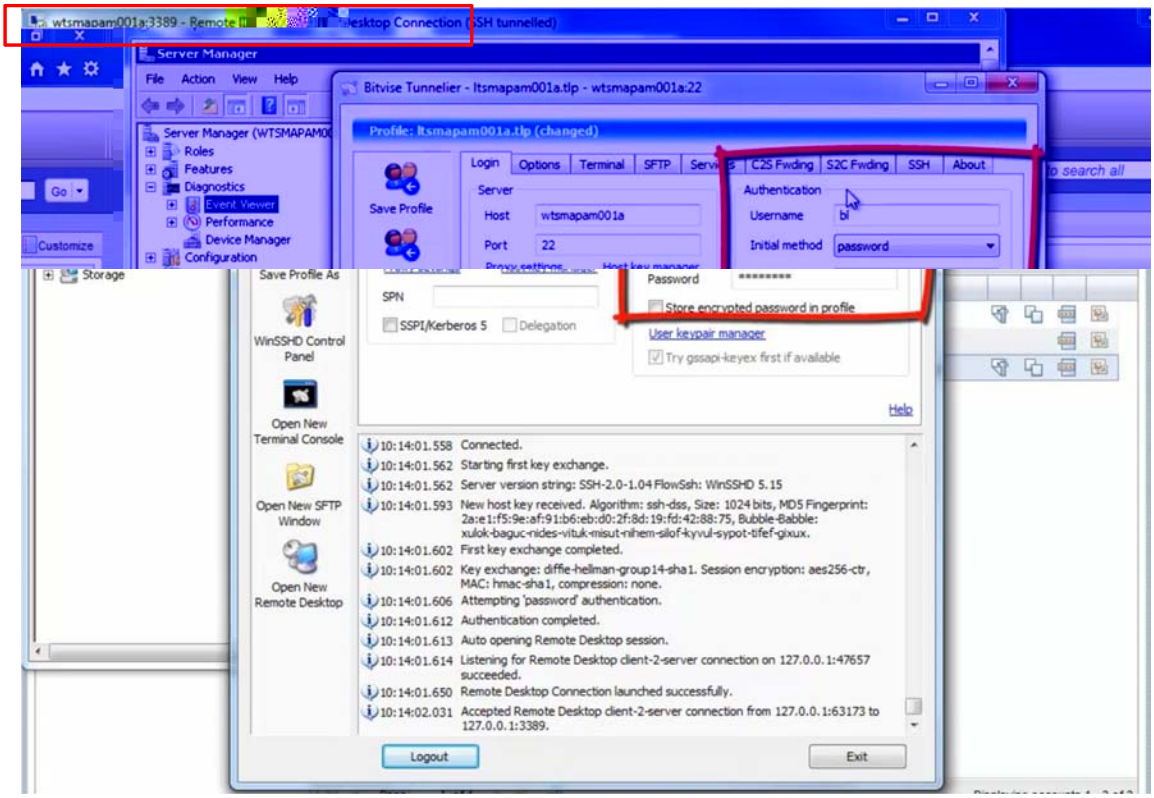
Wachtwoord opties & tonen wachtwoord



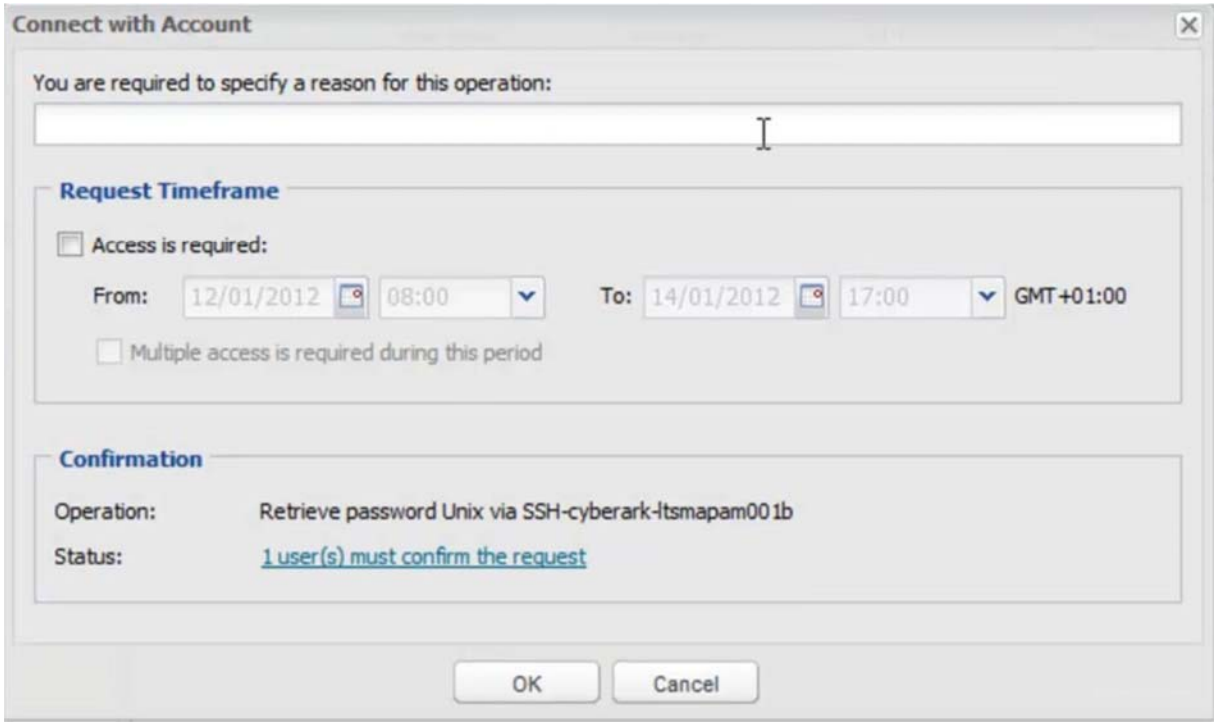
Integratie lokale software (Tunnelier) (1/2)

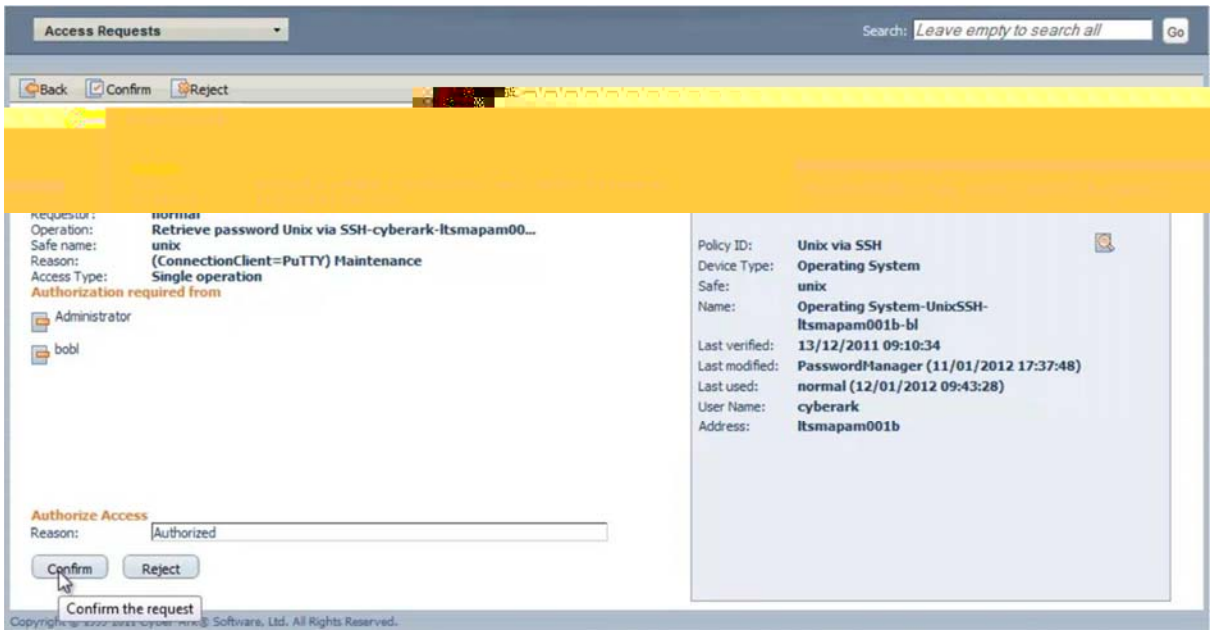


Integratie lokale software (Tunnelier) (2/2)



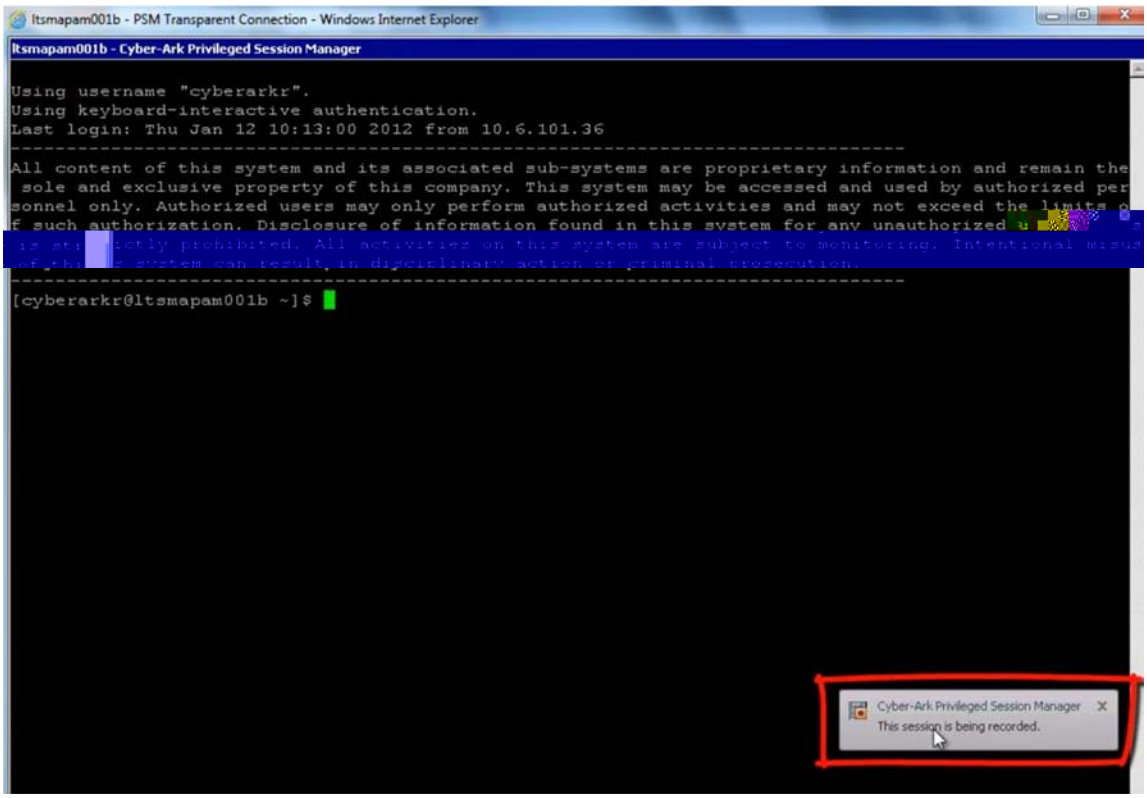
Workflow (1/2)


Connect with Account
You are required to specify a reason for this operation:
Request Timeframe
Access is required:
From: 12/01/2012 08:00
To: 14/01/2012 17:00
GMT+01:00
Multiple access is required during this period
Confirmation
Operation: Retrieve password Unix via SSH-cyberark-ltsmapam001b
Status: 1 user(s) must confirm the request
OK
Cancel

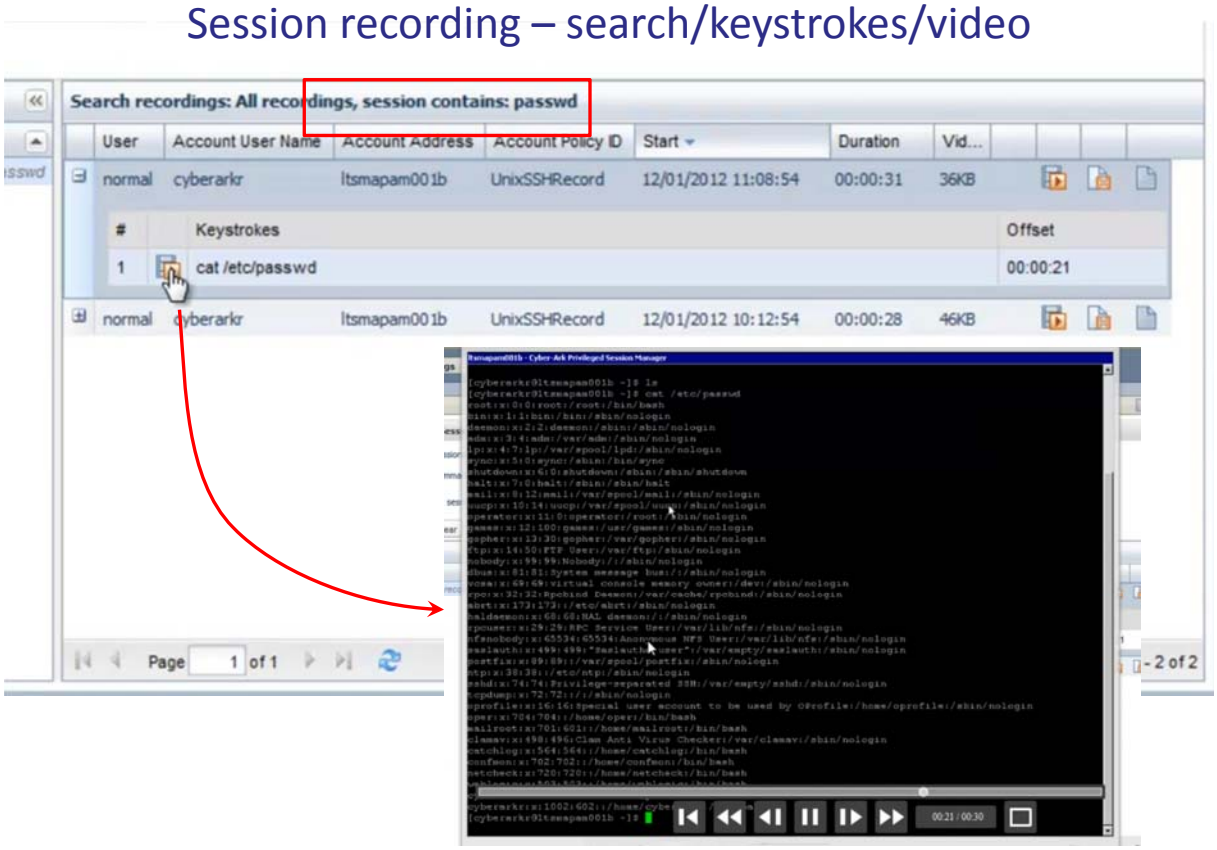

Access Requests
Search: Leave empty to search all
Go
Back
Confirm
Reject
Operation: Retrieve password Unix via SSH-cyberark-ltsmapam00...
Safe name: unix
Reason: (ConnectionClient=PuTTY) Maintenance
Access Type: Single operation
Authorization required from
Administrator
bobl
Policy ID: Unix via SSH
Device Type: Operating System
Safe: unix
Name: Operating System-UnixSSH-ltsmapam001b-bl
Last verified: 13/12/2011 09:10:34
Last modified: PasswordManager (11/01/2012 17:37:48)
Last used: normal (12/01/2012 09:43:28)
User Name: cyberark
Address: ltsmapam001b
Authorize Access
Reason: Authorized
Confirm
Reject
Confirm the request

Account - detailscherm

Session recording



Session recording – search/keystrokes/video



Applicatie integratie

Datasources

Application that uses WebLogic datasource. The WebLogic JDBC data source uses a plugin to get the Oracle Db password.

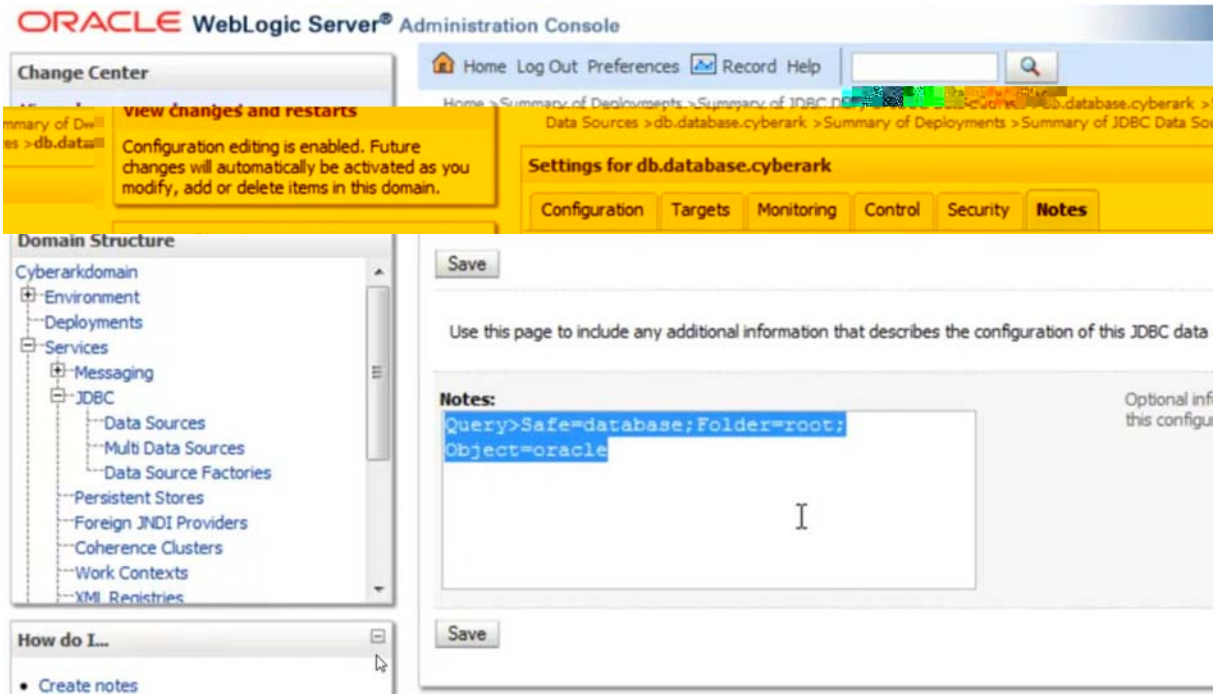
Go to Datasource application

Application - Protected keystore

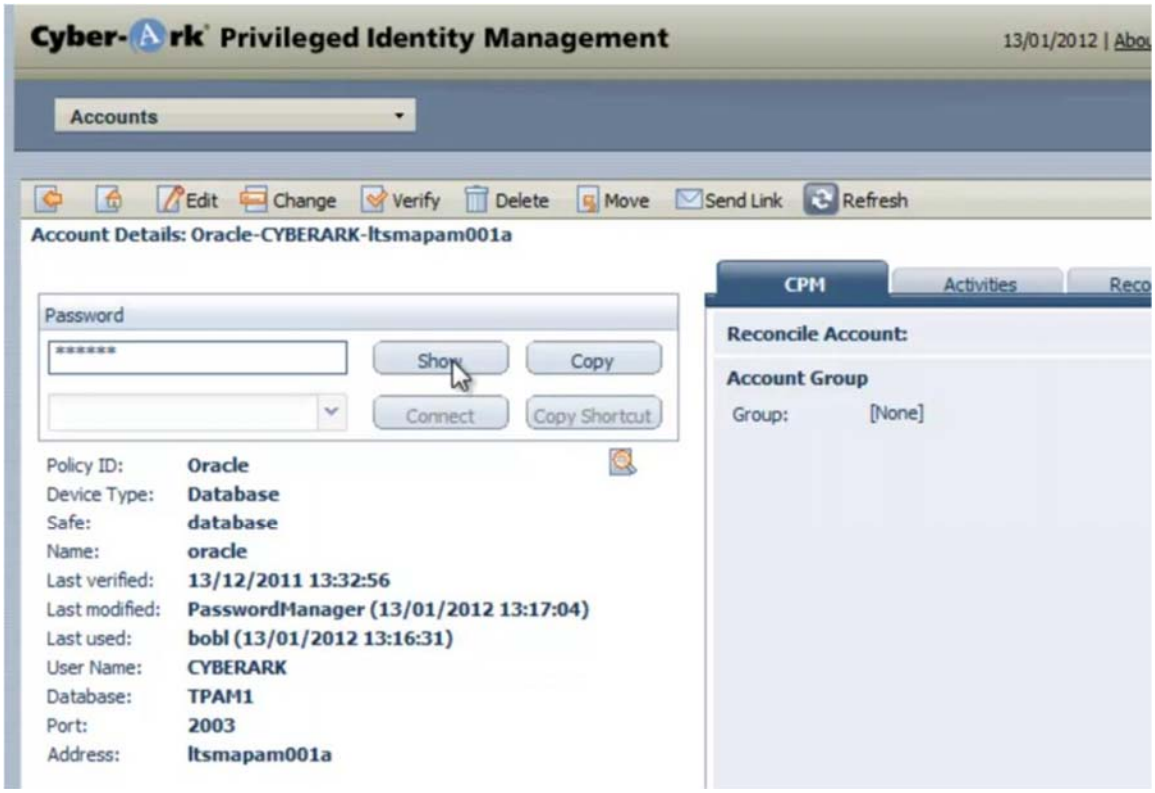
An application requests the password of a local Java keystore from the Vault in order to be able to open it.

Go to Keystore application

Applicatie integratie – weblogic datasource (1/2)



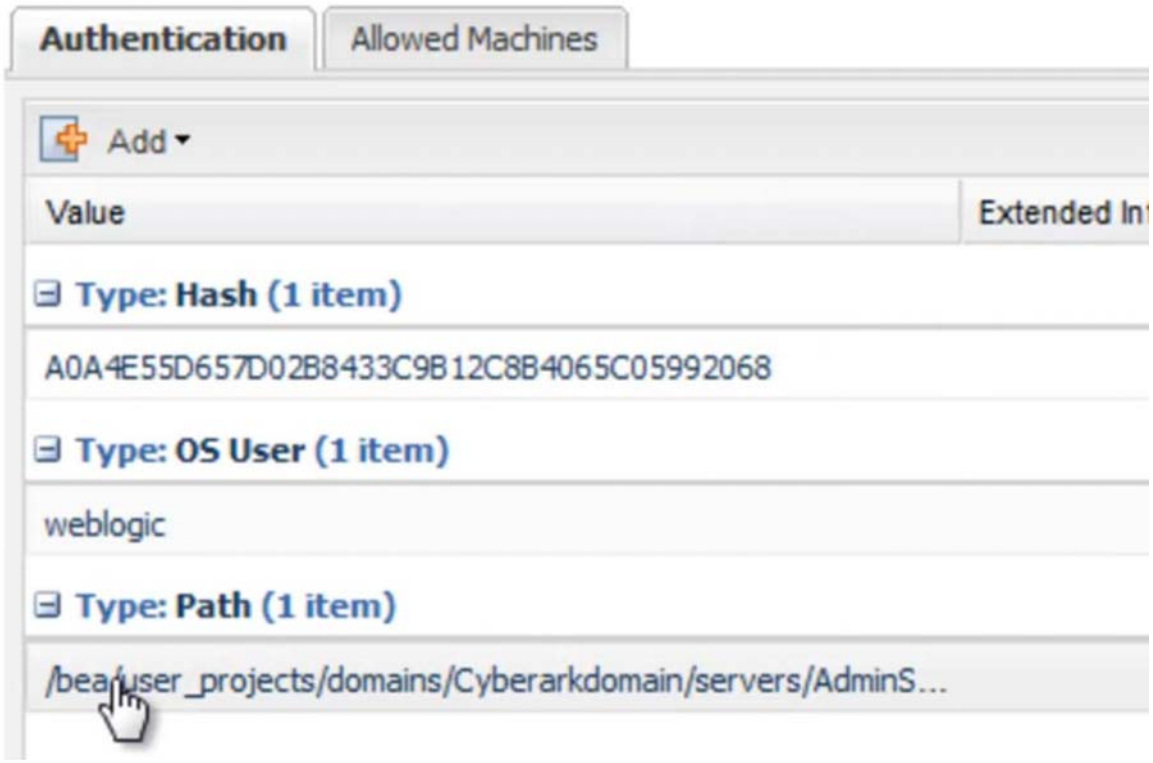
Applicatie integratie – weblogic datasource (2/2)



Applicatie integratie – Java API

```
@see javax.servlet.http.HttpServlet#doGet(javax.servlet.http.HttpServletI
*/
@Override
protected void doGet(HttpServletRequest req, HttpServletResponse resp) throw
    PrintWriter out = new PrintWriter(resp.getOutputStream());
    PSDKPassword password = null;
    try {
        PSDKPasswordRequest passRequest = new PSDKPasswordRequest ();

        passRequest.setAppID ("KeyStoreServlet");
        passRequest.setSafe ("apps");
        passRequest.setFolder ("root");
        passRequest.setObject ("IntegrationsoaKS");
        passRequest.setReason ("Keystore test");
        // Sending the request to get the password
        password = javapasswordsdk.PasswordSDK.getPassword (passRequest);
        // Analyzing the response
        //out.println ("The password content is : " +                passwo
        //out.println ("The password Address is : " +                passwo
        //out.println ("The password keystore path is : " +          passwo
    }
    catch (PSDKException ex)
```

Applicatie integratie - authentication



Wachtwoordbeheer via logon-account