Creating A Single Global Electronic Market

Requirements for Collaboration-Protocol Profiles and Collaboration-Protocol Agreements

Version 1.0

ebXML Trading-Partner Team

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1 Status of this Document

This document specifies an ebXML WORK IN PROGRESS for the eBusiness community.

Distribution of this document is unlimited.

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2 Trading Partner Team participants

We would like to recognize the following for their significant participation to the development of this document.

TBD

3 Table of Contents

4 Introduction

4.1 Summary of Contents of Document

This document defines the requirements on which the Collaboration-Protocol Profiles and Collaboration-Profile Agreements (CPP and CPA) specification will be based. It describes the assumptions and goals for development of the CPP and CPA specification. It then lists the high-level requirements of the CPP and CPA documents and the requirements on the CPP and CPA specification itself. It also lists some possible requirements for later phases of the development of the specification. A glossary is at the end.

4.2 Note on Terminology

In this specification, the term "Party" is used throughout to denote either the owner of a CPP or one of the participants in a CPA. The term "Partner" is used only in contexts where this term is an accepted usage, such as "Trading Partners Team" and "Trading Partner Agreement".

In this specification, the term "transaction" is used only in contexts in which it refers to the ebXML Business Process metamodel. For other purposes of this specification, the term "message exchange" is used.

4.3 Audience

The target audience for the Requirements specification is the people who are designing the CPP and CPA specification, i.e. the ebXML Trading Partners team.

4.4 Related Documents

5 Vision

5.1 Purpose of this Specification

As defined in the ebXML Business-Process Model, a Trading Partner is an entity that engages in commercial transactions with other Trading Partners. Each Partner's capabilities (both commercial/business and technical) to engage in message exchanges with other Partners may be described by a document called a Trading-Partner Profile. The agreed interactions between two Partners may be documented in a document called a Trading-Partner Agreement (TPA). A TPA may be created by computing the intersection of the two Partners' TPPs.

The message-exchange capabilities of a Party may be described by a Collaboration-Protocol Profile (CPP) within the TPP. The message-exchange agreement between two Parties may be described by a Collaboration-Protocol Agreement (CPA) within the TPA.

The purpose of this specification is to define the requirements for the CPP and CPA specification that the ebXML Trading Partner team is developing. This specification defines the requirements only for phase 1 of the specification. An additional section lists some ideas for later phases.

The keywords MUST, MUST NOT, REQUIRED, SHALL, SHALL NOT, SHOULD, SHOULD NOT, RECOMMENDED, MAY, and OPTIONAL, when they appear in this document, are to be interpreted as described in RFC 2119 [Bra97].

5.2 Base Assumptions

Exchange of information between two Parties requires each Party to know the other Party's supported Collaborative Processes and the technology details about how the other sends and receives messages and, in some cases, for the two Parties to reach agreement on some of the details.

The way each Party can exchange information, in context of a Collaborative Process, can be described by a Collaboration-Protocol Profile (CPP) within a TPP that may be stored in a repository. The agreement between the Parties can be expressed as a Collaboration-Protocol Agreement (CPA).

5.3 Goals

An essential goal for development of an electronic CPA is to ensure interoperability between two Parties even though they may procure application software and run-time support software from different vendors.

An additional goal is that the specification should enable implementations in which a pair of Parties can:

- Use built-in or default CPAs when appropriate
- Swap Party information prior to starting to exchange messages or
- Install identical copies of a CPA in their run-time systems.

This assures that they are compatibly configured to exchange messages.

Message-exchange characteristics described in the Collaboration-Protocol Profiles (PP) and Collaboration-Protocol Agreements (CPA) can be divided into two main types: Message-exchange-related (technology), and Process-related (application).

Messaging-exchange-related characteristics include such information as:

- Party identifiers
- Communication protocol
- Communication addresses and other communication details
- Security profiles and parameters
- General message characteristics
- Characteristics related to reliable messaging
- Characteristics related to quality of service

Process-related characteristics include such information as:

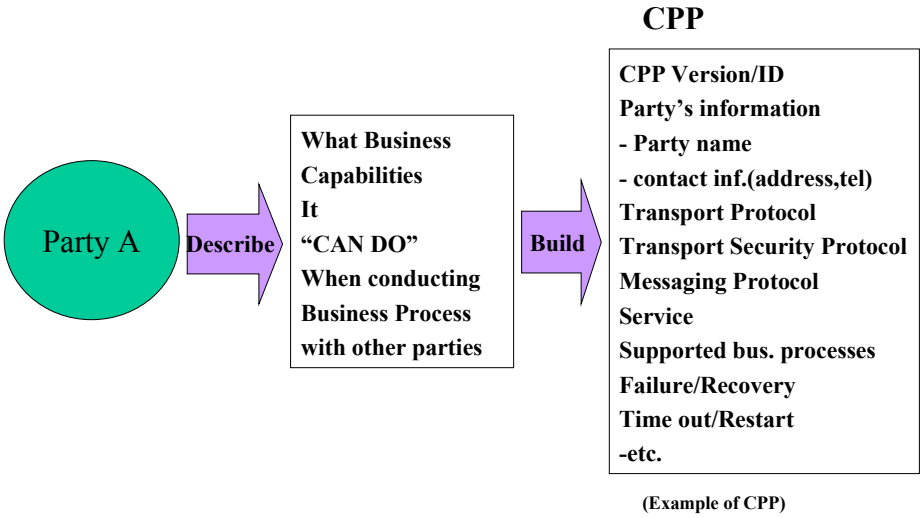
- Supported Collaborative Processes for a Party
- Messages that each Party may send to the other
- Identification of the schema that describes the message that goes with each request
- Rules on the order in which requests can be issued
- Rules on message latency
- Constraints on message length

While an electronic CPA may be associated with a traditional legal contract, particularly when used in a business relationship, the electronic CPA itself shall not include traditional legal terms and conditions.

The following figures illustrate how CPPs and CPAs are used.

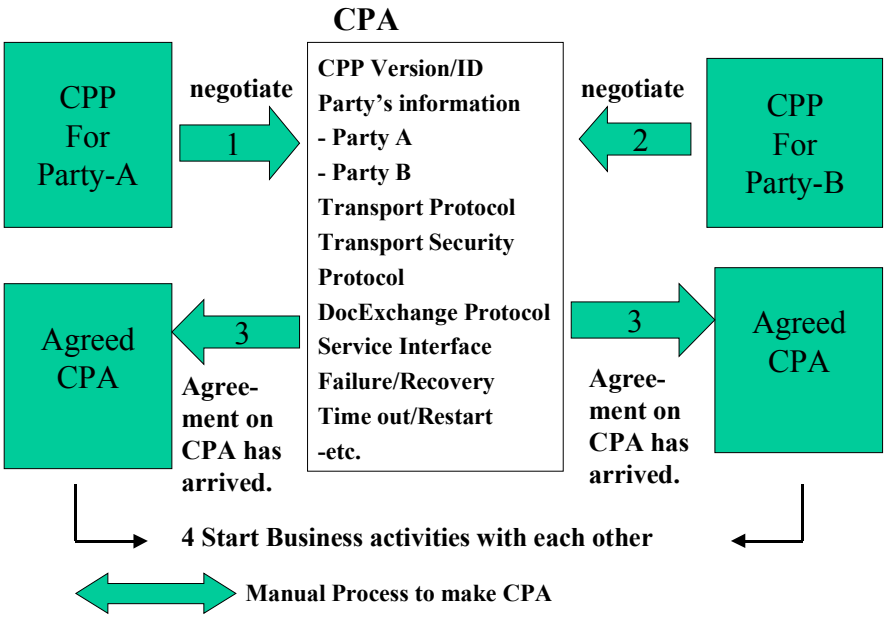
The following figure illustrates forming a CPP. Party A tabulates the information to be placed in a repository for the discovery process, constructs a CPP that contains this information, and enters it into a repository.

Overview of Collaboration-Protocol Profiles(CPP)



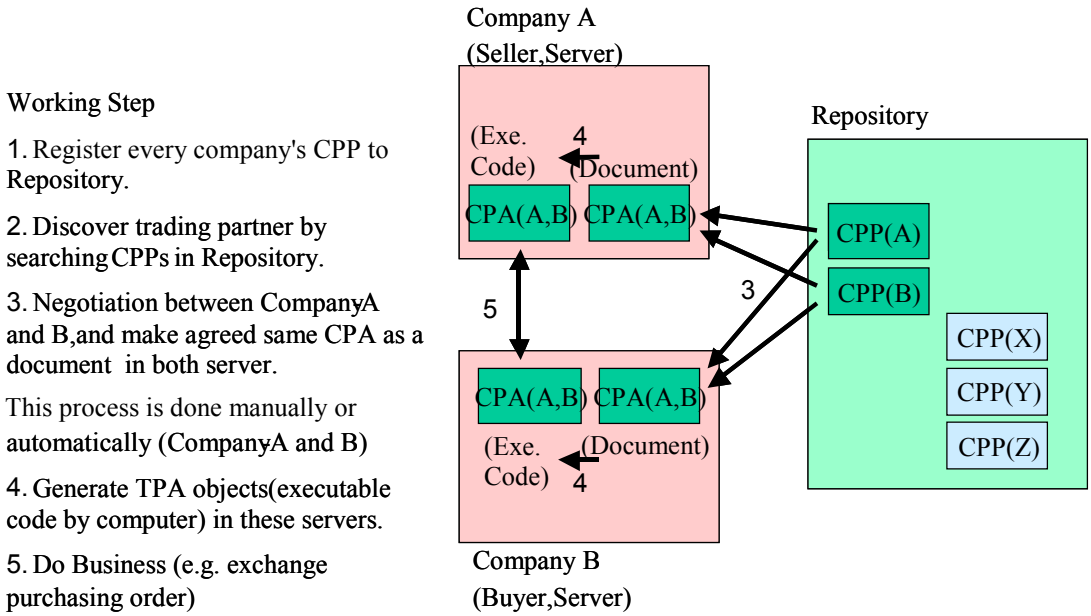
171 In the next figure, party A and party B use their CPPs to construct a CPA by
172 calculating the intersection of the information in their CPPs. The resulting CPA
173 defines how the two parties will behave in performing their collaborative process.

Overview of Collaboration-Protocol Agreements(CPA)



174
175 The final figure illustrates the entire process. The steps are listed at the left.
176
177

Overview of Working Architecture of CPP/CPA with Repository



6 Requirements

6.1 The Specification shall define CPP and CPA documents that:

Doc. 1. Specify the information (in a CPP) about a given Party that the Party wishes to make known to other Parties that may be interested in engaging in a Collaborative Process with this Party.

- NOTE: If it is necessary for a Party to specify characteristics of the other Party in a Collaborative Process, this may be done by expressing the profile as a CPA template between the Party and an arbitrary Party.

Doc. 2. Specify the information (in a CPA) that must be shared between Parties in order for those Parties to successfully carry out:

- a shared Collaborative Process;
- the exchange of documents over a variety of data communication protocols, that meets the requirements of the TRP, R&R and BP/CC project teams.

Doc. 3. Describe how :

- a CPP can be used in a Party Discovery Process.
- NOTE: Defining the Party Discovery Process itself is not within the scope of the TP team.
- a CPA specifies how two (or more) Parties shall carry out a Collaborative Process, including the possible use of intermediaries

Doc. 4. Facilitate the automatic configuration of two (or more) Parties to electronically exchange documents.

Doc. 5. Specify the relationship between a CPP or CPA and a pre-defined model of a Collaborative Process (e.g. RosettaNet PIPs – Partner Interface Processes --- and others).

Doc. 6. Are independent of the internal processes of any of the Parties.

- NOTE: The term "internal processes" refers to what are sometimes called "back end processes" such as workflow, enterprise resource planning, and message-exchange systems. These are distinguished from the Collaborative Processes, whose overall definitions and Collaboration Protocol are defined in a CPP visible to both Parties in a CPA.

Doc. 7. Support the capability for each Party in a 2-Party Collaborative Process to send messages to and receive messages from the other Party.

Doc. 8. Define processing of error conditions detected by the messaging service.

Doc. 9. Support for use of reliable messages. For example, specifying whether reliable messaging is used and which mode is desired.

Doc. 10. Specify security profiles and parameters in a way that cannot cause conflicts with properly conceived local security policies.

Doc. 11. Include a means to identify the Collaborative Process(es) that the CPP or CPA supports. For example, the means may be the URL of a Collaborative Process definition or a keyword whose meaning is agreed to by the two Parties to a CPA.

Doc. 12. Include a means to identify the definition of the messaging protocol that

supports the exchange of messages between two Parties. Examples are the ebXML Messaging Service and messaging protocols defined by pre-existing collaborative processes such as RosettaNet.

Doc. 13. Include a means of specifying the choreography of the interaction among Parties.

Doc. 14. Facilitate extracting from a CPA its component CPPs.

- NOTE: A situation in which it might be desirable to extract one or both CPPs from a CPA is where two Parties initially constructed a custom CPA and then one or both decide to produce CPPs, for future use, from the contents of the CPA.
- NOTE: It should be understood that unless alternatives in the original CPPs that are not chosen in a particular CPA are preserved within the CPA in an inactive form, such extracted CPPs are limited to the functions defined in the source CPA and do not have the range of options that might be present in other CPPs.

Doc. 15. Specify information in accepted international formats (for example, dates, times, addresses, and phone numbers).

Doc. 16. Contain sufficient information to enable either or both Parties to use a CPA to automatically configure their run-time systems to perform the specified Collaboration Protocol between the Parties.

- NOTE: This requirement is stated specifically for a CPA because a CPP describes capabilities and may contain alternatives for some functions from which two Parties must choose in composing a CPA.

Doc. 17. Provide XML vocabularies that can be easily comprehended by humans and yet is precise enough for enforcement by computer.

6.2 The specification shall:

Spec. 1. Shall include a technology-independent representation of the CPP and CPA as a UML class model.

Spec. 2. Use the ebXML Collaboration Model, where appropriate, as a source for deriving the Collaboration Protocol (e.g. message definitions and choreography) in the Service definition in a CPP or CPA.

- NOTE: Using the ebXML Collaboration Model improves the capability for broadening the scope for interoperability.

Spec. 3. Permit the Parties to define their Collaboration Protocol in any agreed way either using an alternative process model or by ad-hoc means.

- NOTE: with this approach, interoperability is restricted to interactions between the two Parties.

Spec. 4. Use the Core Components data definitions, where appropriate, as the basis for the data structures in the CPP and CPA.

Spec. 5. Define XML representations of a CPA and CPP.

Spec. 6. Harmonize with other ebXML specifications while being able to be used independently of them.

Spec. 7. Define the CPP and CPA as consisting of components that can be linked together by means of URLs or XML linking grammars. Specifically, the information that defines the Collaboration Protocol (the inter-Party action

names, message names, and choreography or equivalent) shall be expressed in a separate document that is linked to the portion of the CPP or CPA that contains the Messaging Capabilities of the Party or Parties.

- Encourage implementation of CPA composition tools that provide a composite view of both components that are joined together in order to simplify the process of making consistent choices in the two components.
- Ensure that for linked documents, the consistency of the linked parts and the derived composite document is preserved in case of changes. This may be solved via versioning.

Spec. 8. Define how a CPA may be composed from two CPPs. This refers to the nature of the composition rather than the process of arriving at the composition.

Spec. 9. Not preclude two Parties from directly composing a CPA without having prior CPPs.

Spec. 10. Specify how a pre-defined model of a Collaborative Process is used in a specific instance of a Collaboration Protocol between two Parties.

Spec. 11. Specify how two-Party configuration mechanisms may be used in multi-Party relationships

Spec. 12. Describe the different ways that may be used to communicate Party information between Parties, for example:

- Once in a way that is applicable to all Collaborative Processes carried out between Paries (e.g. by referencing a standard generic CPA for those processes).
- Once in a way that is specific to two Parties (e.g. by negotiating an individual CPA).
- Dynamically (without previously creating a CPA).

Spec. 13. Benefit from function provided by existing standards for Trading Partner Agreements (e.g. US Federal Government Contractor Registration agreement (CCR), X12 Trading Partner Profile (838), United Nations recommendations nos. 26 Interchange Agreement for EDI and 31 Electronic Commerce Agreement)

6.3 Possible Requirements for Later Phases

The following list is not intended as a formal set of requirements but rather as a list of functions which have been suggested and which are appropriate for later phases of development of the specification. The order is not significant.

Future Req. 1. Signing of CPP and CPA.

Future Req. 2. Multiparty CPA.

Future Req. 3. Decomposing of the CPP and CPA into additional functional components that can be linked.

Future Req. 4. Define elements to support automated negotiation of composition of CPAs from CPPs. These elements may be within the CPP or in an associated document.

Future Req. 5. Versioning of CPP and CPA.

Future Req. 6. Multiple Services in a single CPP or CPA. For example, a single CPP or CPA might include multiple related RosettaNet PIPs, each one defined in

a separate pair of Services (one for each Party).

Future Req. 7. Specify more general message flows in the CPA than the sequencing rules defined in the initial version of the specification. An example is an event-condition-action state machine. This model will be aligned with the business flows defined in the XML layer of the ebXML Business-Process model.

Future Req. 8. Specify the name of an applicable repository.

Future Req. 9. Specify higher-level function in the TPA such as business-process constraints.

7 Notes

8 References

[Bra97] Bradner, S., "Key words for use in RFCs to Indicate Requirement Level", BCP 14, RFC 2119, March 1997.

9 Disclaimer

The views and specification expressed in this document are those of the authors and are not necessarily those of their employers. The authors and their employers specifically disclaim responsibility for any problems arising from correct or incorrect implementation or use of this design.

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11 Glossary

1) **Document**. A Document is any data that can be represented in a digital form.

2) **Party**. A Party is an entity such as a company, department, organization or individual that can generate, send, receive or relay Documents.

3) **Document exchange**. An exchange of documents between two parties.

4) **Collaborative Process.** A shared process by which two Parties work together in order to carry out a process. The Collaborative Process may be defined by an ebXML Collaboration Model.

5) **Message.** The movement of a document from one party to another.

6) **Messaging Capabilities**. The set of capabilities that support exchange of Documents between Parties. Examples are the communication protocol and its parameters, security definitions, and general properties of ending and receiving messages.

7) **Collaboration**. Two or more parties working together under a defined set of rules.

8) **Collaboration Protocol.** The protocol that defines for a Collaborative Process:

   a) The sequence, dependencies and semantics of the Documents that are exchanged between Parties in order to carry out that Collaborative Process, and

   b) The Messaging Capabilities used when sending documents between those Parties.

   Note that a Collaborative Process may have more than one Collaboration Protocol by which it may be implemented.

9) **Collaboration-Protocol Profile (CPP)**. A Collaboration-Protocol Profile is information about a Party that can be used to describe one or more Collaborative Processes and associated Collaborative Protocols that the Party supports. A CPP indicates what a Party "can" do in order to carry out a Collaborative Process. A CPP must be representable by a Document. While logically, a CPP is a single document, in practice, the CPP may be a set of linked documents that express various aspects of the capabilities. A CPP is not an agreement. It represents the capabilities of a Party.

10) **Collaboration-Protocol Agreement (CPA)**. A CPA is information agreed between two (or more) Parties that identifies or describes the specific Collaboration Protocol that they have agreed to use. A CPA indicates what the involved Parties "will" do when carrying out a Collaborative Process. A CPA must be representable by a Document.

11) **Party Discovery Process**. A Collaborative Process by which one Party can discover CPP information about other Parties.

12) **Service**. A Service is the representation, in the CPP and CPA, of a set of services provided by a given Party. A Party may define more than one Service when appropriate.

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