

Docet

Stato e prospettive del calcolo scientifico

Legnaro 18 Febbraio 2011

Nelle varie sezioni e laboratori il numero di computers e apparati di rete da amministrare è diventato sempre più grande.

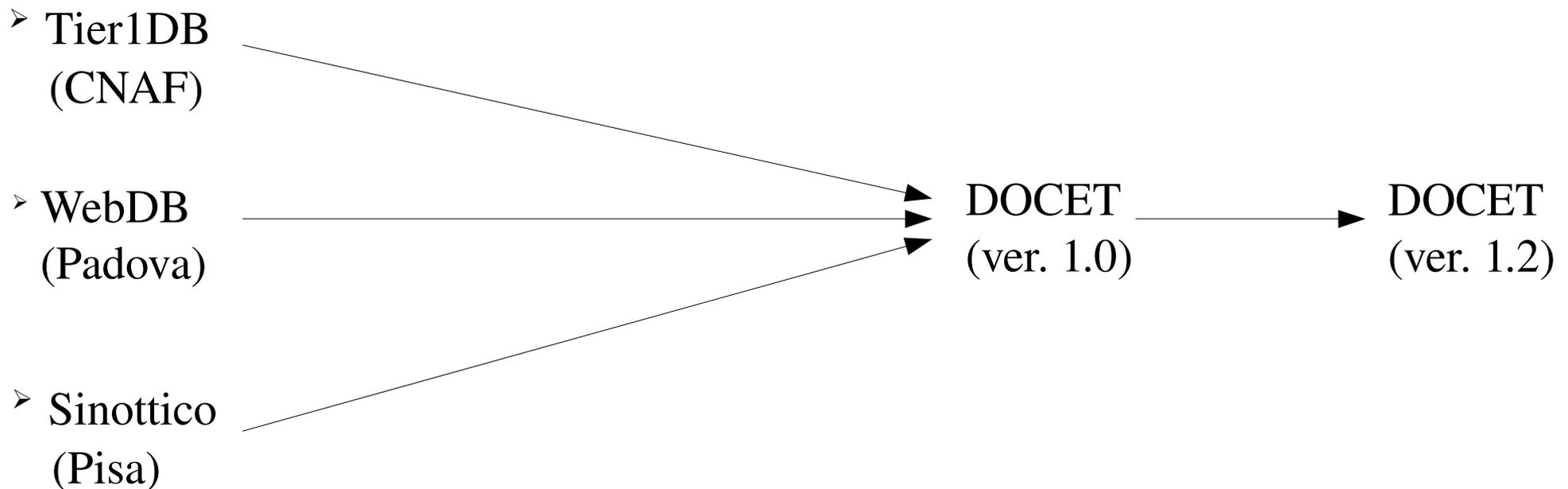
Di conseguenza per il loro mantenimento si deve gestire un numero elevato di informazioni.

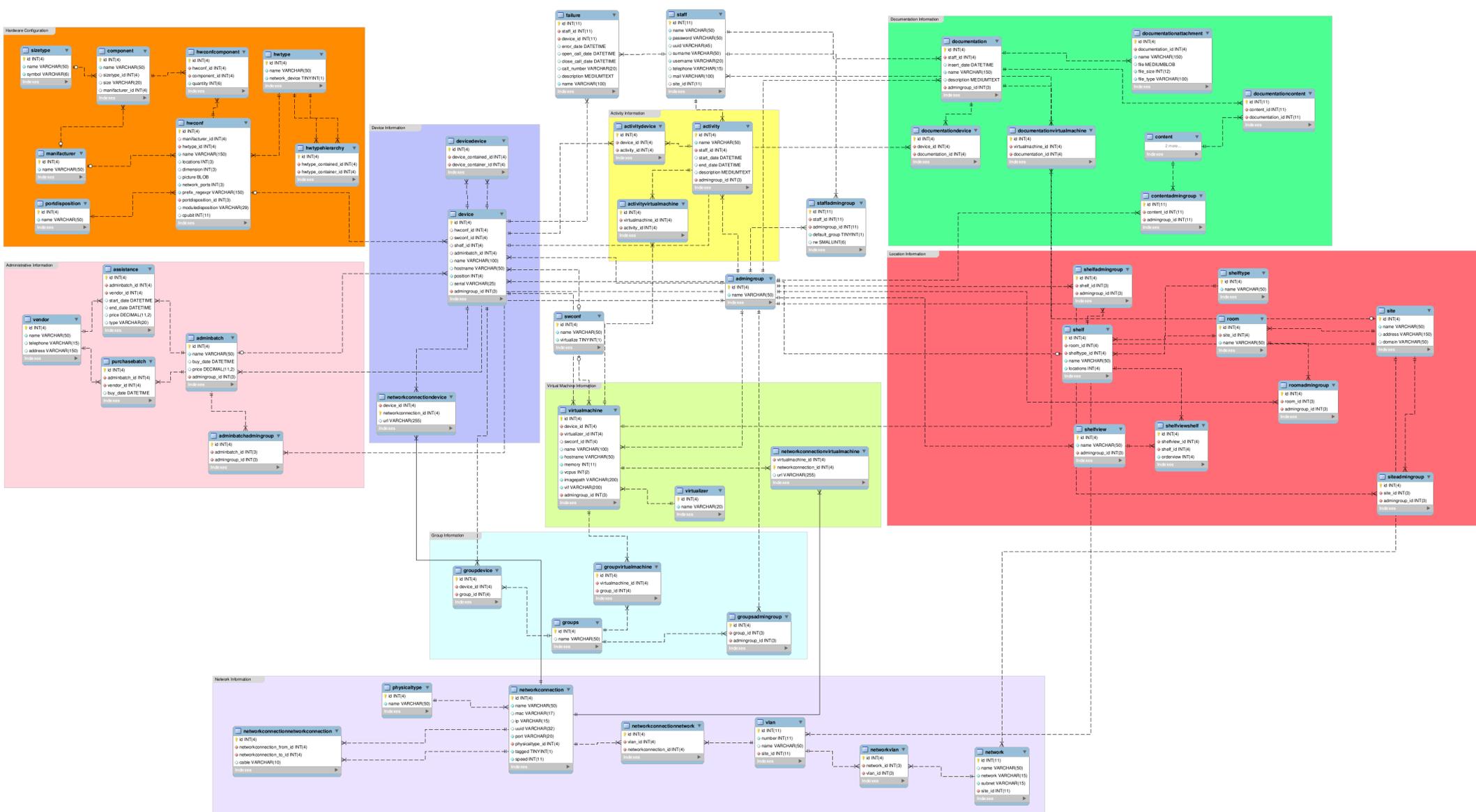
- Informazioni amministrative (fornitori, assistenze, numeri telefonici)
- Configurazioni hardware
- Configurazione software
- Locazione fisica
- Interconnessioni di rete
- Connessione elettrica

DOCET (Data Oriented Centre Tool) è un sistema pensato per la gestione di informazioni dell'hardware.

Le informazioni verranno poi utilizzate per la configurazione dei vari servizi di sito (DHCP, Network Switch, ecc.).

All'interno dell'INFN esistevano già varie esperienze e progetti volti alla gestione delle macchine di calcolo.

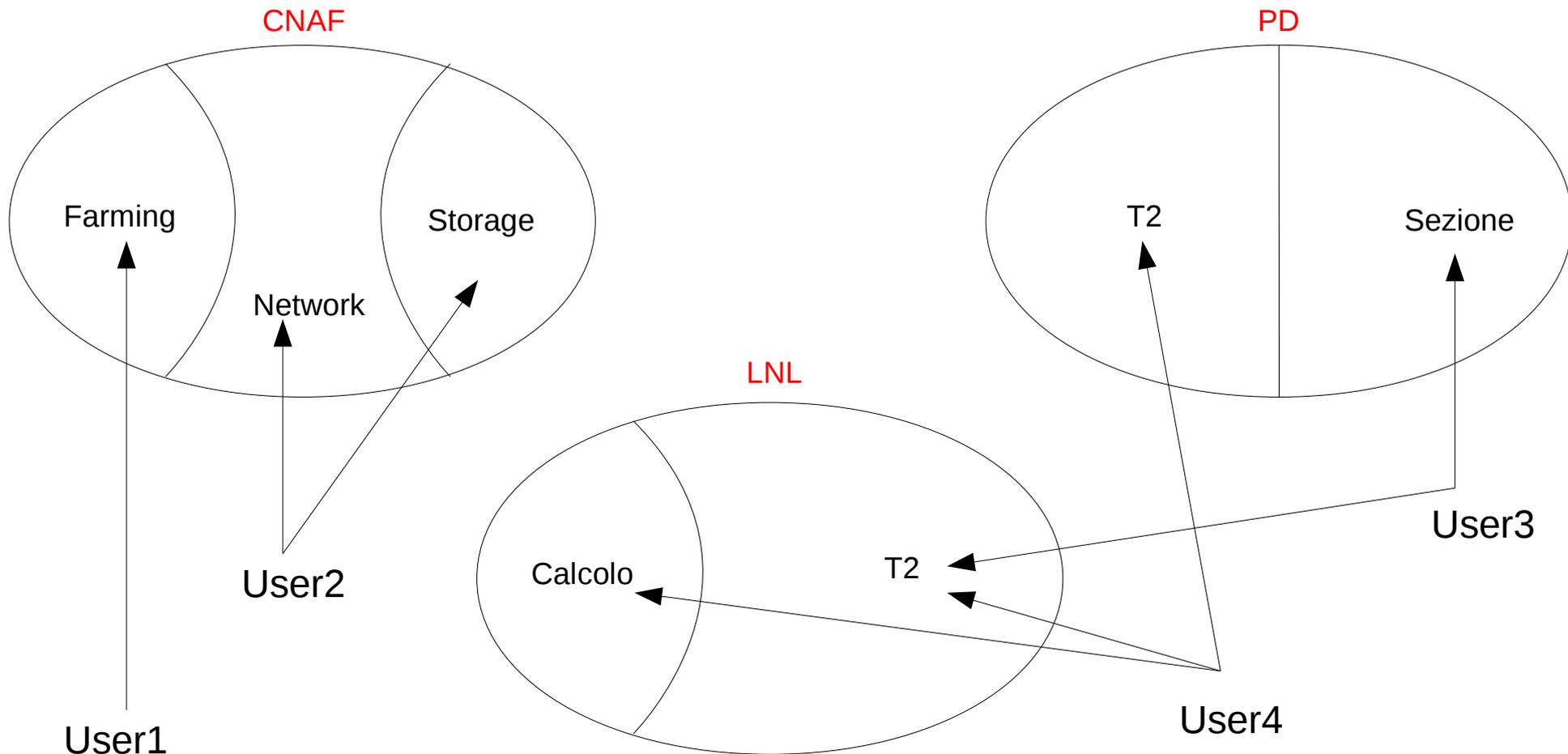


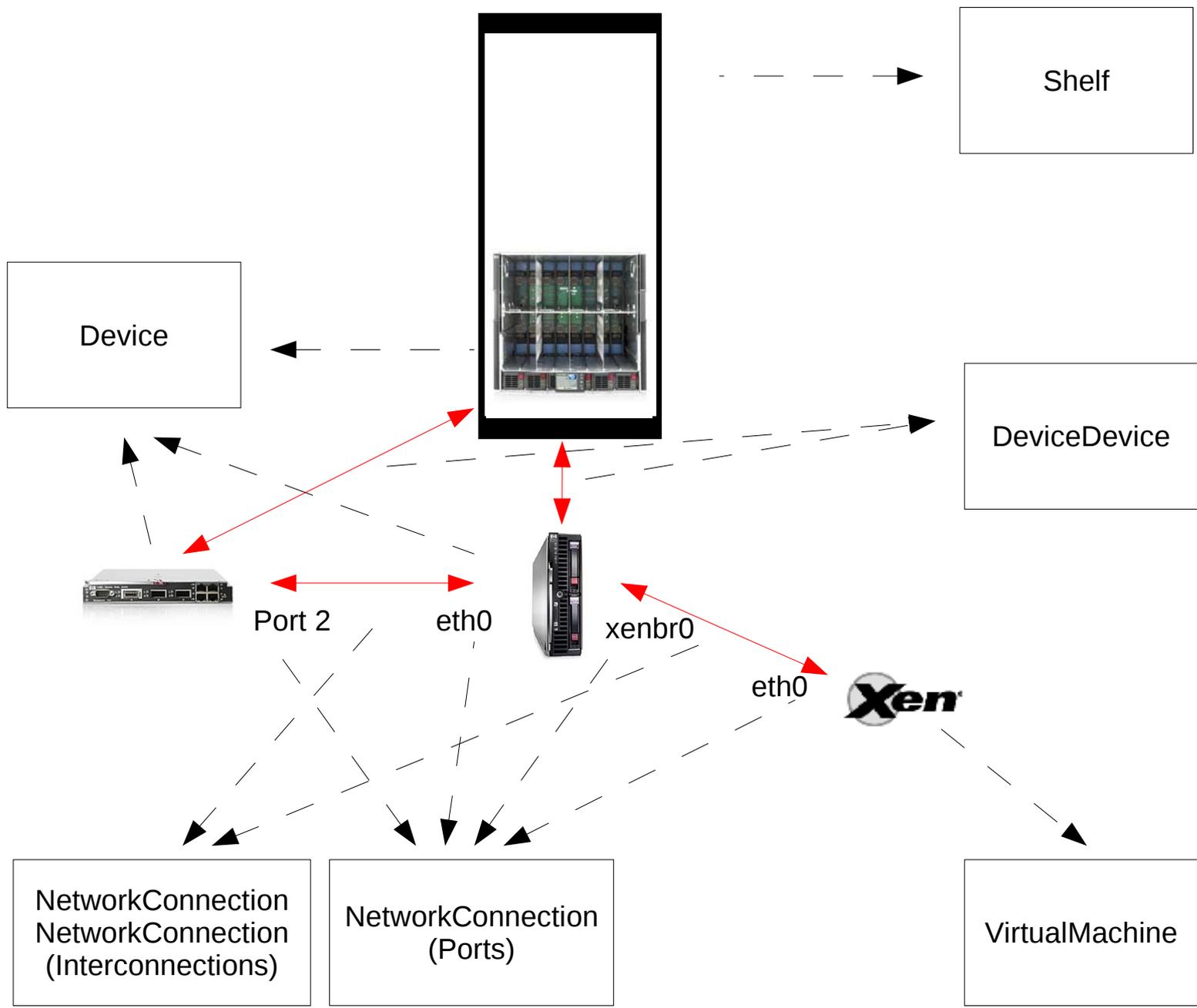


Le informazioni gestite in Docet sono:

- Informazioni sui locali (stanze, rack)
- Informazioni sui gruppi di lavoro (farming, storage, ...)
- Informazioni sul personale (solo dati per login)
- Configurazioni hardware
- Informazioni amministrative
- Informazioni sui dispositivi
- Informazioni sulle macchine virtuali
- Interconnessioni di rete
- Attività svolte sui dispositivi
- Guasti hardware
- Documentazione dei dispositivi

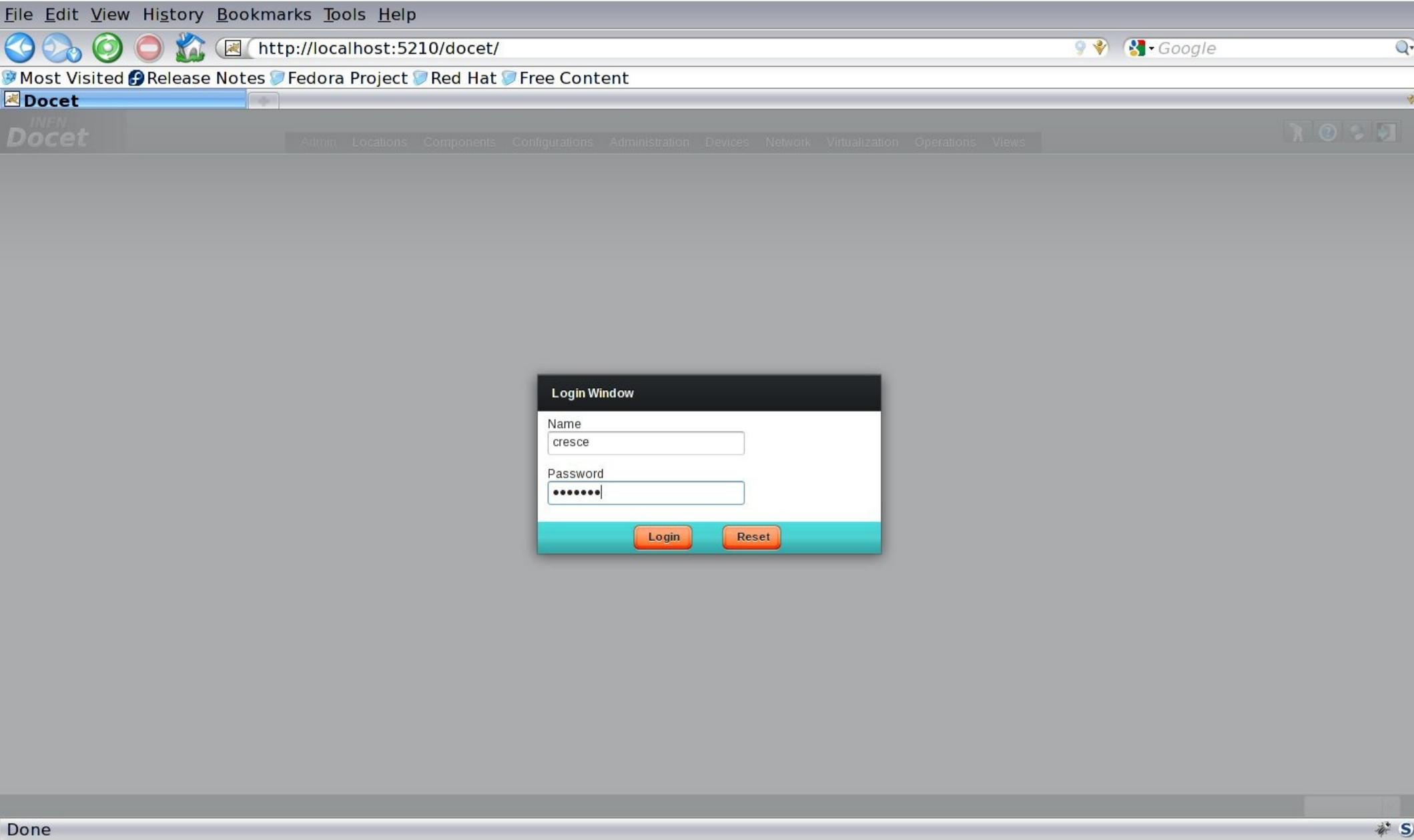
- Docet è stato pensato per poter gestire più siti nella stessa istanza database.
- Gli oggetti di un sito possono essere associati a dei gruppi amministrativi.
- Una stanza e/o un involucro (rack) può appartenere a più gruppi amministrativi.
- Un device può appartenere ad un solo gruppo amministrativo.
- Un gruppo amministrativo può appartenere a più siti.
- Un utente può appartenere a più gruppi amministrativi su diversi siti.
- L'appartenenza ai gruppi può essere con diritti di lettura o scrittura (flag a livello utente e non di gruppo).
- Esiste un utente **admin** per la gestione dei siti, dei gruppi amministrativi e degli utenti (non può gestire dispositivi).





L'istanza in uso nei siti dei Laboratori Nazionali di Legnaro e la Sezione di Padova per ora ha le seguenti informazioni:

- 520 dispositivi
- 3935 porte di rete
- 454 connessioni di rete
- 345 attività inserite



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Docet

Admin Locations Components Configurations Administration Devices Network Virtualization Operations Views

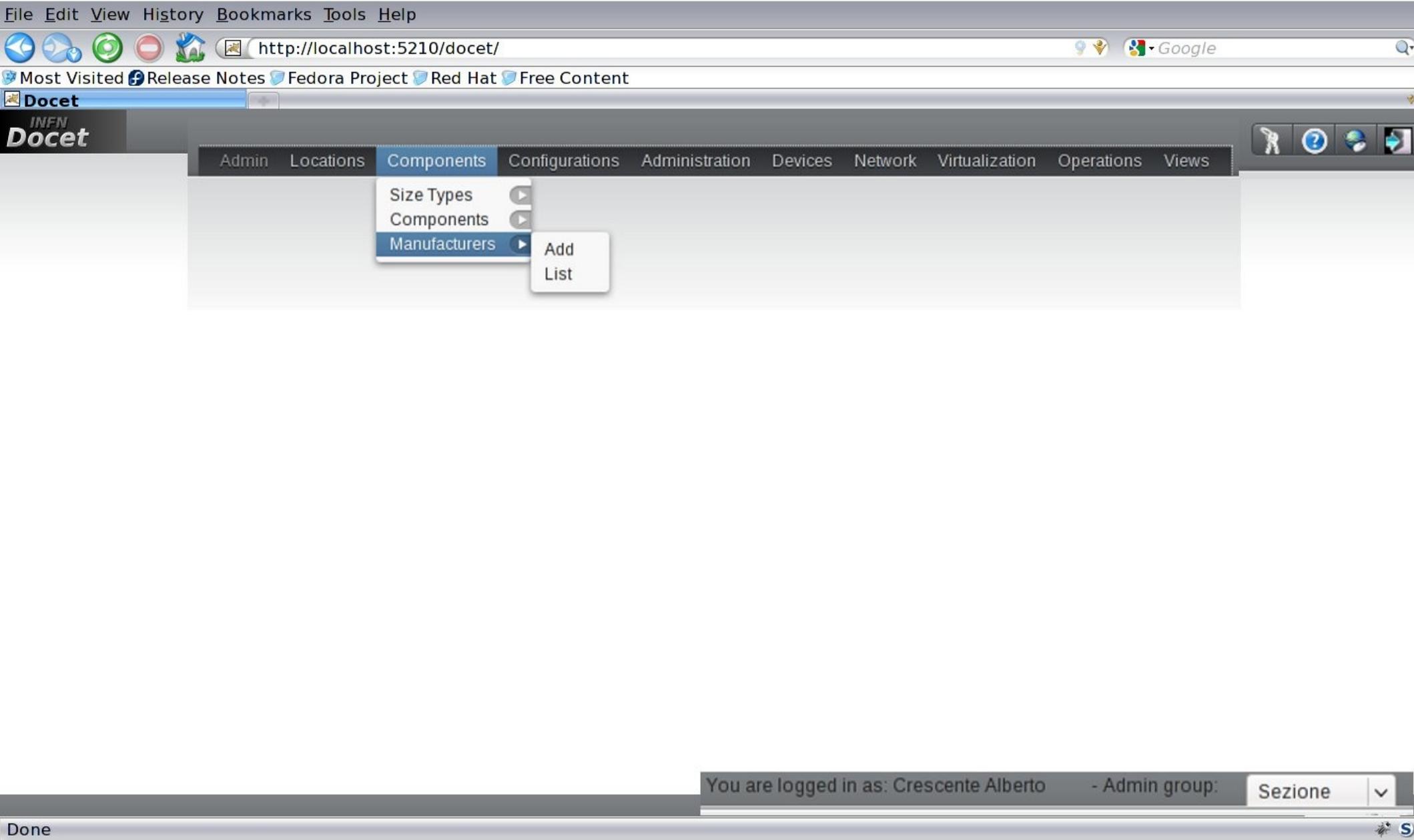
Login Window

Name
cresce

Password
••••••

Login Reset

Done



The screenshot shows a web browser window displaying the Docet application. The browser's address bar shows the URL `http://localhost:5210/docet/`. The application's navigation menu includes: Admin, Locations, Components, Configurations, Administration, Devices, Network, Virtualization, Operations, and Views. The 'Components' menu is expanded, showing sub-items: Size Types, Components, and Manufacturers. The 'Manufacturers' sub-item is further expanded to show 'Add' and 'List' options. The bottom status bar indicates the user is logged in as 'Crescente Alberto' with an 'Admin group' of 'Sezione'. The browser's status bar at the bottom left shows 'Done'.

Computers & Others

ADMIN GROUP	NAME	HOSTNAME	HARDWARE CONFIGURATION	SHELF	POSITION	SOFTWARE C
T2	Data Direct S2A9900 Tray		Data Direct S2A9900 JBOD			
T2	Data Direct S2A9900 Tray		Data Direct S2A9900 JBOD			
T2	Cooler 09	rack-cooler-09	In Row RC Chilled Water, 200-240v	Cool 09 - Sala T2 (Legnar	42	
T2	Blade Farm T2 Nr. 03	wl-03	HP BladeSystem c7000 Enclosure	Rack 2 - Sala T2 (Legnaro	11	
T2	WL 03-01	wl-03-01	HP ProLiant BL2x220c G6		1	SL 5.5 x86_6
T2	WL 03-02	wl-03-02	HP ProLiant BL2x220c G6		2	SL 5.5 x86_6
T2	WL 03-03	wl-03-03	HP ProLiant BL2x220c G6		3	SL 5.5 x86_6
T2	WL 03-04	wl-03-04	HP ProLiant BL2x220c G6		4	SL 5.5 x86_6

Network Ports

NAME	MAC	IP	UUID	PORT	PHYSICAL TYPE

Contained Devices

DEVICE CONTAINED
WL 03-01 (wl-03-01)
WL 03-02 (wl-03-02)
WL 03-03 (wl-03-03)
WL 03-04 (wl-03-04)
WL 03-05 (wl-03-05)
WL 03-06 (wl-03-06)

Linked Groups

GROUP
T2-LNL-PD

Failures List

Virtual Machines

ADMIN GROUP	NAME	HOSTNAME	SERVER	VIRTUALIZER	SOFTWARE CONFIGURATION
T2	CE 05	t2-ce-05	vmserver05 - Server Virtua	VmWare	SLC 4.8 i386
T2	CE 06	t2-ce-06	vmserver05 - Server Virtua	VmWare	SL 5.5 x86_64
T2	Hydra Server	hydra-srv	vmserver03 - Server Virtua	VmWare	SLC 4.8 i386
T2	Monitor sala 3 - Esportazione dati	t2-room-monitor	vmserver02 - Server Virtua	VmWare	Windows XP
T2	Monitor sala 3 - Raccolta dati	t2-opc-server	vmserver02 - Server Virtua	VmWare	Windows XP
Sezione	Nagios di Sezione	guardian	lxd14 - Server 1 Cluster X	XEN	SL 5.5 x86_64
Sezione	RGMA	t3-rgma	t3-xen-01 - XEN Server 01	XEN	SL 4.7 i386 for WN
Sezione	Server Cups di Sezione	vmcups	lxd20 - Server 2 Cluster X	XEN	SL 5.4 x86_64

Network Ports Add Port

NAME	MAC	IP	UUID	PORT
t3-rgma-01	00:16:3E:62:00:03	193.206.210.119		eth0

Group List Link Group

GROUP
all
rgma
virtual

Activities List

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Docet

Tree View

- Hardware Inventory
 - Legnaro
 - Padova
 - Sala CED
 - Rack 4 Up**
 - Rack 5 Up
 - Rack 1 Up
 - Rack 14 Up
 - Rack 6 Down
 - Rack 12 Down
 - Rack Router
 - Rack 2 Up
 - Rack 3 Up
 - Rack 6 Up
 - Rack 7 Up
 - Rack 11 Up
 - Rack 12 Up
 - Rack 13 Up
 - Rack 15 Up
 - Rack 16 Up
 - Rack 17 Up
 - Rack 24 Up
 - Rack 25 Up
 - Rack 1 Down

Shelf

Name Rack 4 Up
Locations 45
Room Sala CED
Shelf Type Rack

Edit Delete

Computer, Network Devices & Others

NAME	POSITION	HWCONF_ID	SWCONF_ID	ADMINBATCH_ID
WN 04	27	Server 1U Supermicro Mod	SL 4.7 i386 for WN	III Gara BaBar
WN 05	26	Server 1U Supermicro Mod	SL 4.7 i386 for WN	III Gara BaBar
WN 06	25	Server 1U Supermicro Mod	SL 4.7 i386 for WN	III Gara BaBar
WN 07	24	Server 1U Supermicro Mod	SL 4.7 i386 for WN	III Gara BaBar
WN 08	23	Server 1U Supermicro Mod	SL 4.7 i386 for WN	III Gara BaBar
WN 09	22	Server 1U Supermicro Mod	SL 4.7 i386 for WN	III Gara BaBar
WN 10	21	Server 1U Supermicro Mod	SL 4.7 i386 for WN	III Gara BaBar
WN 11	20	Server 1U Supermicro Mod	SL 4.7 i386 for WN	III Gara BaBar
WN 12	19	Server 1U Supermicro Mod	SL 4.7 i386 for WN	III Gara BaBar
WN 13	18	Server 1U Supermicro Mod	SL 4.7 i386 for WN	III Gara BaBar
WN 14	17	Server 1U Supermicro Mod	SL 4.7 i386 for WN	III Gara BaBar
WN 15	16	Server 1U Supermicro Mod	SL 4.7 i386 for WN	III Gara BaBar
WN 16	15	Server 1U Supermicro Mod	SL 4.7 i386 for WN	III Gara BaBar
WN 17	14	Server 1U Supermicro Mod	SL 4.7 i386 for WN	III Gara BaBar
WN 18	13	Server 1U Supermicro Mod	SL 4.7 i386 for WN	III Gara BaBar
WN 19	12	Server 1U Supermicro Mod	SL 4.7 i386 for WN	III Gara BaBar
WN 20	11	Server 1U Supermicro Mod	SL 4.7 i386 for WN	III Gara BaBar
WN 21	10	Server 1U Supermicro Mod	SL 4.7 i386 for WN	III Gara BaBar
WN 22	9	Server 1U Supermicro Mod	SL 4.7 i386 for WN	III Gara BaBar

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Tree View

- ▶ Rack 12 Down
- ▶ Rack Router
- ▶ Rack 2 Up
- ▶ Rack 3 Up
- ▶ Rack 6 Up
- ▼ Rack 7 Up
 - ▶ Enclosure Blade BaBar - n
 - ▶ bbr-farm321
 - ▶ HP Proliant BL465c G1

Hardware Configuration

Name	HP Proliant BL465c G1		
Locations	0	Dimension	1
Manufacturer	HP	Hard Type	Blade
Network Ports	5		
Prefix Reg Expr	eth0.eth1.il0.iscsi1.iscsi2		
 - ▶ Dual-Core AMD C
 - ▶ Dimm DDR2 1024
 - ▶ HP Smart Array E2
 - ▶ HP DG072A8B54
 - ▶ bbr-farm322
 - ▶ bbr-farm323
 - ▶ bbr-farm324
 - ▶ bbr-farm325
 - ▶ bbr-farm326
 - ▶ bbr-farm327
 - ▶ bbr-farm328
 - ▶ bbr-farm329
 - ▶ bbr-farm330
 - ▶ bbr-farm331

Components

COMPONENT_ID
Dual-Core AMD Opteron(tm) Processor 2218
Dimm DDR2 1024MB 667MHz
HP Smart Array E200i
HP DG072A8B54 72GB 10K 2.5"

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Docet Stato e Prospettive d... Docet

Failures

DEVICE	CALL NUMBER	NAME	DESCRIPTION	ERROR DATE	OPEN CALL DATE	CLOSE CAI
cmsfarm-09-01 - WN 09-01		Server crash	Show description	2011-02-14 07:3		
cmsfarm-08-12 - WN 08-12		Error messages in syslog (RAM pro	Show description	2011-02-12 17:4		
t2-xrdpool-03 - Xrootd Storage server for Alice Nr. 3		Server crash (kernel panic)	Show description	2011-02-09 10:5	2011-02-09 10:0	2011-02-0
wl-03-03 - WL 03-03		Memory Module Error	Show description	2011-02-07 17:5		
wl-03-18 - WL 03-18		error: Can't connect ILO processor	Show description	2011-02-02 13:3		2011-02-0
cmsfarm-10-05 - WN 10-05		Hard disk failure on cmsfarm-10-05	Show description	2011-01-22 10:1		
dd9900 - Data Direct S2A9900 Raid Array		Hard Disk failure	Show description	2011-01-20 21:1		2011-01-2
catbb2 - Second Switch Farm BaBar		catbb2 trasfer rate problem	Show description	2011-01-13 22:1		2011-01-1
cmsfarm-05-02 - WN 05-02		Power supply failure	Show description	2010-12-23 12:1		2010-12-2
dd9900 - Data Direct S2A9900 Raid Array		Hard Disk failure	Show description	2010-12-19 15:11	2010-12-20 15:14	2010-12-2
satabeast-04 - SataBeast Nr. 4			Show description	2010-12-18 16:5	2010-12-21 16:57	2011-01-1
hpparf.lan - Switch I piano corridoio centrale			Show description	2010-12-06 11:3		2010-12-0
satabeast-04 - SataBeast Nr. 4			Show description	2010-12-06 09:1		2010-12-0
cmsfarmsw009 - Switch Farm Grid (009)			Show description	2010-12-03 11:27		2010-12-0
bsdsz4 - Server Jail per Gate			Show description	2010-11-29 07:2		2010-11-2
dd9900-1 - Data Direct S2A9900 Controller			Show description	2010-11-27 07:3		2011-01-2
p318 - HP LaserJet 4350DTN - Stanzino stampanti	4622889342		Show description	2010-11-24 11:2	2010-11-24 11:2	2010-12-0
cmsfarm-08-12 - WN 08-12	4620964735		Show description	2010-11-19 10:3		2010-11-1
lxpd11 - Server LDAP Primario	4622459316		Show description	2010-11-16 17:4	2010-11-16 17:4	2010-11-2
t2-xrdpool-03 - Xrootd Storage server for Alice Nr. 3			Show description	2010-11-16 17:2		2010-12-0
lxpd18 - Server CAD Meccanico			Show description	2010-11-15 17:37	2010-11-16 10:4	2010-11-1
wl-01-04 - WL 01-04			Show description	2010-11-04 10:4		2010-11-0
bsdsz6 - Server Firewall Sezione	4622446344		Show description	2010-11-02 13:5	2010-11-02 13:5	2010-11-0
cmsfarm-07-04 - WN 07-04			Show description	2010-11-01 08:5		2010-11-0
cmsfarm-10-04 - WN 10-04	4620964983		Show description	2010-10-13 00:0	2010-10-13 16:3	2010-10-1
photon00-raid2.lan - photon00 raid array Demon			Show description	2010-10-01 10:3	2010-10-01 10:3	
- Sun StorageTek 6540 CMS Tray 5			Show description	2010-09-28 17:4		2010-09-2
cmsfarm-11 - Blade Farm T2 Nr. 11	4620964735		Show description	2010-09-22 17:0	2010-10-13 16:3	2010-11-2
cmsfarm-10 - Blade Farm T2 Nr. 10	4620964735		Show description	2010-09-22 17:0	2010-10-13 16:3	2010-11-0

group: Sezione

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http://localhost:7000/docet/

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Activities

NAME	DESCRIPTION	START DATE	END DATE	ADMINISTRATIVE G
Reinstall cmsfarm-10-05	Show description	2011-02-17	2011-02-17	T2
New CA EGI-trustanchors installation	Show description	2011-02-15	2011-02-16	T2
New user added on UI	Show description	2011-02-15	2011-02-15	T2
Installazione middleware di grid sul nodo wl-03-01	Show description	2011-02-14	2011-02-14	T2
Added nagios check for wl-03 blades	Show description	2011-02-07	2011-02-07	T2
Modified mysql configuration to increase nagios performance	Show description	2011-02-07	2011-02-07	T2
Installazione middleware di grid su tutti i nodi da wl-03-02 to wl-03-26	Show description	2011-02-03	2011-02-03	T2
Disabilitato Hypertrading sui nodi wl-03-01 to wl-03-26	Show description	2011-02-03	2011-02-03	T2
New WNs wl-03 added to LSF	Show description	2011-02-03	2011-02-03	T2
t2-srm-03 certificate update	Show description	2011-02-02	2011-02-02	T2
t2-ce-02 certificate update	Show description	2011-02-02	2011-02-02	T2
Installed new ig-vomscert-all-1.1.13	Show description	2011-01-28	2011-01-28	T2
Installation of new blade wl-03	Show description	2011-01-28	2011-01-31	T2
Added nagios plugin to check t2-sepool-06 hardware	Show description	2011-01-28		T2
Removed wl-02-04 on nagios	Show description	2011-01-28	2011-01-28	T2
Added wp-01-08 and wp-01-09 on nagios	Show description	2011-01-28	2011-01-28	T2
Installed OpenManage on t2-sepool-06	Show description	2011-01-28	2011-02-10	T2
Configured kerberos client on t2-ui-01	Show description	2011-01-27	2011-01-27	T2
New WNs wp-01-08 wp-01-09 added to LSF	Show description	2011-01-27	2011-01-27	T2
Created install script for Open Manage	Show description	2011-01-26	2011-02-09	T2
Upgrade firmware on t2-sepool-06	Show description	2011-01-26	2011-01-26	T2

Devices & Virtual Machines List

NAME

Done - Admin group: Sezione

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Documentations

WNoDeS

NAME	DESCRIPTION	STAFF	INSERT DATE	ADMINISTRATIVE GROUP
Add new images to wnodes	Show description	Crescente Alberto	2010-11-04 13:19	T2
bait image creation for wnodes	Show description	Crescente Alberto	2010-10-27 12:39	T2
Compiled Python files	Show description	Crescente Alberto	2010-11-26 08:21	T2
Compiling Python modules to byte code	Show description	Crescente Alberto	2010-11-26 08:21	T2
Install & Configure hypervisor server for wnodes	Show description	Crescente Alberto	2010-11-04 08:51	T2
LSF master server configuration for wnodes	Show description	Crescente Alberto	2010-10-26 10:51	T2
Shutdown hypervisor wnodes	Show description	Crescente Alberto	2010-11-04 12:21	T2
Test submission VM on wnodes	Show description	Crescente Alberto	2010-11-04 09:01	T2
Utility wnodes	Show description	Crescente Alberto	2010-11-04 12:21	T2
virtual WN creation for wnodes	Show description	Crescente Alberto	2010-10-28 14:01	T2
wnodes nameserver installation & configuration	Show description	Crescente Alberto	2010-10-29 09:21	T2

Device & Virtual Machines List

gws1 - Farm T2 Admin Server

Contents List

LSF

WNoDeS

Done

group: Sezione

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http://localhost:5210/docet/

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INFN Docet

Devices

Site: Padova Room: Shelf: Filter by Name or Hostname

Component: Hardware Configuration: Hardware Type: Switch

ADMIN GROUP	NAME	HOSTNAME	HARDWARE CONFIGURATION	SHELF	POSITION	SOFTWARE CON
Sezione	Switch I Piano Paolotti	hppar1.lan	Procurve Switch 2810-48G (J9022A	Rack Corridoio I piano Pac	15	
Sezione	Switch Rack Zeus Opera	hpzeop.lan	Procurve Switch 2810-48G (J9022A	Rack 4 Down - Sala CED (1	
Sezione	Third Switch Farm BaBar	catbb3	Cisco WS-C3550-48	Rack 14 Up - Sala CED (P	26	
Sezione	Switch II Piano Paolotti	hppar2.lan	Procurve Switch 2810-48G (J9022A	Rack Corridoio II piano Pa	15	
Sezione	Switch III Piano Paolotti	hppar3.lan	Procurve Switch 2810-48G (J9022A	Rack Corridoio III piano Pa	15	
Sezione	Switch IV Piano Paolotti	hppar4.lan	Procurve Switch 2810-48G (J9022A	Rack Corridoio IV piano Pa	15	
Sezione	Switch Server Servizi di Se	hppsam.lan	ProCurve 2900-48G Switch	Rack 24 Down - Sala CED	40	
Sezione	Switch I Piano Paolotti	hpparx.lan	Procurve Switch 2810-48G (J9022A	Rack Corridoio I piano Pac	10	
Sezione	Switch Servers Gruppo III	swgr3bl	Procurve Switch 2524 (J4813A)	Rack 9 Down - Sala CED (1	
Sezione	Switch farm INFM	swinmf	Procurve Switch 2524 (J4813A)	Rack 1 Down - Sala CED (1	
Sezione	Switch farm Magic	hpmagic	Procurve Switch 2824	Rack 8 Down - Sala CED (44	
Sezione	Switch rack CDF	hppcdf.lan	Procurve Switch 2810-24G (J9021A	Rack 26 Down - Sala CED	40	
Sezione	Switch Corridoio ala ovest	swgr3al	Procurve Switch 2424M (J4093A)	Mensola Angolo I piano al	2	
Sezione	Switch INFM teorici	swinfmt	Procurve Switch 2424M (J4093A)	Mensola Angolo III piano a	2	
Sezione	Switch CED amministrazio	swammi	Procurve Switch 2524 (J4813A)	Rack CED amministrazion	1	
Sezione	Switch CIsuter XEN	ext5ie	Extreme Summit 5i	Rack 22 Down - Sala CED	22	

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Done

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Network Connections View

A1	A3	A5	A7	A9	A11	A13	A15	A17		
-	t3-master	t3-xen-01	t3-ce-01	-	-	-	-	-		
-	-	-	-	-	-	-	t2-ut-01	-		
A2	A4	A6	A8	A10	A12	A14	A16	A18		
C1	C3	C5	C7	C9	C11	C13	C15	C17		
-	-	-	-	-	-	-	-	-		
-	-	-	-	-	-	-	-	-		
C2	C4	C6	C8	C10	C12	C14	C16	C18		
				E1	E2	E3	E4			
				cmsfarmsw011	blade-01.switch-rmc	-	-			
G1	G3	G5	G7	G9	G11	G13	G15	G17		
-	-	-	-	-	-	-	-	-		
-	-	-	-	-	-	-	-	-		
G2	G4	G6	G8	G10	G12	G14	G16	G18		
						empty				
						empty				

Done

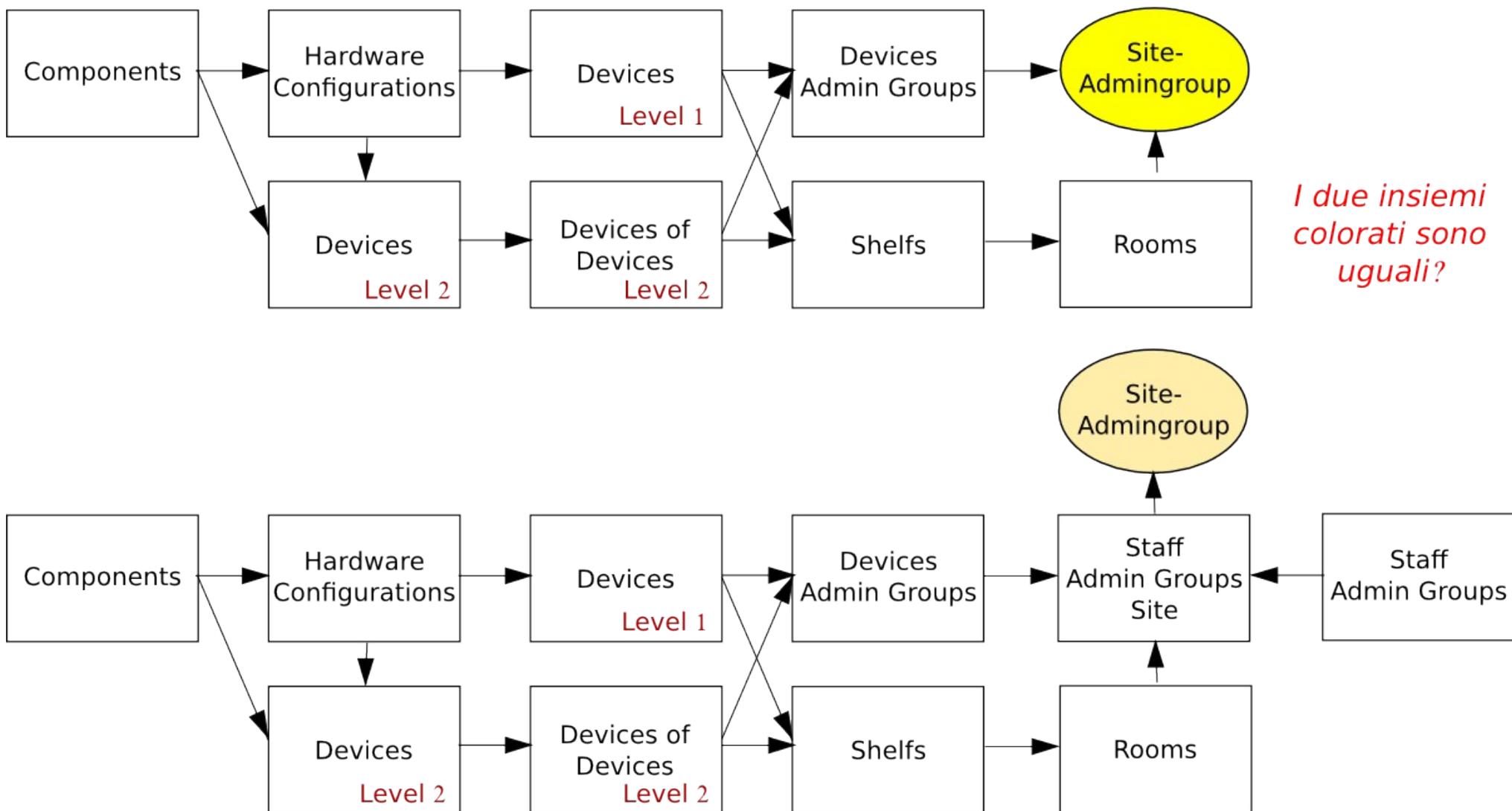
Per la gestione di tutti i possibili casi di utilizzo (multi sito, più di un gruppo amministrativo per dispositivo, gruppi amministrativi ristretti a livello di sito) si sta valutando la possibilità di modificare alcune tabelle e funzionalità.

Questo comporterà una diversa modalità di accesso ai dati.

Per esempio come faccio a sapere se un utente può modificare un componente di una configurazione hardware?

Posso determinare tutti i siti-gruppi amministrativi che utilizzano il componente e li confronto con i siti-gruppi amministrativi del utente.

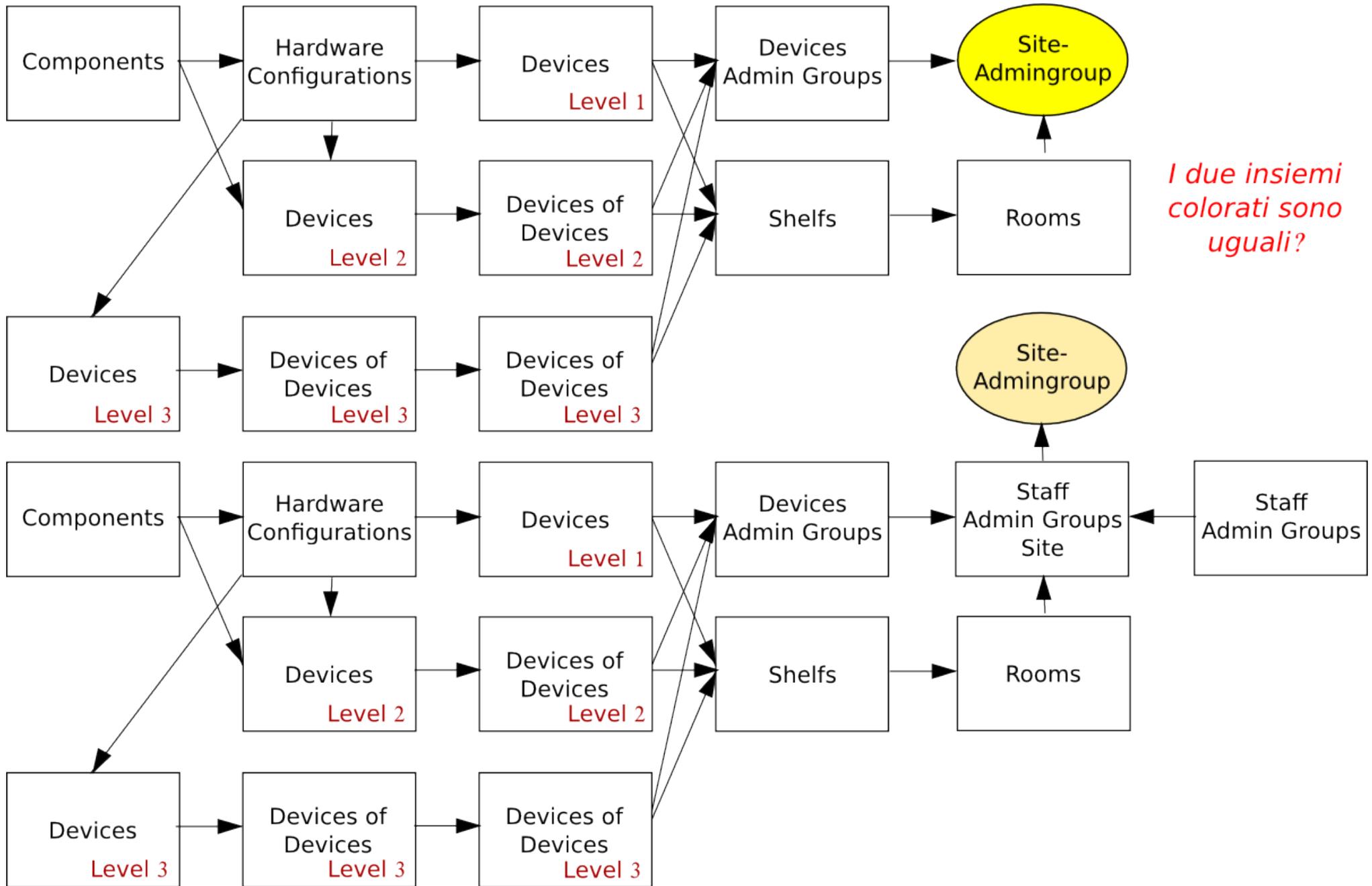
Posso modificare il componente?



Query equivalente per determinare se posso modificare un componente:

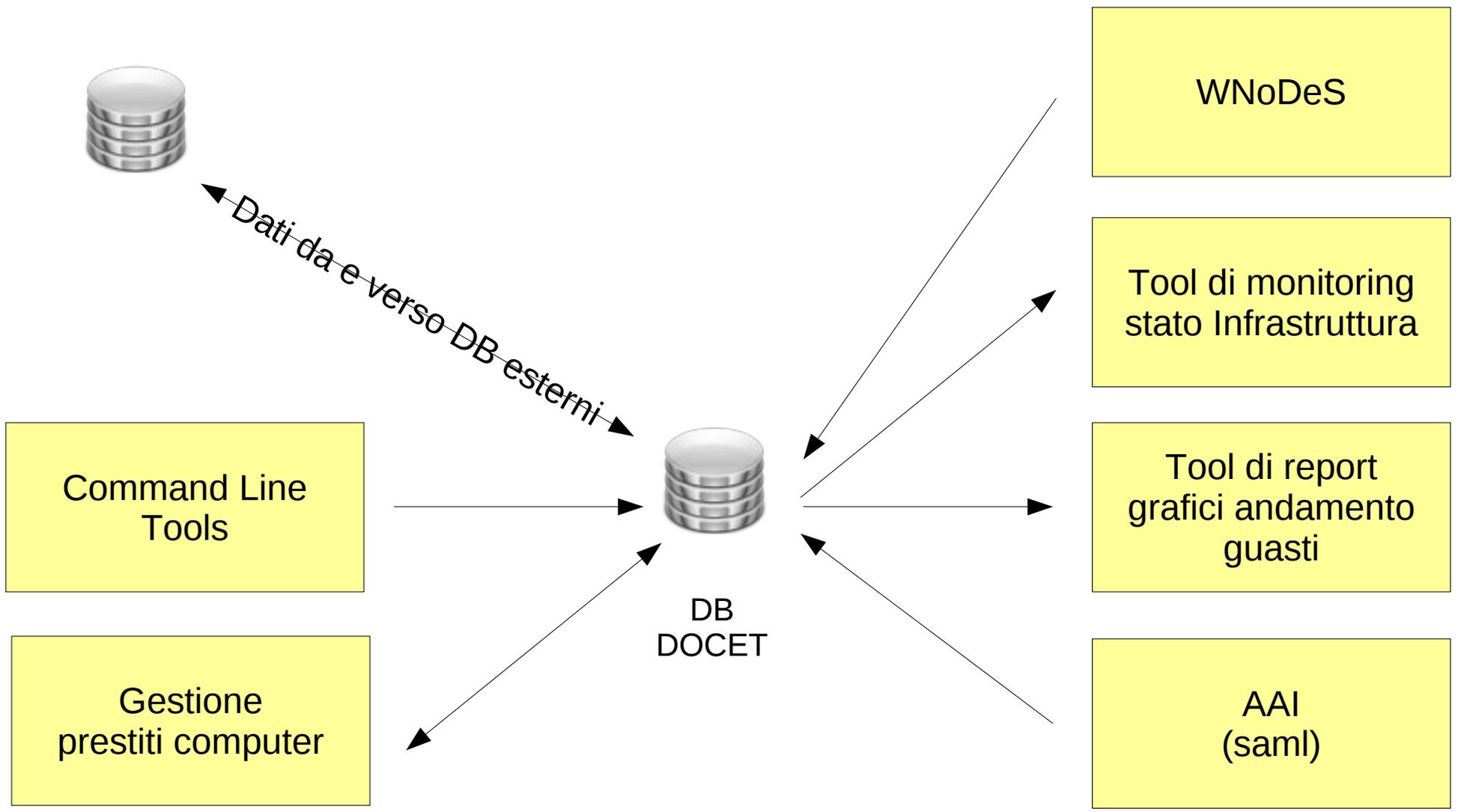
```
select count(*) from (select E.admingroup_id,B.site_id from roomadmingroup as A, room as B,
(select A.id as device_id, A.hwconf_id as hwconf_id, B.id as shelf_id, B.room_id as room_id from
device as A, shelf as B where (A.shelf_id = B.id) union select D.device_contained_id, E.hwconf_id,
D.id, F.room_id from (select B.device_contained_id, C.id from device as A, devicedevice as B, shelf
as C where (A.id = B.device_container_id) and (A.shelf_id = C.id)) as D, device as E, shelf as F
where (D.device_contained_id = E.id) and (D.id = F.id)) as D, deviceadmingroup as E,
hwconfcomponent as F where (A.admingroup_id = E.admingroup_id) and (A.room_id = B.id) and
(B.id = D.room_id) and (D.device_id = E.device_id) and (D.hwconf_id = F.hwconf_id) and
(F.component_id = 47) group by E.admingroup_id,B.site_id) as K where
concat(admingroup_id,'-',site_id) not in (select concat(A.admingroup_id,'-',D.site_id) from
staffadmingroup as A, staffadmingroupsite as B, roomadmingroup as C, room as D, (select A.id as
device_id, A.hwconf_id as hwconf_id, B.id as shelf_id, B.room_id as room_id from device as A, shelf
as B where (A.shelf_id = B.id) union select D.device_contained_id, E.hwconf_id, D.id, F.room_id
from (select B.device_contained_id, C.id from device as A, devicedevice as B, shelf as C where (A.id
= B.device_container_id) and (A.shelf_id = C.id)) as D, device as E, shelf as F where
(D.device_contained_id = E.id) and (D.id = F.id)) as F, deviceadmingroup as G, hwconfcomponent as
H where (A.id = B.staffadmingroup_id) and (A.admingroup_id = C.admingroup_id) and (C.room_id
= D.id) and (B.site_id = D.site_id) and (D.id = F.room_id) and (A.admingroup_id =
G.admingroup_id) and (A.staff_id = 3) and (B.rw = 1) and (F.device_id = G.device_id) and
(F.hwconf_id = H.hwconf_id) and (H.component_id = 47) group by A.admingroup_id, D.site_id);
```

Posso modificare il componente?



Futuri componenti da sviluppare:

- Gestione fibre channel
- Gestione distribuzione elettrica
- Raccolta dati dispositivi tramite SNMP
- Determinazione connessioni tra computer e switch tramite SNMP
- Modifiche grafiche per aumentare le performance di utilizzo



- Vaadin

<http://vaadin.com/home>

- Hibernate

<http://www.hibernate.org>

- Forge CNAF

<http://forge.cnaf.infn.it/docet>