

## Solution Brief

---

**An Integrated  
Broadband Solution  
for True “On-Demand”  
Games Experiences:**

**Offered by  
Juniper Networks and  
Exent Technologies**

---

Broadband providers putting together a portfolio of high-margin, value-added services know that profitability and popularity are inextricably linked. An offer must be intriguing enough to attract customers and compelling enough to keep them coming back — thus slowing subscriber churn, building brand loyalty, and simplifying selling up.

Games-on-Demand is fast becoming the winner on all counts. But as broadband providers are learning, even a comprehensive catalog of video games and a mass-market, advanced usability offering may not be enough to cut down on churn. The culprit is best-effort network performance, which can slow game downloads, give on-screen action the jitters, and frustrate end users. What users want from a Games-on-Demand service is the click-to-play experience. Best-effort networks make that hard to achieve. Even when using innovative streaming delivery protocols, cutting download time to 10%-20% of a typical download-install-launch experience, users still need to wait till they can start playing the game. So users may jump from provider to provider, hoping to find one that can deliver true on-demand services.

Now, any broadband service provider can make instant gratification a selling point for its Games-on-Demand services, thanks to Juniper Networks, the global leader in enabling secure, assured communications over IP, and Exent Technologies, the world’s premiere provider of Games-on-Demand solutions. The Juniper-Exent solution adds a layer of intelligence to the broadband/IP infrastructure that lets the game servers and the network communicate with each other. This service-aware infrastructure can dynamically reallocate network resources, based on game delivery requirements, available network resources, and subscriber service options —improving game download speeds and game play, thus greatly enhancing the end-user experience.

With conventional on-demand schemes, in contrast, content or game servers and network platforms can’t communicate. The network knows little if anything about the content or applications it’s transporting. Since those applications are essentially “decoupled” from the network and they can’t signal any delivery requirements to the network, they end up accepting whatever they get. Best-effort performance becomes the rule rather than the exception.

## Games-On-Demand: The Opportunity

Broadband providers that opt for the integrated Juniper-Exent solution get more than a seamless architecture that intelligently unites applications and infrastructure. They get a highly flexible solution that lets them tailor Games-on-Demand services to various business models. For instance, they can offer multiple game service tiers priced according to the number or type of games offered as well as network performance. Alternatively, they can deliver enhanced higher quality network performance across the board, making it an integral part of their Games-on-Demand portfolio.

There’s something else to consider. The Juniper-Exent solution gives broadband providers a fast, cost-effective way to move into a market that lost its niche status long ago. The 2004 PC/Video Game market reached \$30 billion — more than music or box-office movies—according to “Essential Facts about the

Computer and Videogame Industry” from the Entertainment Software Association (ESA). Several other figures should make Games-on-Demand even more attractive. The average acquisition cost for a games subscriber can be as less as \$10, while the average lifetime value of that customer is \$180, according to Exent’s research. Additionally, it has been found that Games-on-Demand customers are 75 percent less likely to churn than other broadband subscribers. What’s more, is that potential subscribers exhibit a 65 percent to 85 percent conversion rate after a two-week trial.

How important is end-user experience to provider profitability? Research indicates that a full 60 percent of online gaming customers walk away from a service if initial downloads are too slow. And even the most patient subscribers aren’t going to put up with frozen screens, slow response times, and (worst case) dropped sessions.

## Exent’s EXEtender™ Platform

Exent Technologies’ EXEtender™ Delivery and Security platform permits single-user games developed for standalone machines to be used off remote servers without requiring any modifications. EXEtender’s “non-lossy” compression algorithms maintain full CD quality and functionality, including audio and video.

Exent offers a comprehensive client-server architecture, loading a lightweight piece of code on end-users machines and deploying servers to ensure that requests are handled speedily and securely. The Management and Administration Server (MGS) monitors and balances the load, authenticates end-users, and logs subscriber activity. The Application Server houses the game library. In order to ensure optimal performance, it takes load and end-user location into account when determining which server should respond to a request. The Database Server stores essential information, including end-user configuration data, client usage, and error logs.

Delivering any sort of copy-protected material across the public infrastructure raises serious security concerns. The EXEtender solution implements a variety of security mechanisms. Proprietary encapsulation, for example, prevents file-sharing applications from illegally accessing content. In addition, the complete game is never allowed to reside locally.

EXEtender also features robust digital rights management (DRM). This gives broadband providers a great deal of freedom in how they license games, which could be by a specific number of sessions or hours or by day, week, or month. DRM also can associate licenses with specific machines, preventing unauthorized use. Supported business models include subscription, rental, pay-per-use, try-before-you-buy, purchase and others.

## The SDX-300 Service Deployment System

The Juniper Networks Service Deployment System (SDX-300) is a robust, customizable application that enables the rapid generation and deployment of new IP services to millions of subscribers. These services include streaming media, IP television, on-line gaming, and integrated voice and data. The SDX offers a suite of service creation and management tools such as third-party application interfaces, network-wide admission control, dynamic policy generation, and accounting

information. The SDX can provision network resources such as bandwidth and quality of service in real time, based upon specific content or applications and subscriber profiles. Service deployment is supported over a variety of broadband access technologies including wireless, DSL, cable, Ethernet, ATM, Frame Relay, SONET and fixed wireless.

The SDX software offers a service-optimized architecture, which ensures quick time to revenue, flexible subscriber service management, and reliable service delivery. The SDX software uses a modular design, which provides the ability to select the components that meet network requirements and business needs. Working with Juniper Networks routers and PCMM-compliant CMTS devices, the SDX software allows administrators to define service offerings as they need them and automatically provision the network to deliver those services.

The SDX-300 is designed to simplify the 3 major steps in the service life-cycle process:

1. Create innovative, revenue-generating services
2. Deliver numerous on-demand services to subscribers
3. Track services with intelligent accounting applications

## Smart Signaling for Cross-Platform Communications

As indicated, the key to the true on-demand capabilities of the Juniper-Exent solution is the intelligent signaling that allows EXEtender to exchange information with the SDX. These web-services based communications enable EXEtender to inform the network about bandwidth or latency requirements for game downloads and game play. The SDX validates as appropriate, current resource availability, enforces a specific policy into the network, and confirms service activation with the EXEtender platform.

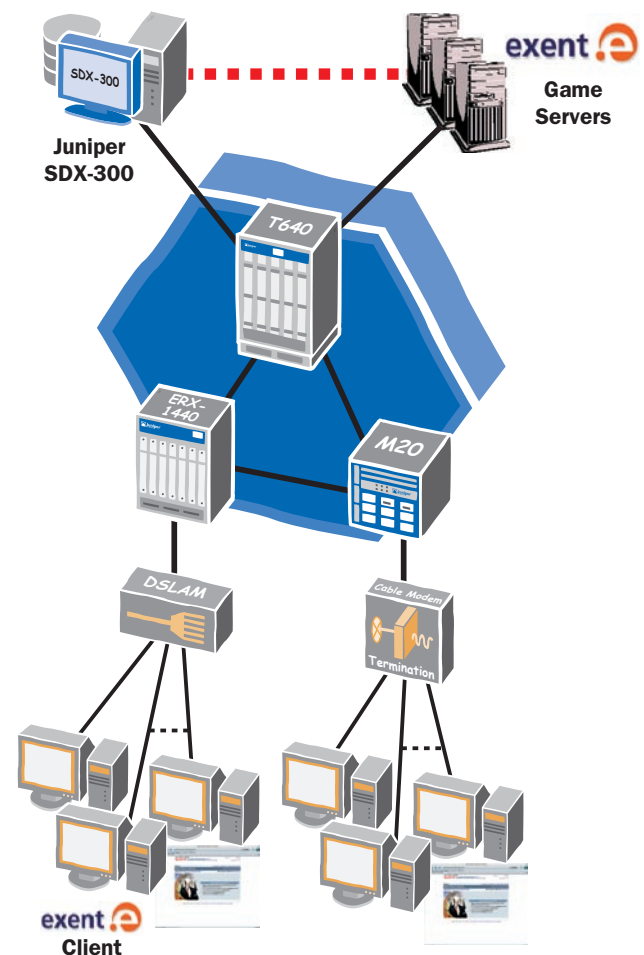
More specifically, when a subscriber initiates a request to either download or play a game as part of a games-on-demand service offering, the EXEtender Web Server passes several key parameters to the SDX, which can include the subscriber's IP address, the relevant Application (Game) Server's IP address, a designated service identifier, and the required bandwidth. For strict bandwidth and priority game services, the SDX can perform an admission control function within the network to validate that the required resources are available. If they are, a service policy is developed and deployed to the network and access platforms in real time. A confirmation message is relayed to EXEtender, confirming that the game download or game play can begin.

- Providers Can Deliver Premium On-Line Game Service Quality To Subscribers
  - Enabled by Signaling Between Juniper's SDX-300 and Exent's Game Server
- Offers Dynamic, Application-Driven Control of Resources
  - Rapid Game Download /Game Play
  - Efficient Use of Network Resources
- Provides an Enhanced Customer Gaming Experience
  - Reduced Churn
  - New Revenue Opportunities

## Flexible, Optimized Service Delivery

The Juniper-Exent Games-on-Demand solution offers broadband providers a wide range of flexibility in creating and delivering games service offerings for its subscribers. Providers can offer multi-tier service bundles with variable pricing which pre-package access to a number of games with variable levels of network performance. Or providers can decide to create the best possible experience for all games subscribers by enabling enhanced game downloads on a standard basis without any additional costs to the subscriber. This can be enabled on a trial basis or as part of a short-term marketing promotion. Providers may also wish to enable one-time (pay per single use) enhanced "super fast" game downloads through the simple click of a button.

Architecturally, the EXEtender platform and the SDX can be flexibly configured to accommodate subscriber and service profile information working seamlessly in conjunction with the provider's back office, CRM and billing databases.



One of the best advantages of this intelligent solution for broadband providers is that the service upgrades to subscriber bandwidth for game downloads are dynamically activated by the application, such that no user intervention or special software is required. Additionally, as the initial game download or pre-cache is completed, the temporarily allocated network resources are relinquished and made available for other users or applications. This allows providers to optimize network usage without having to over-engineer network resources to accommodate the enhanced service delivery.

### The On-Demand Advantage

The Juniper-Exent integrated solution enables broadband providers to offer true Games-on-Demand services to its subscribers. Delivering more compelling, enhanced services has distinct revenue opportunities. They not only attract more customers, but also encourage these customers to upgrade their game subscriptions or level of broadband service, or both. Game publishers also are likely to be very interested in such an enhanced broadband network infrastructure. It's very much to their advantage to have their products featured and consumed over networks that deliver a premium level of performance. Additionally, Games-on-Demand services may offer publishers new release windows as well as extend the shelf life of their products. Finally, in the hypercompetitive environment of value-added services, any provider that can both differentiate itself from the competition and earn the reputation of doing things right is likely to find itself in the enviable position of offering other items in its product portfolio to interested end-users.

### About Exent

Exent is the market leader in technology and service solutions for secure digital delivery of gaming and application software for service providers seeking to digitally distribute, manage and monetize a digital, on-demand games and applications service. Exent delivers products and solutions that support software publishers, broadband service providers, media companies, brand owners, consumer portals, retailers and others.

Exent technology enables all standard business models - purchases, subscriptions, rentals, try-before-you-buy - for applications of any size. Exent Digital Rights Management solution dramatically lowers software piracy and ensures enforcement of licensing restrictions.

Exent's EXEtender(tm)-based products and services are currently in commercial use by Comcast, Yahoo!, Bell Canada, RCN, Atari, Deutsche Telekom, Wanadoo/France Telecom, Telefonica, KPN, Telstra, Telenet, Telenor, Fujitsu, Swisscom and other leading service providers worldwide.

Major shareholders of Exent include Time Warner, Comcast, Concord Ventures and New Enterprise Associates. The company has offices in Bethesda, Maryland and Tel-Aviv, Israel. For more information, please visit [www.exent.com](http://www.exent.com).

Key End-User Benefits	Why	SDX300 - EXEtender Features
Faster time-to-play	Upon requesting a specific game, the EXEtender management server signals the SDX to allocate high-bandwidth for the game download phase. Users enjoy 10x multiple on download speeds.	<ul style="list-style-type: none"> <li>Provisioning of high-bandwidth during initial download period</li> <li>Real-time signaling for bandwidth-on-demand</li> <li>Application server integration with SDX</li> </ul>
Smaller download	By using the innovative streaming EXEtender platform, in conjunction with faster speeds provisioned by the SDX, the user can start playing after downloading as low as 5% of the game.	<ul style="list-style-type: none"> <li>Provisioning of guaranteed minimal bandwidth during game-play</li> <li>Real-time signaling for bandwidth-on-demand</li> <li>Application server integration with SDX</li> </ul>
Improved game-play	During game sessions, the EXEtender application server provisions, through the SDX, low-latency for the clients, to assure best user experience.	<ul style="list-style-type: none"> <li>Provisioning of guaranteed low latency during game-play</li> <li>Real-time signaling for low latency</li> <li>Application server integration with the SDX</li> </ul>



**CORPORATE HEADQUARTERS AND SALES HEADQUARTERS FOR NORTH AND SOUTH AMERICA**  
 Juniper Networks, Inc.  
 1194 North Mathilda Avenue  
 Sunnyvale, CA 94089 USA  
 Phone: 888-JUNIPER (888-586-4737)  
 or 408-745-2000  
 Fax: 408-745-2100  
[www.juniper.net](http://www.juniper.net)

**EAST COAST OFFICE**  
 Juniper Networks, Inc.  
 10 Technology Park Drive  
 Westford, MA 01886-3146 USA  
 Phone: 978-589-5800  
 Fax: 978-589-0800

**ASIA PACIFIC REGIONAL SALES HEADQUARTERS**  
 Juniper Networks (Hong Kong) Ltd.  
 Suite 2507-11, Asia Pacific Finance Tower  
 Citibank Plaza, 3 Garden Road  
 Central, Hong Kong  
 Phone: 852-2332-3636  
 Fax: 852-2574-7803

**EUROPE, MIDDLE EAST, AFRICA REGIONAL SALES HEADQUARTERS**  
 Juniper Networks (UK) Limited  
 Juniper House  
 Guildford Road  
 Leatherhead  
 Surrey, KT22 9JH, U. K.  
 Phone: 44(0)-1372-385500  
 Fax: 44(0)-1372-385501

Copyright 2005, Juniper Networks, Inc. All rights reserved. Juniper Networks, the Juniper Networks logo, NetScreen, NetScreen Technologies, the NetScreen logo, NetScreen-Global Pro, ScreenOS, and GigaScreen are registered trademarks of Juniper Networks, Inc. in the United States and other countries.  
 The following are trademarks of Juniper Networks, Inc.: ERX, ESP E-series, Instant Virtual Extranet, Internet Processor, J2300, J4300, J6300, JProtect, J-series, J-Web, JUNOS, JUNOScope, JUNOScript, JUNOSe, M5, M7i, M10, M10i, M20, M40, M40e, M160, M320, M-series, MMD, NetScreen-5GT, NetScreen-5XP, NetScreen-5XT, NetScreen-25, NetScreen-50, NetScreen-204, NetScreen-208, NetScreen-500, NetScreen-5200, NetScreen-5400, NetScreen-IDP 10, NetScreen-IDP 100, NetScreen-IDP 500, NetScreen-Remote Security Client, NetScreen-Remote VPN Client, NetScreen-SA 1000 Series, NetScreen-SA 3000 Series, NetScreen-SA 5000 Series, NetScreen-SA Central Manager, NetScreen Secure Access, NetScreen-SM 3000, NetScreen-Security Manager, NMC-RX, SDX, Stateful Signature, T320, T640, and T-series. All other trademarks, service marks, registered trademarks, or registered service marks are the property of their respective owners. All specifications are subject to change without notice.  
 Juniper Networks assumes no responsibility for any inaccuracies in this document. Juniper Networks reserves the right to change, modify, transfer, or otherwise revise this publication without notice.