April 2008

by Arindam Banerjee, Enabling Technologies Service Provider, Software Solutions Program Manager,
abanerjee@yankeegroup.com, 617-598-7321

It's Time for Carriers to Adopt Centralized Dynamic Catalog Strategy

The Bottom Line:	Centralized dynamic catalog strategy streamlines and orchestrates service providers' overall product strategy. It also provides end-to-end capability that enables quicker product launch and minimizes fulfillment errors. These are key factors in ensuring customer stickiness and reducing customer churn.
Key Concepts:	OSS, EPC, catalog, service fulfillment, billing
Who Should Read:	CIO, VP of operations, CTO, OSS manager, architects

Practice Leader: Philip Marshall, Ph.D., Vice President--Enabling Technologies Service Provider,
pmarshall@yankeegroup.com, 617-880-0260

Executive Summary

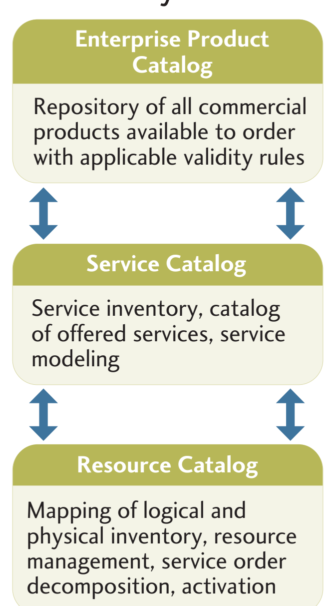
In today's dynamic communications environment, the only way service providers will gain a long-term market position is by creating and assembling products and services spread across different systems, and distributing them efficiently across their networks.

Ubiquitous connectivity enables the convergence of wireline, wireless and broadband as well as content services, and it demands that service providers start acting more as retailers. To do this, service providers must have a platform flexible enough to blend services from internet players and bundle non-traditional services with their typical service offerings. The biggest bottleneck that most service providers still face is launching new products and services, which takes anywhere between 3 and 6 months because of their organizational and back-office issues. Existing product and services definitions and information spread across different systems need to be rationalized. There needs to be congruence between the commercial products that are launched and the underlying network resources that support those commercial products to minimize or eliminate fulfillment errors.

We believe that centralized dynamic catalog (CDC) strategy can address this challenge by effectively connecting OSSs and BSSs. CDC solutions go beyond the product or service catalog because they must manage, create, launch and provision all products and services in the service provider's portfolio. CDC streamlines and orchestrates service providers' overall product strategy. It also provides end-to-end capability, enabling quicker product launch and

Exhibit 1.
Centralized Dynamic Catalog Strategy
Source: Yankee Group, 2008

Centralized Dynamic Catalog



minimizing fulfillment errors—which are critical in ensuring customer stickiness and reducing customer churn. We believe close alignment with and seamless integration between the enterprise product catalog (EPC) and the service and resource catalog is the basis for a horizontal CDC strategy.

Exhibit 1 illustrates the key ingredients of holistic CDC solutions. These solutions will provide links between commercially offered products and technical products, services and resources in a common repository to enable a closed-loop provisioning process from order generation to order fulfillment. This common repository will also provide different views addressing the needs of different groups of carrier users such as product managers, network operators, OSS team members and BSS teams. It will address some of the major challenges that service providers are facing today:

- How to launch products and services faster
- How to launch and manage products and services in a standardized way, and how to address definition inconsistencies when products and services are spread across different systems
- How to reduce fulfillment errors and enable customer satisfaction

At this point, we do not see any vendor having all the pieces of the CDC solution. However, some key components of the CDC solution such as EPC, resource and service catalog markets are currently taking shape. We see traditional OSS and BSS vendors as well as point players addressing different facets of this market.

In this Yankee Group Report, we look at how CDC demands holistic integration between the centralized product catalog, service catalog and resource catalog for service providers to achieve a closed-loop customer fulfillment lifecycle management (CFLM) strategy. We also look at the key ingredients of such solutions and discuss some of the available vendor solutions addressing this growing need.

Table of Contents

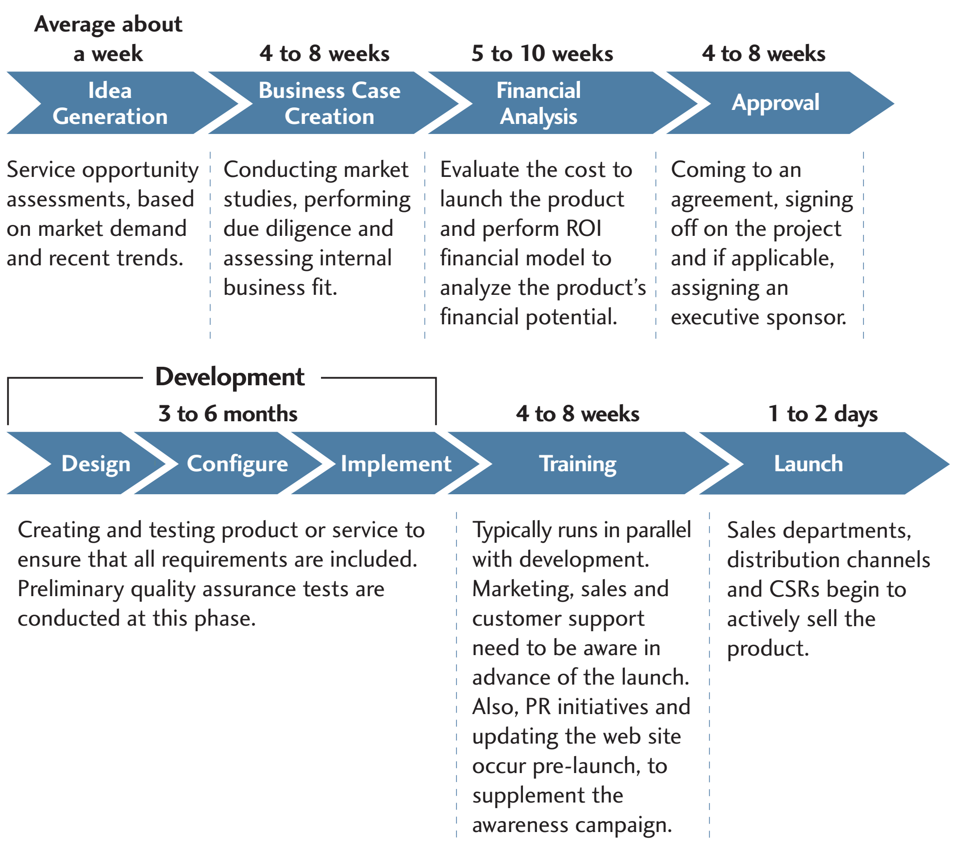
I. Cumbersome Product Management Strategy Stunts Carriers' Flexibility

Exhibit 1 provides some of the key components of a CDC solution. In this section we discuss some of the major business issues these components help to alleviate.

Enterprise Product Catalog

Business Issues: According to Yankee Group research, it takes approximately 3 to 12 months for operators to launch a new service. Exhibit 2 illustrates the typical steps and duration of each step that service providers typically go through to launch a new service.

Exhibit 2.
Delays in Product Introduction Process
Source: Yankee Group, 2008



Typically, incumbent operators have upward of 1,000 unique services, of which they actively sell somewhere between 30% and 40%. Additionally, incumbent operators introduce anywhere from five to 25 new services each year, not including scheduled feature enhancements and upgrades to existing services. The length of time to bring a service to market depends on many factors. New services take longer to develop while service upgrades can be brought to market much more quickly. The length of time can be shorter or longer, depending on the type of service and level of technicality required to launch a new service.

Historically, because of the siloed approach of service launch, mergers and acquisitions, service providers tend to have several product catalogs spread across different systems. In most instances, product definitions across different systems are structured differently. Each catalog contains variations of similar products with different methods for updating or adding product definitions. Product managers face the uphill task of obtaining visibility of commercial products that are available to them. Because of the lack of a single source of truth, they end up creating duplicate products. It causes operational complexity and hinders information exchange across the organization—all of which results in an opex increase for service providers.

Resolution: Automated commercial off-the-shelf (COTS) EPC systems can reduce the limitations that traditional manual management creates, such as communication bottlenecks and product structure complexity. With a single platform, data and knowledge can be transferred among departments, reducing miscommunication and process lags. An EPC will bring order to the service provider's operational system by removing inconsistent product definitions and product structures. It will also enable versioning and access control mechanisms that will enhance auditing and control capabilities for effective collaboration across the entire organization. EPC acts as a central repository that is shared among billing, CRM and content revenue management applications. It brings order to the chaotic product and service management process that is so inherent in service providers' OSS and BSS environments and provides a structured way to help product managers make bundling decisions.

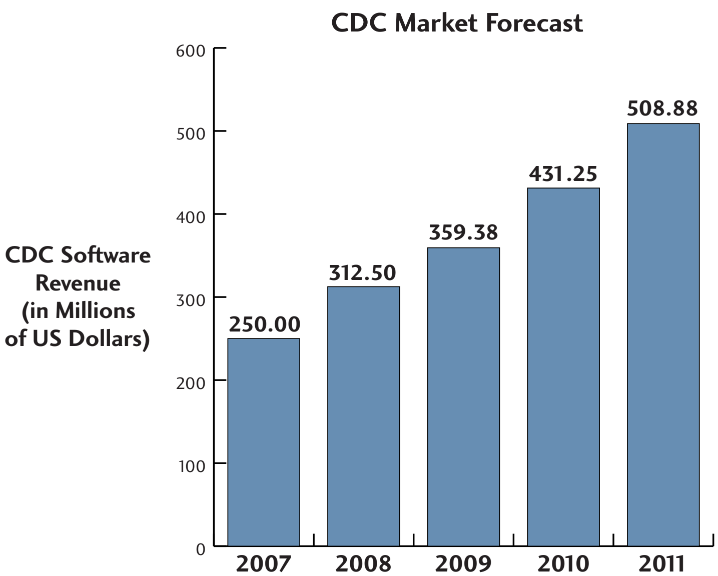
Service and Resource Catalog

EPC solves the business problem of managing commercial products that are ready for ordering. However, achieving seamless service fulfillment requires a deep understanding of the technical components of commercial services. Service offerings today are getting increasingly complex. To achieve seamless CFLM, complex dependencies among VAS, access and devices need to be understood. Because of siloed and disaggregated OSS deployments in most OSS scenarios, there is no real-time correlation between logical and physical modeling of network inventory that underpins the commercial products offered or provisioned to end subscribers via service activation and CRM systems. Because of this fundamental disconnect, service provisioning errors resulting in failed service orders are commonplace. These not only cause headaches for service providers but also major customer dissatisfaction, which results in customer churn.

Resolution: The service catalog has lower interfaces to resource catalogs and upper interfaces to product catalogs. Service and resource catalogs provide links between commercially offered products and technical products, services and resources in a common repository to enable a closed-loop provisioning process from order generation to order fulfillment. The resource catalog is responsible for modeling both physical and logical resources, with either resource type typically able to support one or more logical resources based upon it. Only logical resources are referred to directly by the service catalog; therefore, only those are marked in the resource catalog for publishing upward to the service catalog.

We believe that the CDC market will grow rapidly during the next few years. Yankee Group forecasts that the CDC market will show a 4-year compound annual growth rate (CAGR) of 15.27% and has the potential to reach more than US$500 million in software revenue by 2011 (see Exhibit 3).

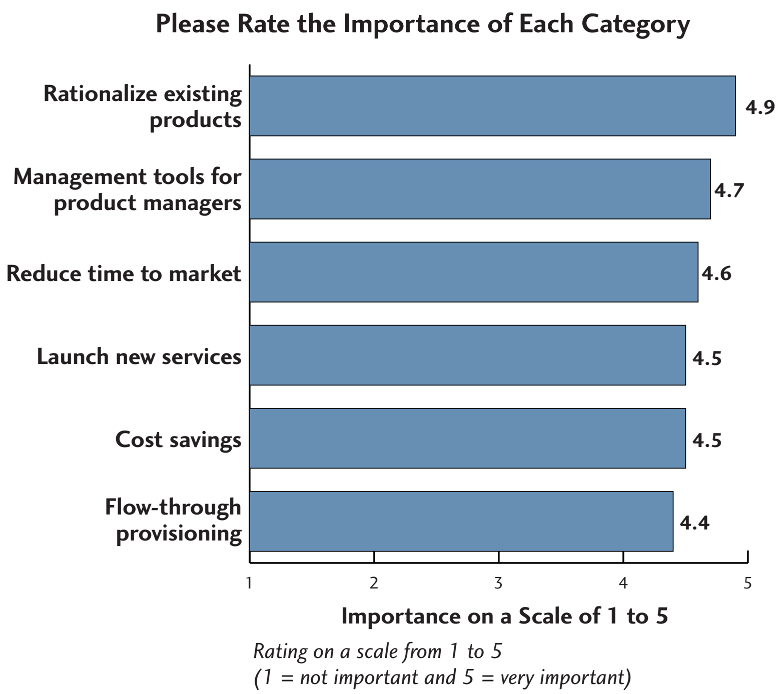
Exhibit 3.
Global Forecast of CDC Market
Source: Yankee Group, 2008



II. Adopting EPC Is the Critical First Step in Transitioning to a Holistic CDC Strategy

In our conversation with service providers, product rationalizing and normalizing products across different disparate systems into a centralized data repository emerged as their primary catalysts in adopting a CDC strategy. Therefore, of the three main components that constitute a CDC strategy—EPC, service catalog and resource catalog—adopting EPC is often seen as the logical first step for most carriers and service providers to rationalize their product sets across different systems, remove duplication and achieve common product definition across all product offerings. The shared information data (SID) model in most cases is seen as the de facto standard for achieving common product definition across different systems. Exhibit 4 illustrates the top six factors driving service providers to adopt EPC, in order of their importance.

Exhibit 4.
Top Six Factors Catalyzing Carriers' Adoption of EPC
Source: Yankee Group, 2008



In the next section we take a closer look at some of the key features that we believe should be part of any EPC system.

III. EPC Unbundled: Key Ingredients for an EPC Solution in Telecom

From our discussions with service providers, Yankee Group has identified the key features needed for EPC solutions. We believe these functionalities are vital for vendors that want to introduce their EPC product to the telecom market. Vendors should provide:

- **A single source of truth for all service providers' existing products:** EPC can be viewed as a single product data repository for all commercial products, whether it is active, inactive or even planned for the future. Normally, product information in a typical service provider's environment is spread across different systems in different data models and data definitions. It is the job of EPC to normalize the data model and technical definitions so they are in a common format. The biggest value add from EPC is standardized product definitions and data models across different systems, which results in high reusability. Version and release management, eligibility and policy rules, and the technical definitions of products are all key functionalities of an EPC solution.

- **Centralized product control for all BOSSs:** Previously, introducing a new product or discount plan or changing a product rate meant that those changes had to be incorporated into multiple systems such as CRM and billing. EPC provides a centralized control where rate changes, new product introductions and new package bundles all can be entered into a single system and then can be published outward to populate multiple BOSSs. It is critical that EPC is independent of any telecom back-office systems and not tied to any specific billing or CRM systems. Therefore, EPC reduces manual processes, minimizes inconsistencies across different systems and also provides a secured mechanism for product introduction and modification. EPC needs to provide integration capabilities with different BOSSs so that it can automatically distribute product information to different systems in various formats.
- **Different views for different stakeholders:** EPC needs to have different GUIs for different set of users and be able to catalyze collaboration by providing common workflow systems. Different stakeholders should be able to introduce their product idea and elicit validation and inputs from other stakeholders through the system without actually publishing the product to external systems. EPC should provide a common platform for discussion and enable business users to collectively brainstorm and discuss product ideas with their IT team. Support for a multiuser platform should be a critical component of an EPC platform because it will help remove the manual redundancies and wasted time typically associated with sharing documents and spreadsheets across different internal departments. EPC should also enable auditing of all activities performed on projects and items by users. This logged information can be monitored and analyzed when necessary. Proper security mechanisms based on user profiles, roles and authorization should be an integral part of any EPC solution.
- **End-to-end product lifecycle management support:** EPC should govern, monitor and control all processes of product lifecycle management from product idea generation to product retirement and analysis. The framework should support all facets of product lifecycle management based on defined, repeatable and built processes. Business intelligence and analytics play a crucial role in tracking product costs, profitability and penetration, and therefore should be a key component of any EPC solution.
- **Support for service-oriented architecture (SOA) and web services:** EPC needs to support SOA principles as in a broader IT context, products will be encompassed by external service wrappers and exposed to updated external product catalogs such as self-service web portals. It is also critical that EPC solutions support web-based principles such as XML and J2EE, and be able to respond to asynchronous event-driven queries and distribution. Intuitive scripting tools should be an integral part of any EPC solution because they will enable easy rule definitions, creation and management based on user-defined criteria.

EPC introduces some key benefits for service providers that are struggling with decreased revenue pressures and increased customer churn. Some key benefits of EPC are:

- Enhanced operational simplicity and efficiency
- Improved market offerings and increased revenue from faster service delivery because EPC enables operators' marketing and sales departments to bring more services to existing, new and potential clients
- Improved business efficiency through information sharing and process automation, which enables operators to identify inefficiencies and see opportunities for cost savings
- Optimized product lifecycle management across the organization
- Enhanced ability to structure and deliver the correct customer offers, which allows for improved customer satisfaction and higher quality services, and accelerates time-to-market of services
- Improved ability for service providers to define, structure and deliver the correct customer offers
- Reduction of customer churn due to improved customer satisfaction, higher quality services and faster time-to-market of services

IV. CDC Supply-Side Analysis

Although none of the vendor solutions covers all the facets of CDC yet, leading BOSS vendors and point vendors made some substantial investments in 2007. We see some of the key components of CDC solutions such as EPC, resource and service catalog solutions currently taking shape and we hope to see comprehensive CDC solutions in the near future. Vendors leading the drive for providing CDC solutions include:

- **Amdocs:** Amdocs launched its EPC solution, which is independent of any underlying BSSs, to the markets. Using SOA principles, Amdocs' EPC solution can support both Amdocs and non-Amdocs BSSs and provide a single normalized view of an entire service provider's products via a centralized interface. Amdocs has already won a couple of key Tier 1 customers, which in a short time are already experiencing substantial savings in process and time. The service and resource catalog is part of Cramer assets and is a key component of Amdocs' OSS solution offering. Though not integrated at this point, Yankee Group believes it is a matter of time before Amdocs unifies its EPC and service and resource catalog to provide a streamlined CDC solution. Having all the key components of CDC in-house, even though not yet integrated, provides Amdocs with a distinct advantage in this space.
- **Convergys:** With its strategic financial investment in Ceon, Convergys is trying to tread the same path as Amdocs and provide a more uniform view of all commercial products and services to the carriers' IT and marketing departments. Ceon's legacy is in the OSS space, though in the last couple of years EPC and product lifecycle management (PLM) have been its key focus. Therefore, Convergys lacks a comprehensive service and resource catalog piece, which is critical for a streamlined CDC solution.
- **Oracle:** With its various acquisitions, Oracle is clearly striving to provide a comprehensive CDC solution to the market. The aim of Oracle Application Integration Architecture (AIA) for Communications is to create an end-to-end service creation environment that includes order and service management, service creation, master data management and service delivery platform along with the already integrated CRM, billing and revenue management solutions. The MetaSolv acquisition provided Oracle with a strong service and resource catalog capability; however, it lacks a comprehensive EPC solution in its portfolio. Presently, Oracle is in the process of tailoring its Product Information Master (PIM) Data Hub solution used in manufacturing industries to address some of the EPC requirements in telecom. It will be beneficial for Oracle to launch an EPC solution specific to the communications industry and integrate that with its service and resource catalog to provide a holistic end-to-end CDC solution to the market.
- **Telcordia:** Telcordia's Service Control Center is a recent addition to the Telcordia Fulfillment Suite. This solution has not been made generally available to the market yet. This solution allows users to define products that are sourced either by service providers or third-party suppliers to compose product bundles and store them in a single product catalog. Service Control Center also enables the Service Order Analysis and Control System to establish an order flow-through process across all internal and third-party systems. Telcordia clearly understands the importance of a providing a CDC solution and is currently in the process of making some major product enhancements to achieve this.
- **Comptel:** Comptel's service catalog defines commercial products and provides the link between these and technical service components. It catalyzes product and service bundles based on customer demands and is network- and technology-agnostic. Comptel's lack of an EPC solution in its portfolio stunts its ability to provide a comprehensive CDC solution to the market.

- **JacobsRimell:** With its focus on telecom-specific information modeling, JacobsRimell has been able to provide innovative product assembly techniques to meet operators' current and future product assembly needs. Its subscriber-centric, real-time information model typically links subscribers with products and supports customized and personalized rapid product assembly. Although it lacks an in-house EPC solution, JacobsRimell clearly understands the effective real-time use of service and resource catalogs and is clearly aligned with our vision of CDC.
- **Axiom Systems:** With its Active Catalog offering, Axiom provides a strong service and resource catalog federation capability. As part of its Active Catalog offering, Axiom deals with resource, service and product building blocks as self-contained components that enable rapid assembly, reassembly, launch and fulfillment of products and services. Yankee Group believes that Axiom has a strong service and resource catalog offering. To provide a comprehensive CDC solution to the market, Axiom needs to establish close working relationships with enterprise product catalog vendors.
- **Ceon and Tribold:** Ceon and Tribold were both initial thought leaders in the EPC space. Both companies saw limited success independently. With the launch of EPC products from heavyweights, we have seen Ceon working under the Convergys umbrella after Convergys and Tribold's partnership fell apart. Convergys' financial stake in the company will drive much of Ceon's road map. Tribold, after its disassociation with Convergys, will have to look for a suitable BSS or OSS vendor partner. Both vendors have a reasonably good EPC solution, but have a long way to go before they can provide a comprehensive CDC solution to the market.

V. Conclusions and Recommendations

There is an inherent pressure on carriers to provide disparate catalog federation and adopt a CDC strategy to streamline products and services that are spread across different systems. Reasons for this unstructured mess can be traced back to siloed fulfillment systems as well as mergers and acquisitions in the communications industry. With service providers trying to rationalize their existing products and become content retailers to fend off competition from internet insurgents, it is imperative to have a CDC strategy in place to drive OSS configuration and achieve end-to-end capability from order request to order fulfillment.

For a CFLM strategy, it is imperative for service providers to have a holistic CDC strategy in place. CDC will help solve some of service providers' critical issues such as rationalizing the product information spread across different systems. It can also enable subscribers to use their service providers' infrastructure to gain access to content without the risk of service provisioning failure because it eliminates the incorrect network configuration that results in faulty design and assignment of inventory resources.

As we have seen from our vendor analysis, most of the bigger OSS and BSS vendors are actively pursuing this space—though currently none of them has all the pieces of the solution in place. Different vendors are trying to achieve CDC strategy in different ways. Traditional OSS vendors that are more network-facing are launching service catalogs, which is a natural extension to their product strategy, while BSS vendors are launching EPC as their first step. Carriers have expressed to Yankee Group that normalizing and centralizing their product strategy is a priority. Therefore, adopting an EPC solution is a logical first step for most matured service providers trying to transform and adopt a CDC strategy. From a standards perspective, most vendors have adopted the TeleManagement Forum's (TMF) SID data model structure and SOA principles supporting XML and other web standards as prevalent standards and frameworks. We strongly believe that the adoption of CDC strategy will be an area of investment for most matured service providers; and for BOSS vendors, this would provide additional revenue-generating opportunities.

Recommendations for Carriers

- **Be prepared for major professional services expenditure.** Adopting CDC as a whole or some elements of CDC has a major integration cost implication. Do not be misled by vendor messaging around out-of-the-box products—this involves complex system rationalization activities that demand intense systems integration efforts. Because every rationalization project involves different system architectures and configurations, one size solution cannot fit all.
- **Make the adoption of CDC strategy a critical part of your OSS/BSS transformation process.** If you planning or executing a BSS and OSS transformation project, ensure that CDC strategy is part of the overall process. Have discussions with your systems integrators and have a plan in place to execute this in a phased approach. Planning and executing CDC strategy in parallel with your transformation project will help avoid opex and capex expenditure and major headaches in the future.
- **Remember that CDC strategy is more than master data management (MDM).** The concept of CDC goes beyond MDM strategy. We are not merely talking about static data repositories, but about a dynamic environment with variable moving parts whose state must be captured in real time. CDC manages delivery of services by managing the chain of activities, including order capture, order orchestration and delivery.

Recommendations for Vendors

- **Develop ROI-based business cases to articulate the value of these solutions to carriers and service providers.** Launching products late and not being able to react quickly to market demand will result in lost revenue opportunities. Vendors need to articulate the value proposition to service providers. The best way to do that is to develop ROI-based business cases quantifying loss of revenue based on delayed service launch.
- **Provide an integrated but modular CDC solution.** Service providers adopting a CDC strategy will in most cases adopt a phased approach or buy different elements of CDC from different vendors. It is important that any CDC solution from vendors not only be preintegrated, but also modular and compliant with open interfaces and application programming interfaces (APIs) so that it is easy to plug in different solution pieces from different vendors.

VI. Further Reading

Yankee Group Link Research

A Year in Review for the Billing and Mediation Market, Report, February 2008

Five Significant OSS Trends We Expect to See in 2008, Note, December 2007

The Next Trillion Dollars from the Anywhere Network, Report, July 2007

IPTV Service Fulfillment: Delivering the Perfect Picture, Report, January 2007

Yankee Group

Yankee Group has research and sales staff located in North America, Europe, the Middle East, Africa, Latin America and Asia-Pacific. For more information, please contact one of the sales offices listed below.

Corporate Headquarters

Prudential Tower
800 Boylston Street
27th Floor
BOSTON, MASSACHUSETTS 02199
617-598-7200 phone
617-598-7400 fax
info@yankeegroup.com

Europe

56 Russell Square
LONDON WC1B 4HP
UNITED KINGDOM
44-20-7307-1050 phone
44-20-7323-3747 fax
euroinfo@yankeegroup.com

Yankee Group | the global connectivity experts™

A global connectivity revolution is under way, transforming the way that businesses and consumers interact beyond anything we have experienced to date. The stakes are high, and there are new needs to be met while power shifts among traditional and new market entrants. Advice about technology change is everywhere—in the clamor of the media, the boardroom approaches of management consultants and the technology research community. Among these sources, Yankee Group stands out as the original and most respected source of deep insight and counsel for the builders, operators and users of connectivity solutions.

For 37 years, we have conducted primary research on the fundamental questions that chart the pace and nature of technology changes on networks, consumers and enterprises. Coupling professional expertise in communications development and deployment with hundreds of interviews and tens of thousands of data points each year, we provide qualitative and quantitative information to our clients in an insightful, timely, flexible and economic offering.

Yankee Group Link

As technology connects more people, places and things, players must confront challenging questions to benefit from the changes: which technologies, what economic models, which partners and what offerings? Yankee Group Link™ is the research membership uniquely positioned to bring you the focus, the depth, the history and the flexibility you need to answer these questions.

Yankee Group Link membership connects you to our qualitative analysis of the technologies, services and industries we assess in our research agenda charting global connectivity change. It also connects you to unique quantitative data from the dozens of annual surveys we conduct with thousands of enterprises and consumers, along with market adoption data, comprehensive forecasts and global regulatory dashboards.

Yankee Group Link Research

As a Link member, you have access to more than 500 research reports and notes that Yankee Group publishes each year. Link Research examines current business issues with a unique combination of knowledge and services. We explore topics in an easy-to-read, solutions-oriented format. With the combination of market-driven research and built-in direct access to Yankee Group analysts, you benefit from the interpretation and application of our research to your individual business requirements.

Yankee Group Link Interaction

Our analysts are at your further disposal with data, information or advice on a particular topic at the core of a Link membership. We encourage you to have direct interaction with analysts through ongoing conversations, conference calls and briefings.

Yankee Group Link Data

Yankee Group Link Data modules provide a comprehensive, quantitative perspective of global connectivity markets, technologies and the competitive landscape. Together with Link Research, data modules connect you to the information you need to make the most informed strategic and tactical business decisions.

Yankee Group Consulting

Who better than Yankee Group to help you define key global connectivity strategies, scope major technology initiatives and determine your organization's readiness to undertake them, differentiate yourself competitively or guide initiatives around connectivity change? Our analysts apply Yankee Group research, methodologies, critical thinking and survey results to your specific needs to produce expert, timely, custom results.

Yankee Group Signature Events

Yankee Group conferences, webinars and speaking engagements offer our clients new insight, knowledge and expertise to better understand and overcome the obstacles to succeed in this connectivity revolution.

www.yankeegroup.com

The people of Yankee Group are the global connectivity experts™—the leading source of insight and counsel for builders, operators and users of connectivity solutions. For more than 35 years, Yankee Group has conducted primary research that charts the pace of technology change and its effect on networks, consumers and enterprises. Headquartered in Boston, Yankee Group has a global presence including operations in North America, Europe, the Middle East, Africa, Latin America and Asia-Pacific.