

CampusIT Configuration Manager

Activation Guide for QuercusPlus 2.6

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DOCUMENT HISTORY

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1	25/05/2007	Jan Navratil	Document created
2	30/07/2007	Jan Navratil	Update for QuercusPlus 2.5
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4	28/11/2008	Jan Navratil	Update for QuercusPlus 2.6

TABLE OF CONTENTS

1 SUMMARY 4

1.1 Scope 4

1.2 New Features in QuercusPlus 2.6..... 4

1.3 Audience 4

1.4 Solution overview 5

1.5 Data Exchange – Database Agent (classic) 7

1.6 Data Exchange – Web Agent..... 8

2 PREREQUISITES..... 9

2.1 Components 9

2.2 Internet connectivity..... 9

2.3 Software (media) 9

2.4 Accounts/passwords 9

3 UPGRADE FROM QUERCUSPLUS 2.5 10

3.1 CM Agent has been activated in QuercusPlus 2.510

3.2 CM Agent has not been activated before.....10

4 CONFIGURATION MANAGER AGENT (CMA) 11

4.1 Overview.....11

4.2 Decide what agent to use11

4.3 Acquire activation details.....12

4.4 Internet connectivity for Database Agent (CMA)12

4.5 Web Agent available over Internet (CMWA)12

4.6 Activation steps for Database Agent (CMA)13

4.6.1 Activation13

4.6.2 Enabling HTTPS14

4.6.3 Initial synchronization15

4.7 Activation steps for Web Agent (CMWA)16

4.7.1 Activation16

4.7.2 Registration of URL16

4.8 Maintenance tasks18

5 SECURITY..... 19

5.1 Summary19

5.2 Database Agent.....19

5.3 Web Agent.....19

5.4 Communication19

5.5 Central Repository19

5.6 User interface20

5.7 Data Exchange.....21

1 SUMMARY

1.1 Scope

- This technical document describes how to activate your environment in the CampusIT Configuration Manager
- Details how solution works and how data are transferred between local database and central repository are also discussed

1.2 New Features in QuercusPlus 2.6

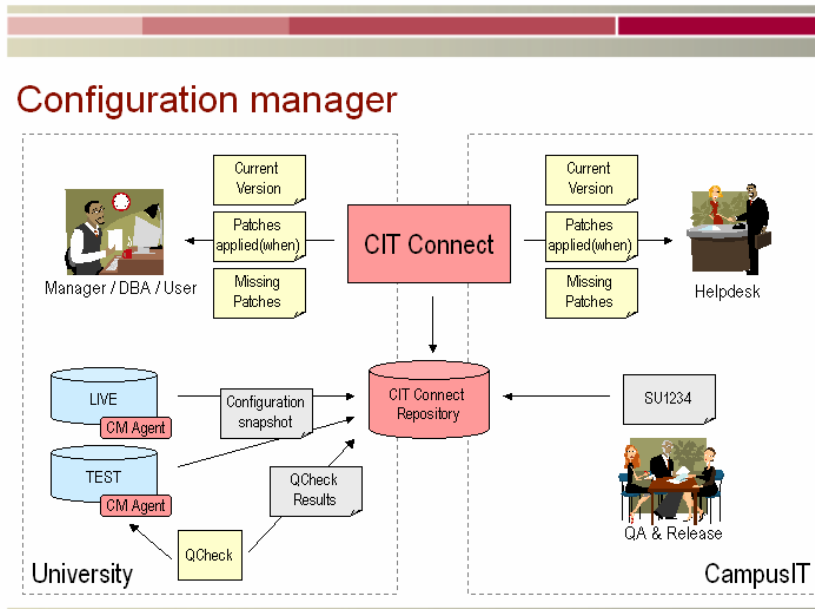
Configuration Manager has been introduced in QuercusPlus 2.5 and this version adds new features

- **Oracle Database Parameters**
Information send to the repository has been extended to hold key database parameters.
- **Live tick**
Configuration agent sends “live tick” info to the repository every day.
It allows monitoring if information in the repository is up-to-date.
- **Web Agent**
Additional agent was introduced to support client configurations where database server has no access to the internet.

1.3 Audience

- Application administrator / DBA
 - To activate, configure and maintain the software
 - Experience with Oracle Database 10g is required
- IT managers, System analysts
 - To understand architecture of the system

1.4 Solution overview



User Interface

The user interface is available through CIT Connect or directly at <https://connect.campusit.net/cm>

Note: User account on CIT Connect is required to login.

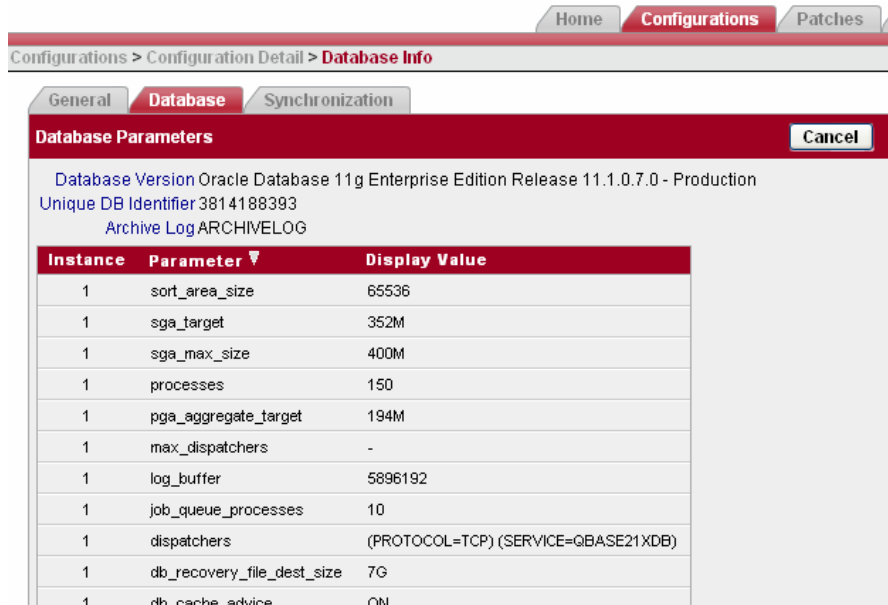
The screenshot shows the CampusIT Configuration Manager web interface. The header includes the CampusIT logo and navigation tabs: Home, Configurations, Patches, Admin, and Help. The main content area displays configuration details for a demo environment (Sofia). Below this is a table of installed components.

Component Name	Version	Patch	Modified	Advisor	Details
QuercusPlus Baseline	2.5.0.1	SU1170	09-OCT-07	✓	✎
QuercusPlus Beta software		SU905	31-MAY-07	✓	✎
QuercusPlus Custom		SU1171	22-NOV-07	✓	✎
QuercusPlus Juno	1.9.0.1194	SU1194	11-NOV-07	✓	✎
QuercusPlus MyAdmin	2.1.0.14	SU956	02-FEB-07	✓	✎
Solar Control Centre	2.0.0.2	SU1186	21-NOV-07	✓	✎

Central Repository

Data about all configurations (environments), installed components and patches are collected in one Central Repository database.

Central Repository is updated every time a local configuration is updated (patch installed).



Configuration Manager Agent

Configuration Manager Agent is responsible for updating Central Repository whenever change to the configuration is made - new patch or software component is installed.

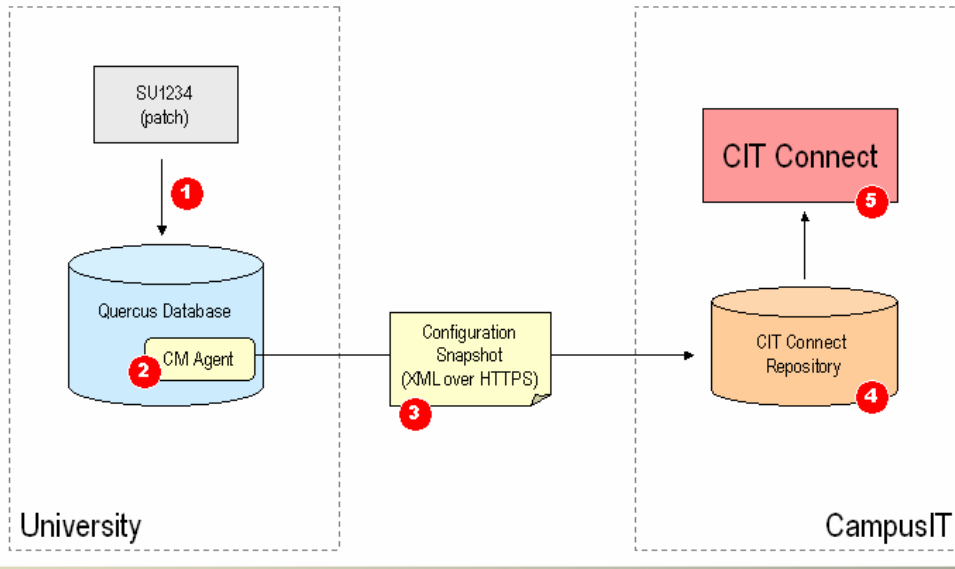
Agent is integrated with local configuration registry (CITSYS) that was introduced with QuercusPlus version 2.1

QuercusPlus 2.6 has two types of agents:

- Database Agent (introduced in QuercusPlus 2.5)
- Web Agent (new in 2.6)

1.5 Data Exchange – Database Agent (classic)

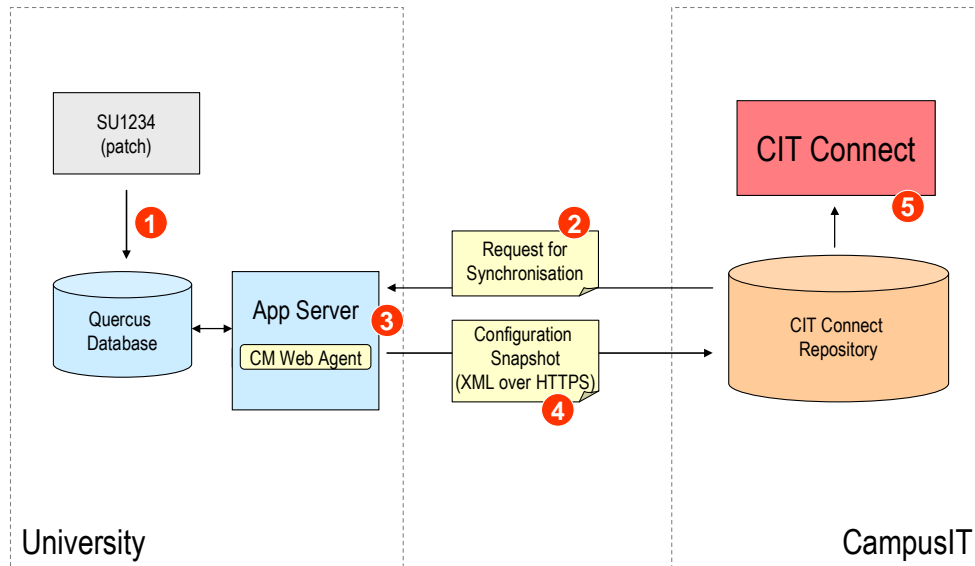
Configuration manager



Step	Description
1	New software patch has been applied on the database. Details are updated in local patch registry (CITSYS)
2	Configuration Agent has been notified about changes and contacts Central repository to see what is the latest registered patch there. Agent create configuration snapshot (XML file) with all patches that are missing on Central registry.
3	Agent sends snapshot to the Central repository using HTTP/HTTPS protocol. If there is problem with connection all changes will be sent again next time (it's also possible manually enforce synchronization process at any time). See 5.7 for details what data are included in the snapshot.
4	Central repository receives the XML message and check if it's authentic and if so details are saved into the database.
5	Details about the patch are visible to the user. Note: Complete process (steps 1-5) typically takes few seconds.

1.6 Data Exchange – Web Agent

Web Agent



Step	Description
1	New software patch has been applied on the database. Details are updated in local patch registry (CITSYS)
2	Central repository contacts Configuration Manager Web Agent with request for synchronization. The request is sent once a day (usually at night).
3	Web Agent check authorization of the requests (configuration ID and support key). Agent create configuration snapshot (XML file) with all patches that are missing on Central registry. See 5.7 for details what data are included in the snapshot.
4	Agent sends snapshot to the Central repository using HTTP/HTTPS protocol. Snapshot is saved into the central repository database.
5	Details about the patch are visible to the user. Note: There is delay up to 24 hours between applying patch and it's visibility on CIT Connect Configuration manager when using Web Agent.

2 PREREQUISITES

2.1 Components

- QuercusPlus 2.6 database

2.2 Internet connectivity

2.2.1 Database agent (classic)

- Database server has to have an outbound Internet connectivity (Direct or through HTTP Proxy server)
- Either on Port 80 (HTTP) or 443 (HTTPS)
- Note: Only outbound connectivity is required. Database server doesn't need to be accessible from the Internet (inbound connectivity).

2.2.2 Web agent (new)

- Oracle Application server has to be available over internet and DAD (Database Access descriptor) must be configured to make Web Agent available to Configuration Manager repository.

2.3 Software (media)

- SU1690 - QuercusPlus 2.6 Database upgrade

2.4 Accounts/passwords

- Quercus database (SYSTEM)
- User account on CIT Connect

3 UPGRADE FROM QUERCUSPLUS 2.5

3.1 CM Agent has been activated in QuercusPlus 2.5

- Upgrade to QuercusPlus 2.6 will automatically upgrade agent to the latest version.
- Re-activation of the agent is not required.
- CampusIT recommends continue to use database agent (not to switch to web agent).

3.2 CM Agent has not been activated before

- Please follow Activation steps as described in the next chapter.

4 CONFIGURATION MANAGER AGENT (CMA)

4.1 Overview

- Configuration Manager Agent software is installed as part of QuercusPlus 2.6 upgrade.
- Agent is disabled by default and needs to be activated
- Activation is required for each configuration (environment)
- You can activate multiple environments however these environments must be specified in your current SLA. Additional environments may be added at additional cost.

4.2 Decide what agent to use

- QuercusPlus 2.6 has two different agents:
 - Database agent – introduced in QuercusPlus 2.5
 - Web Agent – new in 2.6
- CampusIT recommends to use
 - Database Agent when your database server has access to the Internet.
 - Web Agent when your database server has no access to the Internet.

Feature	Database Agent (CMA)	Web Agent (CMWA)
Add applied patches to the repository	✓	✓
Send key database parameters to the repository	✓	✓
Live-Tick signal to the repository	✓	✓
Synchronization with repository (CIT Connect)	Immediate	Once a day
Access to the Internet from the database server is required (out-bound only)	✓	✗
Application server is accessible from the internet (DAD configuration)	✗	✓

4.3 Acquire activation details

- Contact CampusIT Helpdesk and ask for “Configuration ID” and “Support Key” for your configuration (environment).
- Login into Configuration Manager (<https://connect.campusit.net/cm>)
- Click on “Configurations” tab and select Configuration (environment)
- Get values of these two fields
 - Configuration ID (e.g. ABC.LIVE)
 - Support Key (e.g. MY8SZFA0SC)
- Note: These details are used to authenticate XML file when it arrives to the Central repository. When these details are not set correctly XML file will be rejected.

4.4 Internet connectivity for Database Agent (CMA)

- It's required your database server can access Internet over HTTP or HTTPS
- Depends on your network configuration it could be
 - Direct access
 - HTTP Proxy server
- You need to know how this is set-up before you can continue with activation. You would need to know name or IP address of your HTTP proxy server if it's used.

4.5 Web Agent available over Internet (CMWA)

- It's required your Web Agent is available over Internet (either HTTP and HTTPS)
- You have to make sure there is Database Access Descriptor (DAD) enabled on your application server.
- Take a note of the full URL of the DAD
 - <http://yourserver/yourdad/>
- Note: Typically the DAD used for CampusIT Solar, MyCampus or HESA can be used for Web Agent assuming it's available over the internet (firewall).
- Configuration of DAD is not part of this guide. Please refer to Oracle documentation or contact CampusIT for assistance.

4.6 Activation steps for Database Agent (CMA)

4.6.1 Activation

	Step	Description
1	<p>Login as SYSTEM user into QuercusPlus database and run the activation script:</p> <pre>SQL> @cma_activate.sql</pre> <p>Follow the instructions on screen</p> <p>You would be asked for:</p> <ul style="list-style-type: none"> • Configuration ID • Support Key • HTTP Proxy server (leave it blank if proxy server is not required) 	<p>This script is included in SU1690 (see sql folder)</p>
2	<p>Check connection with the Central repository:</p> <pre>SQL> set serveroutput on SQL> exec citsys.cit_central_registry.ping;</pre> <pre>CIT_CENTRAL_REPOSITORY.Ping Central URL = http://connect.campusit.net/pls/app/cit.cm_msg_proc.#ACTION# Oracle Wallet = Config. ID = CIT.QBETA21 ← This is ID of your environment Support Key = ***** Sending XML request ... Response received: Result Code = 1 Result Message = OK ← Check this message Change Seq = 8744</pre>	

4.6.2 Enabling HTTPS

	Step	Description
	<p>HTTPS communication needs to be enabled to secure communication between CMA and Central repository.</p> <p>Note: This is an optional task.</p> <p>CMA is using HTTP protocol by default.</p>	
1	Create Oracle wallet and import trusted certificate (see bellow)	See Oracle Metalink Doc 169768.1 for details
2	<p>Login as SYSTEM and run the activation script and</p> <p>SQL> @cma_set_https.sql</p> <p>Follow instructions on the screen</p>	This script is included in SU1690 (see sql folder)
3	<p>Use PING command (see 4.2) to make sure communication is working.</p> <p>Note: You can switch communication back to HTTP mode using script @cma_set_http.sql</p>	

-----BEGIN CERTIFICATE-----

```

MIICkDCCAfmgAwIBAgIBATANBgkqhkiG9w0BAQQFADBaMQswCQYDVQQGEwJVUzEc
MBoGA1UEChMTRXF1aWZheCBTZWN1cmUgSW5jLjEtMCsGA1UEAxMkRXFlaWZheCBT
ZWN1cmUgR2xvYmFsIGVcdXNpbmVzcyBDQS0xMB4XDk5MDYyMTA0MDAwMFoXDTEw
MDYyMTA0MDAwMFowWjELMAkGA1UEBhMCVVMxHDAaBgNVBAoTE0VxdWlmYXggU2Vj
dXJlIEluYy4xLTArBgNVBAMTJEVxdWlmYXggU2VjdXJlIEdsb2JhbCB1QnVzaW5l
c3MgQ0EtMTCBnzANBgkqhkiG9w0BAQEFAAOBjQAwgYkCgYEAuucXkAJlsTRVPEnc
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A4GBADDiAVGqx+pf2rnQZQ8w1j7aDRRJbpGTJxQx78T3LUX47Me/okENI7SS+RkA
Z70Br83gcfxaz2TE4JaY0KNA4gGK7ycH8WUBikQtBmV1UsCGECAhX2xrD2yuCRyv
8qiYNMrlpHMc8Y3c7635s3a0kr/clRAevsvIO1qEYBlWlKlV

```

-----END CERTIFICATE-----

4.6.3 Initial synchronization

	Step	Description
1	Login as SYSTEM and run the synchronization: <code>SQL> exec citsys.cit_central_registry.synchronize_now;</code>	
2	Login to the Configuration Manager https://connect.campusit.net/cm You should see all components and patches as installed on your system.	

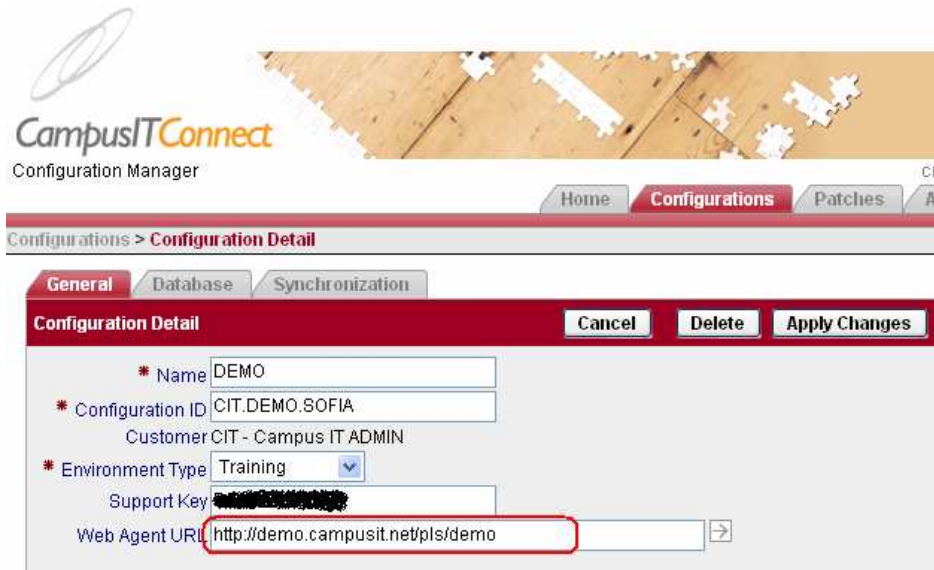
4.7 Activation steps for Web Agent (CMWA)

4.7.1 Activation

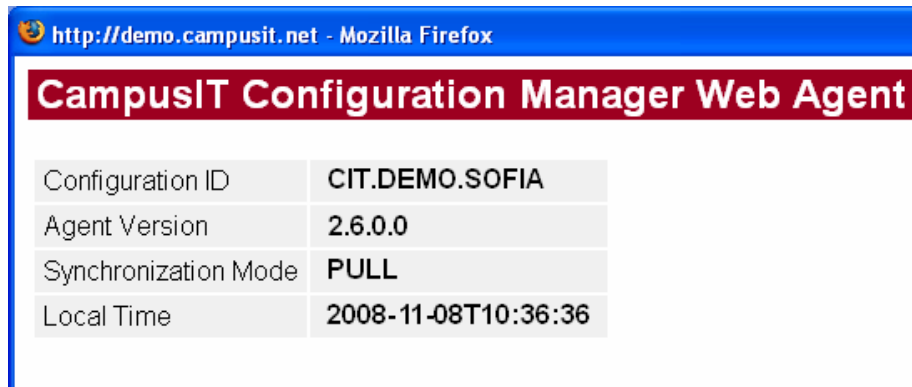
	Step	Description
1	Login as SYSTEM user into QuercusPlus database and run the activation script: SQL> @cmwa_activate.sql Follow the instructions on screen You would be asked for: <ul style="list-style-type: none"> • Configuration ID • Support Key 	This script is included in SU1690 (see sql folder)

4.7.2 Registration of URL

- Login into CampusIT Configuration Manager
- Select the configuration (e.g. Live / Test)
- Enter URL of the Web Agent
- Save the changes



- Go back to configuration details
- Click the arrow icon next to the Web Agent URL



Configuration ID	CIT.DEMO.SOFIA
Agent Version	2.6.0.0
Synchronization Mode	PULL
Local Time	2008-11-08T10:36:36

- If the agent is not responding (as above) please check your DAD configuration.

4.8 Maintenance tasks

- Lost of Internet connectivity
 - When Internet connectivity is unavailable during patch installation the details are still stored in local repository (CITSYS)
 - Both agents will automatically synchronize missing patches when the next patch is installed. No manual intervention is required.
 - You can also enforce synchronization at any time (see 4.6.3)
- CampusIT Connect is temporarily unavailable
 - When CampusIT Central repository is unavailable during patch installation the details are still stored in local repository (CITSYS)
 - The Agent will automatically synchronize missing patches when the next patch is installed. No manual intervention is required.
 - You can also enforce synchronization at any time (see 4.6.3)
- Database has been restored from the backup
 - The agent will be activated automatically with details included in your backup.
 - **WARNING:** When you create new database as a copy of other database you have to re-activate the CMA on the new database.

5 SECURITY

5.1 Summary

- The Concept Configuration Manager is based on sharing between many local Configurations (environments) and one Central Registry. This requires sending data over the Internet.
- The solution was designed with these requirements in mind
 - Restrict access to the data only for authorized users
 - Do not transfer any personalised data at all

5.2 Database Agent

- Only CMA can send data to the Central Repository. Central Repository can NOT initiate any update/synchronization
- Local database (QuercusPlus) does NOT need to be accessible from the Internet (inbound)
- Database server needs access to the internet (outbound)
- CMA has NO access to any data stored in the QUERCUS schema

5.3 Web Agent

- Only Central Repository can contact CMWA assuming correct agent URL, configuration ID and support key.
- Web Agent must be accessible over the internet (Application server / DAD).
- Database server does not needs access to the internet (outbound)
- CMWA has NO access to any data stored in the QUERCUS schema

5.4 Communication

- Only data about configuration are sent to the Central Repository (see 5.7 for full list of fields).
- Communication between CMA / CMWA and Central Repository may be encrypted using SSL (see 4.6.2 how to enable HTTPS protocol)

5.5 Central Repository

- Any update to Central Repository is possible only thru web service interface (XML)
- Central repository supports encrypted communication over HTTPS
- Each message is authenticated prior processing (Configuration ID and Support Key)
- Not authenticated messages are rejected

5.6 User interface

- Only authenticated users with CIT Connect account have access to the application
- User interface is running in HTTPS mode
- User can see only details related to his/her institution
- Note: CampusIT Helpdesk have access to details about any configuration

5.7 Data Exchange

XSD schema:

```
<?xml version="1.0" encoding="utf-8" ?>
<xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:annotation>
    <xs:documentation>
      Configuration Registry XSD Schema
      Version 2008-11-11
      Copyright 2007,2008 CampusIT Ltd. All rights reserved.
    </xs:documentation>
  </xs:annotation>
  <xs:element name="configurationRegistry">
    <xs:complexType>
      <xs:sequence>
        <xs:element ref="configuration" />
      </xs:sequence>
      <xs:attribute name="schemaVersion" type="xs:string" use="optional" />
    </xs:complexType>
  </xs:element>
  <xs:element name="configuration">
    <xs:complexType>
      <xs:sequence>
        <xs:element ref="database" />
        <xs:element ref="components" />
      </xs:sequence>
      <xs:attribute name="timestamp" type="xs:dateTime" use="required" />
      <xs:attribute name="id" type="xs:string" use="required" />
      <xs:attribute name="supportKey" type="xs:string" use="required" />
      <xs:attribute name="changeSequence" type="xs:int" use="required" />
    </xs:complexType>
  </xs:element>
  <xs:element name="database">
    <xs:complexType>
      <xs:sequence>
        <xs:element name="identifier" type="xs:string" />
        <xs:element name="version" type="xs:string" />
        <xs:element name="logMode" type="xs:string" />
        <xs:element ref="parameters" />
      </xs:sequence>
    </xs:complexType>
  </xs:element>
  <xs:element name="parameters">
    <xs:complexType>
      <xs:sequence>
        <xs:element minOccurs="0" maxOccurs="unbounded" ref="parameter" />
      </xs:sequence>
    </xs:complexType>
  </xs:element>
  <xs:element name="parameter">
    <xs:complexType>
      <xs:attribute name="name" type="xs:string" use="required" />
      <xs:attribute name="instance" type="xs:int" use="required" />
      <xs:attribute name="value" type="xs:string" use="required" />
      <xs:attribute name="displayValue" type="xs:string" use="required" />
    </xs:complexType>
  </xs:element>
  <xs:element name="components">
    <xs:complexType>
      <xs:sequence>
        <xs:element minOccurs="0" maxOccurs="unbounded" ref="component" />
      </xs:sequence>
    </xs:complexType>
  </xs:element>
  <xs:element name="component">
    <xs:complexType>
      <xs:sequence>
```

CampusIT Configuration Manager • Activation Guide

```
<xs:element minOccurs="0" maxOccurs="1" ref="patchHistory" />
</xs:sequence>
<xs:attribute name="name" type="xs:string" use="required" />
<xs:attribute name="created" type="xs:dateTime" use="required" />
<xs:attribute name="version" type="xs:string" use="required" />
<xs:attribute name="status" type="xs:string" use="required" />
<xs:attribute name="latestPatch" type="xs:string" use="optional" />
<xs:attribute name="latestModification" type="xs:dateTime"
  use="optional" />
</xs:complexType>
</xs:element>
<xs:element name="patchHistory">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" maxOccurs="unbounded" ref="patch" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
<xs:element name="patch">
  <xs:complexType>
    <xs:attribute name="id" type="xs:string" use="required" />
    <xs:attribute name="patchSequence" type="xs:int" use="required" />
    <xs:attribute name="runStart" type="xs:dateTime" use="optional" />
    <xs:attribute name="runEnd" type="xs:dateTime" use="optional" />
    <xs:attribute name="runUser" type="xs:string" use="optional" />
    <xs:attribute name="runIP" type="xs:string" use="optional" />
    <xs:attribute name="runHost" type="xs:string" use="optional" />
  </xs:complexType>
</xs:element>
</xs:schema>
```

Example of Configuration Snapshot XML file:

```
<?xml version="1.0" encoding="utf-8"?>
<configurationRegistry>
  <configuration timestamp="2008-11-17T20:13:22" id="CIT.DEV-HE" supportKey="*****"
changeSequence="96">
    <database>
      <identifier>2580393822</identifier>
      <version>Oracle Database 10g Enterprise Edition Release 10.1.0.5.0 -
Prod</version>
      <logMode>NOARCHIVELOG</logMode>
      <parameters>
        <parameter name="NLS_CHARACTERSET" instance="1" displayValue="WE8MSWIN1252"
value="WE8MSWIN1252"/>
        <parameter name="NLS_DATE_FORMAT" instance="1" displayValue="DD-MON-RR"
value="DD-MON-RR"/>
        <parameter name="NLS_LENGTH_SEMANTICS" instance="1" displayValue="BYTE"
value="BYTE"/>
        <parameter name="audit_trail" instance="1" displayValue="NONE" value="NONE"/>
        <parameter name="cluster_database" instance="1" displayValue="FALSE"
value="FALSE"/>
        <parameter name="compatible" instance="1" displayValue="10.1.0.2.0"
value="10.1.0.2.0"/>
        <parameter name="cpu_count" instance="1" displayValue="2" value="2"/>
        <parameter name="cursor_sharing" instance="1" displayValue="EXACT"
value="EXACT"/>
        <parameter name="db_block_size" instance="1" displayValue="8192" value="8192"/>
        <parameter name="db_cache_advice" instance="1" displayValue="ON" value="ON"/>
        <parameter name="db_recovery_file_dest_size" instance="1" displayValue="2G"
value="2147483648"/>
        <parameter name="dispatchers" instance="1" displayValue="(PROTOCOL=TCP)
(SERVICE=HEXADB)" value="(PROTOCOL=TCP) (SERVICE=HEXADB)"/>
        <parameter name="job_queue_processes" instance="1" displayValue="10"
value="10"/>
        <parameter name="log_buffer" instance="1" displayValue="524288"
value="524288"/>
        <parameter name="max_dispatchers" instance="1" displayValue="" value=""/>
        <parameter name="pga_aggregate_target" instance="1" displayValue="32M"
value="33554432"/>
        <parameter name="processes" instance="1" displayValue="250" value="250"/>
        <parameter name="sga_max_size" instance="1" displayValue="1G"
value="1073741824"/>
        <parameter name="sga_target" instance="1" displayValue="1G"
value="1073741824"/>
        <parameter name="sort_area_size" instance="1" displayValue="65536"
value="65536"/>
      </parameters>
    </database>
    <components>
      <component name="QBASE" created="2006-03-30T11:16:51" version="2.6.0.0"
status="VALID" latestPatch="SU132" latestModification="2006-03-30T12:08:04"/>
      <component name="QCUST" created="2006-03-30T11:16:51" version="" status="VALID"
latestPatch="SU1437" latestModification="2008-07-24T17:06:36"/>
      <component name="QBETA" created="2006-03-30T11:16:51" version="" status="VALID"
latestPatch="SU1004" latestModification="2007-08-14T11:52:00"/>
      <component name="TUDAPP" created="2007-01-09T10:57:44" version="1.2.0.934"
status="VALID" latestPatch="SU934" latestModification="2007-01-09T13:23:21"/>
      <component name="MYADMIN" created="2007-01-09T13:54:17" version="2.1.0.13"
status="VALID" latestPatch="SU935" latestModification="2007-01-09T13:57:22"/>
      <component name="SOLAR" created="2007-03-01T11:28:27" version="" status="VALID"
latestPatch="SU0000" latestModification="2007-07-24T15:20:32"/>
      <component name="PLACEMENT" created="2007-03-29T10:30:12" version="2.0.0.25"
status="VALID" latestPatch="SU1004" latestModification="2007-03-29T11:54:01"/>
      <component name="QSCRIPT" created="2007-10-18T11:22:16" version="" status="VALID"
latestPatch="SU1679" latestModification="2008-11-12T16:36:09">

```

CampusIT Configuration Manager • Activation Guide

```
<patchHistory>
  <patch id="SU1679" patchSequence="96" runStart="2008-11-12T16:36:08"
runEnd="2008-11-12T16:36:09" runUser="sbrennan" runIP="192.168.62.94"
runHost="CAMPUSIT-INT\SBRENNAN01"/>
</patchHistory>
</component>
</components>
</configuration>
</configurationRegistry>
```