

Getting started with ICE

Applies to:

SAP's NetWeaver™ Knowledge Management (as part of SAP Enterprise Portal >5.0)

Summary

This article provides a short introduction into the semantics of content syndication and the relevant Information and Content Exchange Protocol (ICE) standard. ICE's importance for customers of SAP's NetWeaver™ Knowledge Management is explained. Finally the basic principles of the ICE protocol as a transport protocol for arbitrary content in the context of syndication is sketched.

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Author Bio



As a Standards Architect within SAP's Industry Standards team, Johannes Reich currently works on methodological issues of service definitions. Before, he studied physics and medicine and, since 2000, worked for SAP in several other positions. First as a developer in the communication development team of SAP's healthcare industry solution and then as the head of the SAP XI performance team, where he developed the scaling methodology of the XI integration server and ccBPM.

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Introduction

Content syndication is an old phenomenon. News agencies and weather services provide it since many decades. With the internet age, the importance of content syndication has increased dramatically, since now the lowered technological barriers allow virtually everybody with a sufficient large and interesting information base, be it documents, pictures, videos, etc. to act as a content provider or syndicator.

However, the complexity of the necessary communication becomes enormous for subscribers, if every content syndicator starts to obligate its customers to use his own formats and communication protocols. This was the reason for the industry to agree upon a common standard for the regular delivery of digital content over the internet: the Information and Content Exchange Protocol (ICE).

ICE starts after the content provider (the syndicator) and its consumer (the subscriber) have already worked out their relationship with respect to its contractual, monetary, and business implications. The ICE protocol is a transport protocol specifically designed for content syndication scenarios, supporting the special relation between the syndicator and the subscriber. It is XML based in a sense that it uses XML to define the structures of its protocol messages, but does not specify the structure of the content.

In contrast to other transport mechanisms like SOAP, it has the advantage to already define standardized mechanisms for dedicated subscriptions, transmission of usage conditions or individual shipments.

Why ICE is important to SAP and Customers

SAP NetWeaver™ Knowledge Management as part of SAP Enterprise Portal. provides a central, role-specific point of entry to unstructured information from various data sources in the portal. This unstructured information can exist in different formats such as text documents, presentations, or HTML files. A generic framework integrates these data sources and provides access to the information contained in them through the portal.

One important requirement for any content repository is to exchange content to and from other repositories. For example, one may automatically distribute published content to repositories of another portal. Or one may want to use it to feed external content (for example, news) into a portal on a regular basis.

The content exchange service of SAP NetWeaver™ Knowledge Management provides a ICE version 1.1 compliant implementation of both, a syndication server for distributing content and a client for receiving content. As a result of the usage of the standard ICE protocol, content can easily transferred to and from repositories in other system environments provided they also speak this standard language.

The ICE standard history

ICE has been developed since 1998 by the ICE Authoring Group. Version 1.0 originally was published in October 1998 and posted as a Note to the World Wide Web Consortium in 1999 (<http://www.w3.org/TR/NOTE-ice>). The ICE specification 1.1 has been published on 15th November 1999. The version 2.0 was published in August 2004 with the goal to express the ICE content syndication standard as a Web Service and focused on compatibility with the three major Web Services Standards: WSDL, SOAP and UDDI.

More information about the protocol had been available by <http://www.icestandard.org>, but since 16th November 2006, the domain icestandard.org seems to be unavailable.

About the ICE protocol

The ICE protocol is directed in a sense that it always assigns the two different roles of syndicator and subscriber to the communicating partners. It supports three classes of operations

- Subscription management.
- Content delivery
- General administration like event logging, etc.

From the ICE perspective, the communication between a syndicator and a subscriber proceeds in two stages. At first, a subscription has to be established, which configures when and how often content is supposed to be delivered. Depending on the subscription parameterization, the content delivery is initiated either by the syndicator or by the subscriber, i.e. from the perspective of the subscriber either in a pull- or in a push-mode.

Each logical operation is represented by a request/response message pair, even if logically no response is necessary. Each requests and responses are assigned a common unique IDs and each response contains an error code to notify the requester about the success of the operation.

During subscription initiation, the conditions can be negotiated by catalogue, offer, negotiation and subscription messages. A trivial negotiation implementation, where the syndicator accepts every offer, is also allowed. Additionally, subscriptions can be cancelled or changed or their status can be requested.

Content delivery is based on a package concept. A subscription results in the transmission of a series of packages, which consist of some meta information as well as the actual content in the form of items or references (URLs). The complete content of a subscription is called a collection and results from the successive appendage and cancellation operations of a package sequence. To update a collection, both, a complete as well as an incremental update is possible.

To support the incremental update, the SAP syndicator records information on which subscriber has received which document in the application properties.

To carry out an incremental update, all repositories that are referenced in an offer must support the application property service. If an offer contains a component that references a repository without an active application property service, the system carries out a full update of the entire offer.

When the system puts together an update package, it determines for each subscriber the documents that have been created, changed, or deleted since the last update. When a document is created or changed in the source repository, it is embedded in the ICE package. If a document has been deleted from the source repository, this information is transmitted to the subscriber, and the document is deleted accordingly from the target repository.

SAP supports both, HTTP as well as offline transport channel.

Related Content

<https://websmp202.sap-ag.de/~sapidb/011000358700000378682005E.PDF>: A howto which explains how to set up ICE syndicator and subscriber to distribute KM content. Starting point is a business scenario where documents, managed by KM should be provided to other portals. (login to service market place required)

http://help.sap.com/saphelp_nw04/helpdata/en/35/4cf72bfe18455e892fc53345f4f919/frameset.htm: SAP online help for Content Exchange within SAP KM. As part of the Content Manager Guide, it is explained how to use the content exchange service to transfer content to and from other repositories.

<http://www.icestandard.org/>: Web address of ICE as a specification of the IDE Alliance (seems to be outdated)

<http://www.idealliance.org/>: Web address of the IDE Alliance, still listing the outdated domain icestandard.org for the ICE standard.

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