



Regione Toscana



Rapporto dei test della KB, sottosistema validato

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Legenda Acronimi e sigle

Acronimo / Sigla	Dettaglio
CM	Configuration Manager
SP	Subscription Portal



D3.22.2 – Rapporto dei test della KB, sottosistema validato

SM	Supervisor & Monitor
BP	Business Producer
SCE	Smart Cloud Engine,
KB	Knowledge Base
CMW	Cloud Middleware
CMW-SDK	Insieme di tool ad uso degli sviluppatori delle applicazioni per interagire con CMW
istanza	Un prodotto acquistato (applicazioni sw)
RDF	Resource Description Framework



1. Introduzione

Scopo del presente documento è quello di presentare lo stato dell'attività di test allo stato attuale dello sviluppo del sistema KB (Knowledge Base). Questo documento aggiorna e sostituisce il D3.22.1. Ciascun test è stato descritto riportando gli obiettivi e gli step previsti. Per la realizzazione dei test è stato usato JUnit per testare il comportamento delle API offerte attualmente dalla KB. I test sono stati realizzati usando RDF Store OpenRDF Sesame 2.6.3 con un repository OWLIM-SE 4.3 configurato con inferenza "OWL-Max optimized".

2. Test KB DataCenter

In questa sezione sono riportati i test effettuati per il servizio di creazione, aggiornamento e cancellazione di un 'DataCenter' come specificato nel D3.4.

2.1 DC-TEST1

In questo test viene verificato l'inserimento di un nuovo data center:

1. viene cancellato il data center TEST-001 eventualmente presente precedentemente tramite DELETE a <http://...:8080/icaroKB/api/dataCenter/TEST-001>;
2. viene aggiunto un nuovo data center tramite PUT a <http://...:8080/icaroKB/api/dataCenter/TEST-001>;
3. Viene acquisita la descrizione tramite GET a <http://...:8080/icaroKB/api/dataCenter/TEST-001>;
4. Viene verificato che il valore restituito corrisponda con quello inserito.

Il data center inserito è quello riportato in 9.1 DC-TEST1 e contiene una sola HostMachine

Il test ha dato riscontro positivo.

2.2 DC-TEST2-FAIL

In questo test viene verificato il fallimento dell'inserimento dovuto a richiesta di xml non conforme allo schema:

1. viene fatta richiesta di aggiunta di un nuovo data center tramite PUT a <http://...:8080/icaroKB/api/dataCenter/TEST-002>;
2. viene verificato che la richiesta fallisca

La richiesta fatta è la seguente:

```
<rdf:RDF xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
xmlns:icr="http://www.cloudicaro.it/cloud_ontology/core#">
  <icr:DataCenter rdf:about="urn:cloudicaro:DataCenter:002">
    <icr:hasIdentifier>dc01</icr:hasIdentifier>
    <icr:hasName>data center ICARO</icr:hasName>
    <icr:hasPart rdf:resource="urn:cloudicaro:HostMachine:001"/>
  </icr:DataCenter>
</rdf:RDF>
```

Il risultato è il seguente:



HTTP 400 Bad Request XML NOT VALID: line 12 col 28 reason: cvc-complex-type.2.4.a: Invalid content was found starting with element 'icr:hasIdentifier'. One of '{"http://www.cloudicaro.it/cloud_ontology/core#":hasName}' is expected.

Il test ha dato riscontro positivo

2.3 DC-TEST3

In questo test viene verificato l'inserimento di un nuovo data center:

1. viene cancellato il data center TEST-003 eventualmente presente precedentemente tramite DELETE a <http://...:8080/IcaroKB/api/dataCenter/TEST-003>;
2. viene aggiunto un nuovo data center tramite PUT a <http://...:8080/IcaroKB/api/dataCenter/TEST-003>;
3. Viene acquisita la descrizione tramite GET a <http://...:8080/IcaroKB/api/dataCenter/TEST-003>;
4. Viene verificato che il valore restituito corrisponda con quello inserito.

Il data center inserito e' quello riportato in 9.2 DC-TEST3 e contiene due HostMachine collegate su due reti locali, due storage esterni, un firewall e un router.

Il test ha dato riscontro positivo.

2.4 DC-TEST4

In questo test viene verificato l'inserimento di un nuovo data center:

1. viene cancellato il data center TEST-004 eventualmente presente precedentemente tramite DELETE a <http://...:8080/IcaroKB/api/dataCenter/TEST-004>;
2. viene aggiunto un nuovo data center tramite PUT a <http://...:8080/IcaroKB/api/dataCenter/TEST-004>;
3. Viene acquisita la descrizione tramite GET a <http://...:8080/IcaroKB/api/dataCenter/TEST-004>;
4. Viene verificato che il valore restituito corrisponda con quello inserito.

Il data center inserito e' quello riportato in 9.3 DC-TEST4 e contiene tre HostMachine su una rete locale.

Il test ha dato riscontro positivo.

2.5 DC-TEST5

In questo test viene verificato l'inserimento di un nuovo data center:

1. viene cancellato il data center TEST-005 eventualmente presente precedentemente tramite DELETE a <http://...:8080/IcaroKB/api/dataCenter/TEST-005>;
2. viene aggiunto un nuovo data center tramite PUT a <http://...:8080/IcaroKB/api/dataCenter/TEST-005>;
3. Viene acquisita la descrizione tramite GET a <http://...:8080/IcaroKB/api/dataCenter/TEST-005>;
4. Viene verificato che il valore restituito corrisponda con quello inserito.



Il data center inserito e' quello riportato in *9.5 DC-TEST5* e corrisponde al data center di sviluppo presente in Computer Gross, con due Host che formano un cluster.

Il test ha dato riscontro positivo.

3. Test KB BusinessConfiguration Check

In questa sezione vengono riportati i test effettuati per il controllo di una business configuration.

3.1 BCC-TEST1-OK

In questo test viene verificata una nuova Business Configuration valida:

1. viene controllata la business configuration tramite POST a <http://...:8080/IcaroKB/api/businessConfigurationCheck>
2. verificato che risponda in modo positivo

La business configuration inserita e' quella riportata in *9.5 BC-TEST1-OK*, che contiene una istanza di applicazione XLMS con tutti i servizi (apache web server, tomcat, mysql, axcp scheduler e axcp node) posti su una unica macchina virtuale

Il test ha dato riscontro positivo

3.2 BCC-TEST2-FAIL

In questo test viene verificata una nuova Business Configuration non valida secondo lo schema XML:

1. viene controllata la business configuration tramite POST a <http://...:8080/IcaroKB/api/businessConfigurationCheck>
2. verificato che risponda in modo NON positivo

La business configuration inserita e' quella riportata in *9.8 BC-TEST2-FAIL* (mancano dei dati obbligatori)

Il risultato del test e' il seguente:

```
<?xml version="1.0" encoding="UTF-8"?>
<result>
  <code>XML-failed-validation</code>
  <details>XML NOT VALID: line 14 col 64 reason: cvc-complex-type.2.4.a: Invalid
content was found starting with element 'icr:createdBy'. One of
'{"http://www.cloudicaro.it/cloud_ontology/core#":hasContractId}' is
expected.</details>
</result>
```

Il test ha dato riscontro positivo

3.3 BCC-TEST3-OK

In questo test viene verificata una nuova Business Configuration valida:

1. viene controllata la business configuration tramite POST a <http://...:8080/IcaroKB/api/businessConfigurationCheck>



2. verificato che risponda in modo positivo

La business configuration inserita e' riportata in *9.9 BC-TEST3-OK*, contiene una istanza di XLMS con servizi posti su due macchine virtuali.

Il risultato del test e' il seguente:

```
<?xml version="1.0" encoding="UTF-8"?>
<result>
  <code>OK</code>
</result>
```

Il test ha dato riscontro positivo

3.4 BCC-TEST4-FAIL

In questo test viene verificata una nuova Business Configuration valida rispetto allo XML schema ma non valida nel senso che ci sono riferimenti non validi (non esistenti):

1. viene controllata la business configuration tramite POST a <http://...:8080/icaroKB/api/businessConfigurationCheck>
2. verificato che risponda in modo NON positivo e che siano identificati i link non corretti

La business configuration inserita e' riportata in *9.10 BC-TEST4-FAIL*.

Il risultato del test e' il seguente:

```
<?xml version="1.0" encoding="UTF-8"?>
<result>
  <code>failed-validation</code>
  <details>check createdBy: "urn:cloudicaro:BusinessConfiguration:004":
"urn:cloudicaro:User:a" is not an icr:User
check createdBy: "urn:cloudicaro:XLMS:004_001": "urn:cloudicaro:User:c" is not an icr:User
check createdBy: "urn:cloudicaro:XLMSTenant:004_001": "urn:cloudicaro:User:d" is not an
icr:User
check adminsteredBy: "urn:cloudicaro:BusinessConfiguration:004": "urn:cloudicaro:User:b" is
not an icr:User
check IcaroApplication type: "urn:cloudicaro:XLMS:004_001": "app:XML" is not a valid
icr:IcaroApplication type
check IcaroService type: "urn:cloudicaro:ApacheWebServer:004_001": "icr:ApacheWebServerX" is
not an valid IcaroService type
check runsOnVM: "urn:cloudicaro:ApacheWebServer:004_001": "urn:cloudicaro:VirtualMachine:X" is
not a icr:VirtualMachine
check supportsLanguage: "urn:cloudicaro:ApacheWebServer:004_001": "icr:phpX" is not a
icr:DevelopmentLanguage
check isTenantOf: "urn:cloudicaro:XLMSTenant:004_001": "urn:cloudicaro:XLMS:X" is not a
general icr:IcaroApplication
check VM isPartOf HM: "urn:cloudicaro:VirtualMachine:004_001": "urn:cloudicaro:HostMachine:X"
is not a valid icr:HostMachine or icr:HostMachineCluster
check VMT isPartOf HM: "urn:cloudicaro:VirtualMachineTemplate:004_001":
"urn:cloudicaro:HostMachine:XX" is not a valid icr:HostMachine
check BC hasPart: "urn:cloudicaro:BusinessConfiguration:004":
"urn:cloudicaro:VirtualMachine:Y" is not a valid
icr:IcaroApplication,icr:IcaroTenant,icr:VirtualMachine,icr:HostMachine
check VM NetworkAdapter: "urn:cloudicaro:VirtualMachine:004_001":
"urn:cloudicaro:LocalNetwork:X" is not a valid icr:LocalNetwork
check VMT NetworkAdapter: "urn:cloudicaro:VirtualMachineTemplate:004_001":
"urn:cloudicaro:LocalNetwork:XX" is not a valid icr:LocalNetwork
check VMT hasOS: "urn:cloudicaro:VirtualMachineTemplate:004_001": "icr:windowsXP2" is not a
valid icr:OperativeSystem
```



```
check VM hasOS: "urn:cloudicaro:VirtualMachine:004_001": "icr:windowsXP1" is not a valid
icr:OperativeSystem
check isInstanceOf: "urn:cloudicaro:VirtualMachine:004_001":
"urn:cloudicaro:VirtualMachineTemplate:X" is not a valid icr:VirtualMachineTemplate
check VM isStoredOn: "urn:cloudicaro:VirtualMachine:004_001": "urn:cloudicaro:LocalStorage:X"
is not a valid icr:LocalStorage
check ServiceLevelSimpleMetric dependsOn: "urn:icarocloud:ServiceLevelSimpleMetric-843f05fa-
e9f7-44dc-8be6-9fd2b2476c8f": "urn:cloudicaro:ApacheWebServer:XX" is not a valid
icr:IcaroService or icr:IcaroApplication or icr:IcaroTenant
check ServiceLevelSimpleMetric dependsOn: "urn:icarocloud:ServiceLevelSimpleMetric-a2da426d-
73c1-4ec1-95fc-6c2814728039": "urn:cloudicaro:XLMS:XX" is not a valid icr:IcaroService or
icr:IcaroApplication or icr:IcaroTenant
</details>
</result>
```

Il test viene concluso positivamente perché vengono identificati tutti i riferimenti errati.

3.5 BCC-TEST5-FAIL

In questo test viene verificata una nuova Business Configuration valida rispetto allo XML schema, valida rispetto ai riferimenti ma non valida nel senso che ci sono delle mancanze rispetto al tipo di applicazione che la configurazione deve fornire, in particolare sono controllate le dipendenze presenti tra i 'needs' che sono stati dichiarati nella definizione della applicazione in riferimento al numero di istanze di un servizio:

1. viene controllata la business configuration tramite POST a <http://...:8080/icaroKB/api/businessConfigurationCheck>
2. verificato che risponda in modo NON positivo e che siano identificati i problemi presenti

La business configuration inserita e' riportata in *9.11 BC-TEST5-FAIL*.

Il risultato del test e' il seguente:

```
<?xml version="1.0" encoding="UTF-8"?>
<result>
  <code>failed-validation</code>
  <details>check createdBy: "urn:cloudicaro:BusinessConfiguration:005":
"urn:cloudicaro:User:a" is not an icr:User
check createdBy: "urn:cloudicaro:MyXLMS:005_001": "urn:cloudicaro:User:c" is not an icr:User
check administeredBy: "urn:cloudicaro:BusinessConfiguration:005": "urn:cloudicaro:User:b" is
not an icr:User
check IcaroApplication needs minCardinality: Application "urn:cloudicaro:MyXLMS:005_001"
("app:MyXLMS") does not 'needs' min "1" of "icr:ApacheWebServer" (has "0")
check IcaroApplication needs cardinality: Application "urn:cloudicaro:MyXLMS:005_001"
("app:MyXLMS") does not 'needs' exactly "1" of "icr:ApacheTomcat" (has "2")
check IcaroApplication needs cardinality: Application "urn:cloudicaro:MyXLMS:005_001"
("app:MyXLMS") does not 'needs' exactly "1" of "icr:Axcpscheduler" (has "0")
check IcaroApplication needs cardinality: Application "urn:cloudicaro:MyXLMS:005_001"
("app:MyXLMS") does not 'needs' exactly "1" of "icr:MySQL" (has "0")
check IcaroApplication needs maxCardinality: Application "urn:cloudicaro:MyXLMS:005_001"
("app:MyXLMS") 'needs' max "1" of "icr:StorageServer" (has "2")
check IcaroApplication needs someValuesFrom: Application "urn:cloudicaro:MyXLMS:005_001"
("app:MyXLMS") does not 'needs' min 1 of "icr:AxcpsGridNode" (has "0")
</details>
</result>
```

Il test ha esito positivo in quanto tutti i vincoli non soddisfatti sono stati individuati.

3.5 BCC-TEST6-OK

In questo test viene controllata una configurazione contenente una istanza di applicazione Joomla valida:



1. viene controllata la business configuration tramite POST a <http://...:8080/icaroKB/api/businessConfigurationCheck>
2. verificato che risponda in modo positivo

La business configuration inserita e' riportata in *9.12 BC-TEST6-OK*.

La risposta del servizio e' la seguente:

```
<?xml version="1.0" encoding="UTF-8"?>
<result>
  <code>OK</code>
</result>
```

3.6 BCC-TEST7-OK

In questo test viene controllata una configurazione contenente una istanza di applicazione Sharepoint valida:

1. viene controllata la business configuration tramite POST a <http://...:8080/icaroKB/api/businessConfigurationCheck>
2. verificato che risponda in modo positivo

La business configuration inserita e' riportata in *9.13 BC-TEST7-OK*.

La risposta del servizio e' la seguente:

```
<?xml version="1.0" encoding="UTF-8"?>
<result>
  <code>OK</code>
</result>
```

3.7 BCC-TEST8-OK

In questo test viene controllata una configurazione contenente una istanza di tenant di applicazione sharepoint valida:

1. viene controllata la business configuration tramite POST a <http://...:8080/icaroKB/api/businessConfigurationCheck>
2. verificato che risponda in modo positivo

La business configuration inserita e' riportata in *9.14 BC-TEST8-OK*.

La risposta del servizio e' la seguente:

```
<?xml version="1.0" encoding="UTF-8"?>
<result>
  <code>OK</code>
</result>
```

3.8 BCC-TEST9-OK

In questo test viene controllata una configurazione contenente tre macchine virtuali (senza che realizzino una applicazione predefinita):



1. viene controllata la business configuration tramite POST a <http://...:8080/IcaroKB/api/businessConfigurationCheck>
2. verificato che risponda in modo positivo

La business configuration inserita e' riportata in 9.15 BC-TEST9-OK.

La risposta del servizio e' la seguente:

```
<?xml version="1.0" encoding="UTF-8"?>
<result>
  <code>OK</code>
</result>
```

4. Test KB BusinessConfiguration

In questa sezione vengono riportati i test effettuati per la gestione delle business configuration.

4.1 BC-TEST1-OK

In questo test viene controllato tutto il ciclo di vita di una configurazione:

1. viene cancellata la configurazione TEST-001 tramite DELETE a <http://...:8080/IcaroKB/api/businessConfiguration/TEST-001>
2. viene controllato che non ci siano riferimenti alla configurazione sullo RDF Store;
3. viene inserita la configurazione TEST-001 (riportata in 9.5 BC-TEST-1-OK) tramite PUT a <http://...:8080/IcaroKB/api/businessConfiguration/TEST-001>
4. viene controllato che la configurazione sia presente sullo RDF Store;
5. viene aggiornata la configurazione aggiungendo un nodo grid e una macchina virtuale e tolto un tenant (vedi 9.7 BC-TEST1-UPDATE-OK) tramite PUT a <http://...:8080/IcaroKB/api/businessConfiguration/TEST-001>;
6. viene controllato sullo RDF store che il tenant non sia piu' presente e che il nodo grid e la macchina virtuale siano stati aggiunti;
7. viene modificata nuovamente la configurazione con una configurazione non valida (tolto AxcScheduler e aggiunto riferimento a host non esistente, vedi 9.6 BC-TEST1-UPDATE-FAIL) tramite PUT a <http://...:8080/IcaroKB/api/businessConfiguration/TEST-001>
8. viene verificato che l'operazione fallisca e che la configurazione rimanga invariata.

Il test viene eseguito in modo positivo.

Nota: quando la configurazione viene inoltrata al SM per attivare/modificare il monitoring la configurazione viene inserita ma mai aggiornata o cancellata.

4.2 BC-TEST2-FAIL

In questo test viene controllato che se viene inviata una configurazione non valida (rispetto allo schema) questa viene rifiutata.

1. Viene inserita la configurazione tramite PUT a <http://...:8080/IcaroKB/api/businessConfiguration/TEST-002>



2. Viene controllato che l'inserimento fallisca.

La configurazione usata e' la seguente:

```
<?xml version="1.0" encoding="UTF-8"?>
<!DOCTYPE rdf:RDF [
  <!ENTITY owl "http://www.w3.org/2002/07/owl#">
  <!ENTITY xsd "http://www.w3.org/2001/XMLSchema#">
  <!ENTITY rdfs "http://www.w3.org/2000/01/rdf-schema#">
  <!ENTITY rdf "http://www.w3.org/1999/02/22-rdf-syntax-ns#">
  <!ENTITY icr "http://www.cloudicaro.it/cloud_ontology/core#">
  <!ENTITY app "http://www.cloudicaro.it/cloud_ontology/applications#">
]>
<rdf:RDF xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
xmlns:icr="http://www.cloudicaro.it/cloud_ontology/core#"
  <icr:DataCenter rdf:about="urn:cloudicaro:DataCenter:002">
    <icr:hasIdentifier>dc01</icr:hasIdentifier>
    <icr:hasName>data center ICARO</icr:hasName>
    <icr:hasPart rdf:resource="urn:cloudicaro:HostMachine:001"/>
  </icr:DataCenter>
</rdf:RDF>
```

Il test ha esito positivo.

4.3 BC-TEST3-OK

In questo test viene inserita la configurazione corretta (quella controllata da test **BCC-TEST3-OK**).

1. viene cancellata la configurazione TEST-003 tramite DELETE a <http://...:8080/IcaroKB/api/businessConfiguration/TEST-003>;
2. viene controllato che non ci siano riferimenti alla configurazione sullo RDF Store;
3. viene inserita la configurazione TEST-003 (la stessa usata dal test **BCC-TEST3-OK**) tramite PUT a <http://...:8080/IcaroKB/api/businessConfiguration/TEST-003>;
4. viene controllato che la configurazione sia presente sullo RDF Store;

Il test viene eseguito in modo positivo.

4.4 BC-TEST4-FAIL

In questo test viene inserita la configurazione errata (quella controllata da test **BCC-TEST4-FAIL**).

1. viene cancellata la configurazione TEST-004 tramite DELETE a <http://...:8080/IcaroKB/api/businessConfiguration/TEST-004>;
2. viene inserita la configurazione TEST-004 (la stessa usata dal test **BCC-TEST4-FAIL**) tramite PUT a <http://...:8080/IcaroKB/api/businessConfiguration/TEST-004>;
3. viene controllato che l'inserimento fallisca;

Il test viene eseguito in modo positivo.

4.5 BC-TEST5-FAIL

In questo test viene inserita la configurazione errata (quella controllata da test **BCC-TEST5-FAIL**).

1. viene cancellata la configurazione TEST-005 tramite DELETE a <http://...:8080/IcaroKB/api/businessConfiguration/TEST-005>;



- viene inserita la configurazione TEST-005 (la stessa usata dal test **BCC-TEST5-FAIL**) tramite DELETE a <http://...:8080/IcaroKB/api/businessConfiguration/TEST-005>;
- viene controllato che l'inserimento fallisca;

Il test viene eseguito in modo positivo.

4.6 BC-TEST6-OK

In questo test viene inserita la configurazione corretta (quella controllata da test **BCC-TEST6-OK**).

- viene cancellata la configurazione TEST-006 tramite DELETE a <http://...:8080/IcaroKB/api/businessConfiguration/TEST-006>;
- viene controllato che non ci siano riferimenti alla configurazione sullo RDF Store;
- viene inserita la configurazione TEST-006 (la stessa usata dal test **BCC-TEST6-OK**) tramite PUT a <http://...:8080/IcaroKB/api/businessConfiguration/TEST-006>;
- viene controllato che la configurazione sia presente sullo RDF Store;

Il test viene eseguito in modo positivo.

4.7 BC-TEST7-OK

In questo test viene inserita la configurazione corretta (quella controllata da test **BCC-TEST7-OK**).

- viene cancellata la configurazione TEST-007 tramite DELETE a <http://...:8080/IcaroKB/api/businessConfiguration/TEST-007> ;
- viene controllato che non ci siano riferimenti alla configurazione sullo RDF Store;
- viene inserita la configurazione TEST-007 (la stessa usata dal test **BCC-TEST7-OK**) tramite PUT a <http://...:8080/IcaroKB/api/businessConfiguration/TEST-007> ;
- viene controllato che la configurazione sia presente sullo RDF Store;

Il test viene eseguito in modo positivo.

4.8 BC-TEST8-OK

In questo test viene inserita la configurazione corretta (quella controllata da test **BCC-TEST8-OK**).

- viene cancellata la configurazione TEST-008 tramite DELETE a <http://...:8080/IcaroKB/api/businessConfiguration/TEST-008> ;
- viene controllato che non ci siano riferimenti alla configurazione sullo RDF Store;
- viene inserita la configurazione TEST-008 (la stessa usata dal test **BCC-TEST8-OK**) tramite PUT a <http://...:8080/IcaroKB/api/businessConfiguration/TEST-008> ;
- viene controllato che la configurazione sia presente sullo RDF Store;

Il test viene eseguito in modo positivo.

4.9 BC-TEST9-OK

In questo test viene inserita la configurazione corretta (quella controllata da test **BCC-TEST9-OK**).

- viene cancellata la configurazione TEST-009 tramite DELETE a <http://...:8080/IcaroKB/api/businessConfiguration/TEST-009> ;
- viene controllato che non ci siano riferimenti alla configurazione sullo RDF Store;



- viene inserita la configurazione TEST-009 (la stessa usata dal test **BCC-TEST9-OK**) tramite PUT a <http://...:8080/IcaroKB/api/businessConfiguration/TEST-009> ;
- viene controllato che la configurazione sia presente sullo RDF Store;

Il test viene eseguito in modo positivo.

5. Test KB Service Metric

In questa sezione sono riportati i test effettuati al servizio usato per inserire nella KB (da parte del SM) informazioni di uso delle risorse da parte dei servizi/applicazioni in esecuzione.

5.1 SM-TEST1-OK

In questo test viene provato l'inserimento di una nuova istanza di misura di una metrica relativa ad un servizio.

- Vengono contate quante sono le istanze di ServiceMetric presenti nella KB
- Viene inserito tramite POST su <http://...:8080/IcaroKB/api/serviceMetric> il seguente record XML dove a %C viene sostituito il numero di istanze di ServiceMetric piu' uno.

```
<rdf:RDF xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
xmlns:icr="http://www.cloudicaro.it/cloud_ontology/core#">
  <icr:ServiceMetric>
    <icr:atTime rdf:datatype="&xsd;dateTime">2013-01-01T00:00:00</icr:atTime>
    <icr:hasMetricName>xlms:numberOfObjects</icr:hasMetricName>
    <icr:hasMetricValue rdf:datatype="&xsd;decimal">%C</icr:hasMetricValue>
    <icr:dependsOn rdf:resource="urn:cloudicaro:XLMS:001" />
  </icr:ServiceMetric>
</rdf:RDF>
```

- Viene controllato sullo store RDF un ServiceMetric del servizio urn:cloudicaro:XLMS:001 con valore associato a *hasMetricValue* uguale al numero di istanze piu' uno.
- Viene cancellato il record aggiunto agendo direttamente sul rdf store.

Il test ha esito positivo

5.2 SM-TEST2-FAIL

In questo test viene provato l'inserimento di una nuova istanza di misura di una metrica relativa ad un servizio nel caso in cui questa non sia valida e non sia conforme allo XML Schema definito.

- Viene inserito tramite POST su <http://...:8080/IcaroKB/api/serviceMetric> il seguente record XML (in cui manca proprieta' obbligatoria *icr:dependsOn*).

```
<rdf:RDF xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
xmlns:icr="http://www.cloudicaro.it/cloud_ontology/core#">
  <icr:ServiceMetric>
    <icr:atTime rdf:datatype="&xsd;dateTime">2013-01-01T00:00:00</icr:atTime>
    <icr:hasMetricName>xlms:numberOfObjects</icr:hasMetricName>
    <icr:hasMetricValue rdf:datatype="&xsd;decimal">100</icr:hasMetricValue>
  </icr:ServiceMetric>
</rdf:RDF>
```

- Viene controllato che l'inserimento fallisca

Il test ha dato esito positivo



5. Test KB Application Type

In questa sezione sono riportati i test effettuati al servizio usato per inserire nella KB un tipo di applicazione, l'applicazione è definita tramite la sua descrizione OWL in rdf/xml.

5.1 AT-TEST1-OK

In questo test viene provato l'inserimento di una nuova istanza di applicazione di tipo MyXLMs.

1. Viene inserito tramite PUT su <http://...:8080/icaroKB/api/applicationType/myXLMs> la descrizione OWL RDF/XML della applicazione MyXLMs (vedi 9.16 AT-MyXLMs)
2. Viene controllato che la applicazione sia stata aggiunta agendo direttamente sul rdfStore

Il test ha esito positivo

5.2 AT-TEST2-OK

In questo test viene provato l'inserimento di un tipo di applicazione Joomla.

1. Viene inserito tramite PUT su <http://...:8080/icaroKB/api/applicationType/Joomla> la descrizione OWL RDF/XML della applicazione Joomla (vedi 9.17 AT-Joomla)
2. Viene controllato che la applicazione sia stata aggiunta agendo direttamente sul rdfStore

Il test ha esito positivo

5.3 AT-TEST3-OK

In questo test viene provato l'inserimento di un tipo di applicazione XLMs.

1. Viene inserito tramite PUT su <http://...:8080/icaroKB/api/applicationType/XLMs> la descrizione OWL RDF/XML della applicazione XLMs (vedi 9.18 AT-XLMs)
2. Viene controllato che la applicazione sia stata aggiunta agendo direttamente sul rdfStore

Il test ha esito positivo

5.4 AT-TEST4-OK

In questo test viene provato l'inserimento di un tipo di applicazione SharePoint.

1. Viene inserito tramite PUT su <http://...:8080/icaroKB/api/applicationType/SharePoint> la descrizione OWL RDF/XML della applicazione SharePoint (vedi 9.19 AT-SharePoint)
2. Viene controllato che la applicazione sia stata aggiunta agendo direttamente sul rdfStore

Il test ha esito positivo

6. Test KB Sparql Proxy

In questa sezione sono riportati i test effettuati al servizio usato per interrogare la KB tramite un proxy SPARQL.



6.1 SPQL-TEST-GET-OK

Il test effettua una query SPARQL alla URL <http://...:8080/IcaroKB/sparql> con la richiesta passata in GET e verificato che il sistema risponda correttamente.

1. Viene fatta la query “SELECT (count(*) AS ?c) WHERE { ?s a <http://www.cloudicaro.it/cloud_ontology/core#BusinessConfiguration>. }” a <http://...:8080/IcaroKB/sparql> usando le credenziali di accesso in lettura e richiedendo risultati nel formato “application/sparql-results+xml”
2. Viene controllata la risposta

La risposta ricevuta e' la seguente:

```
<?xml version='1.0' encoding='UTF-8'?>
<sparql xmlns='http://www.w3.org/2005/sparql-results#'>
  <head>
    <variable name='c' />
  </head>
  <results>
    <result>
      <binding name='c'>
        <literal datatype='http://www.w3.org/2001/XMLSchema#integer'>3</literal>
      </binding>
    </result>
  </results>
</sparql>
```

Ed e' corretta.

7. Test RDF Store

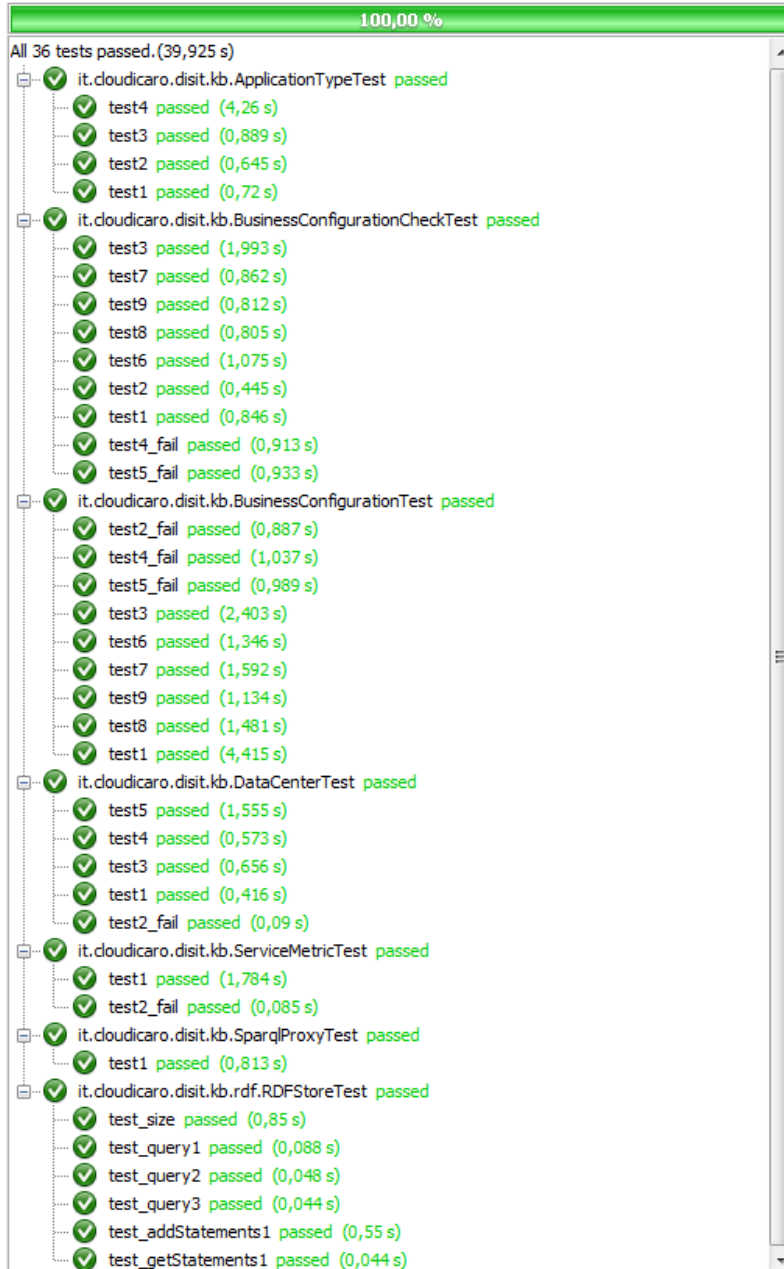
In questa sezione vengono brevemente riportati i test che vengono effettuati sui moduli sviluppati per il collegamento con lo store RDF (OpenRDF Sesame con repository OWLIM-SE).

- **test_size** – per provare l’accesso alla size dello store;
- **test_query1** – per provare l’accesso l’esecuzione della query SPARQL
SELECT (COUNT(*) as ?c) WHERE { ?s ?p ?o }
e il parsing dei risultati
- **test_query2** – per provare l’accesso l’esecuzione della query SPARQL
SELECT * WHERE { ?s ?p ?o } LIMIT 10
e il parsing dei risultati
- **test_query3** – per provare l’accesso l’esecuzione della query SPARQL
SELECT * WHERE {
 GRAPH <urn:cloudicaro:context:BusinessConfiguration:TEST-001> { ?s ?p ?o }
} LIMIT 10
e il parsing dei risultati
- **test_getStatements1** – per provare l’accesso alle triple memorizzate in un GRAPH
- **test_addStatements1** – prova la cancellazione di un grafo, l’inserimento di un RDF/XML in un grafo e la rinominazione di un grafo tramite SPARQL-Update 1.1



8. Riassunto dei test

Nella figura seguente viene riportato l'output di JUnit integrato in NetBeans e mostra che tutti i test sono stati eseguiti correttamente.



9. Dati di usati per i test

Nelle sezioni seguenti sono riportati i dati (DataCenter, BusinessConfiguration) usati nei test

9.1 DC-TEST1

```
<rdf:RDF xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
xmlns:icr="http://www.cloudicaro.it/cloud_ontology/core#">
  <icr:DataCenter rdf:about="urn:cloudicaro:DataCenter:01">
    <icr:hasName>data center ICARO</icr:hasName>
```



```
<icr:hasIdentifier>dc01</icr:hasIdentifier>
<icr:hasPart rdf:resource="urn:cloudicaro:HostMachine:001"/>
</icr:DataCenter>
<icr:HostMachine rdf:about="urn:cloudicaro:HostMachine:001">
  <icr:hasName>host1</icr:hasName>
  <icr:hasIdentifier>host01</icr:hasIdentifier>
  <icr:hasCPUCount rdf:datatype="&xsd;positiveInteger">8</icr:hasCPUCount>
  <icr:hasMemorySize rdf:datatype="&xsd;decimal">16</icr:hasMemorySize>
  <icr:hasLocalStorage>
    <icr:LocalStorage rdf:about="urn:cloudicaro:LocalStorage:HM001:disk1" >
      <icr:hasName>disk1</icr:hasName>
      <icr:hasIdentifier>dsk1</icr:hasIdentifier>
      <icr:hasDiskSize rdf:datatype="&xsd;decimal">1000</icr:hasDiskSize>
    </icr:LocalStorage>
    <icr:LocalStorage rdf:about="urn:cloudicaro:LocalStorage:HM001:disk2" >
      <icr:hasName>disk2</icr:hasName>
      <icr:hasIdentifier>dsk2</icr:hasIdentifier>
      <icr:hasDiskSize rdf:datatype="&xsd;decimal">500</icr:hasDiskSize>
    </icr:LocalStorage>
  </icr:hasLocalStorage>
  <icr:hasNetworkAdapter>
    <icr:NetworkAdapter>
      <icr:hasIPAddress>192.168.1.124</icr:hasIPAddress>
      <icr:boundToNetwork rdf:resource="urn:cloudicaro:LocalNetwork:001"/>
    </icr:NetworkAdapter>
    <icr:NetworkAdapter>
      <icr:hasIPAddress>192.168.0.125</icr:hasIPAddress>
      <icr:boundToNetwork rdf:resource="urn:cloudicaro:LocalNetwork:002"/>
    </icr:NetworkAdapter>
  </icr:hasNetworkAdapter>
  <icr:hasOS rdf:resource="http://www.cloudicaro.it/cloud_ontology/core#linux"/>
  <icr:isPartOf rdf:resource="urn:cloudicaro:DataCenter:01"/>
  <icr:isInDomain>DC01</icr:isInDomain>
  <icr:hasAuthUserName>root</icr:hasAuthUserName>
  <icr:hasAuthUserPassword>xxx</icr:hasAuthUserPassword>
  <icr:hasMonitorInfo>
    <icr:MonitorInfo>
      <icr:hasMetricName>avgCPU%lm</icr:hasMetricName>
      <icr:hasWarningValue rdf:datatype="&xsd;decimal">70</icr:hasWarningValue>
      <icr:hasCriticalValue rdf:datatype="&xsd;decimal">80</icr:hasCriticalValue>
      <icr:hasMaxCheckAttempts
rdf:datatype="&xsd;positiveInteger">5</icr:hasMaxCheckAttempts>
      <icr:hasCheckInterval rdf:datatype="&xsd;positiveInteger">3</icr:hasCheckInterval>
    </icr:MonitorInfo>
  </icr:hasMonitorInfo>
</icr:HostMachine>
</rdf:RDF>
```

9.2 DC-TEST3

```
<rdf:RDF xmlns:app="http://www.cloudicaro.it/cloud_ontology/applications#"
xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
xmlns:icr="http://www.cloudicaro.it/cloud_ontology/core#"
xmlns:foaf="http://xmlns.com/foaf/0.1/">
  <icr:DataCenter rdf:about="urn:cloudicaro:DataCenter:01">
    <icr:hasName>data center ICARO</icr:hasName>
    <icr:hasIdentifier>dc01</icr:hasIdentifier>
    <icr:hasPart rdf:resource="urn:cloudicaro:HostMachine:001"/>
    <icr:hasPart rdf:resource="urn:cloudicaro:HostMachine:002"/>
  </icr:DataCenter>
  <icr:HostMachine rdf:about="urn:cloudicaro:HostMachine:001">
    <icr:hasName>host1</icr:hasName>
    <icr:hasIdentifier>host01</icr:hasIdentifier>
    <icr:hasCPUCount rdf:datatype="&xsd;positiveInteger">8</icr:hasCPUCount>
    <icr:hasMemorySize rdf:datatype="&xsd;decimal">16</icr:hasMemorySize>
    <icr:hasLocalStorage>
      <icr:LocalStorage rdf:about="urn:cloudicaro:LocalStorage:HM001:disk1" >
```



```
<icr:hasName>disk1</icr:hasName>
<icr:hasIdentifier>dsk1</icr:hasIdentifier>
<icr:hasDiskSize rdf:datatype="&xsd:decimal">1000</icr:hasDiskSize>
</icr:LocalStorage>
<icr:LocalStorage rdf:about="urn:cloudicaro:LocalStorage:HM001:disk2" >
  <icr:hasName>disk2</icr:hasName>
  <icr:hasIdentifier>dsk2</icr:hasIdentifier>
  <icr:hasDiskSize rdf:datatype="&xsd:decimal">500</icr:hasDiskSize>
</icr:LocalStorage>
</icr:hasLocalStorage>
<icr:hasNetworkAdapter>
  <icr:NetworkAdapter>
    <icr:hasIPAddress>192.168.1.124</icr:hasIPAddress>
    <icr:boundToNetwork rdf:resource="urn:cloudicaro:LocalNetwork:001"/>
  </icr:NetworkAdapter>
  <icr:NetworkAdapter>
    <icr:hasIPAddress>192.168.0.125</icr:hasIPAddress>
    <icr:boundToNetwork rdf:resource="urn:cloudicaro:LocalNetwork:002"/>
  </icr:NetworkAdapter>
</icr:hasNetworkAdapter>
<icr:hasOS rdf:resource="http://www.cloudicaro.it/cloud_ontology/core#linux"/>
<icr:isPartOf rdf:resource="urn:cloudicaro:DataCenter:01"/>
<icr:isInDomain>DC01</icr:isInDomain>
<icr:hasAuthUserName>root</icr:hasAuthUserName>
<icr:hasAuthUserPassword>xxx</icr:hasAuthUserPassword>
<icr:hasMonitorInfo>
  <icr:MonitorInfo>
    <icr:hasMetricName>avgCPU%1m</icr:hasMetricName>
    <icr:hasWarningValue rdf:datatype="&xsd:decimal">70</icr:hasWarningValue>
    <icr:hasCriticalValue rdf:datatype="&xsd:decimal">80</icr:hasCriticalValue>
    <icr:hasMaxCheckAttempts
rdf:datatype="&xsd:positiveInteger">5</icr:hasMaxCheckAttempts>
    <icr:hasCheckInterval rdf:datatype="&xsd:positiveInteger">3</icr:hasCheckInterval>
  </icr:MonitorInfo>
  <icr:MonitorInfo>
    <icr:hasMetricName>avgMem1m</icr:hasMetricName>
    <icr:hasWarningValue rdf:datatype="&xsd:decimal">70</icr:hasWarningValue>
    <icr:hasCriticalValue rdf:datatype="&xsd:decimal">80</icr:hasCriticalValue>
    <icr:hasMaxCheckAttempts
rdf:datatype="&xsd:positiveInteger">5</icr:hasMaxCheckAttempts>
    <icr:hasCheckInterval rdf:datatype="&xsd:positiveInteger">3</icr:hasCheckInterval>
  </icr:MonitorInfo>
</icr:hasMonitorInfo>
</icr:HostMachine>
<icr:HostMachine rdf:about="urn:cloudicaro:HostMachine:002">
  <icr:hasName>host2</icr:hasName>
  <icr:hasIdentifier>host02</icr:hasIdentifier>
  <icr:hasCPUCount rdf:datatype="&xsd:positiveInteger">8</icr:hasCPUCount>
  <icr:hasMemorySize rdf:datatype="&xsd:decimal">16</icr:hasMemorySize>
  <icr:hasLocalStorage>
    <icr:LocalStorage rdf:about="urn:cloudicaro:LocalStorage:HM002:disk1" >
      <icr:hasName>disk1</icr:hasName>
      <icr:hasIdentifier>dsk1</icr:hasIdentifier>
      <icr:hasDiskSize rdf:datatype="&xsd:decimal">1000</icr:hasDiskSize>
    </icr:LocalStorage>
  </icr:hasLocalStorage>
  <icr:hasNetworkAdapter>
    <icr:NetworkAdapter>
      <icr:hasIPAddress>192.168.1.125</icr:hasIPAddress>
      <icr:boundToNetwork rdf:resource="urn:cloudicaro:LocalNetwork:001"/>
    </icr:NetworkAdapter>
  </icr:hasNetworkAdapter>
  <icr:hasOS rdf:resource="http://www.cloudicaro.it/cloud_ontology/core#linux"/>
  <icr:isPartOf rdf:resource="urn:cloudicaro:DataCenter:01"/>
  <icr:isInDomain>DC01</icr:isInDomain>
  <icr:hasAuthUserName>root</icr:hasAuthUserName>
```



```
<icr:hasAuthUserPassword>xxx</icr:hasAuthUserPassword>
<icr:hasMonitorInfo>
  <icr:MonitorInfo>
    <icr:hasMetricName>avgCPU%lm</icr:hasMetricName>
    <icr:hasWarningValue rdf:datatype="&xsd;decimal">70</icr:hasWarningValue>
    <icr:hasCriticalValue rdf:datatype="&xsd;decimal">80</icr:hasCriticalValue>
    <icr:hasMaxCheckAttempts
rdf:datatype="&xsd;positiveInteger">5</icr:hasMaxCheckAttempts>
    <icr:hasCheckInterval rdf:datatype="&xsd;positiveInteger">3</icr:hasCheckInterval>
  </icr:MonitorInfo>
  <icr:MonitorInfo>
    <icr:hasMetricName>avgMemlm</icr:hasMetricName>
    <icr:hasWarningValue rdf:datatype="&xsd;decimal">70</icr:hasWarningValue>
    <icr:hasCriticalValue rdf:datatype="&xsd;decimal">80</icr:hasCriticalValue>
    <icr:hasMaxCheckAttempts
rdf:datatype="&xsd;positiveInteger">5</icr:hasMaxCheckAttempts>
    <icr:hasCheckInterval rdf:datatype="&xsd;positiveInteger">3</icr:hasCheckInterval>
  </icr:MonitorInfo>
</icr:hasMonitorInfo>
</icr:HostMachine>
<icr:ExternalStorage rdf:about="urn:cloudicaro:ExternalStorage:001">
  <icr:hasName>exstore01</icr:hasName>
  <icr:hasIdentifier>0001111</icr:hasIdentifier>
  <icr:hasPart>
    <icr:SharedStorageVolume rdf:about="urn:cloudicaro:SharedStorageVolume:0001">
      <icr:hasName>Volume 0001</icr:hasName>
      <icr:hasIdentifier>volume1</icr:hasIdentifier>
      <icr:hasDiskSize
rdf:datatype="http://www.w3.org/2001/XMLSchema#decimal">400</icr:hasDiskSize>
    </icr:SharedStorageVolume>
  </icr:hasPart>
  <icr:hasNetworkAdapter>
    <icr:NetworkAdapter>
      <icr:hasIPAddress>192.168.1.100</icr:hasIPAddress>
      <icr:boundToNetwork rdf:resource="urn:cloudicaro:LocalNetwork:001"/>
    </icr:NetworkAdapter>
    <icr:NetworkAdapter>
      <icr:hasIPAddress>192.168.0.101</icr:hasIPAddress>
      <icr:boundToNetwork rdf:resource="urn:cloudicaro:LocalNetwork:001"/>
    </icr:NetworkAdapter>
  </icr:hasNetworkAdapter>
  <icr:hasMonitorInfo>
    <icr:MonitorInfo>
      <icr:hasMetricName>avgCPU%lm</icr:hasMetricName>
      <icr:hasArguments>args</icr:hasArguments>
      <icr:hasWarningValue rdf:datatype="&xsd;decimal">70</icr:hasWarningValue>
      <icr:hasCriticalValue rdf:datatype="&xsd;decimal">80</icr:hasCriticalValue>
      <icr:hasMaxCheckAttempts
rdf:datatype="&xsd;positiveInteger">5</icr:hasMaxCheckAttempts>
      <icr:hasCheckInterval rdf:datatype="&xsd;positiveInteger">3</icr:hasCheckInterval>
    </icr:MonitorInfo>
    <icr:MonitorInfo>
      <icr:hasMetricName>avgMemlm</icr:hasMetricName>
      <icr:hasArguments>args</icr:hasArguments>
      <icr:hasWarningValue rdf:datatype="&xsd;decimal">70</icr:hasWarningValue>
      <icr:hasCriticalValue rdf:datatype="&xsd;decimal">80</icr:hasCriticalValue>
      <icr:hasMaxCheckAttempts
rdf:datatype="&xsd;positiveInteger">5</icr:hasMaxCheckAttempts>
      <icr:hasCheckInterval rdf:datatype="&xsd;positiveInteger">3</icr:hasCheckInterval>
    </icr:MonitorInfo>
  </icr:hasMonitorInfo>
</icr:ExternalStorage>
<icr:ExternalStorage rdf:about="urn:cloudicaro:ExternalStorage:002">
  <icr:hasName>ex02</icr:hasName>
  <icr:hasIdentifier>0001112</icr:hasIdentifier>
  <icr:hasPart>
```



```
<icr:SharedStorageVolume rdf:about="urn:cloudicaro:SharedStorageVolume:0002">
  <icr:hasName>Volume 0002</icr:hasName>
  <icr:hasIdentifier>volume2</icr:hasIdentifier>
  <icr:hasDiskSize
rdf:datatype="http://www.w3.org/2001/XMLSchema#decimal">400</icr:hasDiskSize>
  </icr:SharedStorageVolume>
</icr:hasPart>
<icr:hasNetworkAdapter>
  <icr:NetworkAdapter>
    <icr:hasIPAddress>192.168.1.102</icr:hasIPAddress>
    <icr:boundToNetwork rdf:resource="urn:cloudicaro:LocalNetwork:001"/>
  </icr:NetworkAdapter>
  <icr:NetworkAdapter>
    <icr:hasIPAddress>192.168.0.103</icr:hasIPAddress>
    <icr:boundToNetwork rdf:resource="urn:cloudicaro:LocalNetwork:001"/>
  </icr:NetworkAdapter>
</icr:hasNetworkAdapter>
<icr:hasMonitorInfo>
  <icr:MonitorInfo>
    <icr:hasMetricName>avgCPU%lm</icr:hasMetricName>
    <icr:hasWarningValue rdf:datatype="&xsd;decimal">70</icr:hasWarningValue>
    <icr:hasCriticalValue rdf:datatype="&xsd;decimal">80</icr:hasCriticalValue>
    <icr:hasMaxCheckAttempts
rdf:datatype="&xsd;positiveInteger">5</icr:hasMaxCheckAttempts>
    <icr:hasCheckInterval rdf:datatype="&xsd;positiveInteger">3</icr:hasCheckInterval>
  </icr:MonitorInfo>
  <icr:MonitorInfo>
    <icr:hasMetricName>avgMemlm</icr:hasMetricName>
    <icr:hasWarningValue rdf:datatype="&xsd;decimal">70</icr:hasWarningValue>
    <icr:hasCriticalValue rdf:datatype="&xsd;decimal">80</icr:hasCriticalValue>
    <icr:hasMaxCheckAttempts
rdf:datatype="&xsd;positiveInteger">5</icr:hasMaxCheckAttempts>
    <icr:hasCheckInterval rdf:datatype="&xsd;positiveInteger">3</icr:hasCheckInterval>
  </icr:MonitorInfo>
</icr:hasMonitorInfo>
</icr:ExternalStorage>
<icr:Firewall rdf:about="urn:cloudicaro:Firewall:1">
  <icr:hasName>firewall 1</icr:hasName>
  <icr:hasIdentifier>fwl</icr:hasIdentifier>
  <icr:hasModelName>3COM</icr:hasModelName>
  <icr:hasNetworkAdapter>
    <icr:NetworkAdapter>
      <icr:hasIPAddress>192.168.1.1</icr:hasIPAddress>
      <icr:boundToNetwork rdf:resource="urn:cloudicaro:LocalNetwork:001"/>
    </icr:NetworkAdapter>
    <icr:NetworkAdapter>
      <icr:hasIPAddress>150.217.15.1</icr:hasIPAddress>
      <icr:boundToNetwork rdf:resource="urn:cloudicaro:LocalNetwork:ISP"/>
    </icr:NetworkAdapter>
  </icr:hasNetworkAdapter>
  <icr:hasMonitorInfo>
    <icr:MonitorInfo>
      <icr:hasMetricName>avgCPU%lm</icr:hasMetricName>
      <icr:hasWarningValue rdf:datatype="&xsd;decimal">70</icr:hasWarningValue>
      <icr:hasCriticalValue rdf:datatype="&xsd;decimal">80</icr:hasCriticalValue>
      <icr:hasMaxCheckAttempts
rdf:datatype="&xsd;positiveInteger">5</icr:hasMaxCheckAttempts>
      <icr:hasCheckInterval rdf:datatype="&xsd;positiveInteger">3</icr:hasCheckInterval>
    </icr:MonitorInfo>
    <icr:MonitorInfo>
      <icr:hasMetricName>avgMemlm</icr:hasMetricName>
      <icr:hasWarningValue rdf:datatype="&xsd;decimal">70</icr:hasWarningValue>
      <icr:hasCriticalValue rdf:datatype="&xsd;decimal">80</icr:hasCriticalValue>
      <icr:hasMaxCheckAttempts
rdf:datatype="&xsd;positiveInteger">5</icr:hasMaxCheckAttempts>
      <icr:hasCheckInterval rdf:datatype="&xsd;positiveInteger">3</icr:hasCheckInterval>
```



```
</icr:MonitorInfo>
</icr:hasMonitorInfo>
</icr:Firewall>
<icr:Router rdf:about="urn:cloudicaro:Router:1">
  <icr:hasName>router 1 to 2</icr:hasName>
  <icr:hasIdentifier>rt:01</icr:hasIdentifier>
  <icr:hasModelName>3ROUTE</icr:hasModelName>
  <icr:hasNetworkAdapter>
    <icr:NetworkAdapter>
      <icr:hasIPAddress>192.168.1.2</icr:hasIPAddress>
      <icr:boundToNetwork rdf:resource="urn:cloudicaro:LocalNetwork:001" />
    </icr:NetworkAdapter>
    <icr:NetworkAdapter>
      <icr:hasIPAddress>192.168.0.2</icr:hasIPAddress>
      <icr:boundToNetwork rdf:resource="urn:cloudicaro:LocalNetwork:002" />
    </icr:NetworkAdapter>
  </icr:hasNetworkAdapter>
  <icr:hasMonitorInfo>
    <icr:MonitorInfo>
      <icr:hasMetricName>avgCPU%lm</icr:hasMetricName>
      <icr:hasWarningValue rdf:datatype="&xsd;decimal">70</icr:hasWarningValue>
      <icr:hasCriticalValue rdf:datatype="&xsd;decimal">80</icr:hasCriticalValue>
      <icr:hasMaxCheckAttempts
rdf:datatype="&xsd;positiveInteger">5</icr:hasMaxCheckAttempts>
      <icr:hasCheckInterval rdf:datatype="&xsd;positiveInteger">3</icr:hasCheckInterval>
    </icr:MonitorInfo>
    <icr:MonitorInfo>
      <icr:hasMetricName>avgMemlm</icr:hasMetricName>
      <icr:hasWarningValue rdf:datatype="&xsd;decimal">70</icr:hasWarningValue>
      <icr:hasCriticalValue rdf:datatype="&xsd;decimal">80</icr:hasCriticalValue>
      <icr:hasMaxCheckAttempts
rdf:datatype="&xsd;positiveInteger">5</icr:hasMaxCheckAttempts>
      <icr:hasCheckInterval rdf:datatype="&xsd;positiveInteger">6</icr:hasCheckInterval>
    </icr:MonitorInfo>
  </icr:hasMonitorInfo>
</icr:Router>
<icr:LocalNetwork rdf:about="urn:cloudicaro:LocalNetwork:001">
  <icr:hasName>netw1</icr:hasName>
  <icr:hasIdentifier>net1</icr:hasIdentifier>
</icr:LocalNetwork>
<icr:LocalNetwork rdf:about="urn:cloudicaro:LocalNetwork:002">
  <icr:hasName>network 2</icr:hasName>
  <icr:hasIdentifier>netw2</icr:hasIdentifier>
</icr:LocalNetwork>
</rdf:RDF>
```

9.3 DC-TEST4

```
<rdf:RDF xmlns:app="http://www.cloudicaro.it/cloud_ontology/applications#"
xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
xmlns:icr="http://www.cloudicaro.it/cloud_ontology/core#"
xmlns:foaf="http://xmlns.com/foaf/0.1/" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="http://www.w3.org/1999/02/22-rdf-syntax-ns# schema-icaro-kb-
dataCenter.xsd">
  <icr:DataCenter rdf:about="urn:cloudicaro:DataCenter:TEST-004">
    <icr:hasName>DataCenterDiProvaCheckMode</icr:hasName>
    <icr:hasIdentifier>provaCheckMode</icr:hasIdentifier>
    <icr:hasPart rdf:resource="urn:cloudicaro:HostMachine:TEST-004_01" />
    <icr:hasPart rdf:resource="urn:cloudicaro:HostMachine:TEST-004_02" />
    <icr:hasPart rdf:resource="urn:cloudicaro:HostMachine:TEST-004_03" />
  </icr:DataCenter>
  <icr:HostMachine rdf:about="urn:cloudicaro:HostMachine:TEST-004_01">
    <icr:hasName>Host01</icr:hasName>
    <icr:hasIdentifier>HST01</icr:hasIdentifier>
    <icr:hasCPUCount rdf:datatype="&xsd;positiveInteger">16</icr:hasCPUCount>
    <icr:hasMemorySize rdf:datatype="&xsd;decimal">24</icr:hasMemorySize>
    <icr:hasLocalStorage>
```




```
<icr:LocalStorage rdf:about="urn:cloudicaro:LocalStorage:HMTTest004-1:disk1" >
  <icr:hasName>disk1</icr:hasName>
  <icr:hasIdentifier>dsk1</icr:hasIdentifier>
  <icr:hasDiskSize rdf:datatype="&xsd;decimal">3000</icr:hasDiskSize>
</icr:LocalStorage>
<icr:LocalStorage rdf:about="urn:cloudicaro:LocalStorage:HMTTest004-1:disk2" >
  <icr:hasName>disk2</icr:hasName>
  <icr:hasIdentifier>dsk2</icr:hasIdentifier>
  <icr:hasDiskSize rdf:datatype="&xsd;decimal">4000</icr:hasDiskSize>
</icr:LocalStorage>
<icr:LocalStorage rdf:about="urn:cloudicaro:LocalStorage:HMTTest004-1:disk3" >
  <icr:hasName>disk3</icr:hasName>
  <icr:hasIdentifier>dsk3</icr:hasIdentifier>
  <icr:hasDiskSize rdf:datatype="&xsd;decimal">5000</icr:hasDiskSize>
</icr:LocalStorage>
</icr:hasLocalStorage>
<icr:hasNetworkAdapter>
  <icr:NetworkAdapter>
    <icr:hasIPAddress>192.168.0.1</icr:hasIPAddress>
    <icr:boundToNetwork rdf:resource="urn:cloudicaro:LocalNetwork:LocNetPro"/>
  </icr:NetworkAdapter>
</icr:hasNetworkAdapter>
<icr:hasOS rdf:resource="http://www.cloudicaro.it/cloud_ontology/core#ubuntu"/>
<icr:isPartOf rdf:resource="urn:cloudicaro:DataCenter:TEST-004"/>
<icr:hasCapacity rdf:datatype="&xsd;decimal">12</icr:hasCapacity>
<icr:isInDomain>DC01</icr:isInDomain>
<icr:hasAuthUserName>root</icr:hasAuthUserName>
<icr:hasAuthUserPassword>xxxx</icr:hasAuthUserPassword>
<icr:hasMonitorInfo>
  <icr:MonitorInfo>
    <icr:hasMetricName>avgCPU</icr:hasMetricName>
    <icr:hasArguments>nessuno</icr:hasArguments>
    <icr:hasWarningValue rdf:datatype="&xsd;decimal">85</icr:hasWarningValue>
    <icr:hasCriticalValue rdf:datatype="&xsd;decimal">75</icr:hasCriticalValue>
    <icr:hasMonitorState>enabled</icr:hasMonitorState>
    <icr:hasMaxCheckAttempts
rdf:datatype="&xsd;positiveInteger">80</icr:hasMaxCheckAttempts>
    <icr:hasCheckInterval rdf:datatype="&xsd;positiveInteger">23</icr:hasCheckInterval>
    <icr:hasCheckMode>passive</icr:hasCheckMode>
  </icr:MonitorInfo>
</icr:hasMonitorInfo>
  <icr:hasMonitorState>enabled</icr:hasMonitorState>
</icr:HostMachine>
<icr:HostMachine rdf:about="urn:cloudicaro:HostMachine:TEST-004_02">
  <icr:hasName>Host02</icr:hasName>
  <icr:hasIdentifier>HST02</icr:hasIdentifier>
  <icr:hasCPUCount rdf:datatype="&xsd;positiveInteger">16</icr:hasCPUCount>
  <icr:hasMemorySize rdf:datatype="&xsd;decimal">24</icr:hasMemorySize>
  <icr:hasLocalStorage>
    <icr:LocalStorage rdf:about="urn:cloudicaro:LocalStorage:HMTTest004-2:disk1" >
      <icr:hasName>disk1</icr:hasName>
      <icr:hasIdentifier>dsk1</icr:hasIdentifier>
      <icr:hasDiskSize rdf:datatype="&xsd;decimal">3000</icr:hasDiskSize>
    </icr:LocalStorage>
    <icr:LocalStorage rdf:about="urn:cloudicaro:LocalStorage:HMTTest004-2:disk2" >
      <icr:hasName>disk2</icr:hasName>
      <icr:hasIdentifier>dsk2</icr:hasIdentifier>
      <icr:hasDiskSize rdf:datatype="&xsd;decimal">4000</icr:hasDiskSize>
    </icr:LocalStorage>
    <icr:LocalStorage rdf:about="urn:cloudicaro:LocalStorage:HMTTest004-2:disk3" >
      <icr:hasName>disk3</icr:hasName>
      <icr:hasIdentifier>dsk3</icr:hasIdentifier>
      <icr:hasDiskSize rdf:datatype="&xsd;decimal">5000</icr:hasDiskSize>
    </icr:LocalStorage>
  </icr:hasLocalStorage>
  <icr:hasNetworkAdapter>
```




```
<icr:NetworkAdapter>
  <icr:hasIPAddress>192.168.0.2</icr:hasIPAddress>
  <icr:boundToNetwork rdf:resource="urn:cloudicaro:LocalNetwork:LocNetPro" />
</icr:NetworkAdapter>
</icr:hasNetworkAdapter>
<icr:hasOS rdf:resource="http://www.cloudicaro.it/cloud_ontology/core#ubuntu" />
<icr:isPartOf rdf:resource="urn:cloudicaro:DataCenter:TEST-004" />
<icr:hasCapacity rdf:datatype="&xsd;decimal">12</icr:hasCapacity>
<icr:isInDomain>DC01</icr:isInDomain>
<icr:hasAuthUserName>root</icr:hasAuthUserName>
<icr:hasAuthUserPassword>xxxx</icr:hasAuthUserPassword>
<icr:hasMonitorInfo>
  <icr:MonitorInfo>
    <icr:hasMetricName>avgCPU</icr:hasMetricName>
    <icr:hasArguments>nessuno</icr:hasArguments>
    <icr:hasWarningValue rdf:datatype="&xsd;decimal">85</icr:hasWarningValue>
    <icr:hasCriticalValue rdf:datatype="&xsd;decimal">75</icr:hasCriticalValue>
    <icr:hasMonitorState>enabled</icr:hasMonitorState>
    <icr:hasMaxCheckAttempts
rdf:datatype="&xsd;positiveInteger">80</icr:hasMaxCheckAttempts>
    <icr:hasCheckInterval rdf:datatype="&xsd;positiveInteger">23</icr:hasCheckInterval>
    <icr:hasCheckMode>passive</icr:hasCheckMode>
  </icr:MonitorInfo>
</icr:hasMonitorInfo>
<icr:hasMonitorState>enabled</icr:hasMonitorState>
</icr:HostMachine>
<icr:HostMachine rdf:about="urn:cloudicaro:HostMachine:TEST-004_03">
  <icr:hasName>Host03</icr:hasName>
  <icr:hasIdentifier>HST03</icr:hasIdentifier>
  <icr:hasCPUCount rdf:datatype="&xsd;positiveInteger">16</icr:hasCPUCount>
  <icr:hasMemorySize rdf:datatype="&xsd;decimal">24</icr:hasMemorySize>
  <icr:hasLocalStorage>
    <icr:LocalStorage rdf:about="urn:cloudicaro:LocalStorage:HMTTest004-3:disk1" >
      <icr:hasName>disk1</icr:hasName>
      <icr:hasIdentifier>dsk1</icr:hasIdentifier>
      <icr:hasDiskSize rdf:datatype="&xsd;decimal">3000</icr:hasDiskSize>
    </icr:LocalStorage>
    <icr:LocalStorage rdf:about="urn:cloudicaro:LocalStorage:HMTTest004-3:disk2" >
      <icr:hasName>disk2</icr:hasName>
      <icr:hasIdentifier>dsk2</icr:hasIdentifier>
      <icr:hasDiskSize rdf:datatype="&xsd;decimal">4000</icr:hasDiskSize>
    </icr:LocalStorage>
    <icr:LocalStorage rdf:about="urn:cloudicaro:LocalStorage:HMTTest004-3:disk3" >
      <icr:hasName>disk3</icr:hasName>
      <icr:hasIdentifier>dsk3</icr:hasIdentifier>
      <icr:hasDiskSize rdf:datatype="&xsd;decimal">5000</icr:hasDiskSize>
    </icr:LocalStorage>
  </icr:hasLocalStorage>
  <icr:hasNetworkAdapter>
    <icr:NetworkAdapter>
      <icr:hasIPAddress>192.168.0.3</icr:hasIPAddress>
      <icr:boundToNetwork rdf:resource="urn:cloudicaro:LocalNetwork:LocNetPro" />
    </icr:NetworkAdapter>
  </icr:hasNetworkAdapter>
  <icr:hasOS rdf:resource="http://www.cloudicaro.it/cloud_ontology/core#ubuntu" />
  <icr:isPartOf rdf:resource="urn:cloudicaro:DataCenter:TEST-004" />
  <icr:hasCapacity rdf:datatype="&xsd;decimal">12</icr:hasCapacity>
  <icr:isInDomain>DC01</icr:isInDomain>
  <icr:hasAuthUserName>root</icr:hasAuthUserName>
  <icr:hasAuthUserPassword>xxxx</icr:hasAuthUserPassword>
  <icr:hasMonitorInfo>
    <icr:MonitorInfo>
      <icr:hasMetricName>avgCPU</icr:hasMetricName>
      <icr:hasArguments>nessuno</icr:hasArguments>
      <icr:hasWarningValue rdf:datatype="&xsd;decimal">85</icr:hasWarningValue>
      <icr:hasCriticalValue rdf:datatype="&xsd;decimal">75</icr:hasCriticalValue>
```



```
    <icr:hasMonitorState>enabled</icr:hasMonitorState>
    <icr:hasMaxCheckAttempts
rdf:datatype="&xsd;positiveInteger">80</icr:hasMaxCheckAttempts>
    <icr:hasCheckInterval rdf:datatype="&xsd;positiveInteger">23</icr:hasCheckInterval>
    <icr:hasCheckMode>passive</icr:hasCheckMode>
  </icr:MonitorInfo>
</icr:hasMonitorInfo>
  <icr:hasMonitorState>enabled</icr:hasMonitorState>
</icr:HostMachine>
<icr:LocalNetwork rdf:about="urn:cloudicaro:LocalNetwork:LocNetPro">
  <icr:hasName>LocalNetworkProva</icr:hasName>
  <icr:hasIdentifier>LNP</icr:hasIdentifier>
</icr:LocalNetwork>
</rdf:RDF>
```

9.4 DC-TEST5

```
<rdf:RDF xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
xmlns:icr="http://www.cloudicaro.it/cloud_ontology/core#"
xmlns:foaf="http://xmlns.com/foaf/0.1/" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="http://www.w3.org/1999/02/22-rdf-syntax-ns#
schema-icaro-kb-dataCenter.xsd">
  <icr:DataCenter rdf:about="urn:cloudicaro:DataCenter:cgi:dev">
    <icr:hasName>data center CGI development</icr:hasName>
    <icr:hasIdentifier>DC:cgi-dev</icr:hasIdentifier>
    <icr:hasPart rdf:resource="urn:cloudicaro:HostMachineCluster:cgi:DEV"/>
  </icr:DataCenter>
  <icr:HostMachine rdf:about="urn:cloudicaro:HostMachine:cgi:23">
    <icr:hasName>host 10.254.100.23, UCSB-B200-M3, Cisco Systems Inc.</icr:hasName>
    <icr:hasIdentifier>HM:cgi-23</icr:hasIdentifier>
    <icr:hasCPUCount rdf:datatype="&xsd;positiveInteger">16</icr:hasCPUCount>
    <icr:hasMemorySize rdf:datatype="&xsd;decimal">131</icr:hasMemorySize>
    <icr:hasLocalStorage>
      <icr:LocalStorage rdf:about="urn:cloudicaro:LocalStorage:node03boot">
        <icr:hasName>node03boot</icr:hasName>
        <icr:hasIdentifier>node03boot</icr:hasIdentifier>
        <icr:hasDiskSize
rdf:datatype="http://www.w3.org/2001/XMLSchema#decimal">1.25</icr:hasDiskSize>
      </icr:LocalStorage>
    </icr:hasLocalStorage>
    <icr:useSharedStorage rdf:resource="urn:cloudicaro:SharedStorageVolume:cgi:2240-10-NFS-SHAREPOINT" />
    <icr:useSharedStorage rdf:resource="urn:cloudicaro:SharedStorageVolume:cgi:2240-11-NFS-UNIFI" />
    <icr:useSharedStorage rdf:resource="urn:cloudicaro:SharedStorageVolume:cgi:2240-13-NFS-DEMO" />
    <icr:useSharedStorage rdf:resource="urn:cloudicaro:SharedStorageVolume:cgi:2240-5-NFS-FARMS" />
    <icr:useSharedStorage rdf:resource="urn:cloudicaro:SharedStorageVolume:cgi:2240-7-NFS-ISO" />
    <icr:useSharedStorage rdf:resource="urn:cloudicaro:SharedStorageVolume:cgi:2240-8-NFS-COMMON" />
    <icr:hasNetworkAdapter>
      <icr:NetworkAdapter>
        <icr:hasIPAddress>10.254.100.23</icr:hasIPAddress>
        <icr:boundToNetwork rdf:resource="urn:cloudicaro:LocalNetwork:cgi:internal"/>
      </icr:NetworkAdapter>
    </icr:hasNetworkAdapter>
    <icr:hasOS rdf:resource="http://www.cloudicaro.it/cloud_ontology/core#vmware_esxi"/>
    <icr:isPartOf rdf:resource="urn:cloudicaro:HostMachineCluster:cgi:DEV"/>
  </icr:HostMachine>
  <icr:HostMachine rdf:about="urn:cloudicaro:HostMachine:cgi:24">
    <icr:hasName>host 10.254.100.24, UCSB-B200-M3, Cisco Systems Inc.</icr:hasName>
    <icr:hasIdentifier>HM:cgi-24</icr:hasIdentifier>
    <icr:hasCPUCount rdf:datatype="&xsd;positiveInteger">16</icr:hasCPUCount>
    <icr:hasMemorySize rdf:datatype="&xsd;decimal">131</icr:hasMemorySize>
    <icr:hasLocalStorage>
```



```
<icr:LocalStorage rdf:about="urn:cloudicaro:LocalStorage:cgi:node04boot">
  <icr:hasName>node04boot</icr:hasName>
  <icr:hasIdentifier>node04boot</icr:hasIdentifier>
  <icr:hasDiskSize
rdf:datatype="http://www.w3.org/2001/XMLSchema#decimal">1.25</icr:hasDiskSize>
</icr:LocalStorage>
</icr:hasLocalStorage>
<icr:useSharedStorage rdf:resource="urn:cloudicaro:SharedStorageVolume:cgi:2240-10-NFS-
SHAREPOINT" />
<icr:useSharedStorage rdf:resource="urn:cloudicaro:SharedStorageVolume:cgi:2240-11-NFS-
UNIFI" />
<icr:useSharedStorage rdf:resource="urn:cloudicaro:SharedStorageVolume:cgi:2240-13-NFS-
DEMO" />
<icr:useSharedStorage rdf:resource="urn:cloudicaro:SharedStorageVolume:cgi:2240-5-NFS-
FARMS" />
<icr:useSharedStorage rdf:resource="urn:cloudicaro:SharedStorageVolume:cgi:2240-7-NFS-ISO"
/>
<icr:useSharedStorage rdf:resource="urn:cloudicaro:SharedStorageVolume:cgi:2240-8-NFS-
COMMON" />
<icr:hasNetworkAdapter>
<icr:NetworkAdapter>
  <icr:hasIPAddress>10.254.100.24</icr:hasIPAddress>
  <icr:boundToNetwork rdf:resource="urn:cloudicaro:LocalNetwork:cgi:internal" />
</icr:NetworkAdapter>
</icr:hasNetworkAdapter>
<icr:hasOS rdf:resource="http://www.cloudicaro.it/cloud_ontology/core#vmware_esxi" />
<icr:isPartOf rdf:resource="urn:cloudicaro:HostMachineCluster:cgi:DEV" />
</icr:HostMachine>
<icr:HostMachineCluster rdf:about="urn:cloudicaro:HostMachineCluster:cgi:DEV">
  <icr:hasName>DEV</icr:hasName>
  <icr:hasIdentifier>DEV</icr:hasIdentifier>
  <icr:isPartOf rdf:resource="urn:cloudicaro:DataCenter:cgi:dev" />
</icr:HostMachineCluster>
<icr:ExternalStorage rdf:about="urn:cloudicaro:ExternalStorage:cgi:SAN-31">
  <icr:hasName>SAN storage 31</icr:hasName>
  <icr:hasIdentifier>SAN-31</icr:hasIdentifier>
  <icr:hasPart>
    <icr:SharedStorageVolume rdf:about="urn:cloudicaro:SharedStorageVolume:cgi:2240-11-NFS-
UNIFI">
      <icr:hasName>2240-11-NFS-UNIFI</icr:hasName>
      <icr:hasIdentifier>2240-11-NFS-UNIFI</icr:hasIdentifier>
      <icr:hasDiskSize
rdf:datatype="http://www.w3.org/2001/XMLSchema#decimal">300</icr:hasDiskSize>
    </icr:SharedStorageVolume>
    <icr:SharedStorageVolume rdf:about="urn:cloudicaro:SharedStorageVolume:cgi:2240-13-NFS-
DEMO">
      <icr:hasName>2240-13-NFS-DEMO</icr:hasName>
      <icr:hasIdentifier>2240-13-NFS-DEMO</icr:hasIdentifier>
      <icr:hasDiskSize
rdf:datatype="http://www.w3.org/2001/XMLSchema#decimal">100</icr:hasDiskSize>
    </icr:SharedStorageVolume>
    <icr:SharedStorageVolume rdf:about="urn:cloudicaro:SharedStorageVolume:cgi:2240-5-NFS-
FARMS">
      <icr:hasName>2240-5-NFS-FARMS</icr:hasName>
      <icr:hasIdentifier>2240-5-NFS-FARMS</icr:hasIdentifier>
      <icr:hasDiskSize
rdf:datatype="http://www.w3.org/2001/XMLSchema#decimal">300</icr:hasDiskSize>
    </icr:SharedStorageVolume>
    <icr:SharedStorageVolume rdf:about="urn:cloudicaro:SharedStorageVolume:cgi:2240-7-NFS-
ISO">
      <icr:hasName>2240-7-NFS-ISO</icr:hasName>
      <icr:hasIdentifier>2240-7-NFS-ISO</icr:hasIdentifier>
      <icr:hasDiskSize
rdf:datatype="http://www.w3.org/2001/XMLSchema#decimal">300</icr:hasDiskSize>
    </icr:SharedStorageVolume>
  </icr:hasPart>

```



```
<icr:hasNetworkAdapter>
  <icr:NetworkAdapter>
    <icr:hasIPAddress>10.254.102.31</icr:hasIPAddress>
    <icr:boundToNetwork rdf:resource="urn:cloudicaro:LocalNetwork:cgi:san" />
  </icr:NetworkAdapter>
</icr:hasNetworkAdapter>
</icr:ExternalStorage>
<icr:ExternalStorage rdf:about="urn:cloudicaro:ExternalStorage:cgi:SAN-33">
  <icr:hasName>SAN storage 33</icr:hasName>
  <icr:hasIdentifier>SAN-33</icr:hasIdentifier>
  <icr:hasPart>
    <icr:SharedStorageVolume rdf:about="urn:cloudicaro:SharedStorageVolume:cgi:2240-10-NFS-SHAREPOINT">
      <icr:hasName>2240-10-NFS-SHAREPOINT</icr:hasName>
      <icr:hasIdentifier>2240-10-NFS-SHAREPOINT</icr:hasIdentifier>
      <icr:hasDiskSize
rdf:datatype="http://www.w3.org/2001/XMLSchema#decimal">400</icr:hasDiskSize>
    </icr:SharedStorageVolume>
    <icr:SharedStorageVolume rdf:about="urn:cloudicaro:SharedStorageVolume:cgi:2240-8-NFS-COMMON">
      <icr:hasName>2240-8-NFS-COMMON</icr:hasName>
      <icr:hasIdentifier>2240-8-NFS-COMMON</icr:hasIdentifier>
      <icr:hasDiskSize
rdf:datatype="http://www.w3.org/2001/XMLSchema#decimal">2048</icr:hasDiskSize>
    </icr:SharedStorageVolume>
  </icr:hasPart>
<icr:hasNetworkAdapter>
  <icr:NetworkAdapter>
    <icr:hasIPAddress>10.254.102.33</icr:hasIPAddress>
    <icr:boundToNetwork rdf:resource="urn:cloudicaro:LocalNetwork:cgi:san" />
  </icr:NetworkAdapter>
</icr:hasNetworkAdapter>
</icr:ExternalStorage>
<icr:LocalNetwork rdf:about="urn:cloudicaro:LocalNetwork:cgi:internal">
  <icr:hasName>LAN internal</icr:hasName>
  <icr:hasIdentifier>LN:cg-internal</icr:hasIdentifier>
  <icr:hasSubNetworkMask>255.255.255.0</icr:hasSubNetworkMask>
  <icr:hasIPAddress>10.254.100.0</icr:hasIPAddress>
</icr:LocalNetwork>
<icr:LocalNetwork rdf:about="urn:cloudicaro:LocalNetwork:cgi:san">
  <icr:hasName>LAN SAN</icr:hasName>
  <icr:hasIdentifier>LN:cgi-san</icr:hasIdentifier>
  <icr:hasSubNetworkMask>255.255.255.0</icr:hasSubNetworkMask>
  <icr:hasIPAddress>10.254.102.0</icr:hasIPAddress>
</icr:LocalNetwork>
<icr:LocalNetwork rdf:about="urn:cloudicaro:LocalNetwork:cgi:dev">
  <icr:hasName>LAN ICARO development</icr:hasName>
  <icr:hasIdentifier>LN:icaro-dev</icr:hasIdentifier>
  <icr:hasSubNetworkMask>255.255.255.0</icr:hasSubNetworkMask>
  <icr:hasIPAddress>10.254.101.0</icr:hasIPAddress>
</icr:LocalNetwork>
</rdf:RDF>
```

9.5 BC-TEST1-OK

```
<rdf:RDF xmlns:app="http://www.cloudicaro.it/cloud_ontology/applications#"
xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
xmlns:icr="http://www.cloudicaro.it/cloud_ontology/core#"
xmlns:foaf="http://xmlns.com/foaf/0.1/">
  <icr:BusinessConfiguration rdf:about="urn:cloudicaro:BusinessConfiguration:TEST-001">
    <icr:hasName>My Configuration</icr:hasName>
    <icr:hasIdentifier>TEST-001</icr:hasIdentifier>
    <icr:hasContractId>c001</icr:hasContractId>
    <icr:createdBy rdf:resource="urn:cloudicaro:User:xyz"/>
    <icr:hasPart>
      <icr:IcaroApplication rdf:about="urn:cloudicaro:XLMS:001_002">
        <rdf:type rdf:resource="&app;XLMS"/>

```



```
<icr:hasName>My ECLAP</icr:hasName>
<icr:hasIdentifier>xlms:001</icr:hasIdentifier>
<icr:createdBy rdf:resource="urn:cloudicaro:User:xyz" />
<icr:needs>
  <icr:IcaroService rdf:about="urn:cloudicaro:ApacheWebServer:001_002">
    <rdf:type rdf:resource="&icr;ApacheWebServer" />
    <icr:hasName>Apache Web Server 001</icr:hasName>
    <icr:hasIdentifier>AWS:001</icr:hasIdentifier>
    <icr:runsOnVM rdf:resource="urn:cloudicaro:VirtualMachine:001_003" />
    <icr:supportsLanguage rdf:resource="&icr;php" />
    <icr:usesTcpPort rdf:datatype="&xsd;unsignedShort">80</icr:usesTcpPort>
    <icr:hasMonitorInfo>
      <icr:MonitorInfo>
        <icr:hasMetricName>checkHttp</icr:hasMetricName>
      </icr:MonitorInfo>
    </icr:IcaroService>
  <icr:IcaroService rdf:about="urn:cloudicaro:Tomcat:001_001">
    <rdf:type rdf:resource="&icr;ApacheTomcat" />
    <icr:hasName>Apache Tomcat</icr:hasName>
    <icr:hasIdentifier>AT:001</icr:hasIdentifier>
    <icr:runsOnVM rdf:resource="urn:cloudicaro:VirtualMachine:001_003" />
    <icr:usesTcpPort rdf:datatype="&xsd;unsignedShort">8080</icr:usesTcpPort>
    <icr:hasMonitorInfo>
      <icr:MonitorInfo>
        <icr:hasMetricName>checkHttp</icr:hasMetricName>
        <icr:hasArguments>url:"http://www.eclap.eu:8080/xmf-admin",contains:"ECLAP"</icr:hasArguments>
      </icr:MonitorInfo>
    </icr:IcaroService>
  <icr:IcaroService rdf:about="urn:cloudicaro:MySQL:001_001">
    <rdf:type rdf:resource="&icr;MySQL" />
    <icr:hasName>MySQL</icr:hasName>
    <icr:hasIdentifier>MSQL:001</icr:hasIdentifier>
    <icr:runsOnVM rdf:resource="urn:cloudicaro:VirtualMachine:001_003" />
    <icr:usesTcpPort rdf:datatype="&xsd;unsignedShort">3306</icr:usesTcpPort>
  </icr:IcaroService>
  <icr:IcaroService rdf:about="urn:cloudicaro:AxcpScheduler:001_001">
    <rdf:type rdf:resource="&icr;AxcpScheduler" />
    <icr:hasName>AXCP Scheduler</icr:hasName>
    <icr:hasIdentifier>AXCPS:001</icr:hasIdentifier>
    <icr:runsOnVM rdf:resource="urn:cloudicaro:VirtualMachine:001_003" />
    <icr:usesTcpPort rdf:datatype="&xsd;unsignedShort">9000</icr:usesTcpPort>
  </icr:IcaroService>
  <icr:IcaroService rdf:about="urn:cloudicaro:AxcpGridNode:001_001">
    <rdf:type rdf:resource="&icr;AxcpGridNode" />
    <icr:hasName>AXCPN:001</icr:hasName>
    <icr:hasIdentifier>axcpn:001</icr:hasIdentifier>
    <icr:runsOnVM rdf:resource="urn:cloudicaro:VirtualMachine:001_003" />
    <icr:usesTcpPort rdf:datatype="&xsd;unsignedShort">9100</icr:usesTcpPort>
  </icr:IcaroService>
</icr:needs>
</icr:IcaroApplication>
<icr:IcaroTenant rdf:about="urn:cloudicaro:XMLSTenant:001_001">
  <icr:hasName>XMLSTenant</icr:hasName>
  <icr:hasIdentifier>001</icr:hasIdentifier>
```



```
    <icr:isTenantOf rdf:resource="urn:cloudicaro:XLMS:001_002" />
    <icr:createdBy rdf:resource="urn:cloudicaro:User:xyz" />
  </icr:IcaroTenant>
</icr:hasPart>
</icr:BusinessConfiguration>
<icr:VirtualMachine rdf:about="urn:cloudicaro:VirtualMachine:001_003">
  <icr:hasName>VM001</icr:hasName>
  <icr:hasIdentifier>vm001</icr:hasIdentifier>
  <icr:hasCPUCount rdf:datatype="&xsd;positiveInteger">2</icr:hasCPUCount>
  <icr:hasMemorySize rdf:datatype="&xsd;decimal">2</icr:hasMemorySize>
  <icr:hasVirtualStorage>
    <icr:VirtualStorage rdf:about="urn:cloudicaro:LocalStorage:VM001_003:disk1" >
      <icr:hasName>disk1</icr:hasName>
      <icr:hasIdentifier>dsk1</icr:hasIdentifier>
      <icr:hasDiskSize rdf:datatype="&xsd;decimal">20</icr:hasDiskSize>
    </icr:VirtualStorage>
  </icr:hasVirtualStorage>
  <icr:hasNetworkAdapter>
    <icr:NetworkAdapter>
      <icr:hasIPAddress>192.168.1.23</icr:hasIPAddress>
      <icr:boundToNetwork rdf:resource="urn:cloudicaro:LocalNetwork:001" />
    </icr:NetworkAdapter>
  </icr:hasNetworkAdapter>
  <icr:hasOS rdf:resource="http://www.cloudicaro.it/cloud_ontology/core#windowsXP"/>
  <icr:isPartOf rdf:resource="urn:cloudicaro:HostMachine:001"/>
  <icr:isStoredOn rdf:resource="urn:cloudicaro:LocalStorage:HM001:disk1" />
  <icr:hasMonitorInfo>
    <icr:MonitorInfo>
      <icr:hasMetricName>avgCPU%lm</icr:hasMetricName>
      <icr:hasWarningValue rdf:datatype="&xsd;decimal">70</icr:hasWarningValue>
      <icr:hasCriticalValue rdf:datatype="&xsd;decimal">80</icr:hasCriticalValue>
      <icr:hasMaxCheckAttempts
rdf:datatype="&xsd;positiveInteger">5</icr:hasMaxCheckAttempts>
      <icr:hasCheckInterval rdf:datatype="&xsd;positiveInteger">3</icr:hasCheckInterval>
    </icr:MonitorInfo>
  </icr:hasMonitorInfo>
</icr:VirtualMachine>
<icr:User rdf:about="urn:cloudicaro:User:xyz">
  <foaf:name>Mr. Xyz</foaf:name>
  <foaf:mbox>xyz@gmail.com</foaf:mbox>
</icr:User>
</rdf:RDF>
```

9.6 BC-TEST1-UPDATE-FAIL

```
<rdf:RDF xmlns:app="http://www.cloudicaro.it/cloud_ontology/applications#"
xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
xmlns:icr="http://www.cloudicaro.it/cloud_ontology/core#"
xmlns:foaf="http://xmlns.com/foaf/0.1/">
  <icr:BusinessConfiguration rdf:about="urn:cloudicaro:BusinessConfiguration:TEST-001">
    <icr:hasName>My Configuration</icr:hasName>
    <icr:hasIdentifier>TEST-001</icr:hasIdentifier>
    <icr:hasContractId>C001</icr:hasContractId>
    <icr:createdBy rdf:resource="urn:cloudicaro:User:xyz" />
    <icr:hasPart>
      <icr:IcaroApplication rdf:about="urn:cloudicaro:XLMS:001_002">
        <rdf:type rdf:resource="&app;XLMS" />
        <icr:hasName>My ECLAP</icr:hasName>
        <icr:hasIdentifier>xlms:001</icr:hasIdentifier>
        <icr:createdBy rdf:resource="urn:cloudicaro:User:xyz" />
        <icr:needs>
          <icr:IcaroService rdf:about="urn:cloudicaro:ApacheWebServer:001_002">
            <rdf:type rdf:resource="&icr;ApacheWebServer" />
            <icr:hasName>Apache Web Server 001</icr:hasName>
            <icr:hasIdentifier>AWS:001</icr:hasIdentifier>
            <icr:runsOnVM rdf:resource="urn:cloudicaro:VirtualMachine:001_003" />
            <icr:supportsLanguage rdf:resource="&icr;php" />
          </icr:IcaroService>
        </icr:needs>
      </icr:IcaroApplication>
    </icr:hasPart>
  </icr:BusinessConfiguration>
</rdf:RDF>
```




```
<icr:usesTcpPort rdf:datatype="&xsd;unsignedShort">80</icr:usesTcpPort>
<icr:hasMonitorInfo>
  <icr:MonitorInfo>
    <icr:hasMetricName>checkHttp</icr:hasMetricName>
  </icr:MonitorInfo>
</icr:hasMonitorInfo>
<icr:hasArguments>url:"http://www.ecalp.eu/",contains:"ECLAP"</icr:hasArguments>
</icr:MonitorInfo>
</icr:hasMonitorInfo>
</icr:IcaroService>
<icr:IcaroService rdf:about="urn:cloudicaro:Tomcat:001_001">
  <rdf:type rdf:resource="&icr;ApacheTomcat"/>
  <icr:hasName>Apache Tomcat</icr:hasName>
  <icr:hasIdentifier>AT:001</icr:hasIdentifier>
  <icr:runsOnVM rdf:resource="urn:cloudicaro:VirtualMachine:001_003"/>
  <icr:usesTcpPort rdf:datatype="&xsd;unsignedShort">8080</icr:usesTcpPort>
  <icr:hasMonitorInfo>
    <icr:MonitorInfo>
      <icr:hasMetricName>checkHttp</icr:hasMetricName>
      <icr:hasArguments>url:"http://www.eclap.eu:8080/xmf-
admin",contains:"ECLAP"</icr:hasArguments>
    </icr:MonitorInfo>
  </icr:MonitorInfo>
  <icr:hasMetricName>checkHttp</icr:hasMetricName>
</icr:MonitorInfo>
</icr:hasMonitorInfo>
</icr:IcaroService>
<icr:IcaroService rdf:about="urn:cloudicaro:MySQL:001_001">
  <rdf:type rdf:resource="&icr;MySQL"/>
  <icr:hasName>MySQL</icr:hasName>
  <icr:hasIdentifier>MSQL:001</icr:hasIdentifier>
  <icr:runsOnVM rdf:resource="urn:cloudicaro:VirtualMachine:001_003"/>
  <icr:usesTcpPort rdf:datatype="&xsd;unsignedShort">3306</icr:usesTcpPort>
</icr:IcaroService>
<icr:IcaroService rdf:about="urn:cloudicaro:AxcpGridNode:001_001">
  <rdf:type rdf:resource="&icr;AxcpGridNode"/>
  <icr:hasName>AXCPN:001</icr:hasName>
  <icr:hasIdentifier>axcpn:001</icr:hasIdentifier>
  <icr:runsOnVM rdf:resource="urn:cloudicaro:VirtualMachine:001_003"/>
  <icr:usesTcpPort rdf:datatype="&xsd;unsignedShort">9100</icr:usesTcpPort>
</icr:IcaroService>
<icr:IcaroService rdf:about="urn:cloudicaro:AxcpGridNode:001_002">
  <rdf:type rdf:resource="&icr;AxcpGridNode"/>
  <icr:hasName>AXCPN:002</icr:hasName>
  <icr:hasIdentifier>axcpn:002</icr:hasIdentifier>
  <icr:runsOnVM rdf:resource="urn:cloudicaro:VirtualMachine:001_004"/>
  <icr:usesTcpPort rdf:datatype="&xsd;unsignedShort">9100</icr:usesTcpPort>
</icr:IcaroService>
</icr:needs>
</icr:IcaroApplication>
</icr:hasPart>
</icr:BusinessConfiguration>
<icr:VirtualMachine rdf:about="urn:cloudicaro:VirtualMachine:001_003">
  <icr:hasName>VM001</icr:hasName>
  <icr:hasIdentifier>vm001</icr:hasIdentifier>
  <icr:hasCPUCount rdf:datatype="&xsd;positiveInteger">2</icr:hasCPUCount>
  <icr:hasMemorySize rdf:datatype="&xsd;decimal">2</icr:hasMemorySize>
  <icr:hasVirtualStorage>
    <icr:VirtualStorage rdf:about="urn:cloudicaro:LocalStorage:VM001_003:disk1" >
      <icr:hasName>disk1</icr:hasName>
      <icr:hasIdentifier>dsk1</icr:hasIdentifier>
      <icr:hasDiskSize rdf:datatype="&xsd;decimal">20</icr:hasDiskSize>
    </icr:VirtualStorage>
  </icr:hasVirtualStorage>
  <icr:hasNetworkAdapter>
```



```
<icr:NetworkAdapter>
  <icr:hasIPAddress>192.168.1.23</icr:hasIPAddress>
  <icr:boundToNetwork rdf:resource="urn:cloudicaro:LocalNetwork:001" />
</icr:NetworkAdapter>
</icr:hasNetworkAdapter>
<icr:hasOS rdf:resource="http://www.cloudicaro.it/cloud_ontology/core#windowsXP"/>
<icr:isPartOf rdf:resource="urn:cloudicaro:HostMachine:001"/>
<icr:isStoredOn rdf:resource="urn:cloudicaro:LocalStorage:HM001:disk1" />
<icr:hasMonitorInfo>
  <icr:MonitorInfo>
    <icr:hasMetricName>avgCPU%lm</icr:hasMetricName>
    <icr:hasWarningValue rdf:datatype="&xsd;decimal">70</icr:hasWarningValue>
    <icr:hasCriticalValue rdf:datatype="&xsd;decimal">80</icr:hasCriticalValue>
    <icr:hasMaxCheckAttempts
rdf:datatype="&xsd;positiveInteger">5</icr:hasMaxCheckAttempts>
    <icr:hasCheckInterval rdf:datatype="&xsd;positiveInteger">3</icr:hasCheckInterval>
  </icr:MonitorInfo>
</icr:hasMonitorInfo>
</icr:VirtualMachine>
<icr:VirtualMachine rdf:about="urn:cloudicaro:VirtualMachine:001_004">
  <icr:hasName>VM002</icr:hasName>
  <icr:hasIdentifier>vm002</icr:hasIdentifier>
  <icr:hasCPUCount rdf:datatype="&xsd;positiveInteger">2</icr:hasCPUCount>
  <icr:hasMemorySize rdf:datatype="&xsd;decimal">2</icr:hasMemorySize>
  <icr:hasVirtualStorage>
    <icr:VirtualStorage rdf:about="urn:cloudicaro:LocalStorage:VM001_004:disk1" >
      <icr:hasName>disk1</icr:hasName>
      <icr:hasIdentifier>dsk1</icr:hasIdentifier>
      <icr:hasDiskSize rdf:datatype="&xsd;decimal">20</icr:hasDiskSize>
    </icr:VirtualStorage>
  </icr:hasVirtualStorage>
  <icr:hasNetworkAdapter>
    <icr:NetworkAdapter>
      <icr:hasIPAddress>192.168.1.24</icr:hasIPAddress>
      <icr:boundToNetwork rdf:resource="urn:cloudicaro:LocalNetwork:001" />
    </icr:NetworkAdapter>
  </icr:hasNetworkAdapter>
  <icr:hasOS rdf:resource="http://www.cloudicaro.it/cloud_ontology/core#windowsXP"/>
  <icr:isPartOf rdf:resource="urn:cloudicaro:HostMachine:X"/>
  <icr:isStoredOn rdf:resource="urn:cloudicaro:LocalStorage:HM001:disk1" />
  <icr:hasMonitorInfo>
    <icr:MonitorInfo>
      <icr:hasMetricName>avgCPU%lm</icr:hasMetricName>
      <icr:hasWarningValue rdf:datatype="&xsd;decimal">70</icr:hasWarningValue>
      <icr:hasCriticalValue rdf:datatype="&xsd;decimal">80</icr:hasCriticalValue>
      <icr:hasMaxCheckAttempts
rdf:datatype="&xsd;positiveInteger">5</icr:hasMaxCheckAttempts>
      <icr:hasCheckInterval rdf:datatype="&xsd;positiveInteger">3</icr:hasCheckInterval>
    </icr:MonitorInfo>
  </icr:hasMonitorInfo>
</icr:VirtualMachine>
<icr:User rdf:about="urn:cloudicaro:User:xyz">
  <foaf:name>Mr. Xyz</foaf:name>
  <foaf:mbox>xyz@gmail.com</foaf:mbox>
</icr:User>
</rdf:RDF>
```

9.7 BC-TEST1-UPDATE-OK

```
<rdf:RDF xmlns:app="http://www.cloudicaro.it/cloud_ontology/applications#"
xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
xmlns:icr="http://www.cloudicaro.it/cloud_ontology/core#"
xmlns:foaf="http://xmlns.com/foaf/0.1/">
  <icr:BusinessConfiguration rdf:about="urn:cloudicaro:BusinessConfiguration:TEST-001">
    <icr:hasName>My Configuration</icr:hasName>
    <icr:hasIdentifier>TEST-001</icr:hasIdentifier>
    <icr:hasContractId>C001</icr:hasContractId>
```




```
<icr:createdBy rdf:resource="urn:cloudicaro:User:xyz"/>
<icr:hasPart>
  <icr:IcaroApplication rdf:about="urn:cloudicaro:XLMS:001_002">
    <rdf:type rdf:resource="&icr;XLMS"/>
    <icr:hasName>My ECLAP</icr:hasName>
    <icr:hasIdentifier>xlms:001</icr:hasIdentifier>
    <icr:createdBy rdf:resource="urn:cloudicaro:User:xyz"/>
    <icr:needs>
      <icr:IcaroService rdf:about="urn:cloudicaro:ApacheWebServer:001_002">
        <rdf:type rdf:resource="&icr;ApacheWebServer"/>
        <icr:hasName>Apache Web Server 001</icr:hasName>
        <icr:hasIdentifier>AWS:001</icr:hasIdentifier>
        <icr:runsOnVM rdf:resource="urn:cloudicaro:VirtualMachine:001_003"/>
        <icr:supportsLanguage rdf:resource="&icr;php"/>
        <icr:usesTcpPort rdf:datatype="&xsd;unsignedShort">80</icr:usesTcpPort>
        <icr:hasMonitorInfo>
          <icr:MonitorInfo>
            <icr:hasMetricName>checkHttp</icr:hasMetricName>
          </icr:MonitorInfo>
        </icr:hasMonitorInfo>
      </icr:IcaroService>
      <icr:IcaroService rdf:about="urn:cloudicaro:Tomcat:001_001">
        <rdf:type rdf:resource="&icr;ApacheTomcat"/>
        <icr:hasName>Apache Tomcat</icr:hasName>
        <icr:hasIdentifier>AT:001</icr:hasIdentifier>
        <icr:runsOnVM rdf:resource="urn:cloudicaro:VirtualMachine:001_003"/>
        <icr:usesTcpPort rdf:datatype="&xsd;unsignedShort">8080</icr:usesTcpPort>
        <icr:hasMonitorInfo>
          <icr:MonitorInfo>
            <icr:hasMetricName>checkHttp</icr:hasMetricName>
            <icr:hasArguments>url:"http://www.eclap.eu:8080/xmf-
admin", contains:"ECLAP"</icr:hasArguments>
          </icr:MonitorInfo>
        </icr:hasMonitorInfo>
      </icr:IcaroService>
      <icr:IcaroService rdf:about="urn:cloudicaro:MySQL:001_001">
        <rdf:type rdf:resource="&icr;MySQL"/>
        <icr:hasName>MySQL</icr:hasName>
        <icr:hasIdentifier>MSQL:001</icr:hasIdentifier>
        <icr:runsOnVM rdf:resource="urn:cloudicaro:VirtualMachine:001_003"/>
        <icr:usesTcpPort rdf:datatype="&xsd;unsignedShort">3306</icr:usesTcpPort>
      </icr:IcaroService>
      <icr:IcaroService rdf:about="urn:cloudicaro:AxcpScheduler:001_001">
        <rdf:type rdf:resource="&icr;AxcpScheduler"/>
        <icr:hasName>AXCP Scheduler</icr:hasName>
        <icr:hasIdentifier>AXCPS:001</icr:hasIdentifier>
        <icr:runsOnVM rdf:resource="urn:cloudicaro:VirtualMachine:001_003"/>
        <icr:usesTcpPort rdf:datatype="&xsd;unsignedShort">9000</icr:usesTcpPort>
      </icr:IcaroService>
      <icr:IcaroService rdf:about="urn:cloudicaro:AxcpGridNode:001_001">
        <rdf:type rdf:resource="&icr;AxcpGridNode"/>
        <icr:hasName>AXCPN:001</icr:hasName>
        <icr:hasIdentifier>axcpn:001</icr:hasIdentifier>
        <icr:runsOnVM rdf:resource="urn:cloudicaro:VirtualMachine:001_003"/>
        <icr:usesTcpPort rdf:datatype="&xsd;unsignedShort">9100</icr:usesTcpPort>
      </icr:IcaroService>
      <icr:IcaroService rdf:about="urn:cloudicaro:AxcpGridNode:001_002">
        <rdf:type rdf:resource="&icr;AxcpGridNode"/>
        <icr:hasName>AXCPN:002</icr:hasName>
      </icr:IcaroService>
    </icr:needs>
  </icr:IcaroApplication>
</icr:hasPart>
</icr:hasArguments>
</icr:MonitorInfo>
</icr:hasMonitorInfo>
</icr:IcaroService>
<icr:IcaroService rdf:about="urn:cloudicaro:Tomcat:001_001">
  <rdf:type rdf:resource="&icr;ApacheTomcat"/>
  <icr:hasName>Apache Tomcat</icr:hasName>
  <icr:hasIdentifier>AT:001</icr:hasIdentifier>
  <icr:runsOnVM rdf:resource="urn:cloudicaro:VirtualMachine:001_003"/>
  <icr:usesTcpPort rdf:datatype="&xsd;unsignedShort">8080</icr:usesTcpPort>
  <icr:hasMonitorInfo>
    <icr:MonitorInfo>
      <icr:hasMetricName>checkHttp</icr:hasMetricName>
      <icr:hasArguments>url:"http://www.eclap.eu:8080/xmf-
admin", contains:"ECLAP"</icr:hasArguments>
    </icr:MonitorInfo>
  </icr:hasMonitorInfo>
</icr:IcaroService>
<icr:IcaroService rdf:about="urn:cloudicaro:MySQL:001_001">
  <rdf:type rdf:resource="&icr;MySQL"/>
  <icr:hasName>MySQL</icr:hasName>
  <icr:hasIdentifier>MSQL:001</icr:hasIdentifier>
  <icr:runsOnVM rdf:resource="urn:cloudicaro:VirtualMachine:001_003"/>
  <icr:usesTcpPort rdf:datatype="&xsd;unsignedShort">3306</icr:usesTcpPort>
</icr:IcaroService>
<icr:IcaroService rdf:about="urn:cloudicaro:AxcpScheduler:001_001">
  <rdf:type rdf:resource="&icr;AxcpScheduler"/>
  <icr:hasName>AXCP Scheduler</icr:hasName>
  <icr:hasIdentifier>AXCPS:001</icr:hasIdentifier>
  <icr:runsOnVM rdf:resource="urn:cloudicaro:VirtualMachine:001_003"/>
  <icr:usesTcpPort rdf:datatype="&xsd;unsignedShort">9000</icr:usesTcpPort>
</icr:IcaroService>
<icr:IcaroService rdf:about="urn:cloudicaro:AxcpGridNode:001_001">
  <rdf:type rdf:resource="&icr;AxcpGridNode"/>
  <icr:hasName>AXCPN:001</icr:hasName>
  <icr:hasIdentifier>axcpn:001</icr:hasIdentifier>
  <icr:runsOnVM rdf:resource="urn:cloudicaro:VirtualMachine:001_003"/>
  <icr:usesTcpPort rdf:datatype="&xsd;unsignedShort">9100</icr:usesTcpPort>
</icr:IcaroService>
<icr:IcaroService rdf:about="urn:cloudicaro:AxcpGridNode:001_002">
  <rdf:type rdf:resource="&icr;AxcpGridNode"/>
  <icr:hasName>AXCPN:002</icr:hasName>
</icr:IcaroService>
```



```
<icr:hasIdentifier>axcpn:002</icr:hasIdentifier>
<icr:runsOnVM rdf:resource="urn:cloudicaro:VirtualMachine:001_004"/>
<icr:usesTcpPort rdf:datatype="&xsd;unsignedShort">9100</icr:usesTcpPort>
</icr:IcaroService>
</icr:needs>
</icr:IcaroApplication>
</icr:hasPart>
</icr:BusinessConfiguration>
<icr:VirtualMachine rdf:about="urn:cloudicaro:VirtualMachine:001_003">
  <icr:hasName>VM001</icr:hasName>
  <icr:hasIdentifier>vm001</icr:hasIdentifier>
  <icr:hasCPUCount rdf:datatype="&xsd;positiveInteger">2</icr:hasCPUCount>
  <icr:hasMemorySize rdf:datatype="&xsd;decimal">2</icr:hasMemorySize>
  <icr:hasVirtualStorage>
    <icr:VirtualStorage rdf:about="urn:cloudicaro:LocalStorage:VM001_003:disk1" >
      <icr:hasName>disk1</icr:hasName>
      <icr:hasIdentifier>dsk1</icr:hasIdentifier>
      <icr:hasDiskSize rdf:datatype="&xsd;decimal">20</icr:hasDiskSize>
    </icr:VirtualStorage>
  </icr:hasVirtualStorage>
  <icr:hasNetworkAdapter>
    <icr:NetworkAdapter>
      <icr:hasIPAddress>192.168.1.23</icr:hasIPAddress>
      <icr:boundToNetwork rdf:resource="urn:cloudicaro:LocalNetwork:001" />
    </icr:NetworkAdapter>
  </icr:hasNetworkAdapter>
  <icr:hasOS rdf:resource="http://www.cloudicaro.it/cloud_ontology/core#windowsXP"/>
  <icr:isPartOf rdf:resource="urn:cloudicaro:HostMachine:001"/>
  <icr:isStoredOn rdf:resource="urn:cloudicaro:LocalStorage:HM001:disk1" />
  <icr:hasMonitorInfo>
    <icr:MonitorInfo>
      <icr:hasMetricName>avgCPU%lm</icr:hasMetricName>
      <icr:hasWarningValue rdf:datatype="&xsd;decimal">70</icr:hasWarningValue>
      <icr:hasCriticalValue rdf:datatype="&xsd;decimal">80</icr:hasCriticalValue>
      <icr:hasMaxCheckAttempts
rdf:datatype="&xsd;positiveInteger">5</icr:hasMaxCheckAttempts>
      <icr:hasCheckInterval rdf:datatype="&xsd;positiveInteger">3</icr:hasCheckInterval>
    </icr:MonitorInfo>
  </icr:hasMonitorInfo>
</icr:VirtualMachine>
<icr:VirtualMachine rdf:about="urn:cloudicaro:VirtualMachine:001_004">
  <icr:hasName>VM002</icr:hasName>
  <icr:hasIdentifier>vm002</icr:hasIdentifier>
  <icr:hasCPUCount rdf:datatype="&xsd;positiveInteger">2</icr:hasCPUCount>
  <icr:hasMemorySize rdf:datatype="&xsd;decimal">2</icr:hasMemorySize>
  <icr:hasVirtualStorage>
    <icr:VirtualStorage rdf:about="urn:cloudicaro:LocalStorage:VM001_004:disk1" >
      <icr:hasName>disk1</icr:hasName>
      <icr:hasIdentifier>dsk1</icr:hasIdentifier>
      <icr:hasDiskSize rdf:datatype="&xsd;decimal">20</icr:hasDiskSize>
    </icr:VirtualStorage>
  </icr:hasVirtualStorage>
  <icr:hasNetworkAdapter>
    <icr:NetworkAdapter>
      <icr:hasIPAddress>192.168.1.24</icr:hasIPAddress>
      <icr:boundToNetwork rdf:resource="urn:cloudicaro:LocalNetwork:001" />
    </icr:NetworkAdapter>
  </icr:hasNetworkAdapter>
  <icr:hasOS rdf:resource="http://www.cloudicaro.it/cloud_ontology/core#windowsXP"/>
  <icr:isPartOf rdf:resource="urn:cloudicaro:HostMachine:001"/>
  <icr:isStoredOn rdf:resource="urn:cloudicaro:LocalStorage:HM001:disk1" />
  <icr:hasMonitorInfo>
    <icr:MonitorInfo>
      <icr:hasMetricName>avgCPU%lm</icr:hasMetricName>
      <icr:hasWarningValue rdf:datatype="&xsd;decimal">70</icr:hasWarningValue>
      <icr:hasCriticalValue rdf:datatype="&xsd;decimal">80</icr:hasCriticalValue>
```



```
<icr:hasMaxCheckAttempts
rdf:datatype="&xsd;positiveInteger">5</icr:hasMaxCheckAttempts>
  <icr:hasCheckInterval rdf:datatype="&xsd;positiveInteger">3</icr:hasCheckInterval>
</icr:MonitorInfo>
</icr:hasMonitorInfo>
</icr:VirtualMachine>
<icr:User rdf:about="urn:cloudicaro:User:xyz">
  <foaf:name>Mr. Xyz</foaf:name>
  <foaf:mbox>xyz@gmail.com</foaf:mbox>
</icr:User>
</rdf:RDF>
```

9.8 BC-TEST2-FAIL

```
<rdf:RDF xmlns:app="http://www.cloudicaro.it/cloud_ontology/applications#"
xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
xmlns:icr="http://www.cloudicaro.it/cloud_ontology/core#"
xmlns:foaf="http://xmlns.com/foaf/0.1/">
  <icr:BusinessConfiguration rdf:about="urn:cloudicaro:BusinessConfiguration:TEST-001">
    <icr:hasName>My Configuration</icr:hasName>
    <icr:hasIdentifier>TEST-001</icr:hasIdentifier>
    <icr:createdBy rdf:resource="urn:cloudicaro:User:xyz" />
    <icr:hasPart>
      <icr:IcaroApplication rdf:about="urn:cloudicaro:XLMS:002">
        <rdf:type rdf:resource="&app;XLMS" />
        <icr:hasName>My ECLAP</icr:hasName>
        <icr:hasIdentifier>xlms:001</icr:hasIdentifier>
        <icr:createdBy rdf:resource="urn:cloudicaro:User:xyz" />
        <icr:needs>
          <icr:IcaroService rdf:about="urn:cloudicaro:ApacheWebServer:002">
            <rdf:type rdf:resource="&icr;ApacheWebServer" />
            <icr:hasName>Apache Web Server 001</icr:hasName>
            <icr:hasIdentifier>AWS:001</icr:hasIdentifier>
            <icr:runsOnVM rdf:resource="urn:cloudicaro:VirtualMachine:003" />
            <icr:supportsLanguage rdf:resource="&icr;php" />
            <icr:usesTcpPort rdf:datatype="&xsd;unsignedShort">80</icr:usesTcpPort>
            <icr:hasMonitorInfo>
              <icr:MonitorInfo>
                <icr:hasMetricName>checkHttp</icr:hasMetricName>
            </icr:hasMonitorInfo>
          </icr:IcaroService>
          <icr:hasArguments>url:"http://www.ecalp.eu/",contains:"ECLAP"</icr:hasArguments>
        </icr:needs>
      </icr:IcaroApplication>
      <icr:IcaroTenant rdf:about="urn:cloudicaro:OggiWebTenant:001">
        <icr:hasName>OggiWebTenant</icr:hasName>
        <icr:hasIdentifier>001</icr:hasIdentifier>
        <icr:isTenantOf rdf:resource="urn:cloudicaro:OggiWeb:001" />
        <icr:createdBy rdf:resource="urn:cloudicaro:User:xyz" />
      </icr:IcaroTenant>
    </icr:hasPart>
  </icr:BusinessConfiguration>
  <icr:VirtualMachine rdf:about="urn:cloudicaro:VirtualMachine:003">
    <icr:hasName>VM001</icr:hasName>
    <icr:hasIdentifier>vm001</icr:hasIdentifier>
    <icr:hasCPUCount rdf:datatype="&xsd;positiveInteger">2</icr:hasCPUCount>
    <icr:hasMemorySize rdf:datatype="&xsd;decimal">2</icr:hasMemorySize>
    <icr:hasDiskSize rdf:datatype="&xsd;decimal">200</icr:hasDiskSize>
    <icr:hasNetworkAdapter>
      <icr:NetworkAdapter>
        <icr:hasIPAddress>192.168.1.23</icr:hasIPAddress>
        <icr:boundToNetwork rdf:resource="urn:cloudicaro:LocalNetwork:01" />
      </icr:NetworkAdapter>
    </icr:hasNetworkAdapter>
    <icr:hasOS rdf:resource="http://www.cloudicaro.it/cloud_ontology/icr#windowsXP" />
  </icr:VirtualMachine>
</rdf:RDF>
```



```
<icr:hasMonitorInfo>
  <icr:MonitorInfo>
    <icr:hasMetricName>avgCPU%lm</icr:hasMetricName>
    <icr:hasWarningValue rdf:datatype="&xsd;decimal">70</icr:hasWarningValue>
    <icr:hasCriticalValue rdf:datatype="&xsd;decimal">80</icr:hasCriticalValue>
    <icr:hasMaxCheckAttempts
rdf:datatype="&xsd;positiveInteger">5</icr:hasMaxCheckAttempts>
    <icr:hasCheckInterval rdf:datatype="&xsd;positiveInteger">3</icr:hasCheckInterval>
  </icr:MonitorInfo>
</icr:hasMonitorInfo>
</icr:VirtualMachine>
<icr:User rdf:about="urn:cloudicaro:User:xyz">
  <foaf:name>Mr. Xyz</foaf:name>
  <foaf:mbox>xyz@gmail.com</foaf:mbox>
</icr:User>
</rdf:RDF>
```

9.9 BC-TEST3-OK

```
<rdf:RDF xmlns:app="http://www.cloudicaro.it/cloud_ontology/applications#"
xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
xmlns:icr="http://www.cloudicaro.it/cloud_ontology/core#"
xmlns:foaf="http://xmlns.com/foaf/0.1/" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="http://www.w3.org/1999/02/22-rdf-syntax-ns#
schema-icaro-kb-businessConfiguration.xsd">
  <icr:BusinessConfiguration rdf:about="urn:cloudicaro:BusinessConfiguration:TEST-003">
    <icr:hasName>My Configuration</icr:hasName>
    <icr:hasIdentifier>001</icr:hasIdentifier>
    <icr:hasContractId>c001</icr:hasContractId>
    <icr:createdBy rdf:resource="urn:cloudicaro:User:xyz"/>
    <icr:administeredBy rdf:resource="urn:cloudicaro:User:zzz"/>
    <icr:administeredBy rdf:resource="urn:cloudicaro:User:aaa"/>
    <icr:hasPart>
      <icr:IcaroApplication rdf:about="urn:cloudicaro:XLMS:003_001">
        <rdf:type rdf:resource="&app;XLMS"/>
        <icr:hasName>My ECLAP</icr:hasName>
        <icr:hasIdentifier>xlms:001</icr:hasIdentifier>
        <icr:createdBy rdf:resource="urn:cloudicaro:User:xyz"/>
        <icr:administeredBy rdf:resource="urn:cloudicaro:User:zzz"/>
        <icr:administeredBy rdf:resource="urn:cloudicaro:User:aaa"/>
        <icr:needs>
          <icr:IcaroService rdf:about="urn:cloudicaro:ApacheWebServer:003_001">
            <rdf:type rdf:resource="&icr;ApacheWebServer"/>
            <icr:hasName>Apache Web Server 001</icr:hasName>
            <icr:hasIdentifier>AWS:001</icr:hasIdentifier>
            <icr:runsOnVM rdf:resource="urn:cloudicaro:VirtualMachine:003_001"/>
            <icr:supportsLanguage rdf:resource="&icr;php"/>
            <icr:usesTcpPort rdf:datatype="&xsd;unsignedShort">80</icr:usesTcpPort>
            <icr:hasMonitorInfo>
              <icr:MonitorInfo>
                <icr:hasMetricName>checkHttp</icr:hasMetricName>
                <icr:hasArguments>url:"http://www.ecalp.eu/",contains:"ECLAP"</icr:hasArguments>
              </icr:MonitorInfo>
              <icr:MonitorInfo>
                <icr:hasMetricName>checkHttp</icr:hasMetricName>
                <icr:hasArguments>url:"http://192.168.1.123/"</icr:hasArguments>
              </icr:MonitorInfo>
              <icr:MonitorInfo>
                <icr:hasMetricName>xlms:numberOfObjects</icr:hasMetricName>
                <icr:hasWarningValue rdf:datatype="&xsd;decimal">300</icr:hasWarningValue>
                <icr:hasCriticalValue rdf:datatype="&xsd;decimal">500</icr:hasCriticalValue>
              </icr:MonitorInfo>
            </icr:hasMonitorInfo>
          </icr:IcaroService>
          <icr:IcaroService rdf:about="urn:cloudicaro:Tomcat:003_001">
            <rdf:type rdf:resource="&icr;ApacheTomcat"/>
```



```
<icr:hasName>Apache Tomcat</icr:hasName>
<icr:hasIdentifier>AT:001</icr:hasIdentifier>
<icr:runsOnVM rdf:resource="urn:cloudicaro:VirtualMachine:003_001"/>
<icr:usesTcpPort rdf:datatype="&xsd;unsignedShort">8080</icr:usesTcpPort>
<icr:hasMonitorInfo>
  <icr:MonitorInfo>
    <icr:hasMetricName>checkHttp</icr:hasMetricName>
    <icr:hasArguments>url:"http://www.eclap.eu:8080/xmf-admin",contains:"ECLAP"</icr:hasArguments>
  </icr:MonitorInfo>
  <icr:MonitorInfo>
    <icr:hasMetricName>checkHttp</icr:hasMetricName>
  </icr:MonitorInfo>
</icr:hasMonitorInfo>
<icr:hasArguments>url:"http://www.eclap.eu:8080/LoaderSaver?wsdl"</icr:hasArguments>
</icr:MonitorInfo>
</icr:hasMonitorInfo>
</icr:IcaroService>
<icr:IcaroService rdf:about="urn:cloudicaro:MySQL:003_001">
  <rdf:type rdf:resource="&icr;MySQL"/>
  <icr:hasName>MySQL</icr:hasName>
  <icr:hasIdentifier>MSQL:001</icr:hasIdentifier>
  <icr:runsOnVM rdf:resource="urn:cloudicaro:VirtualMachine:003_001"/>
  <icr:usesTcpPort rdf:datatype="&xsd;unsignedShort">3306</icr:usesTcpPort>
</icr:IcaroService>
<icr:IcaroService rdf:about="urn:cloudicaro:AxcpsScheduler:003_001">
  <rdf:type rdf:resource="&icr;AxcpsScheduler"/>
  <icr:hasName>AXCP Scheduler</icr:hasName>
  <icr:hasIdentifier>AXCPS:001</icr:hasIdentifier>
  <icr:runsOnVM rdf:resource="urn:cloudicaro:VirtualMachine:003_001"/>
  <icr:usesTcpPort rdf:datatype="&xsd;unsignedShort">9000</icr:usesTcpPort>
</icr:IcaroService>
<icr:IcaroService rdf:about="urn:cloudicaro:AxcpsGridNode:003_001">
  <rdf:type rdf:resource="&icr;AxcpsGridNode"/>
  <icr:hasName>AXCPN:001</icr:hasName>
  <icr:hasIdentifier>axcpn:001</icr:hasIdentifier>
  <icr:runsOnVM rdf:resource="urn:cloudicaro:VirtualMachine:003_001"/>
  <icr:usesTcpPort rdf:datatype="&xsd;unsignedShort">9100</icr:usesTcpPort>
</icr:IcaroService>
<icr:IcaroService rdf:about="urn:cloudicaro:AxcpsGridNode:003_002">
  <rdf:type rdf:resource="&icr;AxcpsGridNode"/>
  <icr:hasName>AXCPN:002</icr:hasName>
  <icr:hasIdentifier>axcpn:002</icr:hasIdentifier>
  <icr:runsOnVM rdf:resource="urn:cloudicaro:VirtualMachine:003_002"/>
  <icr:usesTcpPort rdf:datatype="&xsd;unsignedShort">9100</icr:usesTcpPort>
</icr:IcaroService>
</icr:needs>
<icr:hasSLA>
  <icr:ServiceLevelAgreement rdf:about="urn:cloudicaro:ServiceLevelAgreement:003_001">
    <icr:hasSLOjective>
      <icr:ServiceLevelObjective>
        <icr:hasSLAction>
          <icr:ServiceLevelAction>
            <icr:hasName>Send e-mail</icr:hasName>
            <icr:callUrl>http://cm.cloudicaro.it/api/send-email</icr:callUrl>
          </icr:ServiceLevelAction>
        </icr:hasSLAction>
        <icr:hasSLMetric>
          <icr:ServiceLevelAndMetric>
            <icr:dependsOn>
              <icr:ServiceLevelSimpleMetric>
                <icr:hasMetricName>avgResponseTime</icr:hasMetricName>
                <icr:hasMetricValueLessThan
rdf:datatype="&xsd;decimal">5</icr:hasMetricValueLessThan>
                <icr:hasMetricUnit>seconds</icr:hasMetricUnit>
                <icr:dependsOn rdf:resource="urn:cloudicaro:ApacheWebServer:003_001"/>
              </icr:ServiceLevelSimpleMetric>
            </icr:dependsOn>
          </icr:ServiceLevelAndMetric>
        </icr:hasSLMetric>
      </icr:ServiceLevelObjective>
    </icr:hasSLOjective>
  </icr:ServiceLevelAgreement>
</icr:hasSLA>
```



```
<icr:ServiceLevelSimpleMetric>
  <icr:hasMetricName>xlms:numberOfObjects</icr:hasMetricName>
  <icr:hasMetricValueLessThan
rdf:datatype="&xsd;decimal">500</icr:hasMetricValueLessThan>
  <icr:hasMetricUnit>number</icr:hasMetricUnit>
  <icr:dependsOn rdf:resource="urn:cloudicaro:XLMS:003_001" />
</icr:ServiceLevelSimpleMetric>
</icr:dependsOn>
</icr:ServiceLevelAndMetric>
</icr:hasSLMetric>
</icr:ServiceLevelObjective>
</icr:hasSLObjective>
<icr:hasStartTime rdf:datatype="&xsd;dateTime">2013-01-
01T00:00:00</icr:hasStartTime>
  <icr:hasEndTime rdf:datatype="&xsd;dateTime">2015-01-01T00:00:00</icr:hasEndTime>
</icr:ServiceLevelAgreement>
</icr:hasSLA>
</icr:IcaroApplication>
<icr:IcaroTenant rdf:about="urn:cloudicaro:XLMS:003_002">
  <icr:hasName>OggiWebTenant</icr:hasName>
  <icr:hasIdentifier>001</icr:hasIdentifier>
  <icr:isTenantOf rdf:resource="urn:cloudicaro:XLMS:003_001" />
  <icr:createdBy rdf:resource="urn:cloudicaro:User:xyz" />
</icr:IcaroTenant>
</icr:hasPart>
</icr:BusinessConfiguration>
<icr:VirtualMachine rdf:about="urn:cloudicaro:VirtualMachine:003_001">
  <icr:hasName>VM001</icr:hasName>
  <icr:hasIdentifier>vm001</icr:hasIdentifier>
  <icr:hasCPUCount rdf:datatype="&xsd;positiveInteger">2</icr:hasCPUCount>
  <icr:hasMemorySize rdf:datatype="&xsd;decimal">2</icr:hasMemorySize>
  <icr:hasVirtualStorage>
    <icr:VirtualStorage rdf:about="urn:cloudicaro:VirtualStorage:VM003_001:disk1" >
      <icr:hasName>disk1</icr:hasName>
      <icr:hasIdentifier>dsk1</icr:hasIdentifier>
      <icr:hasDiskSize rdf:datatype="&xsd;decimal">20</icr:hasDiskSize>
    </icr:VirtualStorage>
  </icr:hasVirtualStorage>
  <icr:hasNetworkAdapter>
    <icr:NetworkAdapter>
      <icr:hasIPAddress>192.168.1.23</icr:hasIPAddress>
      <icr:boundToNetwork rdf:resource="urn:cloudicaro:LocalNetwork:001" />
    </icr:NetworkAdapter>
  </icr:hasNetworkAdapter>
  <icr:hasOS rdf:resource="http://www.cloudicaro.it/cloud_ontology/core#windowsXP" />
  <icr:isPartOf rdf:resource="urn:cloudicaro:HostMachine:001" />
  <icr:isStoredOn rdf:resource="urn:cloudicaro:LocalStorage:HM001:disk1" />
  <icr:isInstanceOf rdf:resource="urn:cloudicaro:VirtualMachineTemplate:003_001" />
  <icr:hasMonitorInfo>
    <icr:MonitorInfo>
      <icr:hasMetricName>avgCPU%lm</icr:hasMetricName>
      <icr:hasWarningValue rdf:datatype="&xsd;decimal">70</icr:hasWarningValue>
      <icr:hasCriticalValue rdf:datatype="&xsd;decimal">80</icr:hasCriticalValue>
      <icr:hasMaxCheckAttempts
rdf:datatype="&xsd;positiveInteger">5</icr:hasMaxCheckAttempts>
      <icr:hasCheckInterval rdf:datatype="&xsd;positiveInteger">3</icr:hasCheckInterval>
    </icr:MonitorInfo>
    <icr:MonitorInfo>
      <icr:hasMetricName>avgMemlm</icr:hasMetricName>
      <icr:hasWarningValue rdf:datatype="&xsd;decimal">70</icr:hasWarningValue>
      <icr:hasCriticalValue rdf:datatype="&xsd;decimal">80</icr:hasCriticalValue>
      <icr:hasMaxCheckAttempts
rdf:datatype="&xsd;positiveInteger">5</icr:hasMaxCheckAttempts>
      <icr:hasCheckInterval rdf:datatype="&xsd;positiveInteger">3</icr:hasCheckInterval>
    </icr:MonitorInfo>
  </icr:hasMonitorInfo>
</icr:hasMonitorInfo>
```




```
</icr:VirtualMachine>
<icr:VirtualMachine rdf:about="urn:cloudicaro:VirtualMachine:003_002">
  <icr:hasName>VM002</icr:hasName>
  <icr:hasIdentifier>vm002</icr:hasIdentifier>
  <icr:hasCPUCount rdf:datatype="&xsd;positiveInteger">1</icr:hasCPUCount>
  <icr:hasMemorySize rdf:datatype="&xsd;decimal">2</icr:hasMemorySize>
  <icr:hasVirtualStorage>
    <icr:VirtualStorage rdf:about="urn:cloudicaro:VirtualStorage:VM003_002:disk1" >
      <icr:hasName>disk1</icr:hasName>
      <icr:hasIdentifier>dsk1</icr:hasIdentifier>
      <icr:hasDiskSize rdf:datatype="&xsd;decimal">20</icr:hasDiskSize>
    </icr:VirtualStorage>
  </icr:hasVirtualStorage>
  <icr:hasNetworkAdapter>
    <icr:NetworkAdapter>
      <icr:hasIPAddress>192.168.1.24</icr:hasIPAddress>
      <icr:boundToNetwork rdf:resource="urn:cloudicaro:LocalNetwork:001" />
    </icr:NetworkAdapter>
  </icr:hasNetworkAdapter>
  <icr:hasOS rdf:resource="http://www.cloudicaro.it/cloud_ontology/core#windowsXP"/>
  <icr:isPartOf rdf:resource="urn:cloudicaro:HostMachine:001"/>
  <icr:isStoredOn rdf:resource="urn:cloudicaro:LocalStorage:HM001:disk1" />
  <icr:isInstanceOf rdf:resource="urn:cloudicaro:VirtualMachineTemplate:003_002"/>
  <icr:hasMonitorInfo>
    <icr:MonitorInfo>
      <icr:hasMetricName>avgCPU%lm</icr:hasMetricName>
      <icr:hasWarningValue rdf:datatype="&xsd;decimal">70</icr:hasWarningValue>
      <icr:hasCriticalValue rdf:datatype="&xsd;decimal">80</icr:hasCriticalValue>
      <icr:hasMaxCheckAttempts
rdf:datatype="&xsd;positiveInteger">5</icr:hasMaxCheckAttempts>
      <icr:hasCheckInterval rdf:datatype="&xsd;positiveInteger">3</icr:hasCheckInterval>
    </icr:MonitorInfo>
    <icr:MonitorInfo>
      <icr:hasMetricName>avgMemlm</icr:hasMetricName>
      <icr:hasWarningValue rdf:datatype="&xsd;decimal">70</icr:hasWarningValue>
      <icr:hasCriticalValue rdf:datatype="&xsd;decimal">80</icr:hasCriticalValue>
      <icr:hasMaxCheckAttempts
rdf:datatype="&xsd;positiveInteger">5</icr:hasMaxCheckAttempts>
      <icr:hasCheckInterval rdf:datatype="&xsd;positiveInteger">3</icr:hasCheckInterval>
    </icr:MonitorInfo>
  </icr:hasMonitorInfo>
</icr:VirtualMachine>
<icr:VirtualMachineTemplate rdf:about="urn:cloudicaro:VirtualMachineTemplate:003_001">
  <icr:hasName>VMT001</icr:hasName>
  <icr:hasIdentifier>vmt001</icr:hasIdentifier>
  <icr:hasCPUCount rdf:datatype="&xsd;positiveInteger">2</icr:hasCPUCount>
  <icr:hasMemorySize rdf:datatype="&xsd;decimal">2</icr:hasMemorySize>
  <icr:hasVirtualStorage>
    <icr:VirtualStorage rdf:about="urn:cloudicaro:VirtualStorage:VMT003_001:disk1" >
      <icr:hasName>disk1</icr:hasName>
      <icr:hasIdentifier>dsk1</icr:hasIdentifier>
      <icr:hasDiskSize rdf:datatype="&xsd;decimal">20</icr:hasDiskSize>
    </icr:VirtualStorage>
  </icr:hasVirtualStorage>
  <icr:hasNetworkAdapter>
    <icr:NetworkAdapter>
      <icr:hasIPAddress>192.168.1.23</icr:hasIPAddress>
      <icr:boundToNetwork rdf:resource="urn:cloudicaro:LocalNetwork:001" />
    </icr:NetworkAdapter>
  </icr:hasNetworkAdapter>
  <icr:hasOS rdf:resource="http://www.cloudicaro.it/cloud_ontology/core#windowsXP"/>
  <icr:isPartOf rdf:resource="urn:cloudicaro:HostMachine:001"/>
  <icr:isStoredOn rdf:resource="urn:cloudicaro:LocalStorage:HM001:disk1" />
</icr:VirtualMachineTemplate>
<icr:VirtualMachineTemplate rdf:about="urn:cloudicaro:VirtualMachineTemplate:003_002">
  <icr:hasName>VM002-template</icr:hasName>
```



```
<icr:hasIdentifier>Tvm002</icr:hasIdentifier>
<icr:hasCPUCount rdf:datatype="&xsd;positiveInteger">1</icr:hasCPUCount>
<icr:hasMemorySize rdf:datatype="&xsd;decimal">2</icr:hasMemorySize>
<icr:hasVirtualStorage>
  <icr:VirtualStorage rdf:about="urn:cloudicaro:VirtualStorage:VMT003_002:disk1" >
    <icr:hasName>disk1</icr:hasName>
    <icr:hasIdentifier>dsk1</icr:hasIdentifier>
    <icr:hasDiskSize rdf:datatype="&xsd;decimal">20</icr:hasDiskSize>
  </icr:VirtualStorage>
</icr:hasVirtualStorage>
<icr:hasNetworkAdapter>
  <icr:NetworkAdapter>
    <icr:hasIPAddress>192.168.1.24</icr:hasIPAddress>
    <icr:boundToNetwork rdf:resource="urn:cloudicaro:LocalNetwork:001" />
  </icr:NetworkAdapter>
</icr:hasNetworkAdapter>
<icr:hasOS rdf:resource="http://www.cloudicaro.it/cloud_ontology/core#windowsXP"/>
<icr:isPartOf rdf:resource="urn:cloudicaro:HostMachine:001"/>
<icr:isStoredOn rdf:resource="urn:cloudicaro:LocalStorage:HM001:disk1" />
</icr:VirtualMachineTemplate>
<icr:User rdf:about="urn:cloudicaro:User:xyz">
  <foaf:name>Mr. Xyz</foaf:name>
  <foaf:mbox>xyz@gmail.com</foaf:mbox>
</icr:User>
<icr:User rdf:about="urn:cloudicaro:User:zzz">
  <foaf:name>Mr. Zzz</foaf:name>
  <foaf:mbox>zzz@gmail.com</foaf:mbox>
</icr:User>
<icr:User rdf:about="urn:cloudicaro:User:aaa">
  <foaf:name>Mr. Aaa</foaf:name>
  <foaf:mbox>aaa@gmail.com</foaf:mbox>
</icr:User>
</rdf:RDF>
```

9.10 BC-TEST4-FAIL

```
<rdf:RDF xmlns:app="http://www.cloudicaro.it/cloud_ontology/applications#"
xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
xmlns:icr="http://www.cloudicaro.it/cloud_ontology/core#"
xmlns:foaf="http://xmlns.com/foaf/0.1/">
  <icr:BusinessConfiguration rdf:about="urn:cloudicaro:BusinessConfiguration:004">
    <icr:hasName>My Configuration</icr:hasName>
    <icr:hasIdentifier>TEST-001</icr:hasIdentifier>
    <icr:hasContractId>C003</icr:hasContractId>
    <icr:createdBy rdf:resource="urn:cloudicaro:User:a"/>
    <icr:administeredBy rdf:resource="urn:cloudicaro:User:b"/>
    <icr:hasPart>
      <icr:IcaroApplication rdf:about="urn:cloudicaro:XLMS:004_001">
        <rdf:type rdf:resource="&app;XLM"/>
        <icr:hasName>My ECLAP</icr:hasName>
        <icr:hasIdentifier>xlms:001</icr:hasIdentifier>
        <icr:createdBy rdf:resource="urn:cloudicaro:User:c"/>
        <icr:needs>
          <icr:IcaroService rdf:about="urn:cloudicaro:ApacheWebServer:004_001">
            <rdf:type rdf:resource="&icr;ApacheWebServerX"/>
            <icr:hasName>Apache Web Server 001</icr:hasName>
            <icr:hasIdentifier>AWS:001</icr:hasIdentifier>
            <icr:runsOnVM rdf:resource="urn:cloudicaro:VirtualMachine:X"/>
            <icr:supportsLanguage rdf:resource="&icr;phpX"/>
            <icr:usesTcpPort rdf:datatype="&xsd;unsignedShort">80</icr:usesTcpPort>
            <icr:hasMonitorInfo>
              <icr:MonitorInfo>
                <icr:hasMetricName>checkHttp</icr:hasMetricName>
              </icr:MonitorInfo>
            </icr:hasMonitorInfo>
          </icr:IcaroService>
        </icr:needs>
      </icr:IcaroApplication>
    </icr:hasPart>
  </icr:BusinessConfiguration>
  <icr:hasArguments>url:"http://www.ecalp.eu/",contains:"ECLAP"</icr:hasArguments>
</rdf:RDF>
```




```
</icr:hasMonitorInfo>
</icr:IcaroService>
</icr:needs>
<icr:hasSLA>
  <icr:ServiceLevelAgreement rdf:about="urn:cloudicaro:ServiceLevelAgreement:004_001">
    <icr:hasSLObjective>
      <icr:ServiceLevelObjective>
        <icr:hasSLAction>
          <icr:ServiceLevelAction>
            <icr:hasName>Send e-mail</icr:hasName>
            <icr:callUrl>http://cm.cloudicaro.it/api/send-email</icr:callUrl>
          </icr:ServiceLevelAction>
        </icr:hasSLAction>
        <icr:hasSLMetric>
          <icr:ServiceLevelAndMetric>
            <icr:dependsOn>
              <icr:ServiceLevelSimpleMetric>
                <icr:hasMetricName>avgResponseTime</icr:hasMetricName>
                <icr:hasMetricValueLessThan
rdf:datatype="&xsd;decimal">5</icr:hasMetricValueLessThan>
                <icr:hasMetricUnit>seconds</icr:hasMetricUnit>
                <icr:dependsOn rdf:resource="urn:cloudicaro:ApacheWebServer:XX" />
              </icr:ServiceLevelSimpleMetric>
              <icr:ServiceLevelSimpleMetric>
                <icr:hasMetricName>xlms:numberOfObjects</icr:hasMetricName>
                <icr:hasMetricValueLessThan
rdf:datatype="&xsd;decimal">500</icr:hasMetricValueLessThan>
                <icr:hasMetricUnit>number</icr:hasMetricUnit>
                <icr:dependsOn rdf:resource="urn:cloudicaro:XLMS:XX" />
              </icr:ServiceLevelSimpleMetric>
            </icr:dependsOn>
          </icr:ServiceLevelAndMetric>
        </icr:hasSLMetric>
      </icr:ServiceLevelObjective>
    </icr:hasSLObjective>
    <icr:hasStartTime rdf:datatype="&xsd;dateTime">2013-01-
01T00:00:00</icr:hasStartTime>
    <icr:hasEndTime rdf:datatype="&xsd;dateTime">2015-01-01T00:00:00</icr:hasEndTime>
  </icr:ServiceLevelAgreement>
</icr:hasSLA>
</icr:IcaroApplication>
<icr:IcaroTenant rdf:about="urn:cloudicaro:XLMSTenant:004_001">
  <icr:hasName>OggiWebTenant</icr:hasName>
  <icr:hasIdentifier>001</icr:hasIdentifier>
  <icr:isTenantOf rdf:resource="urn:cloudicaro:XLMS:X" />
  <icr:createdBy rdf:resource="urn:cloudicaro:User:d" />
</icr:IcaroTenant>
</icr:hasPart>
<icr:hasPart rdf:resource="urn:cloudicaro:VirtualMachine:Y" />
</icr:BusinessConfiguration>
<icr:VirtualMachine rdf:about="urn:cloudicaro:VirtualMachine:004_001">
  <icr:hasName>VM001</icr:hasName>
  <icr:hasIdentifier>vm001</icr:hasIdentifier>
  <icr:hasCPUCount rdf:datatype="&xsd;positiveInteger">2</icr:hasCPUCount>
  <icr:hasMemorySize rdf:datatype="&xsd;decimal">2</icr:hasMemorySize>
  <icr:hasVirtualStorage>
    <icr:VirtualStorage rdf:about="urn:cloudicaro:LocalStorage:VM004_001:disk1" >
      <icr:hasName>disk1</icr:hasName>
      <icr:hasIdentifier>dsk1</icr:hasIdentifier>
      <icr:hasDiskSize rdf:datatype="&xsd;decimal">20</icr:hasDiskSize>
    </icr:VirtualStorage>
  </icr:hasVirtualStorage>
  <icr:hasNetworkAdapter>
    <icr:NetworkAdapter>
      <icr:hasIPAddress>192.168.1.23</icr:hasIPAddress>
      <icr:boundToNetwork rdf:resource="urn:cloudicaro:LocalNetwork:X" />
    </icr:NetworkAdapter>
  </icr:hasNetworkAdapter>
</icr:VirtualMachine>
</icr:hasPart>
</icr:IcaroApplication>
</icr:IcaroService>
</icr:needs>
</icr:hasMonitorInfo>
```



```
</icr:NetworkAdapter>
</icr:hasNetworkAdapter>
<icr:hasOS rdf:resource="&icr;windowsXP1"/>
<icr:isPartOf rdf:resource="urn:cloudicaro:HostMachine:X"/>
<icr:isStoredOn rdf:resource="urn:cloudicaro:LocalStorage:X" />
<icr:isInstanceOf rdf:resource="urn:cloudicaro:VirtualMachineTemplate:X"/>
<icr:hasMonitorInfo>
  <icr:MonitorInfo>
    <icr:hasMetricName>avgCPU%1m</icr:hasMetricName>
    <icr:hasWarningValue rdf:datatype="&xsd;decimal">70</icr:hasWarningValue>
    <icr:hasCriticalValue rdf:datatype="&xsd;decimal">80</icr:hasCriticalValue>
    <icr:hasMaxCheckAttempts
rdf:datatype="&xsd;positiveInteger">5</icr:hasMaxCheckAttempts>
    <icr:hasCheckInterval rdf:datatype="&xsd;positiveInteger">3</icr:hasCheckInterval>
  </icr:MonitorInfo>
</icr:hasMonitorInfo>
</icr:VirtualMachine>
<icr:VirtualMachineTemplate rdf:about="urn:cloudicaro:VirtualMachineTemplate:004_001">
  <icr:hasName>VMT001</icr:hasName>
  <icr:hasIdentifier>vmt001</icr:hasIdentifier>
  <icr:hasCPUCount rdf:datatype="&xsd;positiveInteger">2</icr:hasCPUCount>
  <icr:hasMemorySize rdf:datatype="&xsd;decimal">2</icr:hasMemorySize>
  <icr:hasVirtualStorage>
    <icr:VirtualStorage rdf:about="urn:cloudicaro:LocalStorage:VMT004_001:disk1" >
      <icr:hasName>disk1</icr:hasName>
      <icr:hasIdentifier>dsk1</icr:hasIdentifier>
      <icr:hasDiskSize rdf:datatype="&xsd;decimal">20</icr:hasDiskSize>
    </icr:VirtualStorage>
  </icr:hasVirtualStorage>
  <icr:hasNetworkAdapter>
    <icr:NetworkAdapter>
      <icr:hasIPAddress>192.168.1.23</icr:hasIPAddress>
      <icr:boundToNetwork rdf:resource="urn:cloudicaro:LocalNetwork:XX" />
    </icr:NetworkAdapter>
  </icr:hasNetworkAdapter>
  <icr:hasOS rdf:resource="&icr;windowsXP2"/>
  <icr:isPartOf rdf:resource="urn:cloudicaro:HostMachine:XX"/>
  <icr:isStoredOn rdf:resource="urn:cloudicaro:LocalStorage:HM001:disk1" />
</icr:VirtualMachineTemplate>
</rdf:RDF>
```

9.11 BC-TEST5-FAIL

```
<rdf:RDF xmlns:app="http://www.cloudicaro.it/cloud_ontology/applications#"
xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
xmlns:icr="http://www.cloudicaro.it/cloud_ontology/core#"
xmlns:foaf="http://xmlns.com/foaf/0.1/">
  <icr:BusinessConfiguration rdf:about="urn:cloudicaro:BusinessConfiguration:005">
    <icr:hasName>My Configuration</icr:hasName>
    <icr:hasIdentifier>TEST-001</icr:hasIdentifier>
    <icr:hasContractId>C006</icr:hasContractId>
    <icr:createdBy rdf:resource="urn:cloudicaro:User:a"/>
    <icr:administeredBy rdf:resource="urn:cloudicaro:User:b"/>
    <icr:hasPart>
      <icr:IcaroApplication rdf:about="urn:cloudicaro:MyXLMS:005_001">
        <rdf:type rdf:resource="&app;MyXLMS"/>
        <icr:hasName>My ECLAP</icr:hasName>
        <icr:hasIdentifier>xlms:001</icr:hasIdentifier>
        <icr:createdBy rdf:resource="urn:cloudicaro:User:c"/>
        <icr:needs>
          <icr:IcaroService rdf:about="urn:cloudicaro:ApacheTomcat:005_001">
            <rdf:type rdf:resource="&icr;ApacheTomcat"/>
            <icr:hasName>Apache Web Server 001</icr:hasName>
            <icr:hasIdentifier>AWS:001</icr:hasIdentifier>
            <icr:runsOnVM rdf:resource="urn:cloudicaro:VirtualMachine:005_001"/>
            <icr:supportsLanguage rdf:resource="&icr;php"/>
            <icr:usesTcpPort rdf:datatype="&xsd;unsignedShort">8080</icr:usesTcpPort>
```



```
<icr:hasMonitorInfo>
  <icr:MonitorInfo>
    <icr:hasMetricName>checkHttp</icr:hasMetricName>

<icr:hasArguments>url:"http://www.ecalp.eu/",contains:"ECLAP"</icr:hasArguments>
  </icr:MonitorInfo>
</icr:hasMonitorInfo>
</icr:IcaroService>
<icr:IcaroService rdf:about="urn:cloudicaro:ApacheTomcat:005_002">
  <rdf:type rdf:resource="&icr;ApacheTomcat"/>
  <icr:hasName>Apache Web Server 001</icr:hasName>
  <icr:hasIdentifier>AWS:001</icr:hasIdentifier>
  <icr:runsOnVM rdf:resource="urn:cloudicaro:VirtualMachine:005_001"/>
  <icr:supportsLanguage rdf:resource="&icr;php"/>
  <icr:usesTcpPort rdf:datatype="&xsd;unsignedShort">8081</icr:usesTcpPort>
  <icr:hasMonitorInfo>
    <icr:MonitorInfo>
      <icr:hasMetricName>checkHttp</icr:hasMetricName>

<icr:hasArguments>url:"http://www.ecalp.eu/",contains:"ECLAP"</icr:hasArguments>
  </icr:MonitorInfo>
</icr:hasMonitorInfo>
</icr:IcaroService>
<icr:IcaroService rdf:about="urn:cloudicaro:StorageServer:005_001">
  <rdf:type rdf:resource="&icr;StorageServer"/>
  <icr:hasName>Storage Server 001</icr:hasName>
  <icr:hasIdentifier>AWS:001</icr:hasIdentifier>
  <icr:runsOnVM rdf:resource="urn:cloudicaro:VirtualMachine:005_001"/>
  <icr:usesTcpPort rdf:datatype="&xsd;unsignedShort">9090</icr:usesTcpPort>
</icr:IcaroService>
<icr:IcaroService rdf:about="urn:cloudicaro:StorageServer:005_002">
  <rdf:type rdf:resource="&icr;StorageServer"/>
  <icr:hasName>Storage Server 002</icr:hasName>
  <icr:hasIdentifier>AWS:002</icr:hasIdentifier>
  <icr:runsOnVM rdf:resource="urn:cloudicaro:VirtualMachine:005_001"/>
  <icr:usesTcpPort rdf:datatype="&xsd;unsignedShort">9091</icr:usesTcpPort>
</icr:IcaroService>
</icr:needs>
</icr:IcaroApplication>
</icr:hasPart>
</icr:BusinessConfiguration>
<icr:VirtualMachine rdf:about="urn:cloudicaro:VirtualMachine:005_001">
  <icr:hasName>VM001</icr:hasName>
  <icr:hasIdentifier>vm001</icr:hasIdentifier>
  <icr:hasCPUCount rdf:datatype="&xsd;positiveInteger">2</icr:hasCPUCount>
  <icr:hasMemorySize rdf:datatype="&xsd;decimal">2</icr:hasMemorySize>
  <icr:hasVirtualStorage>
    <icr:VirtualStorage rdf:about="urn:cloudicaro:LocalStorage:VM005_001:disk1" >
      <icr:hasName>disk1</icr:hasName>
      <icr:hasIdentifier>dsk1</icr:hasIdentifier>
      <icr:hasDiskSize rdf:datatype="&xsd;decimal">20</icr:hasDiskSize>
    </icr:VirtualStorage>
  </icr:hasVirtualStorage>
  <icr:hasNetworkAdapter>
    <icr:NetworkAdapter>
      <icr:hasIPAddress>192.168.1.23</icr:hasIPAddress>
      <icr:boundToNetwork rdf:resource="urn:cloudicaro:LocalNetwork:001" />
    </icr:NetworkAdapter>
  </icr:hasNetworkAdapter>
  <icr:hasOS rdf:resource="&icr;windowsXP"/>
  <icr:isPartOf rdf:resource="urn:cloudicaro:HostMachine:001"/>
  <icr:isStoredOn rdf:resource="urn:cloudicaro:LocalStorage:HM001:disk1" />
  <icr:isInstanceOf rdf:resource="urn:cloudicaro:VirtualMachineTemplate:005_001"/>
  <icr:hasMonitorInfo>
    <icr:MonitorInfo>
      <icr:hasMetricName>avgCPU%1m</icr:hasMetricName>
```



```
    <icr:hasWarningValue rdf:datatype="&xsd;decimal">70</icr:hasWarningValue>
    <icr:hasCriticalValue rdf:datatype="&xsd;decimal">80</icr:hasCriticalValue>
    <icr:hasMaxCheckAttempts
rdf:datatype="&xsd;positiveInteger">5</icr:hasMaxCheckAttempts>
    <icr:hasCheckInterval rdf:datatype="&xsd;positiveInteger">3</icr:hasCheckInterval>
  </icr:MonitorInfo>
</icr:VirtualMachine>
<icr:VirtualMachineTemplate rdf:about="urn:cloudicaro:VirtualMachineTemplate:005_001">
  <icr:hasName>VMT001</icr:hasName>
  <icr:hasIdentifier>vmt001</icr:hasIdentifier>
  <icr:hasCPUCount rdf:datatype="&xsd;positiveInteger">2</icr:hasCPUCount>
  <icr:hasMemorySize rdf:datatype="&xsd;decimal">2</icr:hasMemorySize>
  <icr:hasVirtualStorage>
    <icr:VirtualStorage rdf:about="urn:cloudicaro:LocalStorage:VM005_001:disk1" >
      <icr:hasName>disk1</icr:hasName>
      <icr:hasIdentifier>dsk1</icr:hasIdentifier>
      <icr:hasDiskSize rdf:datatype="&xsd;decimal">20</icr:hasDiskSize>
    </icr:VirtualStorage>
  </icr:hasVirtualStorage>
  <icr:hasNetworkAdapter>
    <icr:NetworkAdapter>
      <icr:hasIPAddress>192.168.1.23</icr:hasIPAddress>
      <icr:boundToNetwork rdf:resource="urn:cloudicaro:LocalNetwork:001" />
    </icr:NetworkAdapter>
  </icr:hasNetworkAdapter>
  <icr:hasOS rdf:resource="&icr;windowsXP" />
  <icr:isPartOf rdf:resource="urn:cloudicaro:HostMachine:001" />
  <icr:isStoredOn rdf:resource="urn:cloudicaro:LocalStorage:HM001:disk1" />
</icr:VirtualMachineTemplate>
</rdf:RDF>
```

9.12 BC-TEST6-OK

```
<rdf:RDF xmlns:app="http://www.cloudicaro.it/cloud_ontology/applications#"
xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
xmlns:icr="http://www.cloudicaro.it/cloud_ontology/core#"
xmlns:foaf="http://xmlns.com/foaf/0.1/" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="http://www.w3.org/1999/02/22-rdf-syntax-ns#
schema-icaro-kb-businessConfiguration.xsd">
  <icr:BusinessConfiguration rdf:about="urn:cloudicaro:BusinessConfiguration:TEST-006">
    <icr:hasName>Joomla</icr:hasName>
    <icr:hasIdentifier>006</icr:hasIdentifier>
    <icr:hasContractId>C002</icr:hasContractId>
    <icr:createdBy rdf:resource="urn:cloudicaro:User:xyz" />
    <icr:administeredBy rdf:resource="urn:cloudicaro:User:zzz" />
    <icr:administeredBy rdf:resource="urn:cloudicaro:User:aaa" />
    <icr:hasPart>
      <icr:IcaroApplication rdf:about="urn:cloudicaro:JoomlaBalanced:006_001">
        <rdf:type rdf:resource="&app;JoomlaBalanced" />
        <icr:hasName>JoomlaBalanced test</icr:hasName>
        <icr:hasIdentifier>006_001</icr:hasIdentifier>
        <icr:createdBy rdf:resource="urn:cloudicaro:User:xyz" />
        <icr:administeredBy rdf:resource="urn:cloudicaro:User:zzz" />
        <icr:administeredBy rdf:resource="urn:cloudicaro:User:aaa" />
        <icr:needs>
          <icr:IcaroService rdf:about="urn:cloudicaro:ApacheWebServer:006_001">
            <rdf:type rdf:resource="&icr;ApacheWebServer" />
            <icr:hasName>Apache Web Server 001</icr:hasName>
            <icr:hasIdentifier>006_001</icr:hasIdentifier>
            <icr:runsOnVM rdf:resource="urn:cloudicaro:VirtualMachine:006_001" />
            <icr:supportsLanguage rdf:resource="&icr;php" />
            <icr:usesTcpPort rdf:datatype="&xsd;unsignedShort">80</icr:usesTcpPort>
            <icr:hasMonitorInfo>
              <icr:MonitorInfo>
                <icr:hasMetricName>checkHttp</icr:hasMetricName>
                <icr:hasArguments>url:'http://192.168.1.123/'</icr:hasArguments>
```



```
    </icr:MonitorInfo>
    <icr:MonitorInfo>
      <icr:hasMetricName>avgResponseTime</icr:hasMetricName>
      <icr:hasArguments>url:"http://192.168.1.123/"</icr:hasArguments>
    </icr:MonitorInfo>
  </icr:hasMonitorInfo>
</icr:IcaroService>
<icr:IcaroService rdf:about="urn:cloudicaro:ApacheWebServer:006_002">
  <rdf:type rdf:resource="&icr;ApacheWebServer"/>
  <icr:hasName>Apache Web Server 002</icr:hasName>
  <icr:hasIdentifier>006_002</icr:hasIdentifier>
  <icr:runsOnVM rdf:resource="urn:cloudicaro:VirtualMachine:006_002"/>
  <icr:supportsLanguage rdf:resource="&icr;php"/>
  <icr:usesTcpPort rdf:datatype="&xsd;unsignedShort">80</icr:usesTcpPort>
  <icr:hasMonitorInfo>
    <icr:MonitorInfo>
      <icr:hasMetricName>checkHttp</icr:hasMetricName>
      <icr:hasArguments>url:"http://192.168.1.124/"</icr:hasArguments>
    </icr:MonitorInfo>
    <icr:MonitorInfo>
      <icr:hasMetricName>avgResponseTime</icr:hasMetricName>
      <icr:hasArguments>url:"http://192.168.1.124/"</icr:hasArguments>
    </icr:MonitorInfo>
  </icr:hasMonitorInfo>
</icr:IcaroService>
<icr:IcaroService rdf:about="urn:cloudicaro:MySQL:006_001">
  <rdf:type rdf:resource="&icr;MySQL"/>
  <icr:hasName>MySQL</icr:hasName>
  <icr:hasIdentifier>006_001</icr:hasIdentifier>
  <icr:runsOnVM rdf:resource="urn:cloudicaro:VirtualMachine:006_003"/>
  <icr:usesTcpPort rdf:datatype="&xsd;unsignedShort">3306</icr:usesTcpPort>
  <icr:hasMonitorInfo>
    <icr:MonitorInfo>
      <icr:hasMetricName>checkMySQL</icr:hasMetricName>
<icr:hasArguments>host:"192.168.1.125",port:3306,user:"usr",passwd:"pwd"</icr:hasArguments>
    </icr:MonitorInfo>
    <icr:MonitorInfo>
      <icr:hasMetricName>checkMySQL</icr:hasMetricName>
<icr:hasArguments>host:"192.168.1.125",port:3306,user:"usr",passwd:"pwd"</icr:hasArguments>
    </icr:MonitorInfo>
  </icr:hasMonitorInfo>
</icr:IcaroService>
<icr:IcaroService rdf:about="urn:cloudicaro:NFSServer:006_001">
  <rdf:type rdf:resource="&icr;NFSServer"/>
  <icr:hasName>NFS</icr:hasName>
  <icr:hasIdentifier>006_001</icr:hasIdentifier>
  <icr:runsOnVM rdf:resource="urn:cloudicaro:VirtualMachine:006_005"/>
  <icr:hasMonitorInfo>
    <icr:MonitorInfo>
      <icr:hasMetricName>usedDiskSpace</icr:hasMetricName>
    </icr:MonitorInfo>
  </icr:hasMonitorInfo>
</icr:IcaroService>
<icr:IcaroService rdf:about="urn:cloudicaro:HttpBalancer:006_004">
  <rdf:type rdf:resource="&icr;HttpBalancer"/>
  <icr:hasName>Http Balancer 004</icr:hasName>
  <icr:hasIdentifier>006_004</icr:hasIdentifier>
  <icr:runsOnVM rdf:resource="urn:cloudicaro:VirtualMachine:006_004"/>
  <icr:usesTcpPort rdf:datatype="&xsd;unsignedShort">80</icr:usesTcpPort>
  <icr:hasMonitorInfo>
    <icr:MonitorInfo>
      <icr:hasMetricName>checkHttp</icr:hasMetricName>
      <icr:hasArguments>url:"http://192.168.1.126/"</icr:hasArguments>
    </icr:MonitorInfo>
```



```
<icr:MonitorInfo>
  <icr:hasMetricName>avgResponseTime</icr:hasMetricName>
  <icr:hasArguments>url:"http://192.168.1.126/"</icr:hasArguments>
</icr:MonitorInfo>
</icr:hasMonitorInfo>
</icr:IcaroService>
</icr:needs>
<icr:hasSLA>
  <icr:ServiceLevelAgreement rdf:about="urn:cloudicaro:ServiceLevelAgreement:006_001">
    <icr:hasSLObjective>
      <icr:ServiceLevelObjective>
        <icr:hasSLAction>
          <icr:ServiceLevelAction>
            <icr:hasName>Send e-mail</icr:hasName>
            <icr:callUrl>http://cm.cloudicaro.it/api/send-email</icr:callUrl>
          </icr:ServiceLevelAction>
        </icr:hasSLAction>
        <icr:hasSLMetric>
          <icr:ServiceLevelAndMetric>
            <icr:dependsOn>
              <icr:ServiceLevelSimpleMetric>
                <icr:hasMetricName>avgResponseTime</icr:hasMetricName>
                <icr:hasMetricValueLessThan
rdf:datatype="&xsd;decimal">5</icr:hasMetricValueLessThan>
                <icr:hasMetricUnit>seconds</icr:hasMetricUnit>
                <icr:dependsOn rdf:resource="urn:cloudicaro:ApacheWebServer:006_001"/>
              </icr:ServiceLevelSimpleMetric>
              <icr:ServiceLevelSimpleMetric>
                <icr:hasMetricName>avgResponseTime</icr:hasMetricName>
                <icr:hasMetricValueLessThan
rdf:datatype="&xsd;decimal">5</icr:hasMetricValueLessThan>
                <icr:hasMetricUnit>seconds</icr:hasMetricUnit>
                <icr:dependsOn rdf:resource="urn:cloudicaro:ApacheWebServer:006_002"/>
              </icr:ServiceLevelSimpleMetric>
              <icr:ServiceLevelSimpleMetric>
                <icr:hasMetricName>usedDiskSpace</icr:hasMetricName>
                <icr:hasMetricValueLessThan
rdf:datatype="&xsd;decimal">1</icr:hasMetricValueLessThan>
                <icr:hasMetricUnit>GB</icr:hasMetricUnit>
                <icr:dependsOn rdf:resource="urn:cloudicaro:NFSSTServer:006_001"/>
              </icr:ServiceLevelSimpleMetric>
            </icr:dependsOn>
          </icr:ServiceLevelAndMetric>
        </icr:hasSLMetric>
      </icr:ServiceLevelObjective>
    </icr:hasSLObjective>
    <icr:hasStartTime rdf:datatype="&xsd;dateTime">2013-01-
01T00:00:00</icr:hasStartTime>
    <icr:hasEndTime rdf:datatype="&xsd;dateTime">2015-01-01T00:00:00</icr:hasEndTime>
  </icr:ServiceLevelAgreement>
</icr:hasSLA>
</icr:IcaroApplication>
</icr:hasPart>
</icr:BusinessConfiguration>
<icr:VirtualMachine rdf:about="urn:cloudicaro:VirtualMachine:006_001">
  <icr:hasName>VM001</icr:hasName>
  <icr:hasIdentifier>006_001</icr:hasIdentifier>
  <icr:hasCPUCount rdf:datatype="&xsd;positiveInteger">2</icr:hasCPUCount>
  <icr:hasMemorySize rdf:datatype="&xsd;decimal">2</icr:hasMemorySize>
  <icr:hasVirtualStorage>
    <icr:VirtualStorage rdf:about="urn:cloudicaro:LocalStorage:VM006_001:disk1" >
      <icr:hasName>disk1</icr:hasName>
      <icr:hasIdentifier>dsk1</icr:hasIdentifier>
      <icr:hasDiskSize rdf:datatype="&xsd;decimal">20</icr:hasDiskSize>
    </icr:VirtualStorage>
  </icr:hasVirtualStorage>
</icr:VirtualMachine>
```



```
<icr:hasNetworkAdapter>
  <icr:NetworkAdapter>
    <icr:hasIPAddress>192.168.1.123</icr:hasIPAddress>
    <icr:boundToNetwork rdf:resource="urn:cloudicaro:LocalNetwork:001" />
  </icr:NetworkAdapter>
</icr:hasNetworkAdapter>
<icr:hasOS rdf:resource="http://www.cloudicaro.it/cloud_ontology/core#ubuntu"/>
<icr:isPartOf rdf:resource="urn:cloudicaro:HostMachine:001"/>
<icr:isStoredOn rdf:resource="urn:cloudicaro:LocalStorage:HM001:disk1" />
<icr:hasMonitorInfo>
  <icr:MonitorInfo>
    <icr:hasMetricName>avgCPU%lm</icr:hasMetricName>
    <icr:hasWarningValue rdf:datatype="&xsd;decimal">70</icr:hasWarningValue>
    <icr:hasCriticalValue rdf:datatype="&xsd;decimal">80</icr:hasCriticalValue>
    <icr:hasMaxCheckAttempts
rdf:datatype="&xsd;positiveInteger">5</icr:hasMaxCheckAttempts>
    <icr:hasCheckInterval rdf:datatype="&xsd;positiveInteger">3</icr:hasCheckInterval>
  </icr:MonitorInfo>
  <icr:MonitorInfo>
    <icr:hasMetricName>avgMemlm</icr:hasMetricName>
    <icr:hasWarningValue rdf:datatype="&xsd;decimal">70</icr:hasWarningValue>
    <icr:hasCriticalValue rdf:datatype="&xsd;decimal">80</icr:hasCriticalValue>
    <icr:hasMaxCheckAttempts
rdf:datatype="&xsd;positiveInteger">5</icr:hasMaxCheckAttempts>
    <icr:hasCheckInterval rdf:datatype="&xsd;positiveInteger">3</icr:hasCheckInterval>
  </icr:MonitorInfo>
</icr:hasMonitorInfo>
</icr:VirtualMachine>
<icr:VirtualMachine rdf:about="urn:cloudicaro:VirtualMachine:006_002">
  <icr:hasName>VM002</icr:hasName>
  <icr:hasIdentifier>006_002</icr:hasIdentifier>
  <icr:hasCPUCount rdf:datatype="&xsd;positiveInteger">1</icr:hasCPUCount>
  <icr:hasMemorySize rdf:datatype="&xsd;decimal">2</icr:hasMemorySize>
  <icr:hasVirtualStorage>
    <icr:VirtualStorage rdf:about="urn:cloudicaro:LocalStorage:VM006_002:disk1" >
      <icr:hasName>disk1</icr:hasName>
      <icr:hasIdentifier>dsk1</icr:hasIdentifier>
      <icr:hasDiskSize rdf:datatype="&xsd;decimal">20</icr:hasDiskSize>
    </icr:VirtualStorage>
  </icr:hasVirtualStorage>
  <icr:hasNetworkAdapter>
    <icr:NetworkAdapter>
      <icr:hasIPAddress>192.168.1.124</icr:hasIPAddress>
      <icr:boundToNetwork rdf:resource="urn:cloudicaro:LocalNetwork:001" />
    </icr:NetworkAdapter>
  </icr:hasNetworkAdapter>
  <icr:hasOS rdf:resource="http://www.cloudicaro.it/cloud_ontology/core#ubuntu"/>
  <icr:isPartOf rdf:resource="urn:cloudicaro:HostMachine:001"/>
  <icr:isStoredOn rdf:resource="urn:cloudicaro:LocalStorage:HM001:disk1" />
  <icr:hasMonitorInfo>
    <icr:MonitorInfo>
      <icr:hasMetricName>avgCPU%lm</icr:hasMetricName>
      <icr:hasWarningValue rdf:datatype="&xsd;decimal">70</icr:hasWarningValue>
      <icr:hasCriticalValue rdf:datatype="&xsd;decimal">80</icr:hasCriticalValue>
      <icr:hasMaxCheckAttempts
rdf:datatype="&xsd;positiveInteger">5</icr:hasMaxCheckAttempts>
      <icr:hasCheckInterval rdf:datatype="&xsd;positiveInteger">3</icr:hasCheckInterval>
    </icr:MonitorInfo>
    <icr:MonitorInfo>
      <icr:hasMetricName>avgMemlm</icr:hasMetricName>
      <icr:hasWarningValue rdf:datatype="&xsd;decimal">70</icr:hasWarningValue>
      <icr:hasCriticalValue rdf:datatype="&xsd;decimal">80</icr:hasCriticalValue>
      <icr:hasMaxCheckAttempts
rdf:datatype="&xsd;positiveInteger">5</icr:hasMaxCheckAttempts>
      <icr:hasCheckInterval rdf:datatype="&xsd;positiveInteger">3</icr:hasCheckInterval>
    </icr:MonitorInfo>
  </icr:hasMonitorInfo>
</icr:VirtualMachine>
```




```
</icr:hasMonitorInfo>
</icr:VirtualMachine>
<icr:VirtualMachine rdf:about="urn:cloudicaro:VirtualMachine:006_003">
  <icr:hasName>VM003</icr:hasName>
  <icr:hasIdentifier>006_003</icr:hasIdentifier>
  <icr:hasCPUCount rdf:datatype="&xsd;positiveInteger">1</icr:hasCPUCount>
  <icr:hasMemorySize rdf:datatype="&xsd;decimal">2</icr:hasMemorySize>
  <icr:hasVirtualStorage>
    <icr:VirtualStorage rdf:about="urn:cloudicaro:LocalStorage:VM006_003:disk1" >
      <icr:hasName>disk1</icr:hasName>
      <icr:hasIdentifier>dsk1</icr:hasIdentifier>
      <icr:hasDiskSize rdf:datatype="&xsd;decimal">20</icr:hasDiskSize>
    </icr:VirtualStorage>
  </icr:hasVirtualStorage>
  <icr:hasNetworkAdapter>
    <icr:NetworkAdapter>
      <icr:hasIPAddress>192.168.1.125</icr:hasIPAddress>
      <icr:boundToNetwork rdf:resource="urn:cloudicaro:LocalNetwork:001" />
    </icr:NetworkAdapter>
  </icr:hasNetworkAdapter>
  <icr:hasOS rdf:resource="http://www.cloudicaro.it/cloud_ontology/core#ubuntu"/>
  <icr:isPartOf rdf:resource="urn:cloudicaro:HostMachine:001"/>
  <icr:isStoredOn rdf:resource="urn:cloudicaro:LocalStorage:HM001:disk1" />
  <icr:hasMonitorInfo>
    <icr:MonitorInfo>
      <icr:hasMetricName>avgCPU%lm</icr:hasMetricName>
      <icr:hasWarningValue rdf:datatype="&xsd;decimal">70</icr:hasWarningValue>
      <icr:hasCriticalValue rdf:datatype="&xsd;decimal">80</icr:hasCriticalValue>
      <icr:hasMaxCheckAttempts
rdf:datatype="&xsd;positiveInteger">5</icr:hasMaxCheckAttempts>
      <icr:hasCheckInterval rdf:datatype="&xsd;positiveInteger">3</icr:hasCheckInterval>
    </icr:MonitorInfo>
    <icr:MonitorInfo>
      <icr:hasMetricName>avgMemlm</icr:hasMetricName>
      <icr:hasWarningValue rdf:datatype="&xsd;decimal">70</icr:hasWarningValue>
      <icr:hasCriticalValue rdf:datatype="&xsd;decimal">80</icr:hasCriticalValue>
      <icr:hasMaxCheckAttempts
rdf:datatype="&xsd;positiveInteger">5</icr:hasMaxCheckAttempts>
      <icr:hasCheckInterval rdf:datatype="&xsd;positiveInteger">3</icr:hasCheckInterval>
    </icr:MonitorInfo>
  </icr:hasMonitorInfo>
</icr:VirtualMachine>
<icr:VirtualMachine rdf:about="urn:cloudicaro:VirtualMachine:006_004">
  <icr:hasName>VM004</icr:hasName>
  <icr:hasIdentifier>006_004</icr:hasIdentifier>
  <icr:hasCPUCount rdf:datatype="&xsd;positiveInteger">1</icr:hasCPUCount>
  <icr:hasMemorySize rdf:datatype="&xsd;decimal">2</icr:hasMemorySize>
  <icr:hasVirtualStorage>
    <icr:VirtualStorage rdf:about="urn:cloudicaro:LocalStorage:VM006_004:disk1" >
      <icr:hasName>disk1</icr:hasName>
      <icr:hasIdentifier>dsk1</icr:hasIdentifier>
      <icr:hasDiskSize rdf:datatype="&xsd;decimal">20</icr:hasDiskSize>
    </icr:VirtualStorage>
  </icr:hasVirtualStorage>
  <icr:hasNetworkAdapter>
    <icr:NetworkAdapter>
      <icr:hasIPAddress>192.168.1.126</icr:hasIPAddress>
      <icr:boundToNetwork rdf:resource="urn:cloudicaro:LocalNetwork:001" />
    </icr:NetworkAdapter>
  </icr:hasNetworkAdapter>
  <icr:hasOS rdf:resource="http://www.cloudicaro.it/cloud_ontology/core#ubuntu"/>
  <icr:isPartOf rdf:resource="urn:cloudicaro:HostMachine:001"/>
  <icr:isStoredOn rdf:resource="urn:cloudicaro:LocalStorage:HM001:disk1" />
  <icr:hasMonitorInfo>
    <icr:MonitorInfo>
      <icr:hasMetricName>avgCPU%lm</icr:hasMetricName>
```




```
<icr:hasWarningValue rdf:datatype="&xsd;decimal">70</icr:hasWarningValue>
<icr:hasCriticalValue rdf:datatype="&xsd;decimal">80</icr:hasCriticalValue>
<icr:hasMaxCheckAttempts
rdf:datatype="&xsd;positiveInteger">5</icr:hasMaxCheckAttempts>
  <icr:hasCheckInterval rdf:datatype="&xsd;positiveInteger">3</icr:hasCheckInterval>
</icr:MonitorInfo>
<icr:MonitorInfo>
  <icr:hasMetricName>avgMemlm</icr:hasMetricName>
  <icr:hasWarningValue rdf:datatype="&xsd;decimal">70</icr:hasWarningValue>
  <icr:hasCriticalValue rdf:datatype="&xsd;decimal">80</icr:hasCriticalValue>
  <icr:hasMaxCheckAttempts
rdf:datatype="&xsd;positiveInteger">5</icr:hasMaxCheckAttempts>
    <icr:hasCheckInterval rdf:datatype="&xsd;positiveInteger">3</icr:hasCheckInterval>
  </icr:MonitorInfo>
</icr:hasMonitorInfo>
</icr:VirtualMachine>
<icr:VirtualMachine rdf:about="urn:cloudicaro:VirtualMachine:006_005">
  <icr:hasName>VM005</icr:hasName>
  <icr:hasIdentifier>006_005</icr:hasIdentifier>
  <icr:hasCPUCount rdf:datatype="&xsd;positiveInteger">1</icr:hasCPUCount>
  <icr:hasMemorySize rdf:datatype="&xsd;decimal">2</icr:hasMemorySize>
  <icr:hasVirtualStorage>
    <icr:VirtualStorage rdf:about="urn:cloudicaro:LocalStorage:VM006_005:disk1" >
      <icr:hasName>disk1</icr:hasName>
      <icr:hasIdentifier>dsk1</icr:hasIdentifier>
      <icr:hasDiskSize rdf:datatype="&xsd;decimal">20</icr:hasDiskSize>
    </icr:VirtualStorage>
  </icr:hasVirtualStorage>
  <icr:hasNetworkAdapter>
    <icr:NetworkAdapter>
      <icr:hasIPAddress>192.168.1.127</icr:hasIPAddress>
      <icr:boundToNetwork rdf:resource="urn:cloudicaro:LocalNetwork:001" />
    </icr:NetworkAdapter>
  </icr:hasNetworkAdapter>
  <icr:hasOS rdf:resource="http://www.cloudicaro.it/cloud_ontology/core#ubuntu"/>
  <icr:isPartOf rdf:resource="urn:cloudicaro:HostMachine:001"/>
  <icr:isStoredOn rdf:resource="urn:cloudicaro:LocalStorage:HM001:disk1" />
  <icr:hasMonitorInfo>
    <icr:MonitorInfo>
      <icr:hasMetricName>avgCPU%lm</icr:hasMetricName>
      <icr:hasWarningValue rdf:datatype="&xsd;decimal">70</icr:hasWarningValue>
      <icr:hasCriticalValue rdf:datatype="&xsd;decimal">80</icr:hasCriticalValue>
      <icr:hasMaxCheckAttempts
rdf:datatype="&xsd;positiveInteger">5</icr:hasMaxCheckAttempts>
        <icr:hasCheckInterval rdf:datatype="&xsd;positiveInteger">3</icr:hasCheckInterval>
      </icr:MonitorInfo>
    <icr:MonitorInfo>
      <icr:hasMetricName>avgMemlm</icr:hasMetricName>
      <icr:hasWarningValue rdf:datatype="&xsd;decimal">70</icr:hasWarningValue>
      <icr:hasCriticalValue rdf:datatype="&xsd;decimal">80</icr:hasCriticalValue>
      <icr:hasMaxCheckAttempts
rdf:datatype="&xsd;positiveInteger">5</icr:hasMaxCheckAttempts>
        <icr:hasCheckInterval rdf:datatype="&xsd;positiveInteger">3</icr:hasCheckInterval>
      </icr:MonitorInfo>
    </icr:hasMonitorInfo>
  </icr:VirtualMachine>
  <icr:User rdf:about="urn:cloudicaro:User:xyz">
    <foaf:name>Mr. Xyz</foaf:name>
    <foaf:mbox>xyz@gmail.com</foaf:mbox>
  </icr:User>
  <icr:User rdf:about="urn:cloudicaro:User:zzz">
    <foaf:name>Mr. Zzz</foaf:name>
    <foaf:mbox>zzz@gmail.com</foaf:mbox>
  </icr:User>
  <icr:User rdf:about="urn:cloudicaro:User:aaa">
    <foaf:name>Mr. Aaa</foaf:name>
```



```
<foaf:mbox>aaa@gmail.com</foaf:mbox>
</icr:User>
</rdf:RDF>
```

9.13 BC-TEST7-OK

```
<rdf:RDF xmlns:app="http://www.cloudicaro.it/cloud_ontology/applications#"
xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
xmlns:icr="http://www.cloudicaro.it/cloud_ontology/core#"
xmlns:foaf="http://xmlns.com/foaf/0.1/" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="http://www.w3.org/1999/02/22-rdf-syntax-ns#
schema-icaro-kb-businessConfiguration.xsd">
  <icr:BusinessConfiguration
rdf:about="urn:cloudicaro:BusinessConfiguration:cgi:SharePointFarm">
  <icr:hasName>SharePointFarm</icr:hasName>
  <icr:hasIdentifier>SharePointFarm</icr:hasIdentifier>
  <icr:hasContractId>farm</icr:hasContractId>
  <icr:createdBy rdf:resource="urn:cloudicaro:User:bellini"/>
  <icr:hasPart>
    <icr:IcaroApplication rdf:about="urn:cloudicaro:SharePoint:cgi:SPFarm1">
      <rdf:type rdf:resource="&app;SharePoint"/>
      <icr:hasName>SharePoint</icr:hasName>
      <icr:hasIdentifier>SharePoint</icr:hasIdentifier>
      <icr:createdBy rdf:resource="urn:cloudicaro:User:bellini"/>
      <icr:needs>
        <icr:IcaroService
rdf:about="urn:cloudicaro:WindowsDomainController:cgi:SPFARM_DC01">
          <rdf:type rdf:resource="&icr;WindowsDomainController"/>
          <icr:hasName>Domain Controller</icr:hasName>
          <icr:hasIdentifier>SPFARM_DC01</icr:hasIdentifier>
          <icr:runsOnVM rdf:resource="urn:cloudicaro:VirtualMachine:cgi:SPFARM_DC01"/>
        </icr:IcaroService>
        <icr:IcaroService rdf:about="urn:cloudicaro:MSSqlServer2012:cgi:SPFARM_SQL01">
          <rdf:type rdf:resource="&icr;MSSqlServer2012"/>
          <icr:hasName>SQL Server 2012</icr:hasName>
          <icr:hasIdentifier>SPFARM_SQL01</icr:hasIdentifier>
          <icr:runsOnVM rdf:resource="urn:cloudicaro:VirtualMachine:cgi:SPFARM_SQL01"/>
        </icr:IcaroService>
        <icr:IcaroService
rdf:about="urn:cloudicaro:OfficeWebAppServer2013:cgi:SPFARM_OWA01">
          <rdf:type rdf:resource="&icr;OfficeWebAppServer2013"/>
          <icr:hasName>Office WebApp Server 2013</icr:hasName>
          <icr:hasIdentifier>SPFARM_OWA01</icr:hasIdentifier>
          <icr:runsOnVM rdf:resource="urn:cloudicaro:VirtualMachine:cgi:SPFARM_OWA01"/>
        </icr:IcaroService>
        <icr:IcaroService rdf:about="urn:cloudicaro:SharePointServer2013:cgi:SPFARM_APP01">
          <rdf:type rdf:resource="&icr;SharePointServer2013"/>
          <icr:hasName>SharePoint Server 2013</icr:hasName>
          <icr:hasIdentifier>SPFARM_APP01</icr:hasIdentifier>
          <icr:runsOnVM rdf:resource="urn:cloudicaro:VirtualMachine:cgi:SPFARM_APP01"/>
        </icr:IcaroService>
        <icr:IcaroService
rdf:about="urn:cloudicaro:InternetInformationServer:cgi:SPFARM_WFE01">
          <rdf:type rdf:resource="&icr;InternetInformationServer"/>
          <icr:hasName>Web Front End 01</icr:hasName>
          <icr:hasIdentifier>SPFARM_WFE01</icr:hasIdentifier>
          <icr:runsOnVM rdf:resource="urn:cloudicaro:VirtualMachine:cgi:SPFARM_WFE01"/>
        </icr:IcaroService>
        <icr:IcaroService
rdf:about="urn:cloudicaro:InternetInformationServer:cgi:SPFARM_WFE02">
          <rdf:type rdf:resource="&icr;InternetInformationServer"/>
          <icr:hasName>Web Front End 02</icr:hasName>
          <icr:hasIdentifier>SPFARM_WFE02</icr:hasIdentifier>
          <icr:runsOnVM rdf:resource="urn:cloudicaro:VirtualMachine:cgi:SPFARM_WFE02"/>
        </icr:IcaroService>
        <icr:IcaroService rdf:about="urn:cloudicaro:HAProxy:cgi:haproxy">
          <rdf:type rdf:resource="&icr;HAProxy"/>
```



```
<icr:hasName>HAProxy Balancer</icr:hasName>
<icr:hasIdentifier>haproxy</icr:hasIdentifier>
<icr:runsOnVM rdf:resource="urn:cloudicaro:VirtualMachine:cgi:haproxy"/>
</icr:IcaroService>
</icr:needs>
</icr:IcaroApplication>
</icr:hasPart>
</icr:BusinessConfiguration>
<icr:VirtualMachine rdf:about="urn:cloudicaro:VirtualMachine:cgi:SPFARM_DC01">
  <icr:hasName>SPFARM_DC01</icr:hasName>
  <icr:hasIdentifier>SPFARM_DC01</icr:hasIdentifier>
  <icr:hasCPUCount rdf:datatype="&xsd;positiveInteger">1</icr:hasCPUCount>
  <icr:hasMemorySize rdf:datatype="&xsd;decimal">2</icr:hasMemorySize>
  <icr:hasVirtualStorage>
    <icr:VirtualStorage rdf:about="urn:cloudicaro:VirtualMachine:cgi:SPFARM_DC01:disk1">
      <icr:hasName>disk</icr:hasName>
      <icr:hasIdentifier>C:</icr:hasIdentifier>
      <icr:hasDiskSize
rdf:datatype="http://www.w3.org/2001/XMLSchema#decimal">40</icr:hasDiskSize>
    </icr:VirtualStorage>
  </icr:hasVirtualStorage>
  <icr:hasNetworkAdapter>
    <icr:NetworkAdapter>
      <icr:hasIPAddress>10.254.101.150</icr:hasIPAddress>
      <icr:boundToNetwork rdf:resource="urn:cloudicaro:LocalNetwork:cgi:dev" />
    </icr:NetworkAdapter>
  </icr:hasNetworkAdapter>
  <icr:hasOS rdf:resource="http://www.cloudicaro.it/cloud_ontology/core#windowsServer2012"/>
  <icr:isPartOf rdf:resource="urn:cloudicaro:HostMachineCluster:cgi:DEV"/>
  <icr:isStoredOn rdf:resource="urn:cloudicaro:SharedStorageVolume:cgi:2240-10-NFS-SHAREPOINT" />
</icr:VirtualMachine>
<icr:VirtualMachine rdf:about="urn:cloudicaro:VirtualMachine:cgi:SPFARM_SQL01">
  <icr:hasName>SPFARM_SQL01</icr:hasName>
  <icr:hasIdentifier>SPFARM_SQL01</icr:hasIdentifier>
  <icr:hasCPUCount rdf:datatype="&xsd;positiveInteger">4</icr:hasCPUCount>
  <icr:hasMemorySize rdf:datatype="&xsd;decimal">8</icr:hasMemorySize>
  <icr:hasVirtualStorage>
    <icr:VirtualStorage rdf:about="urn:cloudicaro:VirtualStorage:cgi:SPFARM_SQL01:disk1">
      <icr:hasName>disk</icr:hasName>
      <icr:hasIdentifier>C:</icr:hasIdentifier>
      <icr:hasDiskSize
rdf:datatype="http://www.w3.org/2001/XMLSchema#decimal">60</icr:hasDiskSize>
    </icr:VirtualStorage>
  </icr:hasVirtualStorage>
  <icr:hasNetworkAdapter>
    <icr:NetworkAdapter>
      <icr:hasIPAddress>10.254.101.151</icr:hasIPAddress>
      <icr:boundToNetwork rdf:resource="urn:cloudicaro:LocalNetwork:cgi:dev" />
    </icr:NetworkAdapter>
  </icr:hasNetworkAdapter>
  <icr:hasOS rdf:resource="http://www.cloudicaro.it/cloud_ontology/core#windowsServer2012"/>
  <icr:isPartOf rdf:resource="urn:cloudicaro:HostMachineCluster:cgi:DEV"/>
  <icr:isStoredOn rdf:resource="urn:cloudicaro:SharedStorageVolume:cgi:2240-10-NFS-SHAREPOINT" />
</icr:VirtualMachine>
<icr:VirtualMachine rdf:about="urn:cloudicaro:VirtualMachine:cgi:SPFARM_OWA01">
  <icr:hasName>SPFARM_OWA01</icr:hasName>
  <icr:hasIdentifier>SPFARM_OWA01</icr:hasIdentifier>
  <icr:hasCPUCount rdf:datatype="&xsd;positiveInteger">2</icr:hasCPUCount>
  <icr:hasMemorySize rdf:datatype="&xsd;decimal">4</icr:hasMemorySize>
  <icr:hasVirtualStorage>
    <icr:VirtualStorage rdf:about="urn:cloudicaro:VirtualStorage:cgi:SPFARM_OWA01:disk1">
      <icr:hasName>disk</icr:hasName>
      <icr:hasIdentifier>C:</icr:hasIdentifier>
```



```
        <icr:hasDiskSize
rdf:datatype="http://www.w3.org/2001/XMLSchema#decimal">40</icr:hasDiskSize>
        </icr:VirtualStorage>
    </icr:hasVirtualStorage>
    <icr:hasNetworkAdapter>
        <icr:NetworkAdapter>
            <icr:hasIPAddress>10.254.101.155</icr:hasIPAddress>
            <icr:boundToNetwork rdf:resource="urn:cloudicaro:LocalNetwork:cgi:dev" />
        </icr:NetworkAdapter>
    </icr:hasNetworkAdapter>
    <icr:hasOS rdf:resource="http://www.cloudicaro.it/cloud_ontology/core#windowsServer2012"/>
    <icr:isPartOf rdf:resource="urn:cloudicaro:HostMachineCluster:cgi:DEV"/>
    <icr:isStoredOn rdf:resource="urn:cloudicaro:SharedStorageVolume:cgi:2240-10-NFS-
SHAREPOINT" />
</icr:VirtualMachine>
<icr:VirtualMachine rdf:about="urn:cloudicaro:VirtualMachine:cgi:SPFARM_APP01">
    <icr:hasName>SPFARM_APP01</icr:hasName>
    <icr:hasIdentifier>SPFARM_APP01</icr:hasIdentifier>
    <icr:hasCPUCount rdf:datatype="&xsd;positiveInteger">2</icr:hasCPUCount>
    <icr:hasMemorySize rdf:datatype="&xsd;decimal">4</icr:hasMemorySize>
    <icr:hasVirtualStorage>
        <icr:VirtualStorage rdf:about="urn:cloudicaro:VirtualStorage:cgi:SPFARM_APP01:disk1">
            <icr:hasName>disk</icr:hasName>
            <icr:hasIdentifier>C:</icr:hasIdentifier>
            <icr:hasDiskSize
rdf:datatype="http://www.w3.org/2001/XMLSchema#decimal">60</icr:hasDiskSize>
            </icr:VirtualStorage>
        </icr:hasVirtualStorage>
    <icr:hasNetworkAdapter>
        <icr:NetworkAdapter>
            <icr:hasIPAddress>10.254.101.152</icr:hasIPAddress>
            <icr:boundToNetwork rdf:resource="urn:cloudicaro:LocalNetwork:cgi:dev" />
        </icr:NetworkAdapter>
    </icr:hasNetworkAdapter>
    <icr:hasOS rdf:resource="http://www.cloudicaro.it/cloud_ontology/core#windowsServer2012"/>
    <icr:isPartOf rdf:resource="urn:cloudicaro:HostMachineCluster:cgi:DEV"/>
    <icr:isStoredOn rdf:resource="urn:cloudicaro:SharedStorageVolume:cgi:2240-10-NFS-
SHAREPOINT" />
</icr:VirtualMachine>
<icr:VirtualMachine rdf:about="urn:cloudicaro:VirtualMachine:cgi:SPFARM_WFE01">
    <icr:hasName>SPFARM_WFE01</icr:hasName>
    <icr:hasIdentifier>SPFARM_WFE01</icr:hasIdentifier>
    <icr:hasCPUCount rdf:datatype="&xsd;positiveInteger">4</icr:hasCPUCount>
    <icr:hasMemorySize rdf:datatype="&xsd;decimal">4</icr:hasMemorySize>
    <icr:hasVirtualStorage>
        <icr:VirtualStorage rdf:about="urn:cloudicaro:VirtualStorage:cgi:SPFARM_WFE01:disk1">
            <icr:hasName>disk</icr:hasName>
            <icr:hasIdentifier>C:</icr:hasIdentifier>
            <icr:hasDiskSize
rdf:datatype="http://www.w3.org/2001/XMLSchema#decimal">60</icr:hasDiskSize>
            </icr:VirtualStorage>
        </icr:hasVirtualStorage>
    <icr:hasNetworkAdapter>
        <icr:NetworkAdapter>
            <icr:hasIPAddress>10.254.101.153</icr:hasIPAddress>
            <icr:boundToNetwork rdf:resource="urn:cloudicaro:LocalNetwork:cgi:dev" />
        </icr:NetworkAdapter>
    </icr:hasNetworkAdapter>
    <icr:hasOS rdf:resource="http://www.cloudicaro.it/cloud_ontology/core#windowsServer2012"/>
    <icr:isPartOf rdf:resource="urn:cloudicaro:HostMachineCluster:cgi:DEV"/>
    <icr:isStoredOn rdf:resource="urn:cloudicaro:SharedStorageVolume:cgi:2240-10-NFS-
SHAREPOINT" />
</icr:VirtualMachine>
<icr:VirtualMachine rdf:about="urn:cloudicaro:VirtualMachine:cgi:SPFARM_WFE02">
    <icr:hasName>SPFARM_WFE02</icr:hasName>
    <icr:hasIdentifier>SPFARM_WFE02</icr:hasIdentifier>
```



```
<icr:hasCPUCount rdf:datatype="&xsd;positiveInteger">2</icr:hasCPUCount>
<icr:hasMemorySize rdf:datatype="&xsd;decimal">4</icr:hasMemorySize>
<icr:hasVirtualStorage>
  <icr:VirtualStorage rdf:about="urn:cloudicaro:VirtualStorage:cgi:SPFARM_WFE02:disk1">
    <icr:hasName>disk</icr:hasName>
    <icr:hasIdentifier>C:</icr:hasIdentifier>
    <icr:hasDiskSize
rdf:datatype="http://www.w3.org/2001/XMLSchema#decimal">40</icr:hasDiskSize>
  </icr:VirtualStorage>
</icr:hasVirtualStorage>
<icr:hasNetworkAdapter>
  <icr:NetworkAdapter>
    <icr:hasIPAddress>10.254.101.154</icr:hasIPAddress>
    <icr:boundToNetwork rdf:resource="urn:cloudicaro:LocalNetwork:cgi:dev" />
  </icr:NetworkAdapter>
</icr:hasNetworkAdapter>
<icr:hasOS rdf:resource="http://www.cloudicaro.it/cloud_ontology/core#windowsServer2012"/>
<icr:isPartOf rdf:resource="urn:cloudicaro:HostMachineCluster:cgi:DEV"/>
<icr:isStoredOn rdf:resource="urn:cloudicaro:SharedStorageVolume:cgi:2240-10-NFS-
SHAREPOINT" />
</icr:VirtualMachine>
<icr:VirtualMachine rdf:about="urn:cloudicaro:VirtualMachine:cgi:haproxy">
  <icr:hasName>haproxy</icr:hasName>
  <icr:hasIdentifier>haproxy</icr:hasIdentifier>
  <icr:hasCPUCount rdf:datatype="&xsd;positiveInteger">1</icr:hasCPUCount>
  <icr:hasMemorySize rdf:datatype="&xsd;decimal">2</icr:hasMemorySize>
  <icr:hasVirtualStorage>
    <icr:VirtualStorage rdf:about="urn:cloudicaro:VirtualStorage:cgi:haproxy:disk1">
      <icr:hasName>disk</icr:hasName>
      <icr:hasIdentifier>C:</icr:hasIdentifier>
      <icr:hasDiskSize
rdf:datatype="http://www.w3.org/2001/XMLSchema#decimal">30</icr:hasDiskSize>
    </icr:VirtualStorage>
  </icr:hasVirtualStorage>
  <icr:hasNetworkAdapter>
    <icr:NetworkAdapter>
      <icr:hasIPAddress>10.254.101.93</icr:hasIPAddress>
      <icr:boundToNetwork rdf:resource="urn:cloudicaro:LocalNetwork:cgi:dev" />
    </icr:NetworkAdapter>
  </icr:hasNetworkAdapter>
  <icr:hasOS rdf:resource="http://www.cloudicaro.it/cloud_ontology/core#windowsServer2012"/>
  <icr:isPartOf rdf:resource="urn:cloudicaro:HostMachineCluster:cgi:DEV"/>
  <icr:isStoredOn rdf:resource="urn:cloudicaro:SharedStorageVolume:cgi:2240-10-NFS-
SHAREPOINT" />
</icr:VirtualMachine>
<icr:User rdf:about="urn:cloudicaro:User:bellini">
  <foaf:name>Pierfrancesco Bellini</foaf:name>
  <foaf:mbox>pierfrancesco.bellini@unifi.it</foaf:mbox>
</icr:User>
</rdf:RDF>
```

9.14 BC-TEST8-OK

```
<rdf:RDF xmlns:app="http://www.cloudicaro.it/cloud_ontology/applications#"
xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
xmlns:icr="http://www.cloudicaro.it/cloud_ontology/core#"
xmlns:foaf="http://xmlns.com/foaf/0.1/" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="http://www.w3.org/1999/02/22-rdf-syntax-ns#
schema-icaro-kb-businessConfiguration.xsd">
  <icr:BusinessConfiguration
rdf:about="urn:cloudicaro:BusinessConfiguration:cgi:SharePointTenant:0001">
    <icr:hasName>SharePointTenant 1</icr:hasName>
    <icr:hasIdentifier>SharePointTenant0001</icr:hasIdentifier>
    <icr:hasContractId>SP00001</icr:hasContractId>
    <icr:createdBy rdf:resource="urn:cloudicaro:User:bellini"/>
    <icr:hasPart>
      <icr:IcaroTenant rdf:about="urn:cloudicaro:IcaroTenant:cgi:SharePointTenant:0001">
```



```
<icr:hasName>My SharePoint</icr:hasName>
<icr:hasIdentifier>SP tenant</icr:hasIdentifier>
<icr:isTenantOf rdf:resource="urn:cloudicaro:SharePoint:cgi:SPFarm1"/>
<icr:createdBy rdf:resource="urn:cloudicaro:User:bellini"/>
<icr:hasMonitorInfo>
  <icr:MonitorInfo>
    <icr:hasMetricName>SharePoint:SQLDBSize</icr:hasMetricName>
    <icr:hasArguments>db="db0001",server="10.254.101.151"</icr:hasArguments>
    <icr:hasWarningValue
rdf:datatype="http://www.w3.org/2001/XMLSchema#decimal">90</icr:hasWarningValue>
    <icr:hasCriticalValue
rdf:datatype="http://www.w3.org/2001/XMLSchema#decimal">100</icr:hasCriticalValue>
    <icr:hasCheckInterval
rdf:datatype="http://www.w3.org/2001/XMLSchema#positiveInteger">3600</icr:hasCheckInterval>
  </icr:MonitorInfo>
  <icr:MonitorInfo>
    <icr:hasMetricName>SharePoint:SQLDBActiveUsers</icr:hasMetricName>
    <icr:hasArguments>db="db0001",server="10.254.101.151"</icr:hasArguments>
    <icr:hasWarningValue
rdf:datatype="http://www.w3.org/2001/XMLSchema#decimal">9</icr:hasWarningValue>
    <icr:hasCriticalValue
rdf:datatype="http://www.w3.org/2001/XMLSchema#decimal">10</icr:hasCriticalValue>
    <icr:hasCheckInterval
rdf:datatype="http://www.w3.org/2001/XMLSchema#positiveInteger">3600</icr:hasCheckInterval>
  </icr:MonitorInfo>
</icr:hasMonitorInfo>
<icr:hasSLA>
  <icr:ServiceLevelAgreement
rdf:about="urn:cloudicaro:ServiceLevelAgreement:cgi:SharePointTenant:00001">
    <icr:hasSLObjective>
      <icr:ServiceLevelObjective>
        <icr:hasSLAction>
          <icr:ServiceLevelAction>
            <icr:hasName>SharePointDB</icr:hasName>
            <icr:callUrl>http://cm.cloudicaro.it/api/updateDB</icr:callUrl>
          </icr:ServiceLevelAction>
        </icr:hasSLAction>
        <icr:hasSLMetric>
          <icr:ServiceLevelAndMetric>
            <icr:dependsOn>
              <icr:ServiceLevelSimpleMetric>
                <icr:hasMetricName>SharePoint:SQLDBSize</icr:hasMetricName>
                <icr:hasMetricValueLessThan
rdf:datatype="http://www.w3.org/2001/XMLSchema#decimal">100</icr:hasMetricValueLessThan>
                <icr:hasMetricUnit>MB</icr:hasMetricUnit>
                <icr:dependsOn
rdf:resource="urn:cloudicaro:IcaroTenant:cgi:SharePointTenant:0001"/>
              </icr:ServiceLevelSimpleMetric>
            </icr:ServiceLevelAndMetric>
          </icr:hasSLMetric>
        </icr:ServiceLevelObjective>
      </icr:hasSLObjective>
      <icr:hasStartTime rdf:datatype="http://www.w3.org/2001/XMLSchema#dateTime">2014-01-01T00:00:00</icr:hasStartTime>
      <icr:hasEndTime rdf:datatype="http://www.w3.org/2001/XMLSchema#dateTime">2020-01-01T00:00:00</icr:hasEndTime>
    </icr:ServiceLevelAgreement>
```




```
    </icr:hasSLA>
  </icr:IcaroTenant>
</icr:hasPart>
</icr:BusinessConfiguration>
<icr>User rdf:about="urn:cloudicaro:User:bellini">
  <foaf:name>Pierfrancesco Bellini</foaf:name>
  <foaf:mbox>pierfrancesco.bellini@unifi.it</foaf:mbox>
</icr>User>
</rdf:RDF>
```

9.15 BC-TEST9-OK

```
<rdf:RDF xmlns:app="http://www.cloudicaro.it/cloud_ontology/applications#"
xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
xmlns:icr="http://www.cloudicaro.it/cloud_ontology/core#"
xmlns:foaf="http://xmlns.com/foaf/0.1/" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="http://www.w3.org/1999/02/22-rdf-syntax-ns#
schema-icaro-kb-businessConfiguration.xsd">
  <icr:BusinessConfiguration rdf:about="urn:cloudicaro:BusinessConfiguration:cgi:disit-icaro">
    <icr:hasName>ICARO</icr:hasName>
    <icr:hasIdentifier>BC:disit-icaro</icr:hasIdentifier>
    <icr:hasContractId>C001</icr:hasContractId>
    <icr:createdBy rdf:resource="urn:cloudicaro:User:p.bellini"/>
    <icr:hasPart rdf:resource="urn:cloudicaro:VirtualMachine:cgi:disit-kb" />
    <icr:hasPart rdf:resource="urn:cloudicaro:VirtualMachine:cgi:disit-sm" />
    <icr:hasPart rdf:resource="urn:cloudicaro:VirtualMachine:cgi:disit-nagios" />
  </icr:BusinessConfiguration>
  <icr:VirtualMachine rdf:about="urn:cloudicaro:VirtualMachine:cgi:disit-kb">
    <icr:hasName>IcaroKBUNIFI</icr:hasName>
    <icr:hasIdentifier>VM:disit-kb</icr:hasIdentifier>
    <icr:hasCPUCount rdf:datatype="&xsd;positiveInteger">2</icr:hasCPUCount>
    <icr:hasMemorySize rdf:datatype="&xsd;decimal">4</icr:hasMemorySize>
    <icr:hasVirtualStorage>
      <icr:VirtualStorage rdf:about="urn:cloudicaro:VirtualStorage:cgi:disit-kb:disk1">
        <icr:hasName>dsk</icr:hasName>
        <icr:hasIdentifier>dsk</icr:hasIdentifier>
        <icr:hasDiskSize
rdf:datatype="http://www.w3.org/2001/XMLSchema#decimal">30</icr:hasDiskSize>
      </icr:VirtualStorage>
    </icr:hasVirtualStorage>
    <icr:hasNetworkAdapter>
      <icr:NetworkAdapter>
        <icr:hasIPAddress>10.254.101.131</icr:hasIPAddress>
        <icr:boundToNetwork rdf:resource="urn:cloudicaro:LocalNetwork:cgi:dev" />
      </icr:NetworkAdapter>
    </icr:hasNetworkAdapter>
    <icr:hasOS rdf:resource="http://www.cloudicaro.it/cloud_ontology/core#ubuntu"/>
    <icr:isPartOf rdf:resource="urn:cloudicaro:HostMachineCluster:cgi:DEV"/>
    <icr:isStoredOn rdf:resource="urn:cloudicaro:SharedStorageVolume:cgi:2240-11-NFS-UNIFI" />
  </icr:VirtualMachine>
  <icr:VirtualMachine rdf:about="urn:cloudicaro:VirtualMachine:cgi:disit-sm">
    <icr:hasName>IcaroSMUNIFI</icr:hasName>
    <icr:hasIdentifier>VM:disit-sm</icr:hasIdentifier>
    <icr:hasCPUCount rdf:datatype="&xsd;positiveInteger">2</icr:hasCPUCount>
    <icr:hasMemorySize rdf:datatype="&xsd;decimal">1</icr:hasMemorySize>
    <icr:hasVirtualStorage>
      <icr:VirtualStorage rdf:about="urn:cloudicaro:VirtualStorage:cgi:disit-sm:disk1">
        <icr:hasName>dsk</icr:hasName>
        <icr:hasIdentifier>dsk</icr:hasIdentifier>
        <icr:hasDiskSize
rdf:datatype="http://www.w3.org/2001/XMLSchema#decimal">30</icr:hasDiskSize>
      </icr:VirtualStorage>
    </icr:hasVirtualStorage>
    <icr:hasNetworkAdapter>
      <icr:NetworkAdapter>
        <icr:hasIPAddress>10.254.101.132</icr:hasIPAddress>
        <icr:boundToNetwork rdf:resource="urn:cloudicaro:LocalNetwork:cgi:dev" />
```



```
</icr:NetworkAdapter>
</icr:hasNetworkAdapter>
<icr:hasOS rdf:resource="http://www.cloudicaro.it/cloud_ontology/core#ubuntu"/>
<icr:isPartOf rdf:resource="urn:cloudicaro:HostMachineCluster:cgi:DEV"/>
<icr:isStoredOn rdf:resource="urn:cloudicaro:SharedStorageVolume:cgi:2240-11-NFS-UNIFI" />
</icr:VirtualMachine>
<icr:VirtualMachine rdf:about="urn:cloudicaro:VirtualMachine:cgi:disit-nagios">
  <icr:hasName>Centos Nagios4</icr:hasName>
  <icr:hasIdentifier>VM:disit-nagios</icr:hasIdentifier>
  <icr:hasCPUCount rdf:datatype="&xsd;positiveInteger">1</icr:hasCPUCount>
  <icr:hasMemorySize rdf:datatype="&xsd;decimal">4</icr:hasMemorySize>
  <icr:hasVirtualStorage>
    <icr:VirtualStorage rdf:about="urn:cloudicaro:VirtualStorage:cgi:disit-nagios:disk1">
      <icr:hasName>dsk</icr:hasName>
      <icr:hasIdentifier>dsk</icr:hasIdentifier>
      <icr:hasDiskSize
rdf:datatype="http://www.w3.org/2001/XMLSchema#decimal">100</icr:hasDiskSize>
    </icr:VirtualStorage>
  </icr:hasVirtualStorage>
  <icr:hasNetworkAdapter>
    <icr:NetworkAdapter>
      <icr:hasIPAddress>10.254.101.134</icr:hasIPAddress>
      <icr:boundToNetwork rdf:resource="urn:cloudicaro:LocalNetwork:cgi:dev" />
    </icr:NetworkAdapter>
  </icr:hasNetworkAdapter>
  <icr:hasOS rdf:resource="http://www.cloudicaro.it/cloud_ontology/core#ubuntu"/>
  <icr:isPartOf rdf:resource="urn:cloudicaro:HostMachineCluster:cgi:DEV"/>
  <icr:isStoredOn rdf:resource="urn:cloudicaro:SharedStorageVolume:cgi:2240-11-NFS-UNIFI" />
</icr:VirtualMachine>
<icr:User rdf:about="urn:cloudicaro:User:p.bellini">
  <foaf:name>Pierfrancesco Bellini</foaf:name>
  <foaf:mbox>pierfrancesco.bellini@unifi.it</foaf:mbox>
</icr:User>
</rdf:RDF>
```

9.16 AT-MyXLMs

```
<?xml version="1.0" encoding="UTF-8"?>
<!DOCTYPE rdf:RDF [
  <!ENTITY owl "http://www.w3.org/2002/07/owl#" >
  <!ENTITY xsd "http://www.w3.org/2001/XMLSchema#" >
  <!ENTITY rdfs "http://www.w3.org/2000/01/rdf-schema#" >
  <!ENTITY rdf "http://www.w3.org/1999/02/22-rdf-syntax-ns#" >
  <!ENTITY icr "http://www.cloudicaro.it/cloud_ontology/core#" >
]>
<rdf:RDF xmlns="http://www.w3.org/2002/07/owl#"
  xmlns:base="http://www.w3.org/2002/07/owl"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:icr="http://www.cloudicaro.it/cloud_ontology/core#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#">
  <Class rdf:about="http://www.cloudicaro.it/cloud_ontology/applications#MyXLMs">
    <rdfs:subClassOf>
      <Class>
        <intersectionOf rdf:parseType="Collection">
          <rdf:Description rdf:about="&icr;IcaroApplication"/>
          <Restriction>
            <onProperty rdf:resource="&icr;needs"/>
            <someValuesFrom rdf:resource="&icr;AxcpGridNode"/>
          </Restriction>
          <Restriction>
            <onProperty rdf:resource="&icr;needs"/>
            <allValuesFrom>
              <Class>
                <unionOf rdf:parseType="Collection">
```




```
        <rdf:Description
rdf:about="http://www.cloudicaro.it/cloud_ontology/applications#MyXlmsModule"/>
        <rdf:Description rdf:about="&icr;ApacheTomcat"/>
        <rdf:Description rdf:about="&icr;ApacheWebServer"/>
        <rdf:Description rdf:about="&icr;AxcpGridNode"/>
        <rdf:Description rdf:about="&icr;AxcpScheduler"/>
        <rdf:Description rdf:about="&icr;HttpBalancer"/>
        <rdf:Description rdf:about="&icr;MySQL"/>
        <rdf:Description rdf:about="&icr;StorageServer"/>
        </unionOf>
    </Class>
</allValuesFrom>
</Restriction>
<Restriction>
    <onProperty rdf:resource="&icr;needs"/>
    <onClass rdf:resource="&icr;ApacheWebServer"/>
    <minQualifiedCardinality
rdf:datatype="&xsd;nonNegativeInteger">1</minQualifiedCardinality>
    </Restriction>
</Restriction>
    <onProperty rdf:resource="&icr;needs"/>
    <onClass rdf:resource="&icr;ApacheTomcat"/>
    <qualifiedCardinality
rdf:datatype="&xsd;nonNegativeInteger">1</qualifiedCardinality>
    </Restriction>
</Restriction>
    <onProperty rdf:resource="&icr;needs"/>
    <onClass rdf:resource="&icr;AxcpScheduler"/>
    <qualifiedCardinality
rdf:datatype="&xsd;nonNegativeInteger">1</qualifiedCardinality>
    </Restriction>
</Restriction>
    <onProperty rdf:resource="&icr;needs"/>
    <onClass rdf:resource="&icr;MySQL"/>
    <qualifiedCardinality
rdf:datatype="&xsd;nonNegativeInteger">1</qualifiedCardinality>
    </Restriction>
</Restriction>
    <onProperty rdf:resource="&icr;needs"/>
    <onClass rdf:resource="&icr;StorageServer"/>
    <maxQualifiedCardinality
rdf:datatype="&xsd;nonNegativeInteger">1</maxQualifiedCardinality>
    </Restriction>
</intersectionOf>
</Class>
</rdfs:subClassOf>
</Class>
<Class rdf:about="http://www.cloudicaro.it/cloud_ontology/applications#MyXLMSBalanced">
    <rdfs:subClassOf>
        <Class>
            <intersectionOf rdf:parseType="Collection">
                <rdf:Description
rdf:about="http://www.cloudicaro.it/cloud_ontology/applications#MyXLMS"/>
                <Restriction>
                    <onProperty rdf:resource="&icr;needs"/>
                    <onClass>
                        <Class>
                            <intersectionOf rdf:parseType="Collection">
                                <rdf:Description rdf:about="&icr;ApacheWebServer"/>
                                <Restriction>
                                    <onProperty rdf:resource="&icr;supportsLanguage"/>
                                    <hasValue rdf:resource="&icr;php"/>
                                </Restriction>
                            </intersectionOf>
                        </Class>
                    </onClass>
                </Restriction>
            </intersectionOf>
        </Class>
    </rdfs:subClassOf>
</Class>
```



```
        <minQualifiedCardinality
rdf:datatype="&xsd;nonNegativeInteger">2</minQualifiedCardinality>
    </Restriction>
    <Restriction>
        <onProperty rdf:resource="&icr;needs"/>
        <onClass rdf:resource="&icr;HttpBalancer"/>
        <qualifiedCardinality
rdf:datatype="&xsd;nonNegativeInteger">1</qualifiedCardinality>
    </Restriction>
    </intersectionOf>
    </Class>
</rdfs:subClassOf>
</Class>
<Class rdf:about="http://www.cloudicaro.it/cloud_ontology/applications#MyXlmsModule">
    <equivalentClass>
        <Class>
            <oneOf rdf:parseType="Collection">
                <rdf:Description
rdf:about="http://www.cloudicaro.it/cloud_ontology/applications#myXlmsMoodleModule"/>
                </oneOf>
            </Class>
        </equivalentClass>
        <rdfs:subClassOf rdf:resource="&icr;IcaroApplicationModule"/>
    </Class>
    <NamedIndividual
rdf:about="http://www.cloudicaro.it/cloud_ontology/applications#myXlmsMoodleModule">
        <rdf:type
rdf:resource="http://www.cloudicaro.it/cloud_ontology/applications#myXlmsModule"/>
    </NamedIndividual>
</rdf:RDF>
```

9.17 AT-Joomla

```
<?xml version="1.0" encoding="UTF-8"?>
<!DOCTYPE rdf:RDF [
    <!ENTITY owl "http://www.w3.org/2002/07/owl#" >
    <!ENTITY xsd "http://www.w3.org/2001/XMLSchema#" >
    <!ENTITY rdfs "http://www.w3.org/2000/01/rdf-schema#" >
    <!ENTITY rdf "http://www.w3.org/1999/02/22-rdf-syntax-ns#" >
    <!ENTITY icr "http://www.cloudicaro.it/cloud_ontology/core#" >
]>
<rdf:RDF xmlns="http://www.w3.org/2002/07/owl#"
    xmlns:base="http://www.w3.org/2002/07/owl"
    xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
    xmlns:icr="http://www.cloudicaro.it/cloud_ontology/core#"
    xmlns:owl="http://www.w3.org/2002/07/owl#"
    xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
    xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#">
    <Class rdf:about="http://www.cloudicaro.it/cloud_ontology/applications#Joomla">
        <rdfs:subClassOf>
            <Class>
                <intersectionOf rdf:parseType="Collection">
                    <rdf:Description rdf:about="&icr;IcaroApplication"/>
                    <Restriction>
                        <onProperty rdf:resource="&icr;needs"/>
                        <allValuesFrom>
                            <Class>
                                <unionOf rdf:parseType="Collection">
                                    <rdf:Description rdf:about="&icr;ApacheWebServer"/>
                                    <rdf:Description rdf:about="&icr;HttpBalancer"/>
                                    <rdf:Description rdf:about="&icr;MySQL"/>
                                    <rdf:Description rdf:about="&icr;StorageServer"/>
                                </unionOf>
                            </Class>
                        </allValuesFrom>
                    </Restriction>
                </intersectionOf>
            </Class>
        </rdfs:subClassOf>
    </Class>
```



```
<onProperty rdf:resource="&icr;needs"/>
<onClass>
  <Class>
    <intersectionOf rdf:parseType="Collection">
      <rdf:Description rdf:about="&icr;ApacheWebServer"/>
      <Restriction>
        <onProperty rdf:resource="&icr;supportsLanguage"/>
        <hasValue rdf:resource="&icr;php"/>
      </Restriction>
    </intersectionOf>
  </Class>
</onClass>
<minQualifiedCardinality
rdf:datatype="&xsd;nonNegativeInteger">1</minQualifiedCardinality>
</Restriction>
<Restriction>
  <onProperty rdf:resource="&icr;needs"/>
  <onClass rdf:resource="&icr;MySQL"/>
  <qualifiedCardinality
rdf:datatype="&xsd;nonNegativeInteger">1</qualifiedCardinality>
</Restriction>
<Restriction>
  <onProperty rdf:resource="&icr;needs"/>
  <onClass rdf:resource="&icr;NFSServer"/>
  <qualifiedCardinality
rdf:datatype="&xsd;nonNegativeInteger">1</qualifiedCardinality>
</Restriction>
</intersectionOf>
</Class>
</rdfs:subClassOf>
</Class>
<Class rdf:about="http://www.cloudicaro.it/cloud_ontology/applications#JoomlaBalanced">
  <rdfs:subClassOf>
    <Class>
      <intersectionOf rdf:parseType="Collection">
        <rdf:Description
rdf:about="http://www.cloudicaro.it/cloud_ontology/applications#Joomla"/>
        <Restriction>
          <onProperty rdf:resource="&icr;needs"/>
          <onClass>
            <Class>
              <intersectionOf rdf:parseType="Collection">
                <rdf:Description rdf:about="&icr;ApacheWebServer"/>
                <Restriction>
                  <onProperty rdf:resource="&icr;supportsLanguage"/>
                  <hasValue rdf:resource="&icr;php"/>
                </Restriction>
              </intersectionOf>
            </Class>
          </onClass>
          <minQualifiedCardinality
rdf:datatype="&xsd;nonNegativeInteger">1</minQualifiedCardinality>
</Restriction>
          <Restriction>
            <onProperty rdf:resource="&icr;needs"/>
            <onClass rdf:resource="&icr;HttpBalancer"/>
            <qualifiedCardinality
rdf:datatype="&xsd;nonNegativeInteger">1</qualifiedCardinality>
</Restriction>
          <Restriction>
            <onProperty rdf:resource="&icr;needs"/>
            <onClass>
              <Class>
                <intersectionOf rdf:parseType="Collection">
                  <rdf:Description rdf:about="&icr;ApacheWebServer"/>
                  <Restriction>
```



```
        <onProperty rdf:resource="&icr;supportsLanguage"/>
        <hasValue rdf:resource="&icr;php"/>
    </Restriction>
</intersectionOf>
</Class>
</onClass>
    <maxQualifiedCardinality
rdf:datatype="&xsd;nonNegativeInteger">3</maxQualifiedCardinality>
    </Restriction>
</intersectionOf>
</Class>
</rdfs:subClassOf>
</Class>
</rdf:RDF>
```

9.18 AT-XLMS

```
<?xml version="1.0" encoding="UTF-8"?>
<!DOCTYPE rdf:RDF [
  <!ENTITY owl "http://www.w3.org/2002/07/owl#" >
  <!ENTITY xsd "http://www.w3.org/2001/XMLSchema#" >
  <!ENTITY rdfs "http://www.w3.org/2000/01/rdf-schema#" >
  <!ENTITY rdf "http://www.w3.org/1999/02/22-rdf-syntax-ns#" >
  <!ENTITY icr "http://www.cloudicaro.it/cloud_ontology/core#" >
]>
<rdf:RDF xmlns="http://www.w3.org/2002/07/owl#"
  xml:base="http://www.w3.org/2002/07/owl"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:icr="http://www.cloudicaro.it/cloud_ontology/core#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  <Class rdf:about="http://www.cloudicaro.it/cloud_ontology/applications#XLMS">
    <rdfs:subClassOf>
      <Class>
        <intersectionOf rdf:parseType="Collection">
          <rdf:Description rdf:about="&icr;IcaroApplication"/>
          <Restriction>
            <onProperty rdf:resource="&icr;needs"/>
            <someValuesFrom rdf:resource="&icr;AxcpGridNode"/>
          </Restriction>
          <Restriction>
            <onProperty rdf:resource="&icr;needs"/>
            <allValuesFrom>
              <Class>
                <unionOf rdf:parseType="Collection">
                  <rdf:Description
rdf:about="http://www.cloudicaro.it/cloud_ontology/applications#XlmsModule"/>
                  <rdf:Description rdf:about="&icr;ApacheTomcat"/>
                  <rdf:Description rdf:about="&icr;ApacheWebServer"/>
                  <rdf:Description rdf:about="&icr;AxcpGridNode"/>
                  <rdf:Description rdf:about="&icr;AxcpScheduler"/>
                  <rdf:Description rdf:about="&icr;HttpBalancer"/>
                  <rdf:Description rdf:about="&icr;MySQL"/>
                  <rdf:Description rdf:about="&icr;StorageServer"/>
                </unionOf>
              </Class>
            </allValuesFrom>
          </Restriction>
          <Restriction>
            <onProperty rdf:resource="&icr;developedBy"/>
            <hasValue
rdf:resource="http://www.cloudicaro.it/cloud_ontology/applications#disit"/>
          </Restriction>
          <Restriction>
            <onProperty rdf:resource="&icr;needs"/>
          </Restriction>
        </intersectionOf>
      </Class>
    </rdfs:subClassOf>
  </Class>
```



```
<Class>
  <intersectionOf rdf:parseType="Collection">
    <rdf:Description rdf:about="&icr;ApacheWebServer"/>
    <Restriction>
      <onProperty rdf:resource="&icr;supportsLanguage"/>
      <hasValue rdf:resource="&icr;php"/>
    </Restriction>
  </intersectionOf>
</Class>
</onClass>
<minQualifiedCardinality
rdf:datatype="&xsd;nonNegativeInteger">1</minQualifiedCardinality>
</Restriction>
<Restriction>
  <onProperty rdf:resource="&icr;needs"/>
  <onClass rdf:resource="&icr;ApacheTomcat"/>
  <qualifiedCardinality
rdf:datatype="&xsd;nonNegativeInteger">1</qualifiedCardinality>
</Restriction>
<Restriction>
  <onProperty rdf:resource="&icr;needs"/>
  <onClass rdf:resource="&icr;Axcpscheduler"/>
  <qualifiedCardinality
rdf:datatype="&xsd;nonNegativeInteger">1</qualifiedCardinality>
</Restriction>
<Restriction>
  <onProperty rdf:resource="&icr;needs"/>
  <onClass rdf:resource="&icr;MySQL"/>
  <qualifiedCardinality
rdf:datatype="&xsd;nonNegativeInteger">1</qualifiedCardinality>
</Restriction>
<Restriction>
  <onProperty rdf:resource="&icr;needs"/>
  <onClass rdf:resource="&icr;StorageServer"/>
  <maxQualifiedCardinality
rdf:datatype="&xsd;nonNegativeInteger">1</maxQualifiedCardinality>
</Restriction>
</intersectionOf>
</Class>
</rdfs:subClassOf>
</Class>
<Class rdf:about="http://www.cloudicaro.it/cloud_ontology/applications#XLMSBalanced">
  <rdfs:subClassOf>
    <Class>
      <intersectionOf rdf:parseType="Collection">
        <rdf:Description
rdf:about="http://www.cloudicaro.it/cloud_ontology/applications#XLMS"/>
        <Restriction>
          <onProperty rdf:resource="&icr;needs"/>
          <onClass>
            <Class>
              <intersectionOf rdf:parseType="Collection">
                <rdf:Description rdf:about="&icr;ApacheWebServer"/>
                <Restriction>
                  <onProperty rdf:resource="&icr;supportsLanguage"/>
                  <hasValue rdf:resource="&icr;php"/>
                </Restriction>
              </intersectionOf>
            </Class>
          </onClass>
          <minQualifiedCardinality
rdf:datatype="&xsd;nonNegativeInteger">2</minQualifiedCardinality>
        </Restriction>
        <Restriction>
          <onProperty rdf:resource="&icr;needs"/>
          <onClass rdf:resource="&icr;HttpBalancer"/>

```



```
        <qualifiedCardinality
rdf:datatype="&xsd;nonNegativeInteger">1</qualifiedCardinality>
      </Restriction>
    </intersectionOf>
  </Class>
</rdfs:subClassOf>
</Class>
<Class rdf:about="http://www.cloudicaro.it/cloud_ontology/applications#XlmsModule">
  <equivalentClass>
    <Class>
      <oneOf rdf:parseType="Collection">
        <rdf:Description
rdf:about="http://www.cloudicaro.it/cloud_ontology/applications#xlmsMoodleModule"/>
        </oneOf>
      </Class>
    </equivalentClass>
    <rdfs:subClassOf rdf:resource="&icr;IcaroApplicationModule"/>
  </Class>
<NamedIndividual rdf:about="http://www.cloudicaro.it/cloud_ontology/applications#disit">
  <rdf:type rdf:resource="&icr;Developer"/>
</NamedIndividual>
<NamedIndividual
rdf:about="http://www.cloudicaro.it/cloud_ontology/applications#xlmsMoodleModule">
  <rdf:type rdf:resource="http://www.cloudicaro.it/cloud_ontology/applications#XlmsModule"/>
</NamedIndividual>
</rdf:RDF>
```

9.19 AT-SharePoint

```
<?xml version="1.0" encoding="UTF-8"?>
<!DOCTYPE rdf:RDF [
  <!ENTITY owl "http://www.w3.org/2002/07/owl#" >
  <!ENTITY xsd "http://www.w3.org/2001/XMLSchema#" >
  <!ENTITY rdfs "http://www.w3.org/2000/01/rdf-schema#" >
  <!ENTITY rdf "http://www.w3.org/1999/02/22-rdf-syntax-ns#" >
  <!ENTITY icr "http://www.cloudicaro.it/cloud_ontology/core#" >
]>
<rdf:RDF xmlns="http://www.w3.org/2002/07/owl#"
  xml:base="http://www.w3.org/2002/07/owl"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:icr="http://www.cloudicaro.it/cloud_ontology/core#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#">
  <Class rdf:about="http://www.cloudicaro.it/cloud_ontology/applications#SharePoint">
    <rdfs:subClassOf>
      <Class>
        <intersectionOf rdf:parseType="Collection">
          <rdf:Description rdf:about="&icr;IcaroMultiTenantApplication"/>
          <Restriction>
            <onProperty rdf:resource="&icr;needs"/>
            <onClass rdf:resource="&icr;InternetInformationServer"/>
            <minQualifiedCardinality
rdf:datatype="&xsd;nonNegativeInteger">2</minQualifiedCardinality>
          </Restriction>
          <Restriction>
            <onProperty rdf:resource="&icr;needs"/>
            <onClass rdf:resource="&icr;HAProxy"/>
            <qualifiedCardinality
rdf:datatype="&xsd;nonNegativeInteger">1</qualifiedCardinality>
          </Restriction>
          <Restriction>
            <onProperty rdf:resource="&icr;needs"/>
            <onClass rdf:resource="&icr;MSSqlServer2012"/>
            <qualifiedCardinality
rdf:datatype="&xsd;nonNegativeInteger">1</qualifiedCardinality>
          </Restriction>
        </intersectionOf>
      </Class>
    </rdfs:subClassOf>
  </Class>
```



```
<Restriction>
  <onProperty rdf:resource="&icr;needs"/>
  <onClass rdf:resource="&icr;OfficeWebAppServer2013"/>
  <qualifiedCardinality
rdf:datatype="&xsd;nonNegativeInteger">1</qualifiedCardinality>
</Restriction>
<Restriction>
  <onProperty rdf:resource="&icr;needs"/>
  <onClass rdf:resource="&icr;SharePointServer2013"/>
  <qualifiedCardinality
rdf:datatype="&xsd;nonNegativeInteger">1</qualifiedCardinality>
</Restriction>
<Restriction>
  <onProperty rdf:resource="&icr;needs"/>
  <onClass rdf:resource="&icr;WindowsDomainController"/>
  <qualifiedCardinality
rdf:datatype="&xsd;nonNegativeInteger">1</qualifiedCardinality>
</Restriction>
</intersectionOf>
</Class>
</rdfs:subClassOf>
</Class>
</rdf:RDF>
```