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<p>ANNEX II.A - TERMS OF REFERENCE</p> <p>Invitation to Tender TAXUD/2011/AO-013</p> <p>Specification, development, maintenance and 3rd level support of CCN and CCN2</p> <p>(CCN2-DEV)</p>		

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Typographic conventions

The following typographic conventions are used in this document:



Draws attention to important information



Indicates definitions or reference information



Indicates that this requirement must be clearly addressed in the tender

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0.4. Introduction



In this document, the Directorate-General Taxation and Customs Union of the European Commission, which is the contracting authority, will be further referred to as “the Commission” or “DG TAXUD”.



“Tenderer” is to be understood as an economic operator who has submitted a Tender with a view to concluding a contract. In this Call for Tenders, Terms of Reference document, “Tender” and “Bid” are used as synonyms.

0.4.1. Purpose

This document provides background information on the IT activities and IT organisation of DG TAXUD, recent activities and future developments. It also provides a general description of the CCN/CSI, along with CCN/CSI supporting information, which includes hardware and software infrastructure and the supported CCN/CSI stacks.

0.4.2. Overview

This CCN2-DEV Terms of Reference document has the following structure:

- Chapter 0 Provides a list of acronyms, definitions and reference documents used in this document. It also provides the Baseline, which is a repository of DG TAXUD documents providing detailed technical specifications, descriptions of procedures, reports and organisation of DG TAXUD IT service activities of relevance for the contract.
- Chapter 1 Gives an overview of the IT activities of DG TAXUD, along with recent business achievements and future developments. It also provides an overview of the IT organisation and governance in DG TAXUD and contractual aspects.
- Chapter 2 Provides a general description of CCN/CSI. It describes the CCN/CSI architecture, subsystems, security, administration, volumetrics and services evolution history.
- Chapter 3 It provides the CCN/CSI supporting information (SW/HW components and the supported CCN/CSI stacks). It also presents recent and future CCN related activities and introduces the TEMPO methodology.

0.5. Acronyms and definitions

An extensive list of abbreviations and definitions can be found in “Annex II.E. - List of Abbreviations.”

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0.5.1. References

TEMPO: The DG TAXUD methodology to ensure the consistent and efficient management, set-up, development, operation and support of projects and service management. For more information, see section 3.6 [TEMPO documentation](#). The tendering parties are invited to access TEMPO at the following URL:

<http://circa.europa.eu/Members/irc/taxud/tempo/home>

With the following parameters to sign in:

User identifier: **guesttem**

Password: **guest800**

Domain: **circa**

ITIL: IT Infrastructure Library (ITIL) for the implementation of the IT Service Management Processes. The ITIL processes are specified in the publications of the Office of Government Commerce (OGC), at <http://www.cabinetoffice.gov.uk/>.

At the time of writing, DG TAXUD is in the process of migration from ITIL V2 to ITIL V3.

Standards:

The following standards are referred as applicable in this scope document:

- CMMI level 2;
- ISO 9001:2000 (Quality management systems -- Requirements);
- ISO 20000-1:2011 part 1 (Service management -- Part 1: Specification) & ISO 20000-1:2012 part 2 (Service management -- Part 2: Code of practice);
- ISO 27001:2005 (Security techniques -- Information security management systems -- Requirements);
- ISO 27005:2011 (Security techniques -- Information security risk management);

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The Baseline:

The baseline documents and software are provided on DVD-ROM as **Annex XI**.

The DVD-ROM provided by the Commission is available only on written request by e-mail to "taxud-tenders@ec.europa.eu"

or by mail to the following address:

European Commission,
 Directorate-General Taxation and Customs Union
 Unit R1, "Finances and Human Resources"
 For the attention of Mr Jean-Louis Vergnolle (J79 6/40)
 Avenue du Bourget 1
 B-1140 Evere
 Belgium

The information and the documents on the DVD-ROM are the sole property of the Commission (unless otherwise specified), are provided without prejudice and for the exclusive use of the tenderer.

A non-disclosure declaration (Annex IX) will need to be signed by the potential Tenderers.



The CCN2-DEV contractor needs to take into account that the baseline reflects the situation applicable at the time of publication this Call for Tenders and that it will evolve.

In case of a conflict between the applicable documents and/or source code, the following order of decreasing precedence shall prevail, unless otherwise stated:

- The CCN2-DEV call for tenders (of which this document is part);
- TEMPO;
- International standard and best practices;
- All documents in the call for tenders baseline.

The latest Release of TEMPO is to be used by the CCN2-DEV bidder. The list of TEMPO documents referred to in this document is only added in order to make the reading easier. They are neither exhaustive nor legally binding; they are only provided as additional information.

References to DG TAXUD are based on the organisational structure at the time of writing the call for tenders that will evolve.

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1. Background information

1.1. IT activities of DG TAXUD

1.1.1. *IT in support to policy*

DG TAXUD coordinates and manages a set of operational activities relying on IT systems in support of the European Union (EU) policies for customs, taxation and excise duties. Actually, this comprises direct and indirect taxation, tariff strategy, e-Customs, the future Union Customs Code, risk management, safety and security, the fight against counterfeited goods, as well as international policy objectives.

TAXUD's IT systems are a unique instrument to sustain the continuity of operation of a broad range of customs and taxation procedures within the EU.

The main objectives are:

- To support the **uniform management of the Customs Union** and to maintain the fluidity of the **flow of goods at the border** of the EU through the availability of customs trans-European systems, such as the New Computerised Transit System, the Export Control System and the Import Control System. Any unavailability of these systems would have an immediate and highly visible adverse impact on the economic activity of the EU, such as lorry queues at the borders and ports, loss of containers, distortion in the application of legislation, increased risk of fraud and loss in revenue collection etc.
- To contribute to the fight against fraud:
 - **In the area of customs:** TAXUD's IT systems support the sharing of risks profile amongst Member States and feed the European Anti-fraud Office (OLAF) with information on sensitive consignments;
 - **In the area of taxation:** IT systems also allow for a rapid exchange of secure information and thus for the efficient **fight against different types of tax fraud**. This is the case in the areas of:
 - VAT, through the VAT Information Exchange System;
 - savings through the Taxation on Savings system;
 - administrative co-operation and mutual assistance;
 or to better control movement of excise goods across the EU.
- To **facilitate** the handling of tax and customs procedures **for citizens and economic operators** by enabling the **refund of VAT** from a Member State (in which an economic operator is not established) and **through the publication of** the most relevant information (including customs tariff, balances of tariff quotas, VAT number identification, etc.), contained in its IT systems on the Commission's Europa website.

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Some traders have integrated the availability of the information in their daily processes. Therefore they rely heavily on this service. The success of these services is constantly increasing, with the number of queries made by the traders exceeding 120 millions requests in 2011.

1.1.2. *IT Systems*

Most of the IT systems of DG TAXUD are trans-European systems spanning all Member States (MS) of the EU. The users are the National Administrations, the EU traders' and the Commission Services. Other IT systems include systems to manage reference data, test and monitoring applications, and dissemination applications to the wide public (e.g. via the Europa web site).

All the IT systems have a legal basis¹ and receive budgetary support from EU programmes, currently Customs 2013 and Fiscalis 2013 for which they represent a significant part of the expenditure. The Customs 2013 and Fiscalis 2013 programmes will be replaced by the FISCUS programme, which is proposed for the period 2014 – 2020.

A Trans-European System (**TES**) performs specific business functions in Customs or Taxation as defined in or in support of Union policies. A trans-European system is a **collection of collaborating systems (orchestrated and choreographed) with responsibilities distributed across the National Administrations and the Commission.** It includes processes, applications, services and infrastructure.

A Trans-European System (**TES**) is characterised by:

- Exchanges of information between the National Administrations at EU level (NA ↔ NA); in this case the system forms a set of interoperable business systems implemented and operated by the National Administrations, under the overall co-ordination of DG TAXUD; the National Administrations are meant to integrate into their own national systems the business processes agreed at EU level; it is referred to as a **distributed TES**;
- And/or exchanges of information between National Administration and the Commission (NA ↔ EC); in this case the system is operated by DG TAXUD; it is referred to as a **centralised TES**.

Exchanges take place on a secured Common Communication Network (CCN), according to agreed protocols and data formats. CCN is a distributed middleware assuring the interoperability of all national information systems and offering the secure asynchronous and synchronous exchanges of information that are necessary.

¹ For example, in 2008 important legal acts for IT systems were the so-called “VAT package”, the future Union Customs Code and the e-Customs decision on a paperless environment for customs and trade.

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The development of an IT system constitutes a major project to be run over several years, the full description of which is available from TEMPO (Trans-European Systems (**TES**) reference manual). An extract from this documentation is provided here below to introduce the notion of the lifecycle and the respective phases of the Trans-European System development project.

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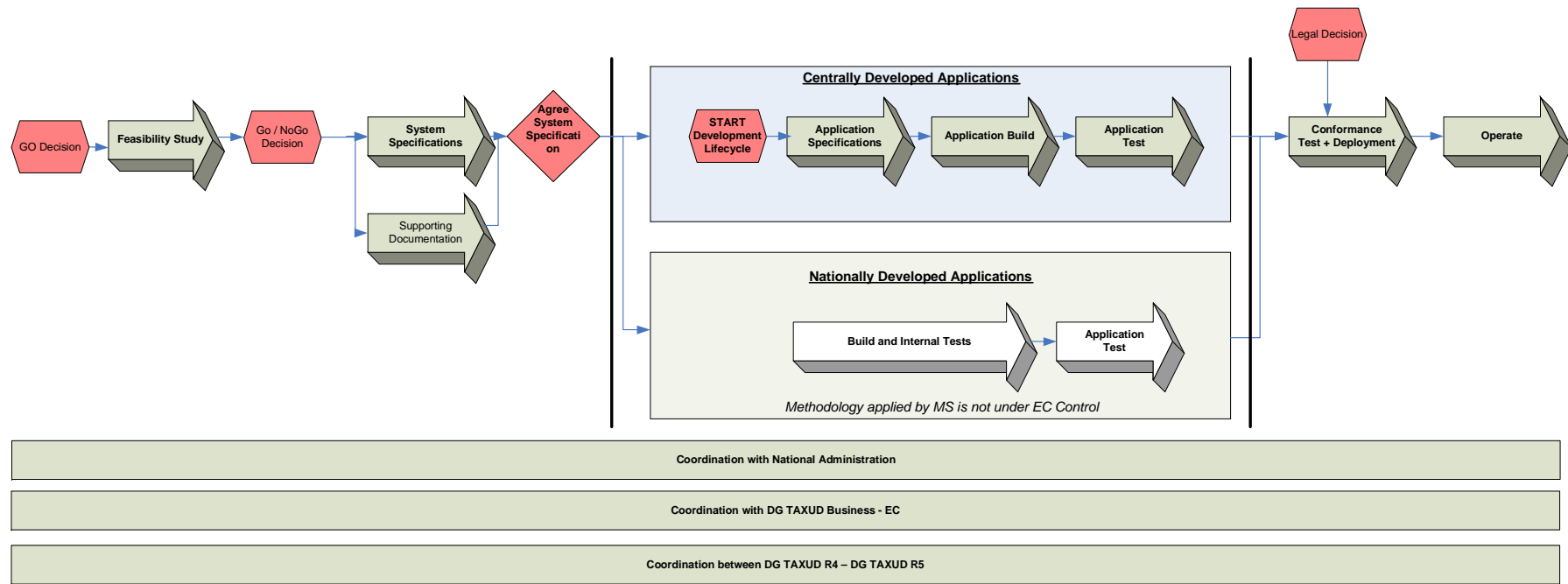


Figure 1: Trans-European System Development Lifecycle

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As examples of some IT systems, we can mention:

- **In the field of taxation: the VIES network** enables the tax administrations to verify trader's VAT identification numbers and statements of their intra-EU turnover, *the VAT on e-Services system* provides for the management of the VAT revenues in connection with services provided on the internet by non-EU traders, *the VAT refund system* enables traders to obtain the refund of VAT from a Member State in which they are not established, *the Taxation on savings system* enables Member States to exchange information on interest payments by paying agents established in their territories to individuals resident in other Member States;
- **In the field of customs: the New Computerised Transit System (NCTS)** which provides a fully computerised Customs regime for goods which enter into the Common Transit, *the Quota system* enables to publish the tariff quotas and tariff ceiling to the trader community, *the Transit system* enables the customs offices to automatically track and control the movements of goods in transit through the EU, *the Export Control System* provides full control on the conclusion of export operations in particular when different Member States are involved, *the Import Control System* is devoted to the import operations, *the Surveillance System* complements the other customs systems and contributes to the fight against fraud by enabling the surveillance of the movement of goods inside and outside the EU;
- **In the field of Excise: Excise Movement and Control System (EMCS)** allows for the control of movements of products falling under suspension arrangement of excise duties.

DG TAXUD also makes available, through the Commission's Europa website, a wide range of information and services to the citizens and to the traders in order to enable them to consult measures relating to tariff, commercial and agricultural legislation, tariff quotas, to query authorised economic operators, to consult the list of transit customs offices, validate VAT numbers, to consult the main taxes in force in the EU Member States or to query excise numbers.

On 01/01/2009, and innovating in the context of customs international activities, an electronic connection was launched with Russia to allow for secure data exchange of TIR movement data, in order to address lorry congestion at the EU-Russia border (currently 3,500 movements supported daily). Currently, a new version of SPEED (namely SPEED²) is under development, and is expected to be in production in the third quarter of 2012.

All these activities rely on a secure and reliable communication between the Member States and the Commission. This is realised thanks to a private common communication network (CCN) that TAXUD has developed and operated for more than 10 years across the European Union and which transports and exchanges a massive amount of messages and information.

² SPEED2 will replace the SPEED Bridge and SPEED ECN (see also [R350], [R351] and [R352]). Support for SPEED Bridge and SPEED ECN will continue till the introduction of SPEED2. Security Infrastructure (see also [R250]). Please note that the CCN WAN framework contract will support the SPEED NET network security infrastructure

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In particular, in the context of EU enlargement, connecting the candidate countries to the network is one of the first IT activities to be started well before the target enlargement date.

The Common Communication Network (CCN), given its central role, is an important component of the whole IT architecture to ensure the security, availability and continuity of the service. It is managed by the Commission and has evolved over the years in the biggest network linking the Commission and Member States, in terms of number of application data exchanges and probably among the largest administrative networks worldwide. For further details refer to page [29](#) - “General Description of CCN/CSI”.

1.1.3. Governance

Experience suggests that the **time to develop and deliver a trans-European IT system ranges from 2 to 8 years** according to the complexity and the level of implication of the Member States. This demands to manage each Trans-European IT project under strict governance, using a proven project management methodology.

The management of Trans-European IT projects involves different levels of governance, involving the Commission and the National Administrations.

- DG TAXUD is **assisted by Comitology committees** such as the Customs 2013, Fiscalis 2013 committees, and the Standing Committee on Administrative Cooperation. These groups are each supported by a sub-committee dedicated to IT matters. Each IT sub-committee meets several times a year under TAXUD's chairmanship with the participation of heads of IT from National Administrations.
- **Technical Experts' groups** with the National Administrations to deal with technical related project matters which meet with a frequency from monthly to quarterly according to the pace of development. Each TES and IT Services from the Commission are overseen by such a working group (ex: Electronic Customs Group, Union Customs Code Group, etc.).

DG TAXUD also needs to ensure that any decision on IT matters is taken in full understanding of the context, challenges, impact and associated risks. This is why DG TAXUD applies internally strong IT governance. All the IT systems are managed under the supervision of an **IT Steering Committee**, chaired by the Director General and composed of the board of Directors and the head of the financial and human resource unit. The IT Steering Committee meets regularly (quarterly on average) and takes decisions on IT working plans, priorities and resource allocation upon proposal from the IT units.

The **audit on the large IT systems** performed in 2006 by the **Internal Audit Service** of the Commission delivered reasonable assurance to DG TAXUD for its project management processes. Following further recommendations from the audit, DG TAXUD has put special attention and continues its efforts to better formalise with the Member States the agreement on quality of service and the security aspects.

1.2. Recent achievements and future developments

The capacity demonstrated over the last two decades in the creation of successful IT systems supporting the integration of customs and fiscal administrations in the EU has positioned IT at the heart of the European construction in the areas of customs and taxation.

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In particular, for **Customs**, the e-Customs Decision underlined the central role of DG TAXUD in the creation of systems supporting the customs union and generated the need for a number of new trans-European systems successfully deployed over 2009-2011. The Union Customs Code and its implementing provisions added a new challenge for IT since it requires reassessing the whole of the customs procedures and underlying IT systems in order to meet the diversity of expectations from the different stakeholders. Specification work with the Member States has started with the definition of the business process models and the development of an IT Master Plan.

The perspectives for developing new IT systems under **Taxation** spanned over 2009 for VAT refund systems and over 2010 for the systems related to Recovery and Direct Taxation. Also in 2011 a new version of the Taxes in Europe Database (TEDBv2) was deployed as well as a new release of Recovery e-Forms for Council Directive 2010/24/EU³. In the longer term (2015), the one-stop-shop IT system will greatly simplify the tax declarations for e-commerce, telecommunication and broadcasting activities throughout the EU.

The years 2009-2011 were unique in terms of the high number of IT systems deployed into operations. A strong commitment and collaboration between the Member States and the Commission was required to respect deadlines:

- The **Customs** systems were deployed by 01/07/2009 (the system for economic operators, the upgrade of the transit system for security, anti-fraud information, enquiry and recovery procedure, and the upgrade of the export control system). In 2011, it was developed a new strategy for customs IT in the framework of the IT master plan for UCC and eCustoms, a new collaboration model with MS, and a reference enterprise architecture of customs systems.
- The **Taxation** systems were deployed by 01/01/2010 (several improvements of the quality of data under the VAT network, the VAT package, and the upgrade of the Europa services on VAT). The exchange of electronic forms for the recovery of claims, for mutual assistance in the field of direct taxation, and for Council Regulation (EC) No 1798/2003⁴ and Commission Regulation (EC) No 1925/2004⁵ in VAT was deployed as well. Also, to support the central applications common to all taxation communities, development started or were finalised (in 2011) for: the Self Service IT Testing System (SSTS), the Central eForms Application (CeFA), the Member States Central Information Application (MSCIA) and Taxation Statistical System (TSS).
- The new Import Control System (ICS), the upgrade of the integrated Community tariff management system followed in 2010, together with the entry into operation of the **Excise Movement Control System** (EMCS), which improves the functioning of the Internal Market and helps fighting fraud (a roll out of EMCS Phase 2 was successful in 2011).
- Also a new **version of CCN** was put in production, as well as a **new service management tool** (Synergia).

³ OJ L84/1, 31.03.2010

⁴ OJ L 264/1, 15.10.2003

⁵ OJ L 331/13, 05.11.2004

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DG TAXUD anticipates a **significant increase of the volume of IT activities and IT operations for the years to come**. This is due to the future deployment of additional customs IT systems as a result of the e-Customs Decision and the Union Customs Code, the operation of the EMCS and its further expansion with the EMCS Phase 3, of the VAT package, and possible additional systems for exchange of data between the EU and third countries such as Japan, China and US, and the Eastern neighbourhood.

The developments described below are only a projection of potential IT systems development in the coming years, on the basis of the current EU policy and legislative framework, but may be amended during the life of the **CCN2-DEV** framework contract. It should be underlined that this list does not reflect current formal requirements or priorities of the Commission or Member States in the field of Excise, Taxation, and Customs, nor it is exhaustive. It remains to be established if MSAs would be favourable to some of these initiatives. It is merely indicative of the type of future evolutions possible.

In the **Customs** area, the implementation of the Union Customs Code constitutes a comprehensive exercise, going beyond the adoption of implementing provisions, and includes in particular the development of the necessary IT applications within the framework of the e-Customs Decision. Their implementation will involve the test, deployment and monitoring of evolutions of existing systems or of development of new systems such as:

- Single Window (SW), Registered Exporters (REX);
- Centralised Clearance at Import and Export;
- Customs Decisions and Proof of Union Status (mainly specification and architecture activities);
- RSS application Phase 1;
- COPIS application;
- The adaptation of safety and security for small consignments;
- The evolution of ECS, ICS and NCTS;
- Customs Decisions (CD) (standard procedure and specific decisions as required);
- Possible evolutions on AEO and EORI;
- Adaptation of the Binding Tariff Information (BTI) system to include new functions including trader access;
- Possible evolutions of risk management;
- Guarantee management;
- Evolutions of Export and Transit (simplified procedures);

Additional systems may be developed for exchange of data between the EU and third countries, and existing systems may be extended to third countries.

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In **Taxation**, several activities are envisaged in the foreseeable future.

- In Indirect Taxation, the main changes envisaged are the introduction of the Mini-One-Stop-Shop system (mini1SS) and the VAT on e-Services system (VoeS), both of which are to start operations in 2015.
- In the field of VAT, the main changes in the next few years will be the implementation of the Recast in Directive 904/2010. After this, the current public consultation about the Green Paper on the Future of VAT may result in a very significant change to the VIES system. These changes, if any, are not expected to become operational before 2015.
- In the field of Direct Taxation, a Feasibility Study is to be launched on the implementation of the FISCO Recommendation. This could lead to the launch of a new Trans-European FISCO system, with possible interactions with OECD members across the world. If the project continues, it is expected that a FISCO system would not become operational before 2015.

Possible smaller systems in the 2015-2020 timeframe could include an IT system to support taxation on road transport means, on financial transactions or to support own resource taxation of the EU, for instance on CO₂ emissions.

- Regarding administrative cooperation among the Member States, new IT systems may be requested to support the EUROFISC information exchanges. It is possible that an extensive overhaul would take place of the e-Forms and other administrative cooperation tools currently in place.

Frequent requests are received to extend administrative cooperation with members of the OECD. The most notable of these requests were to extend CCN/Mail and the exchanges of e-Forms, as well as to extend the possible future FISCO system. At the moment, international agreements are not in place to enable such an extension; but if the political decision is taken within the next few years, the EU/OECD exchange over CCN/Mail could then be expected to start operations in the period 2015-2020.

Beyond 2013, there are at this stage no formal requirements yet for evolution of EMCS and/or future Excise applications.

By analogy to similar evolutions in the taxation and customs areas, a number of initiatives could be taken, either extension of the existing systems or harmonisation with other sectors.

- The extension of EMCS to duty paid and distance selling;
- The globalisation in EMCS; follow-up of movements/quantities under simplified procedures;
- In the direction of harmonisation across sectors and simplification: the computerisation of Excise Simplified procedure authorisations, and the potential merge of SEED into AEO/EORI with a view of consolidating Economic Operators' registers; the harmonisation of guarantee management across customs/tax/excise;
- The development of new functionalities, such as common risk assessment.

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- Further possible developments of EMCS: the creation of a Single window, allowing multinationals to make declarations from any MSA for all their movements; the set-up of a one stop-shop, so that payments as well can be made in any MSA; this could cover both duty paid and duty suspension movements (or actually abolish the difference).

The Customs 2013 and Fiscalis 2013 programmes provide for an increased annual budget to support much of this growth (from 55,5 Mio Euro initially foreseen for IT systems in 2009 up to 73,6 Mio Euro in 2013).

In order to cope with the new IT systems and the expected growth of the traffic, the private Common Communication Network (CCN) will need to be upgraded as well. This concerns not only its capacity but also its security and its overall architecture.

1.3. IT organisation in DG TAXUD

The **Information Technology Steering Committee (ITSC)** of DG TAXUD acts to ensure high-level authorisation for IT projects in line with the principles of good management and financial governance, under the overall supervision of the IT governance bodies of the Commission.

The **Stakeholders** for DG TAXUD information systems are the Commission, National Administrations, traders or the public in general.

The Information Technology Units (**R4** and **R5**) are responsible for administering the computerisation activities of DG TAXUD in line with the policies of the DG. This includes the provision of business-critical operational services and central information systems necessary for the support of the National Administrations and Commission services.

The **mission** of the Information Technology Units is to:

- Develop and operate secure Information Systems (IS) and transmission services appropriate to beneficiaries in DG TAXUD, Commission departments and Member State administrations;
- Maintain and develop a coherent Information Systems Architecture consistent with the Commission standards policy, allowing interoperability of administrations in the EU and partner countries for the benefit of the Customs and Tax policies;
- Provide and support efficient office automation facilities for approximately 550 staff of the DG TAXUD.

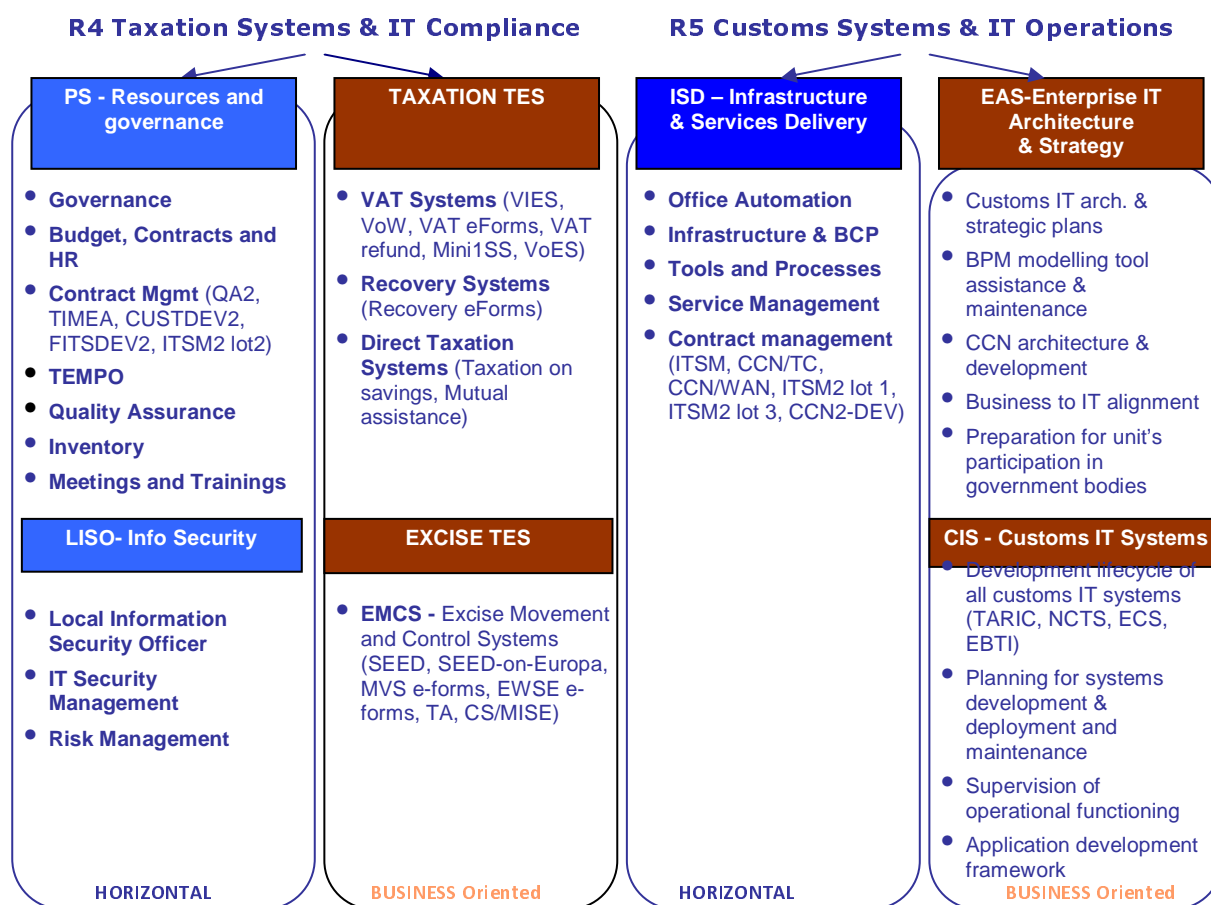


Figure 2: IT organisation in DG TAXUD

The **Unit R4** is divided into four sectors:

- **Resources and governance sector (R4/PS):** is a “horizontal” sector involved with governance, budget, contracts and project management, human resources and support to other sectors of DG TAXUD IT Units from Quality Assurance and Quality Control point of view. R4/PS will be in charge of the management of the relationship between TAXUD and the ITSM2 Lot2 contractor;
- **Excise Trans-European Systems sector (R4/EMCS):** defines, maintains and evolves, in close cooperation with the Member States and on the basis of the EU legislation in place, the IT systems related to the monitoring of movements of excise goods under suspension of excise duty within the EU. These systems are designed to simplify the administrative procedures for the traders involved in intra-EU movements of excise goods, while securing the fiscal revenue of the Member States. The sector also coordinates with the Member States to ensure the constant level of quality and correct functioning of these trans-European systems while in their operational phase;
- **Taxation Trans-European Systems sector (R4/TAX):** defines and creates EU-wide IT systems aiming at supporting the fight against fraud or simplifying the VAT compliance obligations, in close cooperation with the Member States. In the field of VAT the two main systems are VIES and VAT Refund. Part of the functionality of VIES is also used by the general public via the VIES-on-the-Web application. The

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sector has also developed standardised eForms to smoothen and fasten the administrative cooperation in the field of VAT, Recovery of Claims and mutual assistance for Direct Taxation. The sector has developed and maintains the Taxation on Savings system and the Taxes in Europe database;

- **Local Informatics Security Officer (LISO):** defines the DG TAXUD-specific Information Security Policy, oversees the development of security plans approved by DG TAXUD and monitors its implementation, develops information security awareness and training programmes, maintains an inventory of information systems, with a description of security needs, advises and reports on information systems security matters.

The **Unit R5** is divided into three sectors:

- **Infrastructure and Service Delivery (R5/ISD):** The sector is responsible for:
 - Providing office automation services (supply the office automation equipment, user support, helpdesk, management of IT logistics including acquisition, move and decommissioning).
 - Managing the infrastructure used by the Information Systems in support of the Customs and Tax policies, the DG TAXUD specific administrative processes.
 - Assuring continuity of operation of the IT function in case of disaster.
 - Operating the infrastructure allowing interoperability of administrations in the EU and partner countries for the benefit of the Customs and Tax policies (CCN contracts).
 - Managing the IT Operations (ITSM contract).
 - Designing and implementing the IT operation processes in DG TAXUD and all its suppliers.
- **Customs IT Systems (R5/CIS):** The sector is responsible for:
 - The system development lifecycle of all Customs IT systems.
 - The maintenance of the operational planning for systems development and deployment.
 - The co-ordination of the implementation and maintenance of all Customs IT systems in EU in collaboration with internal and external stakeholders.
 - The supervision of their operational functioning and the production of related statistics, dashboards, etc.
 - The system development lifecycle methodology for all Customs IT systems.
 - The application development framework of all Customs applications.

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- The maintenance of a repository of all artefacts of Customs IT systems.
- **Enterprise IT Architecture and Strategy (R5/EAS):** The sector is responsible for:
 - The overall Customs IT architecture and IT strategic plan.
 - Providing assistance to Customs business units for the correct use of the modelling tool ARIS.
 - Maintaining in ARIS, in close cooperation with the Customs units and CIS, a coherent view of the enterprise architecture, including its business data, business processes, business rules and technical IT plan.
 - Providing advice to Customs policy units for the optimal use of IT in reaching their policy objectives; to assure this duty, the section shall represent the unit in coordination groups created either internally or with the participation with MS in view of policy coordination and development.
 - The technical studies, architecture and development of the CCN platform.
 - The overall coherence of IT architecture of DG TAXUD, which operationally is implemented by the sections ISD and CIS.
 - Assuring the secretariat of DG TAXUD's architecture board and through this body promoting business to IT alignment.
 - Preparing the unit's participation in governance bodies, such as the ECG IT and legal, the IT steering committee, the High-level group for the UCC, etc.

In addition to the above, DG TAXUD **Unit A3** is in charge of **UCC and BPM functional structure** to define, in close cooperation with the Member States, the requirements and business process models of the customs IT systems related to the Union Customs Code and its implementing provisions.

Some changes in this organisation may occur during the course of the CCN2-DEV framework contract.

1.4. Contractual aspects

1.4.1. *DG TAXUD IT value chain*

DG TAXUD relies on the Commission's DG for Informatics (DIGIT) for hosting part of the IT systems. In parallel, DG TAXUD **outsources the bulk of its IT activities to external service providers**, which are contracted through public procurement procedures in compliance with the Financial Regulation. The products and services supplied are all subject to a systematic quality control and testing as part of the acceptance procedures.

Currently, units **R4** and **R5** rely on several **external contractors** to perform their duties (refer to [Figure 3](#) below for a graphical representation of the current contracts):

- Two development contractors (CUSTDEV2 for Customs, FITSDEV2 for Taxation);

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- One IT service management contractor (ITSM);
- One provider for building infrastructure (Data Centre Building Facilities, see [R333]);
- One common network provider (CCN/WAN2);
- One network technical centre (CCN/TC) in charge of the CCN/CSI developments and operations;
- One quality assurance/control contractor (QA2);
- Several consulting contractors to perform strategic studies and analyses.

Customs and tax administrations face major challenges that will require continued and improved support of IT. The introduction of the Union Customs Code as of 2013 and the e-Customs initiative are examples of these business challenges.

In order to respond to these challenges it is considered necessary:

- To continue the consolidation of its IT service management, so as to increase the effectiveness and efficiency of the services it supplies to its beneficiaries. In order to do so, the IT service management call for tender TAXUD/2010/AO-13 (ITSM2) that was published in the Official Journal⁶, comprised three (3) lots for the execution of services for five (5) years;
- To renovate CCN so as to modernise the existing facilities and create the new facilities necessary for the support of the existing political and operational objectives (CCN2-DEV).

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The IT value chain of DG TAXUD is depicted below:

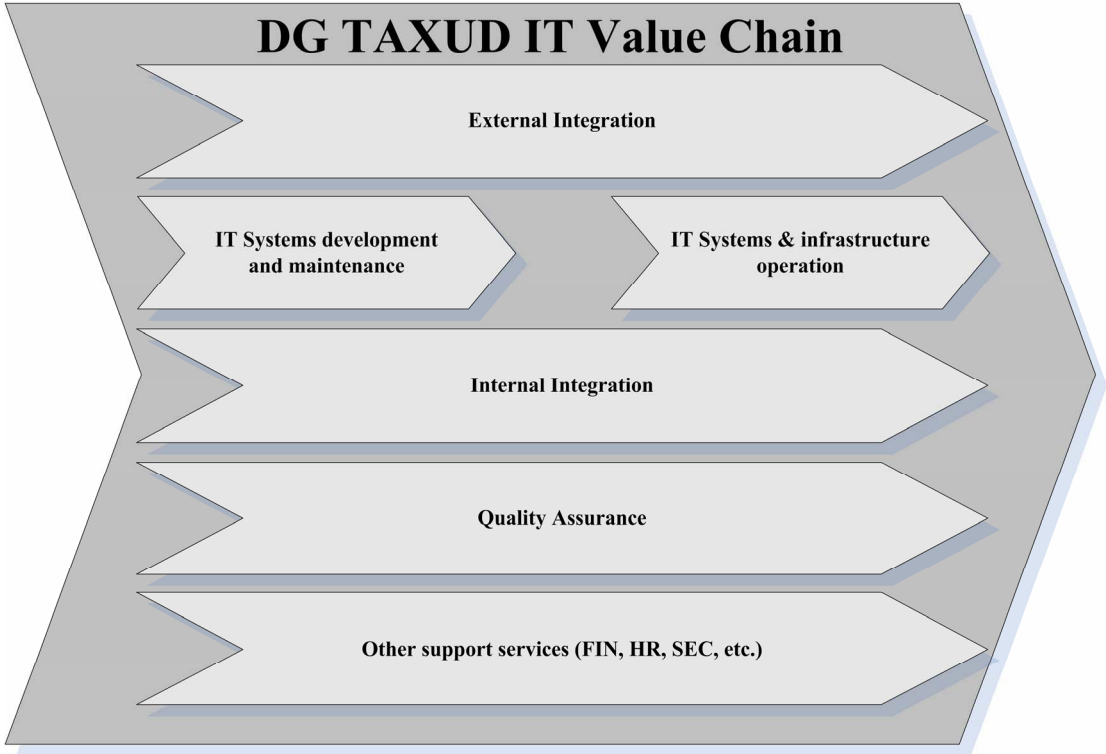


Figure 3: DG TAXUD IT Value Chain

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1.4.2. As-is DG TAXUD organization overview

The existing structure of DG TAXUD contracts⁷ is depicted in the diagram below. Development services are delivered by the CCN/TC, CUSTDEV2, FITSDEV2 and ITSM contracts, the later being restricted to support "Service Management related tools" and facilities necessary for the IT service management and related activities.

Operations rely on ITSM, CCN/TC, CCN/WAN2 contracts, the Data Centre (DC) Building Facilities and the Data Centre service of DIGIT.

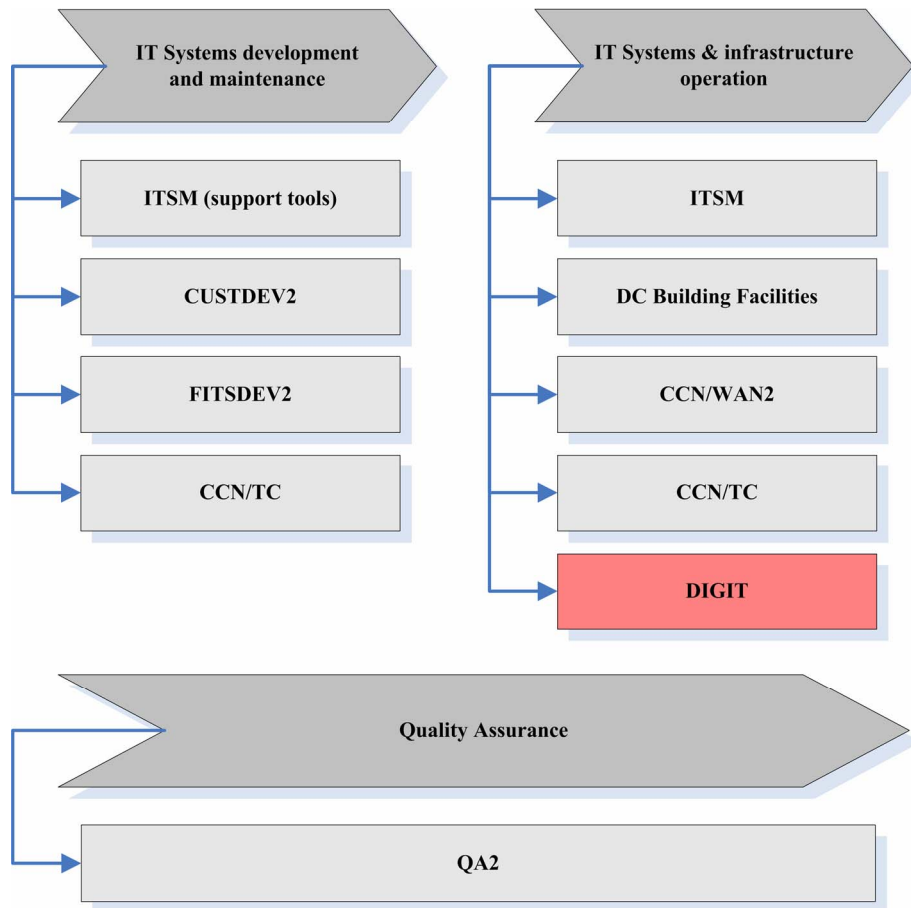
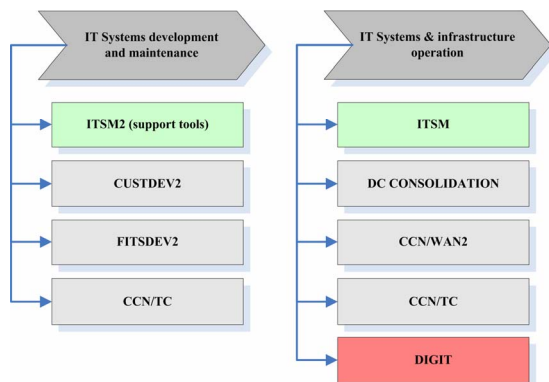


Figure 4: DG TAXUD's Current Contracts

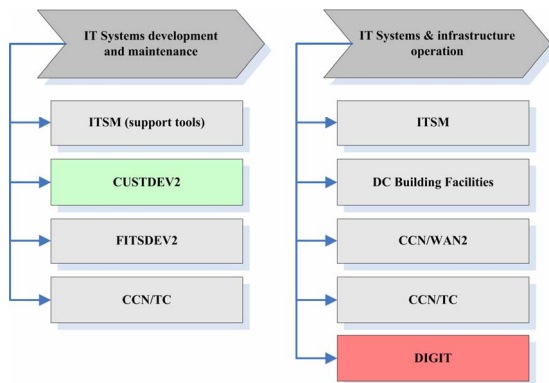
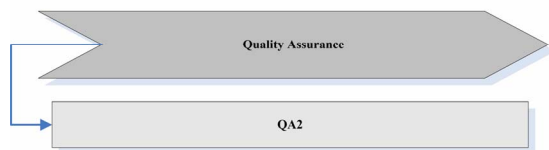
⁷ With the exception of DIGIT as there is no contract between DG TAXUD and DIGIT.

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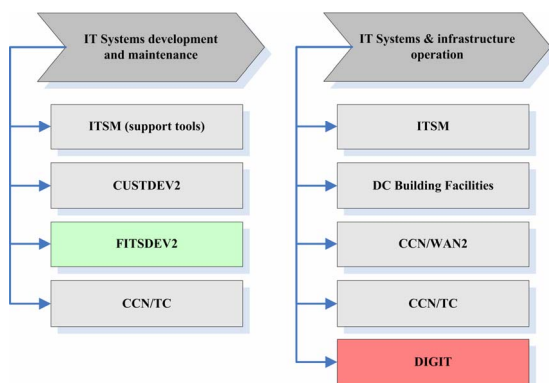
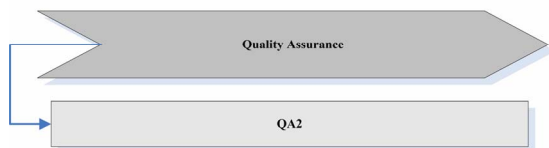
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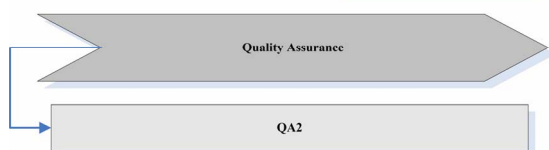
The **ITSM** contractor is the current provider of IT Service Management on behalf of DG TAXUD for excise, taxation, and customs business threads, except for the CCN/CSI service. The contract includes development and maintenance of its own "Service Management related tools" of which some are also used by other contractors (e.g. SMT).

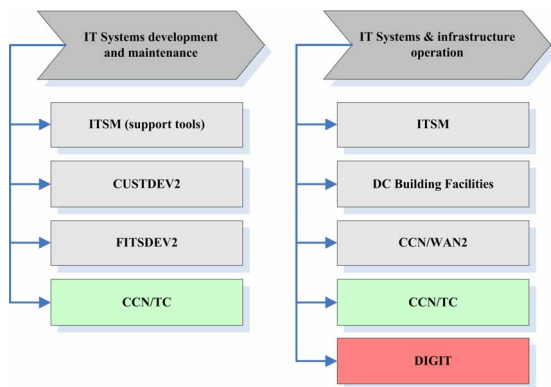


CUSTDEV2 is a development and maintenance contract, which consolidates all customs-related development. The CUSTDEV2 contractor provides specification, development, maintenance and support services for all customs IT systems.

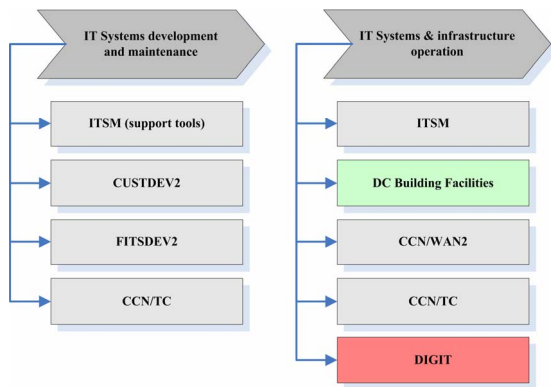
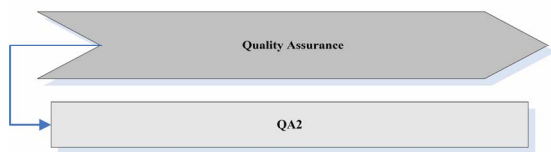


The **FITSDEV2** contractor provides specification, development and maintenance services for the taxation and excise systems and applications as it is currently in operation.

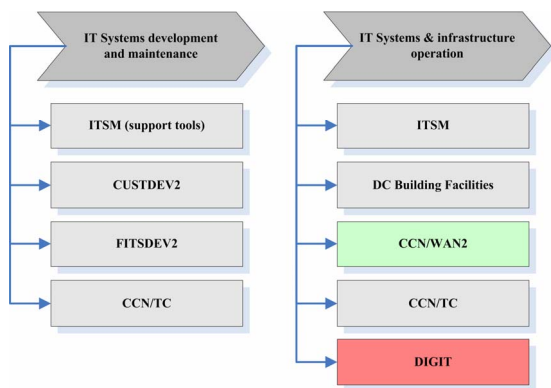
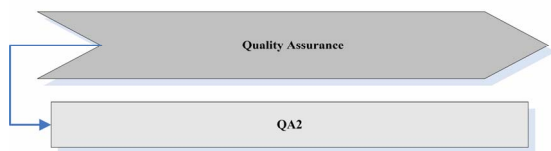




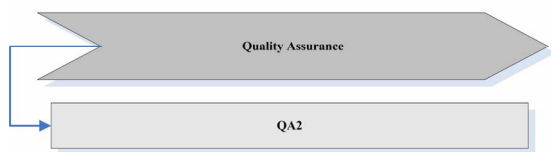
The **CCN/TC** contractor provides CCN/CSI service management including its service desk for the NAs and various contractors of DG TAXUD, service delivery and support, ICT Infrastructure management, operations management, security management as well as its application development.

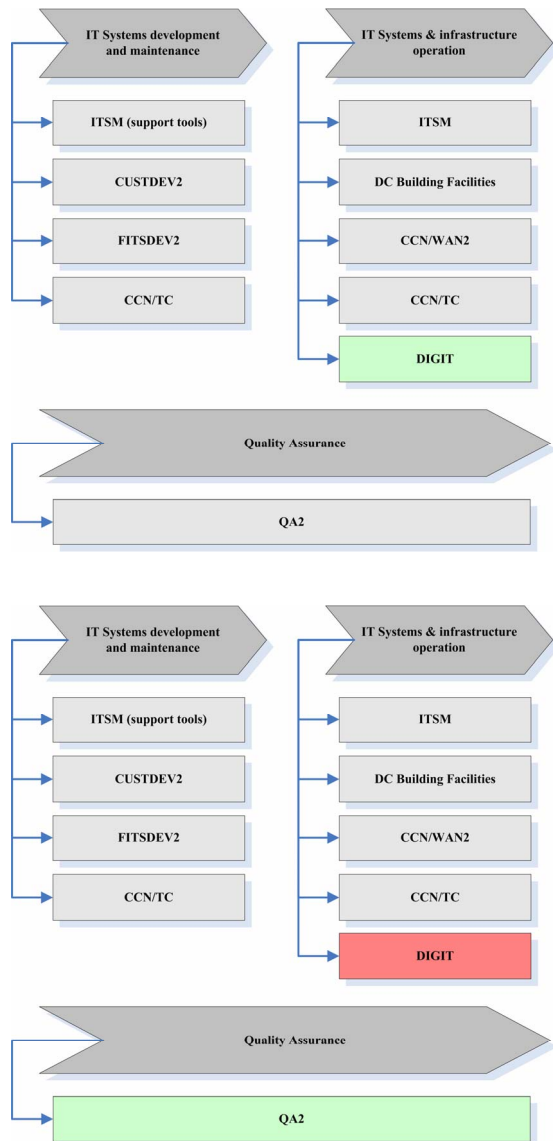


DC Building Facilities is the contract that provides the locations for the two Tier IV level Data Centres in Luxembourg that will be used by DG TAXUD. All infrastructure hosted by ITSM and CCN/TC will be regrouped in these Data Centres, and will be operated by the ITSM2 contractor.



The **CCN/WAN2** contractor provides the private secured IP network services of CCN including their maintenance.





DIGIT is the IT General Directorate of the Commission. DIGIT has responsibility for the Commission's Data Centre (DIGIT/DC) which hosts part of the DG TAXUD information systems.

The **QA2** contractor is responsible for TEMPO maintenance quality assurance and quality control of the IT services and deliverables provided by the others IT contractors of DG TAXUD. This includes services supplied by the current CCN/TC contractor.

Figure 5: DG TAXUD contracts

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1.4.3. To-be DG TAXUD organization overview

The target organisation represents the current vision of DG TAXUD, without prejudice to further evolution as the need may arise.

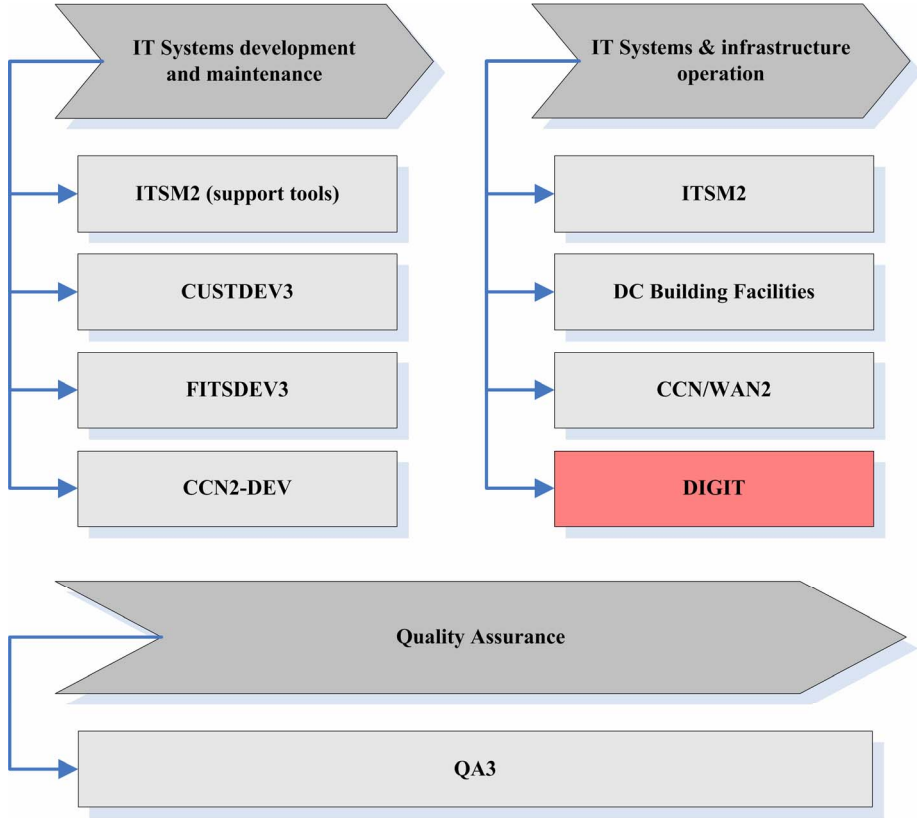


Figure 6: Support Contracts' Target Situation at DG TAXUD

The new ITSM2 framework contract shall integrate IT systems and infrastructure operation, merging the previously repeated CCN/TC operation and ITSM operations. The CCN2-DEV framework contract shall provide essentially 3rd level support, maintenance services and development services for the existing CCN/CSI and future CCN2 Platform Infrastructure.

2. General Description of CCN/CSI

The Common Communications Network / Common Systems Interface (CCN/CSI) is a value-added network operated by the Directorate-General for Taxation and Customs Union (DG TAXUD). The mission of CCN today and in the future is to provide common services to exchange taxation, excise and customs information at reasonable cost, with high agility, high security and continuity. CCN was designed between 1993 and 1995 and is operational since 1999. Today, the CCN/CSI relies on:

- The Common Communications Network (CCN), which is composed of a series of physical Gateways located either in the National Administration or on the Commission premises. These Gateways are interconnected in a secure way through communications services and locally connected to the application platforms provided by the local site.
- The Common Systems Interface (CSI), which is a set of protocols and application programming interfaces allowing the above-described application platforms to exchange information through the CCN backbone. It ensures the interoperability between the relevant heterogeneous systems in the National Administration.

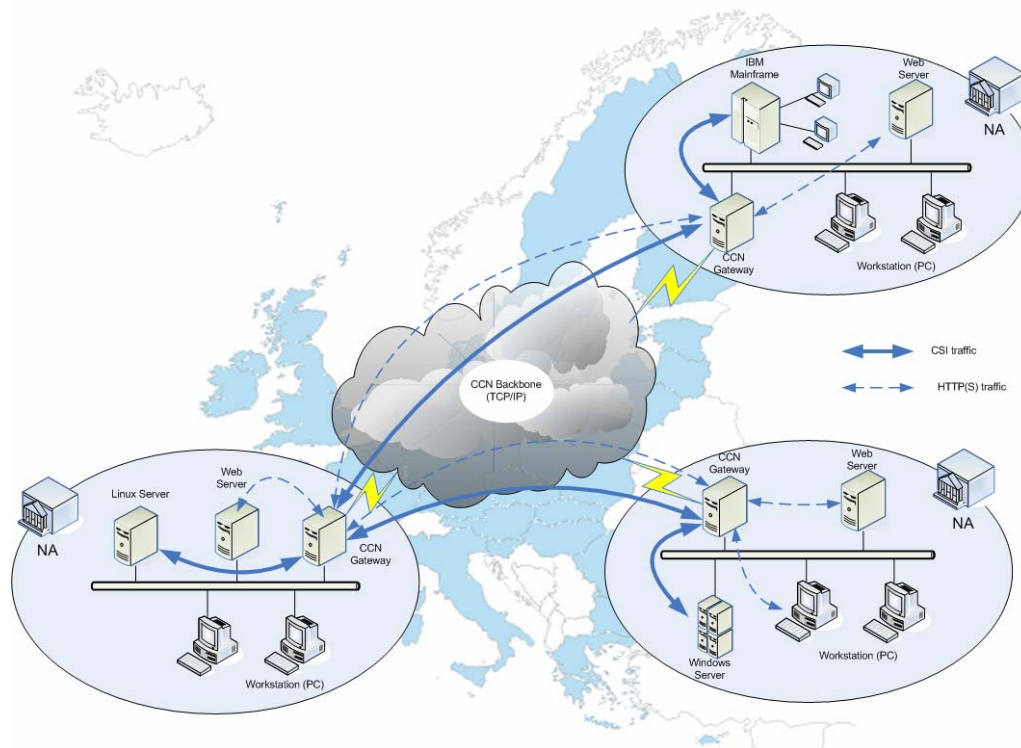


Figure 7: CCN/CSI topology overview

CCN is the largest e-communications platform among customs and taxation administrations worldwide, and delivers a variety of specific services to support various policies⁸. CCN and

⁸ Customs, Excise, Taxation, Anti-fraud, Fisheries, and Agriculture related.

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CSI are managed and developed by the Directorate General for Taxation and Customs Union (DG TAXUD) in conjunction with the Member-State administrations concerned (see also [R104]).

CCN/CSI serves all of the EU Members States and the EFTA members Norway and Switzerland. It also extends to third countries, including Russia for example, via a separate system named SPEED. The provision of services may extend to Candidate Countries such as Turkey, and the Former Yugoslav Republic of Macedonia (FYROM), and to other countries according to the evolution of the taxation and customs policies. Such countries may also include Moldova, Ukraine, Belarus, China, United States, Japan and India. OLAF relies on the CCN infrastructure to carry out anti-fraud campaigns in collaboration with the EU Member States.

The CCN/CSI provides a network which is:

- Secure:
 - CCN/CSI runs on a dedicated private hardware infrastructure;
 - All data transmitted over the network is encrypted;
 - Access to the network is controlled by strong user authentication and authorisation.
- Accessible:
 - The network has access points (CCN Gateways) in every Taxation and Customs administration;
 - The CSI software ensures that heterogeneous computer systems can access the network.
- Reliable:
 - Data exchanges over the network have guarantees of delivery ;
 - All hardware and software elements of the network are constantly monitored.

The CCN/CSI infrastructure can be split into 2 domains:

- The "European" domain infrastructure is owned by DG TAXUD and operated by the service providers. Inside this domain, the CCN backbone and access equipment are provided by the network provider. The operation supplier remains the sole responsible for the operation of CCN/CSI infrastructure deployed in each National Administration or at DG TAXUD premises.
- The "national" or "local" domain components which are under the full responsibility of the National Administrations.

Of over **50** central applications and **18** distributed systems relying on CCN/CSI, the most critical are VIES (VAT Information Exchange System), NCTS (New Computerised Transit System), EMCS (Excise Movement and Control System), ICS (Import Control System) and

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AFIS (Anti-Fraud Information System). These applications range over the collection of taxes and duties, the security of trade, the control of fraud and illicit trade, VAT information and more.

In addition to the CCN sites installed in National Administrations, there are also sites located centrally. These are located in the European Commission Data Centre, and in the European Anti-Fraud Office (OLAF) and provide CCN access to centralised information systems. The remaining sites are located at the CCN Technical Centre (CCN/TC) and ITSM Data Centre. Finally it is important to mention that there is a project ongoing with the objective to consolidate all DC.

The subsequent sections are describing the functionalities provided by CCN/CSI, its components and the overall architecture. It is a subset of the complete overview of the CCN/CSI that is provided by [R064]. This document as well as high level design documents of the different CCN/CSI components are part of the baseline.

The TCP/IP backbone consisting of leased lines and network component is managed by a separate contract (CCN/WAN) and is not in the scope of this Call for Tender.

2.1. Objectives of the CCN/CSI middleware

The general objectives of the CCN/CSI middleware can be summarised as follows:

- To offer to all National Administrations a coherent method of access to all DG TAXUD applications;
- To offer all National Administrations a coherent method of access to other National Administration applications;
- To provide a high level of service on an equal basis to all National Administrations;
- To allow for the integration of other Commission entities hence extending the coherence of access to non-DG TAXUD applications;
- To provide a solution that is not dedicated to a particular application (or even several applications) but rather a general purpose solution which will be valid for a long period of time;
- To ensure the interconnectivity between the CCN/CSI sites;
- To ensure the interoperability in a heterogeneous environment;
- To ensure the continuity of the services.

The technical objectives are:

- To provide a robust and standardised backbone;
- The backbone provides to the applications synchronous and asynchronous CSI services, web services and mail facilities in an integrated manner;
- To have a high quality administration system so as to offer a high quality of service. This robust administration of the European domain adheres to the subsidiary

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principle, allowing the National Administrations to benefit from a local administration for their national domain;

- To provide a consistent API on the Application Platforms of all the National Administrations;
- To provide widely accepted API.

In order to achieve these objectives, the CCN/CSI middleware **must**:

- Continue to consolidate the solid organisation and to deliver continuous, efficient and reliable services to customs, taxation and excise users by providing a harmonised and secure method of having access to and exchanging information between the communities of users (National Administration and the European Commission). In the near future, this may require an increase in the guaranteed continuity of service of the network to 24 hours/day, 365 days/year;
- Cope with an increasing number of users, sites and applications relying on the CCN/CSI middleware and guarantee a smooth implementation of new application's requirements;
- Anticipate the expansion of the CCN/CSI to new Candidate Countries, to third countries and handle the increase in service demand;
- Align the CCN/CSI with technical evolutions in the marketplace;
- Validate the CCN/CSI strategy, architecture trends and draft guidelines taking into account existing applications;
- Limit the financial impact of the expansion of the CCN infrastructure as a whole and be responsive to cost evolutions in the marketplace;
- Support extended protocols and standards.

CCN/CSI will continue to evolve, both in terms of the information systems that it supports and the value-added services that it provides. The levels of security and availability will be maintained. As more demand is made to CCN/CSI middleware, hardware upgrades will be made in order to maintain performance. CCN/CSI will also continue to expand, both in terms of the countries which are connected (Candidate Countries and other EU economic partners) and the administration domains that use it.

2.2. Services offered to the Applications of the NAs

The CCN/CSI middleware services allow the development of applications using synchronous, asynchronous, web or email interactions on the different hosts of the National Administrations.

The services offered can be summarised as follows:

- Synchronous service: an application can invoke another application in a request/response mode; with the restriction that CCN/CSI does not offer distributed transaction support;

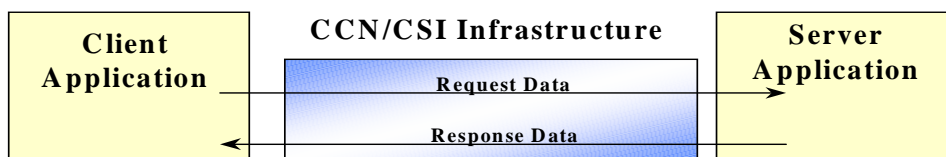


Figure 8: CCN/CSI synchronous service

- Asynchronous service: an application can exchange messages with other applications in an asynchronous manner (store and forward technique). In this case, the applications see each other via message queues;

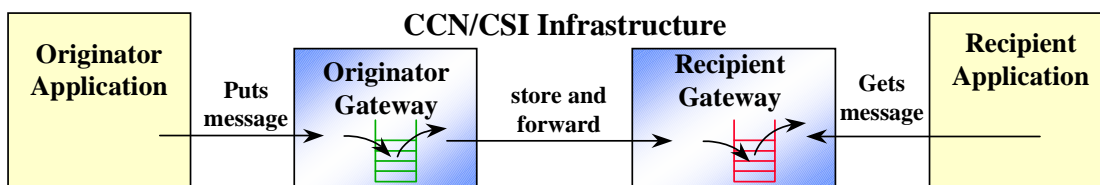


Figure 9: CCN/CSI asynchronous service

- HTTP traffic: an application can exchange messages with other applications in a synchronous way using the HTTP protocol;

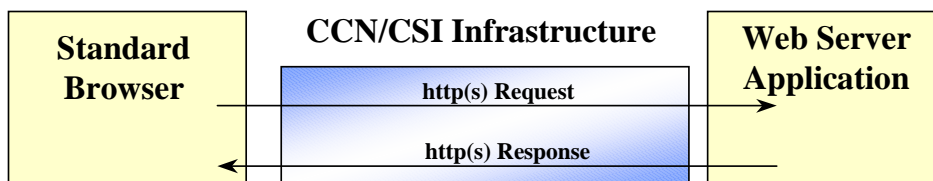


Figure 10: CCN/CSI HTTP traffic

This enables Internet browsers to access web servers located on centralised servers via the private CCN network – and not via the Internet. The first information systems which are examples of this technology, the Specimen Management System (SMS), the Information System for Processing Procedures (ISPP) and the European Binding Tariff Information system (EBTI) are already in operation. Also already in operation is the CCN/TC Web Portal – an information source for CCN users;

- Mail service: a user (or an application) can exchange mail messages with other users (or applications) in an asynchronous way using the SMTP protocol. In addition to standard messages, this system, CCN Mail2, also supports the exchange of forms between National Administrations, directory services and could possibly be used for value-added services such as workflow management. A technological upgrade (CCN Mail3) is actually in development (see also [R356]).

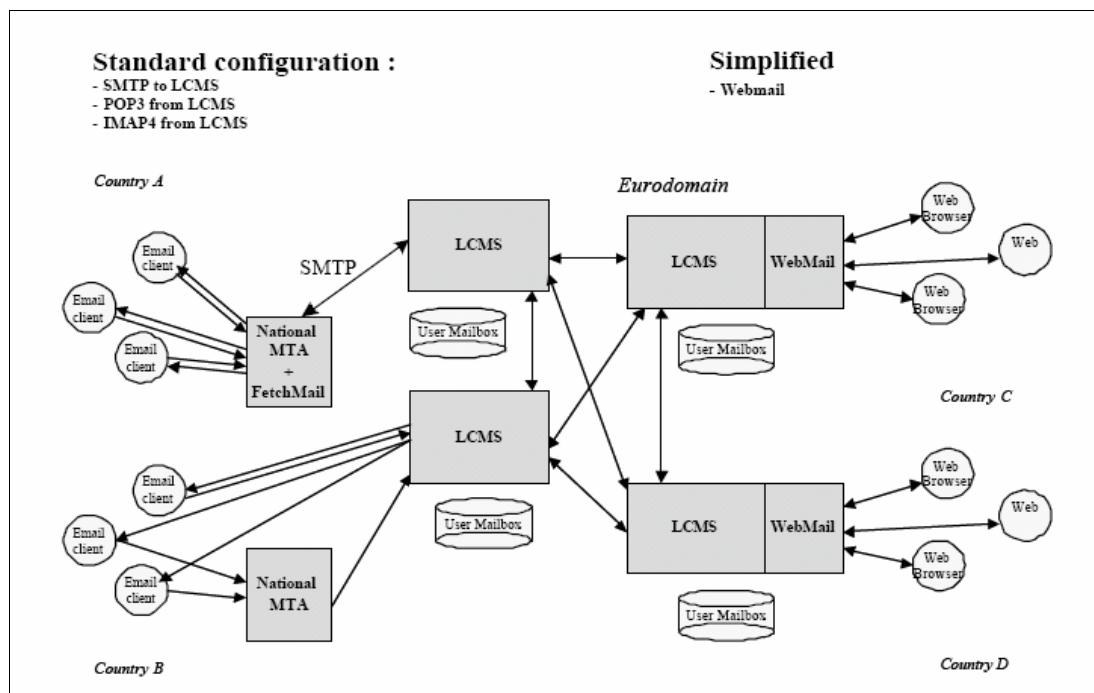


Figure 11: CCN/CSI mail service

- **Interoperability:** National Administrations applications run on different Application Platforms, each one with its own data format. The infrastructure handles all the necessary conversions on behalf of applications (restricted to very limited set of character encoding), which deal only with their own native format;
- The exchanges between National Administrations Application Platforms are secured. Two levels of security are provided:
 - At the European level (security devices are present between each CCN/CSI Gateway and the CCN/CSI Backbone, so that the CCN/CSI Gateways are in a DMZ);
 - At the CCN/CSI access point (links between the Application Platforms and the Gateways) where authentication, confidentiality and integrity mechanisms are provided.

2.3. Security

The security of CCN/CSI is organised according to the underlying IDA architecture, in particular to the Euro Domain and Local Domain principles. So, there are two kinds of security responsibility domains:

The **European security domain** includes only systematic, non-negotiable services: mutual authentication of Gateways, access control lists (user / user profile / resource) recorded on the Gateways and a hardware-based encryption of all trans-European communications (see also [R209]).

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The National security domains include an authentication of the user and application to the Gateway in two possible contexts:

- Secure links, meaning well protected, communication lines from an application platform having its own security subsystem may be considered as secure enough to have a direct access to the gateway.
- In other cases, the link is said to be non-secure, and additional authentication features such as three-way authentication are offered.

The Security Service covers three functions: authentication, confidentiality and integrity. It is part of the Function Layer.

On National Domain, the GSS_API is used to call the security services and to compute security tokens. For confidentiality and integrity, data are sealed and unsealed (in the GSS_API terminology, “sealing/unsealing” means sealing/unsealing and enciphering/deciphering). For the authentication, the Security Service relies on CSI_API to transfer the security context (see also [R338] and [R357]).

On European Domain, the Security Service relies on the Gateway cryptographic devices plugged on the CCN Backbone.

2.4. Administration

The Administration Software of the CCN/CSI Gateway provides a set of tools allowing the administrators to configure and manage the CCN Gateway software. It provides the administration functions covering the following functional areas:

- Configuration and Name Management, which allows the administrators to manage the configuration and naming of the various software products and components of the CCN Gateway;
- Fault Management, which provides error detection and reporting mechanisms to facilitate troubleshooting;
- Accounting and Performance Management, which provides functions to collect statistics information for further analysis by external applications (e.g. generation of reports regarding CCN service availability, message transit delay, backbone usage, Gateway management);
- Security Management, which provides functions to the administrators to configure and manage security information, such as user authentication keys, user profiles and Access Control Lists (ACL). Security management also provides security logging mechanism (see also [R337]);
- Control and Monitoring, which allows the administrators to control and monitor the operation of the CCN Gateway software. Control and monitoring functions include start-up, stop and restart of the CCN Gateway software, and supervision of the running CCN/CSI software processes to detect possible unexpected fallen processes.

Most of the common configuration information is stored in the CCN Directory, which allows the Administration Software to provide auto-configuration facilities, to make use of the

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replication mechanism provided by the CCN Directory to synchronise configuration information and to simplify configuration management.

The Administration Software provides the technical means to allow the administrators of the National Administrations to locally perform administration, configuration and management of the CCN Gateway software. It provides also facilities to allow the Central Administrator from the CCN Technical Centre to perform centralised remote administration.

Although the administrative functions described here are technically available both to the local and to the central administrators, in practice, they are assigned to the local, the central or both types of administrators according to the agreement between MS and DG TAXUD (see also [R078]).

Due to technical constraints, some administrative functions are only available to the local NA administrators, e.g. backup configuration information on physical media. This is pointed out in the relevant functions.

Recently, the administration subsystem is subject of many evolutions (see section 3.5 and [R349]).

2.5. CCN/CSI Subsystems

The applications communicate with each other through the Inter Application Bus (IAB). The accesses to the Quality of Service (QoS) management are carried out by the IAB. The IAB constitutes the CCN/CSI middleware. It is split into several subsystems as presented in the figure below.

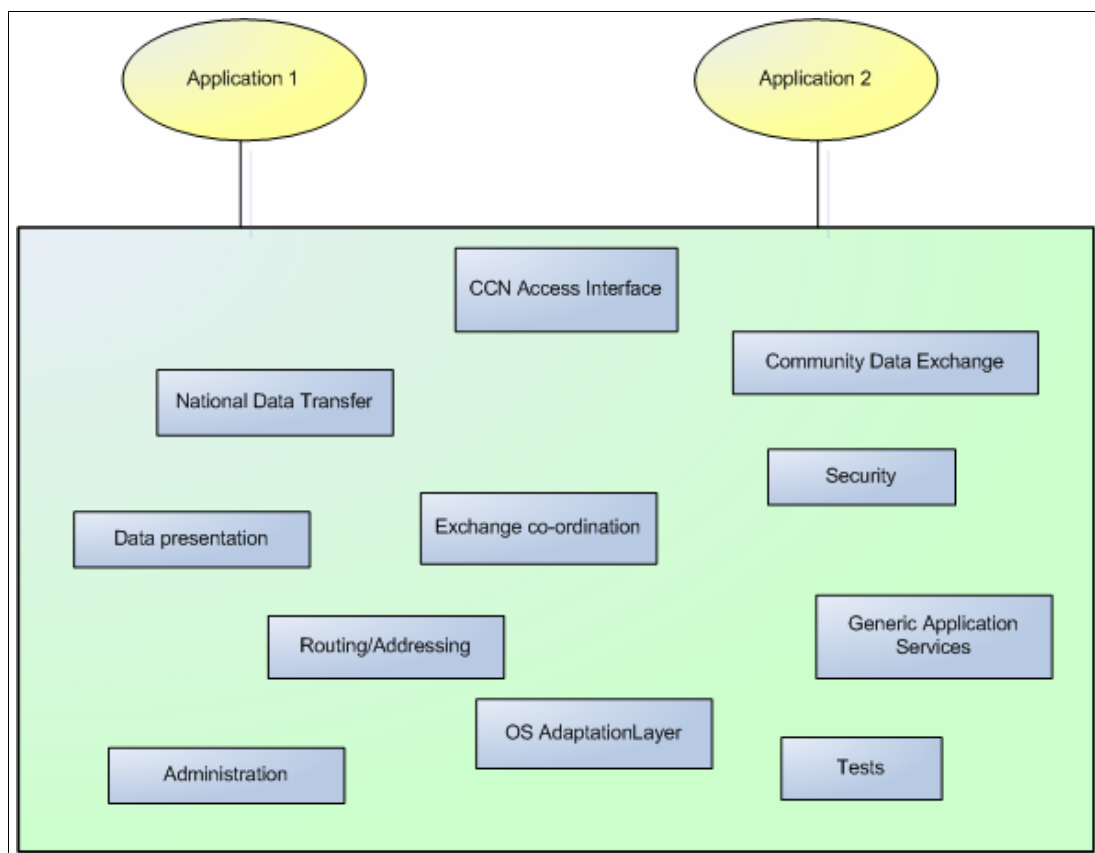


Figure 12: CCN/CSI Functional Subsystems

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The Functional Subsystems composing the CCN/CSI middleware are as follows:

- **CCN Access Interfaces:** this subsystem is the entry point offered to the applications in order to access and to use the CCN/CSI middleware. This subsystem is the access point for all information entering or leaving the CCN/CSI middleware. It is distributed on the Application Platform and the CCN/CSI Gateway. It includes the HL_API (see also [R212]), the CSI_API, the JCSI_API and the NJCSI_API and the Function layer. The SPI_API is included in this subsystem as an internal entry point in the gateway though it cannot be used by the applications (see also [R219] and [R217]). Concerning the HTTP interactions, the API provided to the National Administrations relies directly on specific handlers run by the HTTP server. For mail exchanges, the CCN Access Interfaces are in fact SMTP, IMAP and POP3⁹.
- **National Data Transfer:** this subsystem provides the transfer means used to exchange information between the Application platforms and the related CCN/CSI gateway. It is distributed on the Application Platform and the CCN/CSI Gateway. It includes the T_API, the GT layer (see also [R211]), the CT_API and the CT layer.
- **For HTTP and mail exchanges,** TCP/IP takes the transfer between the Application Platforms and the CCN backbone in charge.
- **Community Data Exchange:** this subsystem is responsible for the data transfer between two CCN/CSI gateways. It includes the Function layer in the European Domain described in the next "Functional Architecture Model" paragraph. The Function and Transmission Layer role is to convey the CCN/CSI messages. The Communication layer of the European Domain is based on the following underlying products: Tuxedo, MQSeries (accessed through the GT_API), Apache (HTTP protocol) and Postfix (SMTP protocol).
- **Exchange Co-ordination:** this subsystem allows the scheduling of the services offered by other subsystems (Data Presentation, Security, and Routing/Addressing) in order to ensure their activation in a consistent way. It takes charge of the Quality of Service (QoS) required by the Applications. This subsystem is a mandatory access point for all information to be handled within the system.
- **Security:** this subsystem provides the security services, including access control, authentication, integrity and confidentiality. It provides the GSS_API to the Applications in order to access to the security services. It is distributed on the Application Platform and on the CCN/CSI Gateway.
- For HTTP exchanges it makes use of SSL, especially during the authentication phase (see also [R213]).
- **Generic Application Services (GAS):** this subsystem includes all the CCN/CSI services running directly on the CCN gateways.

⁹ Concerning the SMTP, IMAP and POP3 protocols, a webmail interface is also offered for convenient purpose.

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- For synchronous and asynchronous services, these applications are relying on the same API as applications running on Applications Platforms. The only difference is located in the authentication mechanism, which is replaced by an identification mechanism.
- For web services, these applications are implemented via a specific content-handler integrated in the Apache HTTP server running on the gateway (see also [R292]).
- **Routing/Addressing:** this subsystem is responsible for the routing/addressing resolution of the messages sent by the applications to their destination. Its goal is to associate a resource logical name to a final destination, assuring the coherence regarding the mode of the partners and the gateways they are running on.
- **Data Presentation:** this subsystem provides the means to convert the data exchanged between heterogeneous application platforms, to and from a common format used by the IAB.
- **Administration:** this subsystem allows the administration of the subsystems that make the CCN/CSI middleware.
- **Tests:** this subsystem provides the means to perform application environment tests with the CCN/CSI middleware.
- **OS (Operating System) Adaptation Layer:** this subsystem provides, for portability purpose, services to the Application Platforms subsystems permitting to mask the dependencies of system dependent operations.

Note: The Directory is not defined as a subsystem. It is related to the architecture and is a way to implement the configuration information storage on the CCN/CSI gateway.

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2.6. CCN/CSI Architecture Overview

2.6.1. Introduction

The following Figure gives an overview of the CCN in terms of networks and platforms.

Note: In the present section, the term “platform” is used to reference the trio made up of computer hardware, the operating system it runs and possibly the transactional monitor. Thus, the computer hardware running two different operating systems (and vice versa) are considered as different platforms.

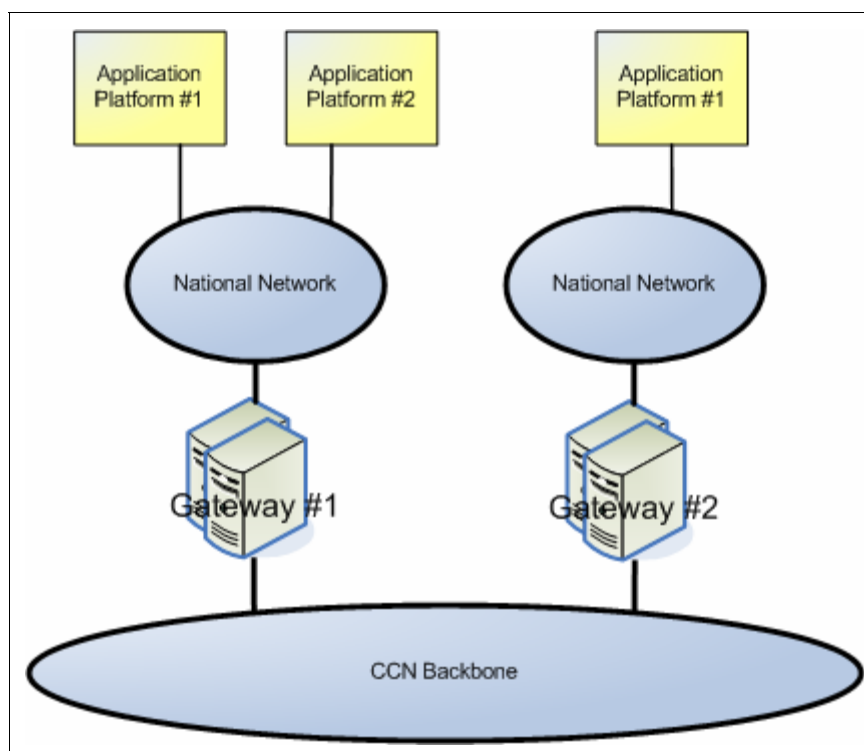


Figure 13: CCN overview

The national networks are owned and administrated by the National Administrations. The distributed trans-European applications run on the Application Platforms and dialogue through the CCN backbone.

The CCN Gateways are the only access points to the CCN. They offer the CSI for both the remote (Application Platform located) and local (Gateway located) applications. The local (Gateway located) applications are generic applications services (GAS). As depicted on the figure, to provide a better service availability, each CCN Gateway is backed up.

An Application Platform (AP) is a platform (see above) running CCN/CSI applications.

The following figures zoom in on the CCN/CSI application and Gateway. These two components are detailed hereinafter.

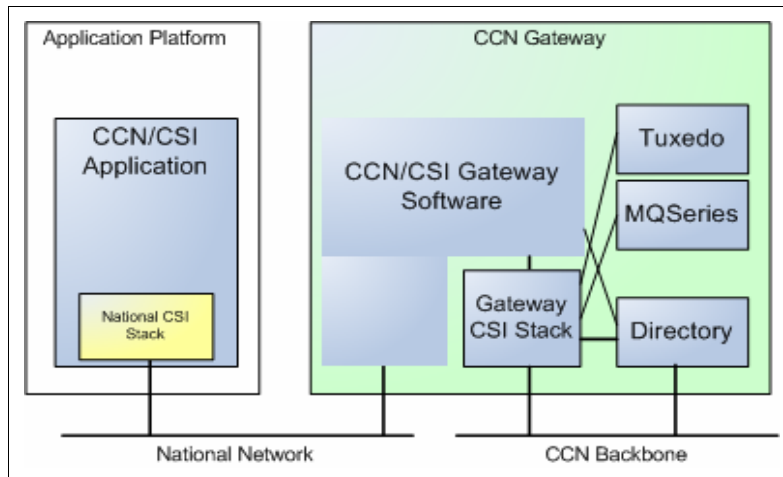


Figure 14: CCN/CSI Applications and Gateways architecture for request-response and asynchronous interactions.

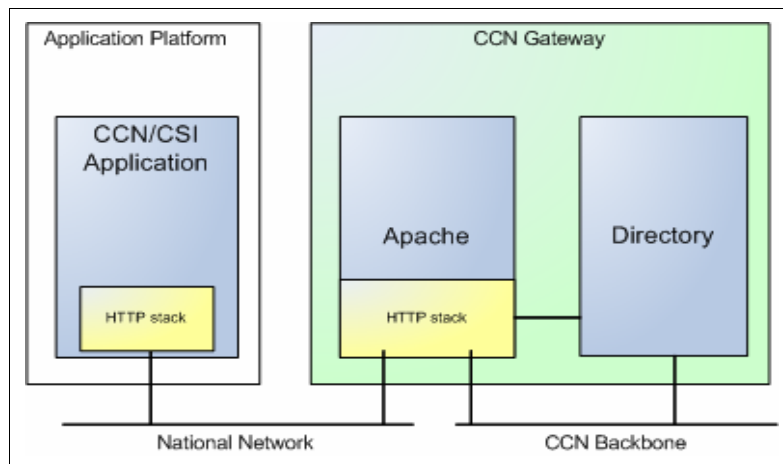


Figure 15: CCN/CSI Applications and Gateways architecture for HTTP interactions.

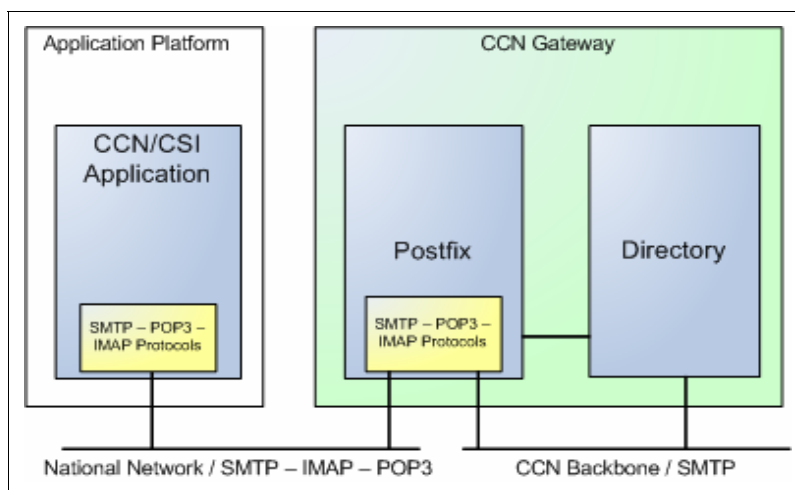


Figure 16: CCN/CSI Applications and Gateways architecture for mail interactions

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2.6.2. CCN/CSI Applications

2.6.2.1. Application Architecture

The architecture model for the CCN/CSI applications is the client/server model. Thus, a CCN/CSI application can behave either as a client and/or as a server. A client application is an application that invokes (initiates) services (operations) to be performed by a server application.

A CCN/CSI application can be client, server or both at the same time.

The CCN/CSI applications rely on the CSI stack to connect to the CCN Gateway through the National network. The CSI stack, by offering a consistent set of Application Programming Interfaces (API), makes the applications independent of the underlying data transfer protocols.

The CSI API offers the application two sets of verbs, to allow the application to function in synchronous (connection oriented) or asynchronous (message oriented) modes. Note that the JCSI API relies on the implementation of the CSI stack written in the "C" language while the NJCSI API is a Java – only component.

When functioning in a synchronous manner, both the client and server applications are active during the interaction. Two types of synchronous verbs are available to the applications, blocking and non-blocking synchronous verbs. When using a blocking synchronous verb (a request-response or a HTTP interaction), the client application is blocked until the server application has completed the processing of the requested operation or has reported failure whereas non-blocking synchronous verbs allow the application to invoke other operations without waiting for the previous operation(s) to complete, other verbs being available for the application to retrieve the operation results/outcome.

When working in an asynchronous manner, only one entity (i.e. the client or the server) is active at a time during the interaction. The asynchronous or message oriented mode relies on message-queuing and store-and-forward mechanisms that do not require the applications to be active at the same time.

2.6.2.2. National CSI Stack

Due to the variety of the application platforms, the CCN/CSI applications, regardless of their role and the exchange mode they rely on, can be:

- Controlled by a Transaction Processing (TP) monitor.
- Run in a batch environment.
- Run by an operator or a user.

The National Network between the Application Platform and the CCN gateway relies on the TCP/IP protocol for all interactions.

If the whole CSI stack functionality was to be implemented on every Application Platform, a dedicated CSI stack would have to be designed and implemented for each application platform supported by the CCN/CSI software.

The chosen implementation is to remove as many CSI stack features as possible from the application platform and to locate it on the CCN Gateway in order to make the application platform dependent part (i.e. the part to be rewritten for each AP) as small as possible.

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This can be achieved by executing remotely (i.e. on the Gateway) each of the CSI verbs, the objective being to restrict the CSI interface on the application platform to the role of a data transmission protocol.

Some of the CCN/CSI features involve the presence of evolved data processing mechanisms on the Application Platforms. An example of such functionality is the security protocol that requires the application (via the CSI stack) to compute the security tokens for the identification, authentication, confidentiality and integrity features. Another example is the data presentation.

As all the features requiring some processing to be performed on the Application Platform are part of the Function layer, this layer cannot be placed remotely. Similarly, the Communication layer consisting mostly of the operating system provided communication protocol software required in order to communicate with the Gateway has to remain on the Application Platform.

On the other hand, the services offered by the Transmission layer (e.g. execution of a call to a service, access to message queues, etc.) can be executed remotely on the CCN Gateway. The Transmission layer on each Application Platform can then be restricted to a function of data encapsulation and forwarding; its peer on the gateway being in charge of both data extraction and execution of services.

The CSI stacks are implemented and qualified for different HW/SW platforms (see 3.3) in Java, C (see also [R234]) and Cobol (see also [R235]).

2.6.3. The CCN Gateway

2.6.3.1. Gateway Software Products

The CCN Gateway relies on the following software products:

- The CCN/CSI Gateway Software;
- The Tuxedo TP monitor;
- The IBM WebSphere MQ queue manager;
- The Apache HTTP server;
- The Tomcat “pure Java” HTTP server (Servlet container);
- The Java Virtual Machine;
- SunOne Directory Server;
- The AIX or the Linux Operating Systems;
- The Tivoli monitoring agents;
- SuSE Open Exchange Server, for the LCMS usage only (will be phased out by CCN Mail3).

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The Tuxedo Transaction Processing monitor, the MQSeries queue manager, the Apache HTTP server and SuSE Open Exchange Server are the pieces of software on which the CCN/CSI Gateway and LCMS Software is built. They are also used to implement the communication protocol used to exchange data on the CCN backbone.

The Directory System is based on a X.500 client-server architecture: the client queries and receives responses from one or more servers using the Lightweight Directory Access Protocol (LDAP). The Lightweight Directory Access Protocol (LDAP) is a simpler version based on TCP/IP of the Directory Access Protocol (DAP). The Directory client, called the Directory User Agent (DUA), provides the standardized functionality that supports searching or browsing through one or more directory databases. The Directory System Agent (DSA) is the database in which the CCN/CSI configuration information (e.g.: definitions of the users, user profiles, applications, services, Application Platforms, Gateways) information is stored. This database is hierarchical in form, designed to provide fast and efficient search and retrieval. The Directory System Protocol (DSP) controls the interaction between two or more Directory System Agents. The Directory System also manages the storage and replication (using the Directory Information Shadowing Protocol - DISP) of the Directory Information Base (DIB) to synchronise the Directory content on all the CCN Gateways and improve the information access time by maintaining a copy of the directory content on every CCN Gateway and backup Gateway.

The AIX and the Linux Operating Systems offer services, such as file management, basic networking software, etc., on which the CCN/CSI Gateway Software relies heavily.

The mail exchange functionality is running on dedicated hardware running SuSE Open Exchange Server. These machines, called Local CCN Mail Servers (LCMS) are totally independent from the CCN/CSI gateways. They will be replaced in 2012/2013 by a centralized architecture based on MS Exchange (see also [R356]).

The CCN/CSI Gateway Software implements the CCN/CSI functions. The following figures show the breakdown of the CCN/CSI Gateway Software into software products for the different type of interactions CSI (Figure 17), HTTP (Figure 18) and SMTP (Figure 19).

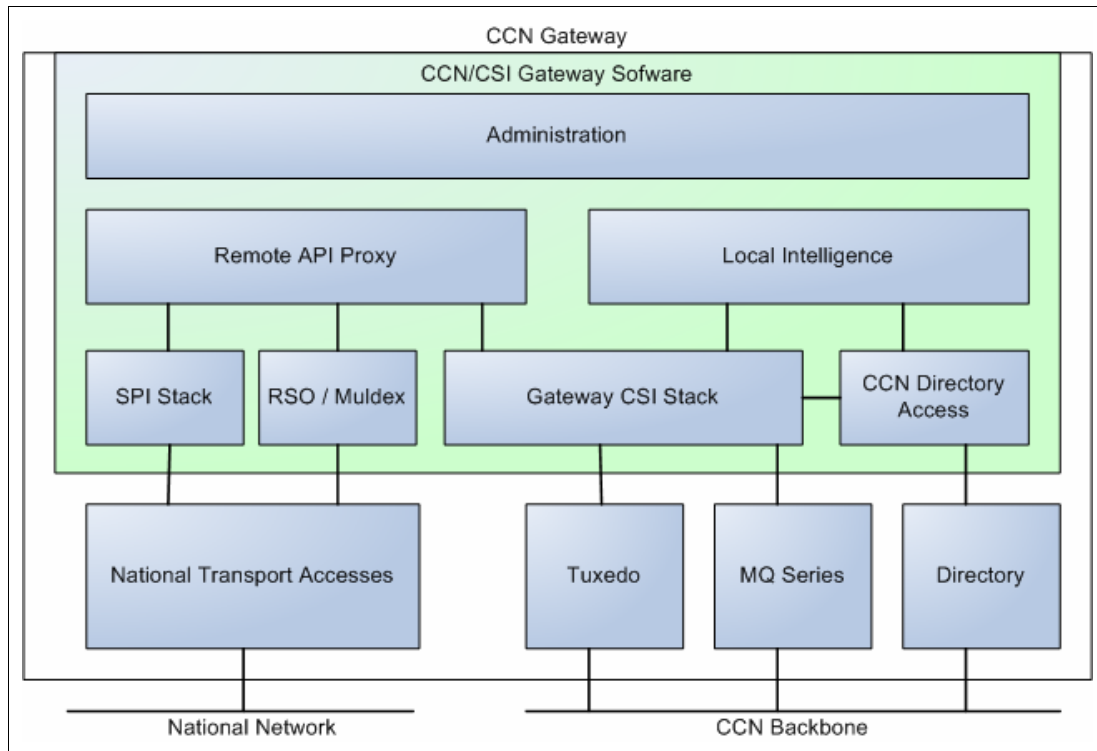


Figure 17: Breakdown of the CCN/CSI Gateway Software into software products (CSI).

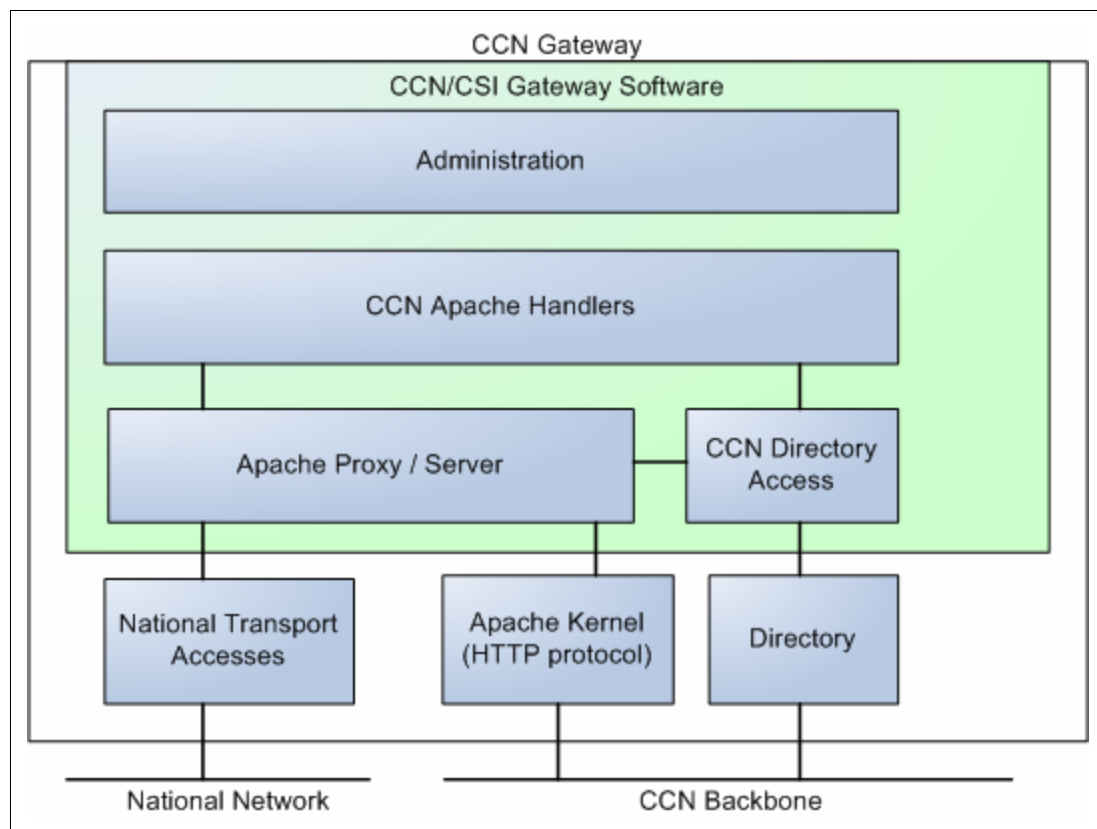


Figure 18: Breakdown of the CCN/CSI Gateway Software into software products (HTTP).

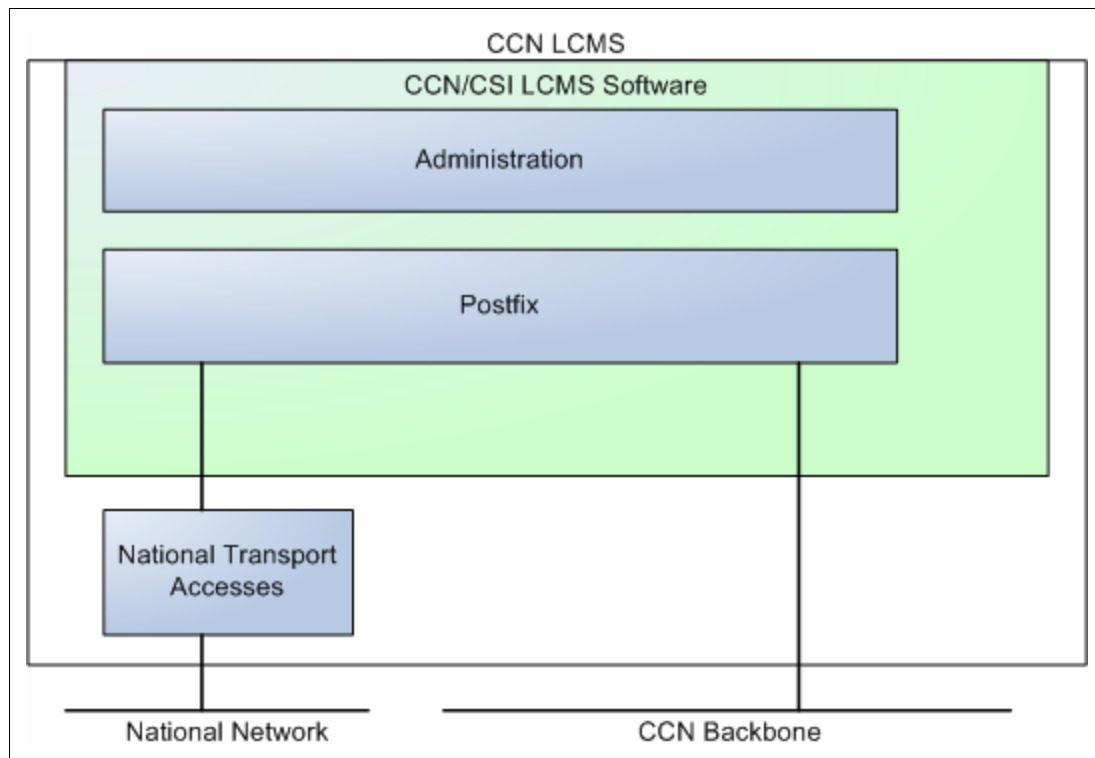


Figure 19: Breakdown of the CCN/CSI LCMS Software into software products

The description of each of the above depicted software products can be found in the related High Level Design Documents in the Baseline.

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2.7. CCN WAN

2.7.1. CCN WAN provider objectives

The primary objective of the CCN Wide Area Network (CCN WAN) provider is to assure business continuity by delivering reliable and secure telecommunications services for the exchanges of data between the CCN sites.

The main services that are delivered to DG TAXUD can be depicted as follows:

- Provision of main network services
- Service desk and service delivery
- Capacity Management services
- Provision of CCN statistics
- Hardware and software installation, support and maintenance services of the equipment provided
- Specification, development and consultancy services
- Provision of Business Continuity services
- Provision of network services and products in the operation of the CCN
- Internet access point to CCN
- Ensure the CCN Security requirements are met
- Provision of On-site service outside normal working hours
- Hold conference call/virtual meetings

It should be noted that the Commission provides to the beneficiaries of CCN a single stop shop service concept for the totality of the CCN services. This single service point is run by the CCN/TC.

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2.7.2. List of current CCN sites

The following table presents the list of current CCN sites along with bandwidth and equipment information:

CCN site	CCN/TC Site code	Country	Primary Lines Bandwidth	Backup Lines Bandwidth	# of Routers	# of Encryption devices	
1	Austria Customs	CUST.AT	Austria	4 Mbps	2 Mbps	2	2
2	Austria Taxation	TAX.AT	Austria				
3	Belgium Customs	CUST.BE	Belgium	4 Mbps	2 Mbps	2	2
4	Belgium Taxation	TAX.BE	Belgium				
5	Bulgaria Customs & Taxation	CUSTTAX.BG	Bulgaria	4 Mbps	2 Mbps	2	2
6	Croatia CCN site	CUSTTAX.HR	Croatia	4 Mbps	2 Mbps	2	2
7	Cyprus Customs & Taxation	CUSTTAX.CY	Cyprus	4 Mbps	2 Mbps	2	2
8	Czech Republic Customs & Taxation	CUST.CZ	Czech Republic	4 Mbps	2 Mbps	2	2
9	Denmark Customs & Taxation	CUSTTAX.DK	Denmark	4 Mbps	2 Mbps	2	2
10	Estonia Customs & Taxation	CUSTTAX.EE	Estonia	4 Mbps	2 Mbps	2	2
11	Finland Customs	CUST.FI	Finland	4 Mbps	2 Mbps	2	2
12	Finland Taxation	TAX.FI	Finland	4 Mbps	2 Mbps	2	2
13	France Customs & Taxation	CUSTTAX.FR	France	4 Mbps	2 Mbps	2	2
14	Germany	CUST.D	Germany	4 Mbps	2 Mbps	2	2

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	Customs	E					
15	Germany Taxation	TAX.DE	Germany	4 Mbps	2 Mbps	2	2
16	Greece Customs & Taxation	CUSTTA X.GR	Greece	4 Mbps	2 Mbps	2	2
17	Hungary Customs & Taxation	CUSTTA X.HU	Hungary	4 Mbps	2 Mbps	2	2
18	Ireland Customs & Taxation	CUSTTA X.IE	Ireland	4 Mbps	2 Mbps	2	2
19	Italy Customs	CUST.IT	Italy	4 Mbps	2 Mbps	2	2
20	Italy Taxation	TAX.IT	Italy				
21	Latvia Customs & Taxation	CUSTTA X.LV	Latvia	4 Mbps	2 Mbps	2	2
22	Lithuania Customs & Taxation	CUSTTA X.LT	Lithuania	4 Mbps	2 Mbps	2	2
23	Luxembourg Customs & Taxation	CUSTTA X.LU	Luxembourg	4 Mbps	2 Mbps	2	2
24	Malta Customs & Taxation	CUSTTA X.MT	Malta	4 Mbps	2 Mbps	2	2
25	Netherlands Customs & Taxation	CUSTTA X.NL	Netherlands	4 Mbps	2 Mbps	2	2
26	Norway Customs	CUST.N O	Norway	4 Mbps	2 Mbps	2	2
27	Poland Customs & Taxation	CUSTTA X.PL	Poland	4 Mbps	2 Mbps	2	2
28	Portugal Customs & Taxation	CUSTTA X.PT	Portugal	4 Mbps	2 Mbps	2	2
29	Romania Customs &	CUSTTA X.RO	Romania	4 Mbps	2 Mbps	2	2

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	Taxation						
30	Slovakia Customs & Taxation	CUSTTA X.SK	Slovakia	4 Mbps	2 Mbps	2	2
31	Slovenia Customs & Taxation	CUSTTA X.SI	Slovenia	4 Mbps	2 Mbps	2	2
32	Spain Customs & Taxation	CUSTTA X.ES	Spain	4 Mbps	2 Mbps	2	2
33	Sweden Customs	CUST.SE	Sweden	4 Mbps	2 Mbps	2	2
34	Sweden Taxation	TAX.SE	Sweden	4 Mbps	2 Mbps	2	2
35	Switzerlan d Customs	CUST.C H	Switzerla nd	4 Mbps	2 Mbps	2	2
36	Turkey Customs & Taxation	CUSTTA X.TR	Turkey	4 Mbps	2 Mbps	2	2
37	United Kingdom Customs & Taxation	CUSTTA X.GB	United Kingdom	4 Mbps	2 Mbps	2	2
38	CCN Technical Centre	CCN.TC	Belgium	140 Mbps	140 Mbps	2	2
39	CCN/TC Central Backup Site (CBS)	N/A	Belgium	4 Mbps	2 Mbps	2	2
40	EC DG OLAF (Brussels)	OLAF.E C	Belgium	4 Mbps	2 Mbps	2	2
41	EC DG OLAF Secondary Site (Nossegem)	OLAF.E C	Belgium	4 Mbps	2 Mbps	2	2
42	EC DG TAXUD (Machelen)	DGXXI. EC	Belgium	16 Mbps	8 Mbps	2	2

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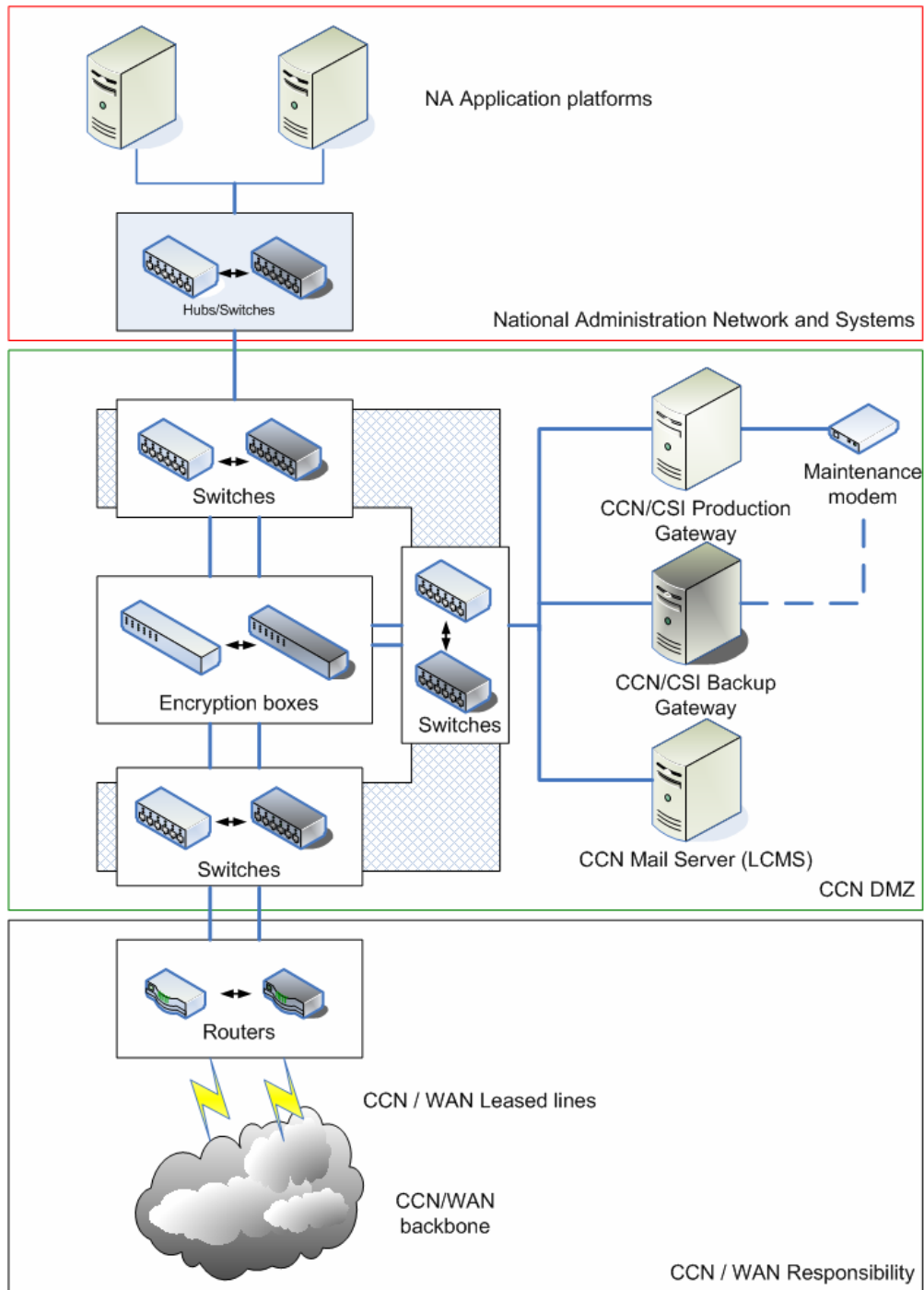
43	EC DG TAXUD (Luxembourg)	DGXXI. EC	Luxembourg	32 Mbps	8 Mbps	2	2
44	ITSM	ITSM.TC	Belgium	34 Mbps	34 Mbps	2	2
45	SPEED Bridge	EUECN. EC	Belgium	4 Mbps	2 Mbps	2	2
46	SPEED ECN	EUSPEE D.EC	Belgium	4 Mbps	2 Mbps	2	2

Table 1: CCN sites

There is also a site in Russia connecting the Russian Administration to the CCN WAN using a line of bandwidth 1 Mbps (including one router and one encryption device). Note that NO Gateway is installed at this location.

2.7.3. Configuration of the typical CCN site

A typical CCN/CSI site is displayed in the figure below:



Note: Backup equipment are darkened.

Figure 20: Typical CCN/CSI site

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2.8. CCN/CSI Volumetrics

2.8.1. General CCN/CSI Information

Currently, the CCN/CSI network interconnects National Administrations of all the members of the enlarged EU and third countries. It allows National Administrations to exchange data in a large number of customs and taxation domains. It is composed of the following:

GENERAL CCN/CSI	ESTIMATED VOLUMETRICS (2 YEAR PERIOD)	
	2010	2011
Number of CCN users ¹⁰	20.000	20.000
Number of CCN registered contacts ¹¹	720	700
Number of CCN Sites	45 sites in 31 countries (including the two SPEED sites, Croatia and OLAF backup site)	46 sites in 31 countries (including the two SPEED sites, Croatia and OLAF backup site)
Number of CCN Gateways (running AIX OS)	116 CCN Gateways (running AIX OS) deployed in the National Administrations and connected to the CCN network through leased lines	120 CCN Gateways (running AIX OS) deployed in the National Administrations and connected to the CCN network through leased lines
Number of encryption devices per CCN site	1 or more routing / encryption devices at each CCN site	2 routing / encryption devices at each CCN site
Number of mini hubs per CCN site	2 or more mini-hubs at each CCN site	2 or more mini-hubs at each CCN site
MB of CCN Messages exchanged	1.022 Mio messages / year exchanged on the CCN network in	1.222 Mio messages / year exchanged on the CCN network in 2011

¹⁰ CCN users (with status active) are the CCN users defined in the LDAP. They are the users exchanging messages through the CCN gateways.

¹¹ CCN registered contacts (with status active) are the CCN contacts registered at the CCN/TC (in the CCN/TC Database of registered users linked to CCN portal and JIRA service management tool).

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	2010 corresponding to a volume of 2,5 Terabytes of application data and a total transmitted volume of 5,5 Terabytes ; This information exchanges grew 50 times over the last 5 years and has an annual growth factor of approximately 50% (2010 compared to 2009).	corresponding to a volume of 3,2 Terabytes of application data and a total transmitted volume of 8,5 Terabytes ;
Number of Central Systems	30 or more Central Systems running for instance the monitoring software, DNS, master LDAP, logging and the SPEED environment	30 or more Central Systems running for instance the monitoring software, DNS, master LDAP, logging and the SPEED environment
Number of application domains	Support of more than 30 application domains using about 4400 production queues	Support of more than 30 application domains using about 4500 production queues
Number of asynchronous queues	11.000 queues are defined in the LDAP	11.000 queues are defined in the LDAP
Production CCN Mail2 Mailboxes	550	954
Number of Security Convention Updates	9	10

Table 2: General CCN/CSI information for 2010 and 2011

The table does not include the infrastructure used to support the development of the CCN/CSI software (development systems, test systems, etc.), (see [R098], sections 4.1.1 Production Environment and 4.1.2 Development and Integration Environments).

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2.8.2. Service consumption per Work Package

The following are volumetric data for the 2-year period 2010 and 2011 that are linked to CCN2-DEV related activities performed by the incumbent contractor and organised following the Work Package structure¹² of the CCN2-DEV Framework contract:

2.8.2.1.WP.0 Project Management

WP.0 PROJECT MANAGEMENT	ESTIMATED VOLUMETRICS (2 YEAR PERIOD)	
	2010	2011
Number of SC / year	2 – 3 / year	2 – 3 / year
Number of RfAs / year	20 - 25 / year	10 - 15 / year
Number of Self Assessment / year	2 / year	2 / year
Number of Internal Audits / year	2-3 / year	2-3 / year
Number of co-ordination meetings	12 BMMs + 12 follow-up BMMs + 12 Operational meetings + 50 Ad hoc meetings / year	12 BMMs + 12 follow-up BMMs + 12 Operational meetings + 50 Ad hoc meetings / year
Number of Steering committees / year	4	12
Number of External Audits / year	1	2 - 3
Number of External Security Audits / year	1 general + 1 for SPEED	1

Table 3: Project management service consumption for 2010 and 2011

¹² Work packages are described in details in CCN2-DEV Technical Annex.

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2.8.2.2.WP.6 Specifications

WP.6 SPECIFICATIONS	ESTIMATED VOLUMETRICS (2 YEAR PERIOD)	
	2010	2011
Number of Existing specifications related document – split per document type (excluding test specifications)	430	484
<ul style="list-style-type: none"> • Specifications, analysis, feasibility study, vision document 	186	200
<ul style="list-style-type: none"> • Technical notes 	27	28
<ul style="list-style-type: none"> • External notes 	104	123
<ul style="list-style-type: none"> • Operations (User guide, deployment guide, migration guide, working procedures, training guides, security policy & procedures, etc.) 	113	133

Table 4: Specifications service consumption for 2010 and 2011

2.8.2.3.WP.7 Build and Test

WP.7 BUILD AND TEST	ESTIMATED VOLUMETRICS (2 YEAR PERIOD)	
	2010	2011
Number of Existing test specifications related document	87	99
Number of FAT/year	20	20
Number of (P)SAT/year	15	15
Average duration of FAT, PSAT campaign	2 weeks	2 weeks
Number of QT/year	20	20

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WP.7 BUILD AND TEST	ESTIMATED VOLUMETRICS (2 YEAR PERIOD)	
	2010	2011
Number of Patches to be produced / year:		
• CCN Gateway Software	5	18
• LCMS	0	2
• ACT	0	2
• CCN/TC Portal	0	2
• CCN central statistics system	0	2
• CCN central monitoring	0	1
• CSI API	0	1
• SPEED Bridge	0	1
Number of Releases to be produced / year:		
• CCN Gateway Software	1	0
• LCMS	1	0
• ACT	1	1
• CCN/TC Portal	0	1
• CCN central statistics system	1	0
• CCN central monitoring	1	0
• CSI API	4	10
• SPEED Bridge	0	0
Major CCN software release/year	1	0

Table 5: Build and Test service consumption for 2010 and 2011

For test plans and reports refer to [R098] (section 4.2 Software).

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2.8.2.4.WP.8 IT Service Management

WP.8 IT SERVICE MANAGEMENT	ESTIMATED VOLUMETRICS YEARLY AVERAGE FOR THE 2 YEAR PERIOD (2010 - 2011)
Number of Working group/party meeting – Performance	2
Number of Working group/party meeting – Attendance	2
Number of Training, Workshop, Demonstration – Performance ¹³	5 sessions in Autumn and 5 during spring period.
Number of Training, Workshop, Demonstration – Attendance	5 sessions in Autumn and 5 during spring period.
Number of Training, Workshop, Demonstration – Hosting	5 sessions in Autumn and 5 during spring period.
Number of Training, Workshop, Demonstration – Reporting	5 sessions in Autumn and 5 during spring period.
Number of Missions	1 - 5
Number of Service monthly meetings / year	12
Number of Monthly progress meetings (meeting with all involved parties) / year	12
Number of Technical meetings / year	50 - 80
Number of Translations (pages) / year	0
Number of Interventions outside WH/WD / year	Less than 50
Number of pages from 3 rd party reviewed / year	About. 2.500
Number of Review meetings attended / year	30 - 40

Table 6: IT Service Management service consumption for 2010 and 2011

¹³ Please refer to the CCN training bundle as indicated in [R98]

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2.8.3. CCN/TC information on incidents/calls

The following table lists the statistics on the type of incidents logged for the 2 year period 2010 and 2011:

INCIDENT TYPE	(2 YEAR PERIOD)	
	2010	2011
Hardware Failure	8.74%	6.77%
Local Failure	18.03%	9.02%
Network Failure	18.58%	20.30%
Security Issue	0.55%	0.00%
Software Failure	53.01%	63.16%
Web Server unavailability	1.09%	0.75%

Table 7: CCN/TC incident types for 2010 and 2011

INCIDENT TYPE	(2 YEAR PERIOD)	
	2010	2011
Number of Incidents/year	143	190
Number of Problems/year ¹⁴	N/A	16
Number of Changes/year ¹⁵	N/A	24
Number of Configuration Items – SW to manage	700	700
Number of Configuration Items – Specs to manage	430	484
Number of Configuration Items – HW & COTS to manage	1300	1300

Table 8: CCN/TC incident volumetrics for 2010 and 2011

CCN/TC SERVICE CALL CATEGORY	NUMBER OF SERVICE CALLS (2011)
1st level call management	8.743
2nd level call management	6.321
RFI/RFS/RFD (a.k.a. 3rd level call management)	379
Notification/Administration	1.822

Table 9: CCN/TC call distribution for 2011

14 Problems are formally used since 2011

15 Changes are formally used since June 2011

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During its processing, one given call – after being handled by the 1st level – can be classified in one or several other categories.

2.8.4. CCN/TC Development Activities

Following table provides metrics over the last 3 years (2009 - 2011):

NUMBER OF:	2009-2011
CCN releases deployed	
- CCN major release	1
- Planned release (that deliver new or updated functionalities)	12
- "quick fix"	22
CCN applications releases (i.e. BCP/DRP, ACT, Tivoli, CCN portal, LCMS)	
- major	6
- planned release	4
- quick fixes	9
CSI stacks releases	
- NJCSI stack	4
- C CSI stack	21
- Cobol stack	9
- JCSI stack	16
FAT/(p)SAT test campaigns	
- FAT - ATS (Acceptance Test Specification) and ITS (Integration Test Specification) for specific CCN component or a CCN features.	77
- FAT - Acceptance Test campaigns run on the integration environment.	71
-(p)SAT - to validate a new site installation, a site move or to validate the porting of CSI stacks.	45

Table 10: CCN/TC Development Activities metrics over the last 3 years (2009-2010-2011)

For information on the CCN/CSI software code volumes please refer to [R098], sections 4.2.1.4 Software Executable Summary and 4.2.1.5 Software Code Summary.

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2.8.5. CCN/TC Resources

The table below provides the volumetric data linked to the team composition of the incumbent contractor at end 2011. Please note that this covers the complete team of the incumbent CCN/TC contractor including as well the team managing the operational activities (that will be taken over by ITSM2) as the team managing the development and integration related activities to be taken over by CCN2-DEV.

PROJECT MANAGEMENT	
12,5 FULL TIME EQUIVALENT (FTE)	
(INCLUDING QUALITY MANAGEMENT AND SECURITY MANAGEMENT)	
Program management	1 FTE
Project, service and technical management	3 FTE
Project methodology and project support office	2 FTE, including 1 manager and 1 officer
Quality management	3 FTE, including 1 manager, 1 senior consultant and 1 officer
Security management	3 FTE, including 1 manager and 2 specialists
Contract management	0,5 FTE
“RUN” COMPETENCE CENTRE	
30 FTE	
(INCLUDES OPERATIONS, SERVICE DESK, ETC.)	
1st line helpdesk	4 FTE, including 1 team leader and 3 agents
2nd line operation and support	10 FTE, including 1 team leader, 3 CCN experts and 6 agents
3rd line operation and support	TBC
Infrastructure and systems management	9 FTE, including 1 team leader, 2 senior system engineers and 6 system engineers
CCN configuration	4 FTE, including 1 team leader and 3 CCN experts
Incident resolution and reporting	3 FTE, including 1 team leader, 1 CCN expert and 1 agent
“PROJECTS” AND “INCEPTION” COMPETENCE CENTRES	
7,5 FTE	
(PROJECTS TARGETING SHORT TERM IMPROVEMENTS AND INCEPTION PHASES THEREOF)	
THE FTEs ASSOCIATED TO THE "PROJECTS" AND "INCEPTION" COMPETENCE CENTRES ARE OCCASIONALLY INVOLVED IN PROVIDING TRAINING AS WELL AS IN 3RD LEVEL SUPPORT FOR SPECIFIC TECHNICAL EXPERTISE IN CASE OF COMPLEX REQUESTS AND/OR CALL RESOLUTION.	
Development	3 FTE, including 1 team leader and 2 senior software engineers

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Tests and Integration	3 FTE, including 1 team leader and 2 senior software engineers
Consultancy and Training	1,5 FTE senior consultant and architect

Table 11: CCN/TC Resources

The number of trainings is expected to have a peak during the build and deployment of the CCN2 Platform.

2.9. Services evolution history

The following figure depicts the evolution of the Service Calls over a 2 year period:

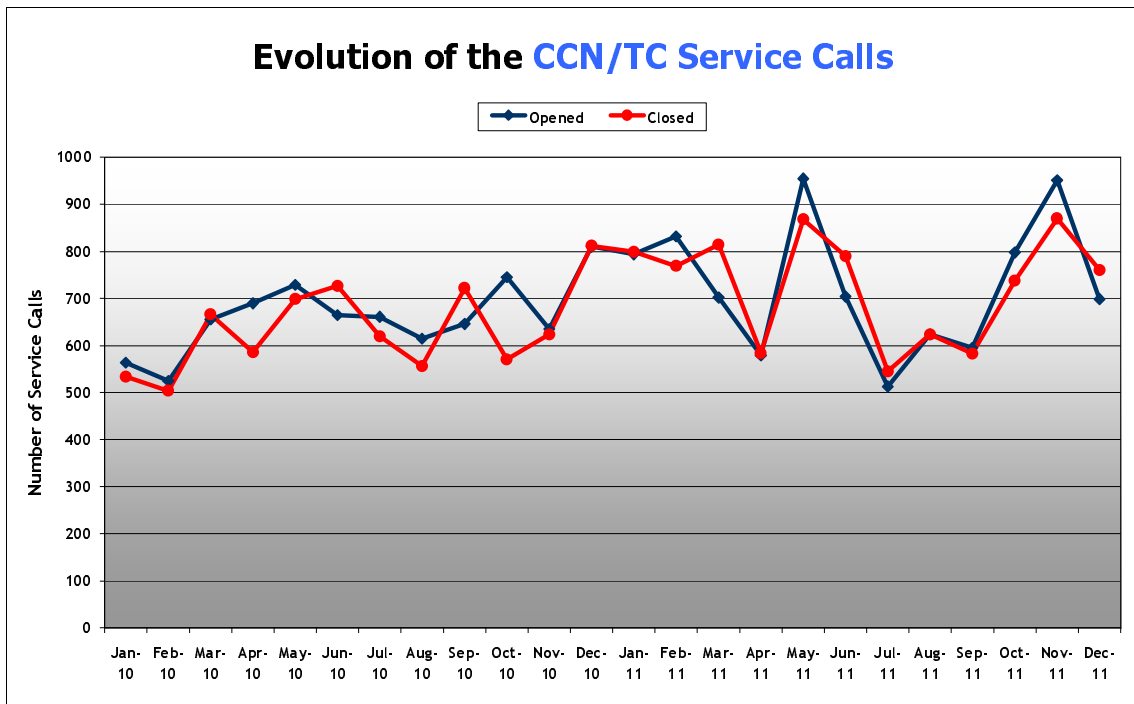


Figure 21: Evolution of Service Calls

The figure below displays the severity type of incidents during a 2 year period (2010 - 2011):

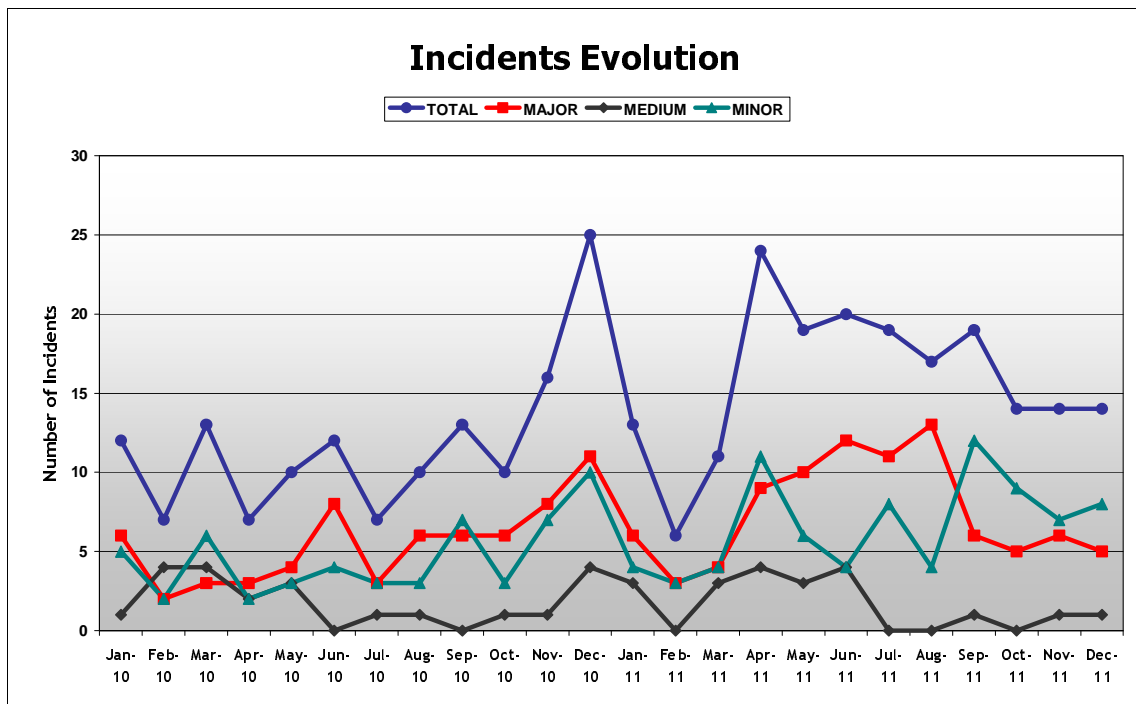


Figure 22: Incidents evolution

The figure below displays the amount of messages exchanged and their volume during a 2 year period (2010 - 2011):

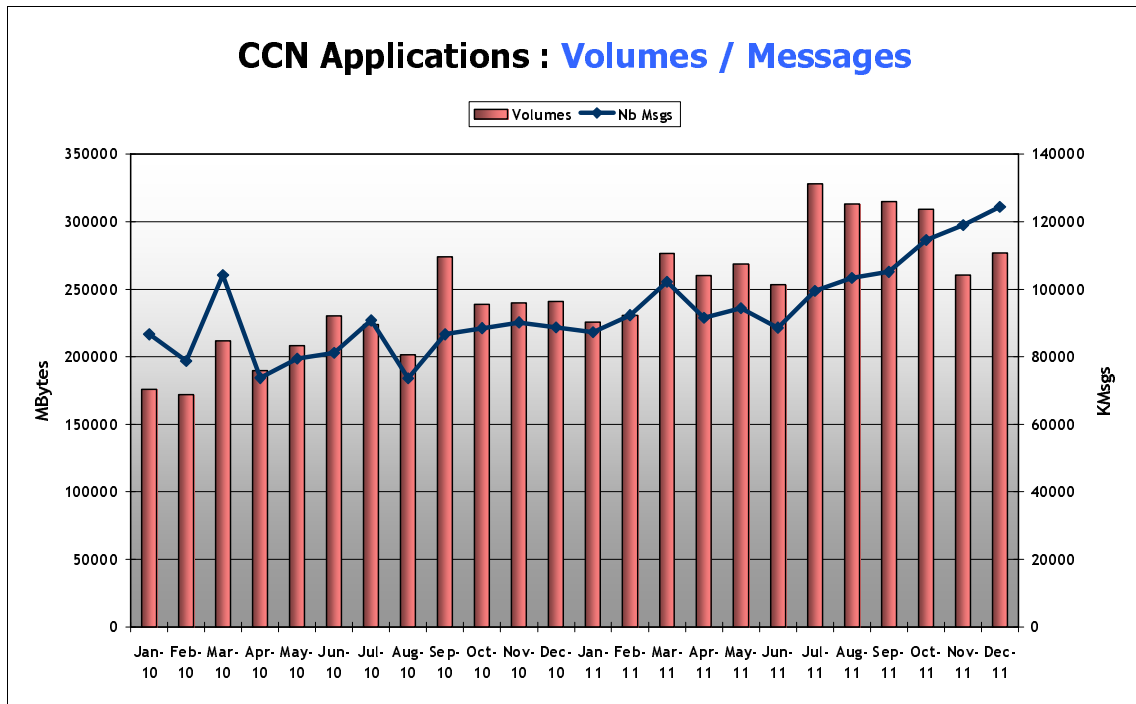


Figure 23: Traffic during the 2 year period 2010 - 2011

The following figure displays the volume/traffic during a 2 year period (2010 - 2011):

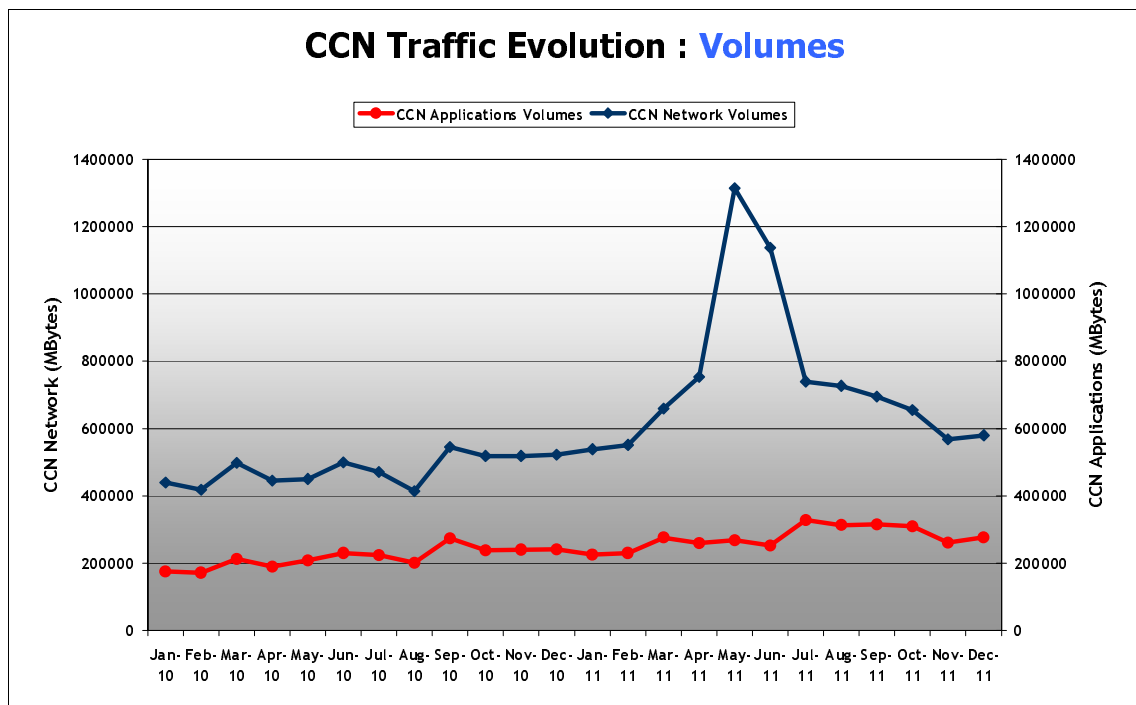


Figure 24: Total application volume history

The following figure displays the CCN Application availability over a 2 year period (2010 – 2011):

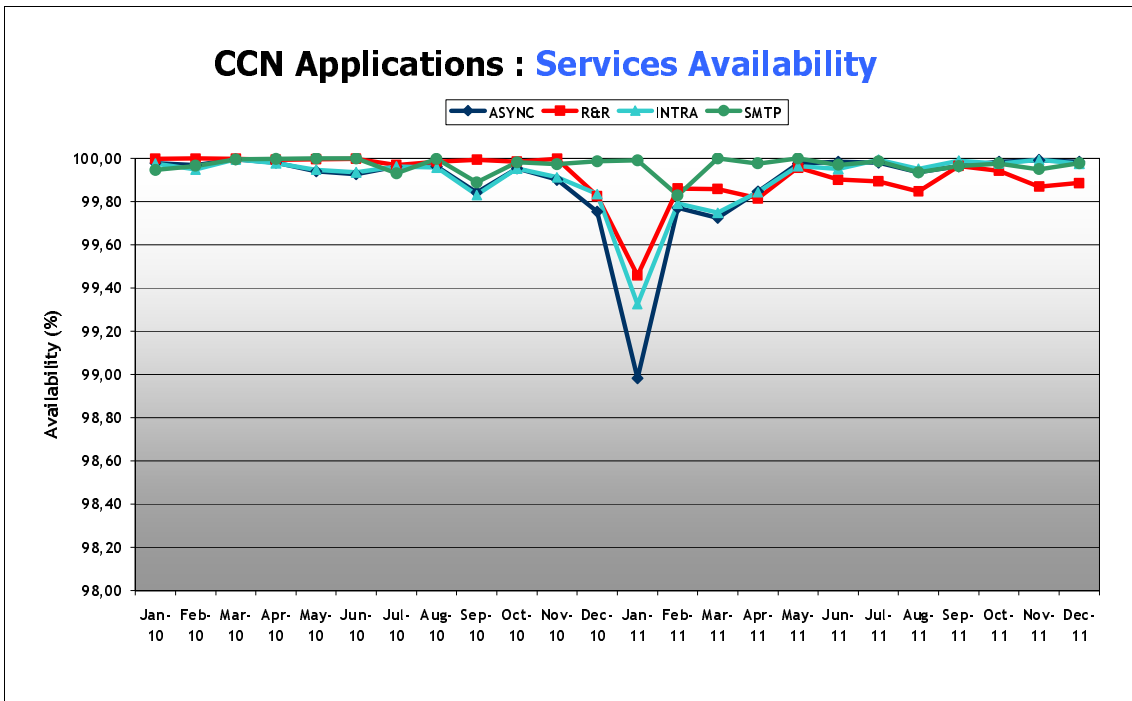


Figure 25: CCN Application availability over a 2 year period (2010 – 2011)

The following figure displays the average message count for the CCN sites monthly average) based on 6 month period (Sept. 2011 – Feb. 2012) (grouped by range):

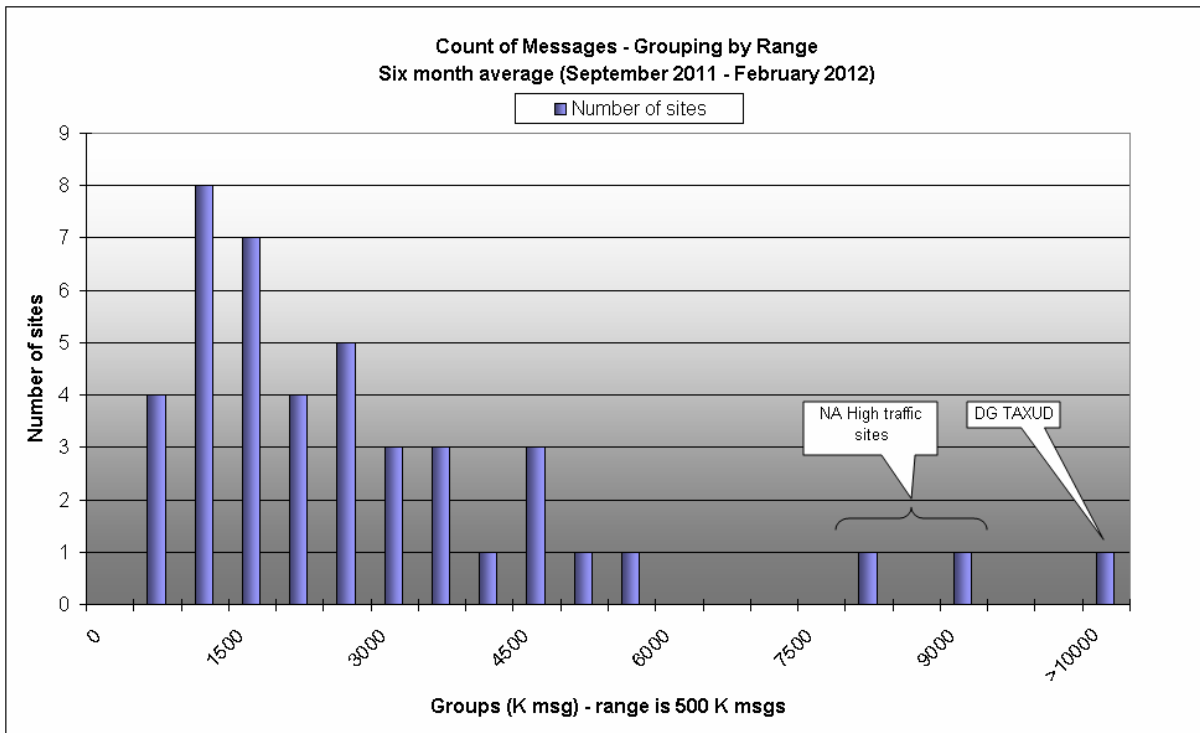


Figure 26: Average message count for the CCN sites (Sept. 2011 – Feb. 2012)

The following figure displays the average message volume for the CCN sites monthly average) based on 6 month period (Sept. 2011 – Feb. 2012) (grouped by range):

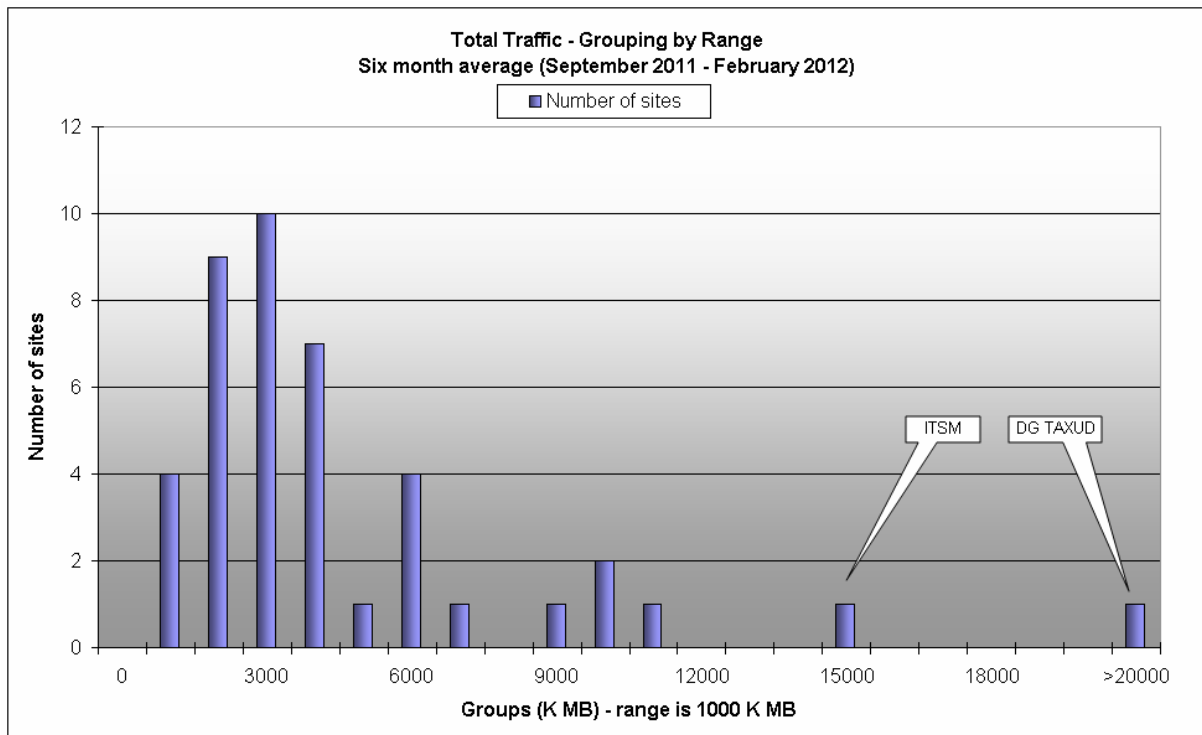


Figure 27: Average message volume for the CCN sites (Sept. 2011 – Feb. 2012)

The following figure displays the correlation between message size and count for the CCN sites (monthly average) based on 6 month period (Sept. 2011 – Feb. 2012):

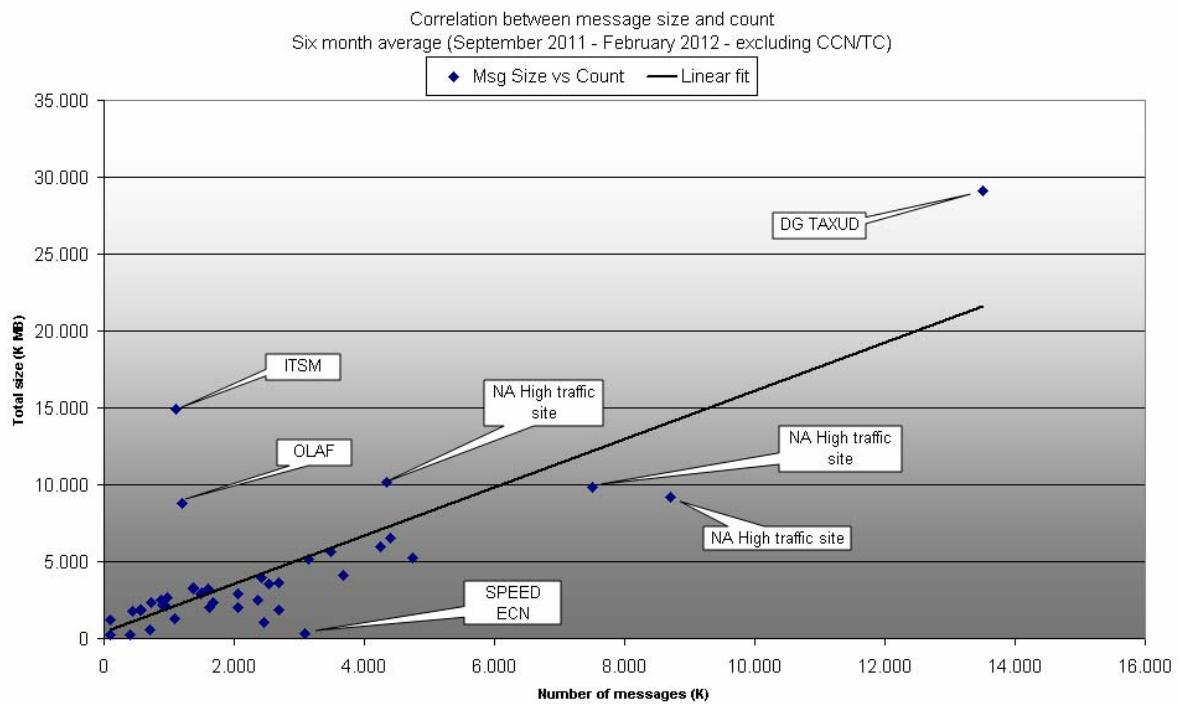


Figure 28: Correlation between message size and count for the CCN sites (Sept. 2011 – Feb. 2012)

The following table displays average message count and volumes per CCN site over a 6 month period (Sept. 2011 – Feb. 2012):

CCN SITE	AVERAGE TRAFFIC PER MONTH (SEPT. 2011 – FEB. 2012)	
	MESSAGE COUNT	MESSAGE SIZE
Site 1	1089	1316
Site 2	2054	1994
Site 3	2450	1074
Site 4	2421	3965
Site 5	4398	6503
Site 6	434	1804
Site 7	2355	2526
Site 8	705	549
Site 9	719	2360
Site 10	1484	2907
Site 11	561	1868
Site 12	2064	2932
Site 13	946	2118
Site 14	893	2148

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CCN SITE	AVERAGE TRAFFIC PER MONTH (SEPT. 2011 – FEB. 2012)	
	MESSAGE COUNT	MESSAGE SIZE
Site 15	3480	5622
Site 16	7507	9840
Site 17	4745	5248
Site 18	96	1229
Site 19	1374	3316
Site 20	881	2474
Site 21	1499	2953
Site 22	973	2647
Site 23	1678	2365
Site 24	564	1894
Site 25	4352	10158
Site 26	3141	5136
Site 27	2529	3551
Site 28	1597	3221
Site 29	1595	3174
Site 30	1363	3220
Site 31	88	266
Site 32	2695	3594
Site 33	4254	5932
Site 34	8702	9156
Site 35	2692	1833
Site 36	3678	4086
Site 37	1620	1983
Site 38	1200	8830
Site 39	13497	29083
Site 40	1110	14939
Site 41	3081	328
Site 42	394	273
Site 43	5653	14841

Table 12: Average Traffic per Month (Sept. 2011 – Feb. 2012)

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Note that above table lists the average traffic per month only for 43 sites (contrary to the defined 46) because some sites have been grouped:

- Traffic of the OLAF primary and Secondary Data Centre is merged;
- Traffic of the DG TAXUD DC Brussels and Luxembourg Data Centre is merged;
- Traffic of the CCN/TC and CBS Data Centre is merged.

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3. CCN/CSI Supporting Information

3.1. Hardware Infrastructure

Information on the CCN/CSI infrastructure environment can be found in [R098] sections 4.1 Hardware, along with an comprehensive Hardware Inventory in section 6.1 Hardware Inventory.

3.2. Software Infrastructure

Information on the CCN/CSI software environment can be found in [R098] sections 4.2 Software, 5.1 Build Services and 5.2 Run Services.

3.3. Supported CCN/CSI stacks

Detailed information on the CCN/CSI stacks can be found in [R098] sections 4.2.4 CSI Stacks.

3.4. Major CCN related activities during last 12 months

The following table lists the major activities carried out during the last 12 months (status as of December 2011):

- Researched solutions for Gateway backup/restore improvements;
- Tested BCP/DRP scenarios and CCN Gateway failover exercises with NAs [R406];
- Network connectivity tests for Secure Internet Access Point (SIAP) have been completed;
- Implementation of NJCSI (New fully Java compliant CSI Stack) - new security layer based on standards TLS/SSLv3;
- Implementation of ACT (Application Configuration Tool), a web-based tool which allows CCN/CSI users to enter their configuration of the CCN/Gateways requests for business applications in a guided manner. Phasing out the Excel ACF forms (for more details please refer to [R180], [R382], [R383] and [R384]);
- Implementation of MDS (Message Duplication Service), which is an internal mechanism that generates an automatic copy of an asynchronous CSI message, based on its message type for the OLAF activities (enabled on 19/06/2011);
- Implementation of the Tivoli monitoring service - Phases 1 and 2 have been completed (see [R183], [R206], [R349], ;
- Old CCN Gateways have been replaced with new ones, increased memory capacity, and deployed a second contingency Gateway in sites where the CCN Gateway is multimode. Also the Croatian CCN Gateway has been connected to the backbone;
- CCN v7 – new version for the CCN Gateway software (12/2010 – 03/2011). It offers an up-to-date system which facilitates the MS daily tasks when managing the CCN

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network, and also provides security enhancements and better statistics, monitoring and reporting(See [R764] - [R768]);

- A new release of CCN Mail system was deployed in all CCN Sites (LCMS v3.0.2 05/2011), which provides Statistics on traffic between MTA (MTA2MTA);
- New version of CCN/TC Portal v2.10 (05/2011), delivering statistics tools on measurement of the performance of the CCN infrastructure, VIES traffic, and providing statistics on response/transit time per application domain (See for instance [R75], [R103] and[R260]);
- Network infrastructure upgrade in order to bring a full resiliency to each CCN device deployed in the National Administration CCN sites;
- Porting of new CCN/CSI stack on various application platforms;
- Implementation of a secondary CCN site for OLAF (contingency site);
- Connection of Turkey to CCN completed.

3.5. What next?

CCN/CSI will continue to expand, both in terms of the countries connected (Candidate Countries and other EU economic partners) and of the administration domains using it. Non-exhaustive list of tasks being under consideration (status as of December 2011) follows:

- CCN Mail3 (implementation ongoing) (for more details please refer to [R293], [R379] and [R380]). The purpose is to replace the current CCN Mail infrastructure by a Highly Available, centralised and fully monitored solution based on the messaging standard product Microsoft Exchange 2010 (expected production date Q3 2012);
- Introduction of SPEED2 (for more details please refer to [R374], [R375] and [R376]) which will allow two-way communication, use virtualisation and open standard interfaces and protocols, with stronger security by introducing XML Security, and provide failover capabilities by offering clustered configuration (expected production Q4 2012);
- Launched the Secured Internet Access Point (SIAP) (for more details please refer to [R377] and [R378]) project (deployment / testing is expected to be delivered Q3 2012) that will grant access to a user from non-customs/non-taxation NA to central applications using HTTP over existing sTESTA or Internet lines;
- Improvements in BACKUP/RESTORE procedures (no human intervention) by separating data to restore quickly, reducing the backup size, and reducing tape usage;
- Implement Tivoli custom agents and integrate all monitoring tasks into CCN Tivoli Monitoring in order to phase out custom build monitoring solution (Big Brother). Tivoli Phase3 implementation is ongoing (see [R389]). (Expected production date Q2 2012);

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- Wider use of the Web Service technologies may be considered by new applications/services (or existing) using today's CCN/CSI HTTP capacities;
- As the result of the tighter integration of the Taxation, Customs and Excise policies among MS new business applications/services may be developed. Those in absence of CCN2 will use CCN/CSI network as the middleware solution.

3.6. TEMPO documentation

DG TAXUD wants to ensure that the different projects are well managed with deliverables on time and within budget and high-level Quality Assurance and Quality Control, and that cooperation between DG TAXUD and its service providers is optimal. To do so, DG TAXUD has created the **TAXUD Electronic Management of Project Online** (TEMPO) quality management system, and continues its development and maintenance. This methodology is fully part of the technical specifications. The tenderer must ensure that the Application lifecycle development is compatible with TEMPO Security Management guidelines – Security Software Development Lifecycle Reference Manual.

The **TEMPO** documentation is hosted on Europa web site (CIRCA pages) and is available for members of the [TEMPO Interest Group](#). Account registration can be requested via the Project Support [TEMPO mailbox](#). A specific account has been set-up for the tenderers to access the documentation. See section 0.5.1 “References” for the details of this account.

The tenderers are invited in particular to read the following TEMPO documentation:

- General documentation:
 - Introduction to TEMPO
 - Project Management reference manual
 - Quality Management reference manual and Quality Policy
 - Information Security reference manual and Information Security Policy
 - Specific Contract management reference manual and Deliverables acceptance reference manual, and procedures
- Trans-European systems:
 - Trans-European Systems (TES) reference manual
 - TES high-level security policy, and TES Security Plan reference manual
 - Application Management reference manual
 - Application Development reference manual
 - Business Perspective reference manual
 - IT Strategic and Tactical Planning reference manual

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- Planning to Implement Service Management reference manual
- Testing reference manual
- Conformance Test procedure
- Service Delivery reference manuals (Service Level, Availability, Continuity, Financial and Capacity management)
- Service Support reference manuals (Service Desk, Incident, Release, Change, Configuration, and Problem management), and related procedures
- Risk management reference manual
- ICT Infrastructure reference manual

Additionally, TEMPO provides for supporting documentation such as fact sheets, procedures, guides and templates.

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End of ANNEX II.A