Recovery as a Service – Delivered from HP’s CloudSystem

Leverage the #1 Ranked Recovery as a Service Platform with HP Cloud Technologies from CloudSystem to the HP Cloud OS.
Introduction

Cloud Computing has fundamentally changed the way Disaster Recovery ("DR") and Business Continuity ("BC") services are offered, leaving traditional “build-it” BC/DR providers scrambling to secure customers who now have the option of more flexible and lower-cost Cloud-enabled solutions. In tandem, the Cloud has facilitated dramatic growth in the size of the BC/DR market as services traditionally only affordable for Enterprises have now become economically viable for the larger marketplace.

Many service providers, including leading Telcos, VARs and MSPs, have responded to the burgeoning opportunity in the BC/DR space by offering Recovery as a Service ("RaaS") delivered from their respective Clouds. RaaS has quickly proven to be a market-changing offering and has effectively turned the BC/DR world upside down.

In 2013 Gartner Inc. released a Critical Capabilities Assessment (CCA) on the RaaS industry, naming a new entrant into the RaaS arena and anointing them as the #1 global RaaS provider. This was the first time in over 30 years that an incumbent legacy player, such as IBM and SunGard, had been bumped from the top tier ranking, illustrating a tectonic shift in both the Cloud Services Provider and the BC/DR industry. RaaS has opened the door for Cloud Service providers to enter the old guard’s closed BC/DR ecosystem.

Recovery as a Service provides both versatility and the ability to enable a Cloud Provider quickly, permanently altering the BC/DR market landscape. Vendors that were previously on the outside looking in at the $5.7 Billion dollar BC/DR industry can now rapidly become significant players in this high-growth market.

According to Forrester Research, Gartner, TechNavio and others, Geminare’s patented platform is the underlying technology that is driving Cloud Service Provider ("CSP") success in the RaaS market, powering over 50% of today’s RaaS Service Providers.

CSPs have a unique opportunity to be market leaders with their infrastructure-as-a-service and Cloud offerings by leveraging the stickiness and technological advantages of the Geminare-enabled RaaS solutions. To this end, the Geminare/HP Partnership is a perfect match, allowing the HP partner ecosystem to leverage HP CloudSystem, HP Cloud OS, OpenStack and other HP-enabled technologies to launch their own customized RaaS programs.
Solution Overview

Geminare’s Cloud Recovery is a Cloud-based, server replication solution that addresses business continuity and disaster recovery requirements by leveraging the flexibility and cost-effective deployment models that the Cloud can offer. Cloud Recovery can be deployed in hours, and provides near instantaneous failover and failback capability for your production servers (both physical and virtual) to the Cloud platform of your choice, and is tightly integrated with the HP Cloud technologies.

Introduction

Geminare’s Cloud Recovery allows organizations to conduct business as usual during unexpected server failures or planned downtime through auto-failover and redirection of end users to a real-time Replica Server in a secure HP CloudSystem Data Center.

Failover is rapid and seamless, with users and applications up and running in minutes, ensuring continued service and uninterrupted access for end customers.

Business Challenge

Enterprises are faced with constrained budgets, reduced IT staff and the ever increasing demand from business units and end users to deliver “business services” with reliability and scalability never before seen.

These operation centers must operate “non-stop” if they are to stay competitive in today’s on-demand business environment. Interruptions due to unexpected system failures, software corruption, maintenance windows, outside threats or disasters will affect sales, service and productivity, and may threaten a company’s very survival.

Cloud Computing has provided flexibility for Enterprises to leverage the flexible on-demand resources for their BC/DR needs and for the first time has also provided an affordable and manageable way to ensure non-stop business operations and total data protection. RaaS has enabled a business continuity service that leverages the capability and capacity of the Cloud to ensure continuous availability of applications and data in the event of a critical system failure or disaster… and is delivered without additional IT infrastructure costs and without adding internal IT specialists.
Integration with HP CloudSystem

Integration Models

Fig 1.1 – Integration Models

Geminare’s Cloud Recovery offering operates at the block-level, is hypervisor-independent, and can be easily deployed across the HP CloudSystem architecture.

Integration Plan

The technical integration of the Geminare solution is part of the overall Partner On-Boarding Program, and consists of the following steps:

Architecture Review

For new Data Center deployments, Geminare conducts a detailed review of the Partner’s current DC environment, including, but not limited to, the HP CloudSystem:

i) Cloud infrastructure
ii) Connectivity options such as VPNs and VLANs
iii) Access to and integration with existing management HP CloudSystem portals, and
iv) The HP CloudSystem virtualization technology.

Deployment Planning

Using the compiled Data Center review information, Geminare will then create Service Deployment Guides in conjunction with HP that are tailored to the HP CloudSystem specific architecture and delivery models, and include specific additional hardware, software and networking requirements.
**Data Center Service Setup**

Based on the deployment guides, Geminare and HP will work together to implement the Geminare RaaS services within the HP CloudSystem environment, tracking the following milestones:

i) Hardware provisioning  
ii) Software licensing and installation  
iii) Testing  
iv) Certification  
v) Sign-off on the technical documentation library
Business Benefits

Companies that elect to offer Geminare RaaS from their HP CloudSystem environment can be confident that they are offering proven, best-in-class business continuity solutions to a market that is poised to explode in the next five years. A 2013 MarketsandMarkets Analyst report projects a global RaaS market that will grow from $640.85m in 2013 to $5.77B in 2018 – reflecting CAGR of 55%.

While the financial opportunity is massive, the benefits of bringing RaaS to market often extend beyond the value inherent in realizing new, incremental recurring revenue. Current RaaS providers have experienced significant add-on infrastructure sales linked to their RaaS solutions, and many have reported more strategic customer relationships as their status has elevated beyond that of a commodity service provider.

Furthermore, RaaS is deemed a “sticky” service, and not subject to churn or slippage like commodity offerings.

Financial Model

RaaS offered from HP CloudSystem affords service providers the opportunity to generate substantial new recurring revenue, while achieving significant margins. Given the premium nature of RaaS and the staggering ROI it affords end customers, price points per RaaS server deployed are usually in the $400/month range, with a recent ThinkStrategies Inc Business Value Award citing a case where Geminare RaaS delivered an impressive 100,000% ROI.

In the first three years of service, a RaaS provider that generated modest market customer gains of approximately 350 customers with an average 15 servers each, would generate approximately $22million in new revenues—a mere 1% of the estimated 2016 global market share.

<table>
<thead>
<tr>
<th>SAMPLE PARTNER Business Case Totals</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
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</thead>
<tbody>
<tr>
<td>New Customers</td>
<td>75</td>
<td>121</td>
<td>124</td>
</tr>
<tr>
<td>Cumulative Customers</td>
<td>75</td>
<td>191</td>
<td>303</td>
</tr>
<tr>
<td>New Servers Deployed</td>
<td>1,139</td>
<td>1,817</td>
<td>1,853</td>
</tr>
<tr>
<td>Total Replicated Servers Deployed - Passive Mode</td>
<td>1,139</td>
<td>2,956</td>
<td>4,809</td>
</tr>
<tr>
<td>Total Servers in Active Failover Mode (Failover = 1 Day)</td>
<td>26</td>
<td>67</td>
<td>108</td>
</tr>
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</table>

**Revenue Sources**

<table>
<thead>
<tr>
<th></th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
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<tbody>
<tr>
<td>One-Time Set-Up Fees</td>
<td>$568,592</td>
<td>$906,479</td>
<td>$924,776</td>
</tr>
<tr>
<td>Monthly Fees/Replicated Server - Passive Mode</td>
<td>$2,212,568</td>
<td>$11,424,966</td>
<td>$21,319,449</td>
</tr>
<tr>
<td>Servers in Active Failover Mode (Failover = 1 Day)</td>
<td>$44,239</td>
<td>$228,436</td>
<td>$426,270</td>
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<tr>
<td>Gross Revenue</td>
<td>$2,825,399</td>
<td>$12,559,881</td>
<td>$22,670,495</td>
</tr>
</tbody>
</table>

Fig 1.2 – Business Case Financial Model
Expansion of Portfolio

Like any offering that achieves mass-market status, such as raw network services, Cloud computing is fast becoming commoditized. Companies that want to avoid the price-cutting game can embrace Geminare RaaS on HP CloudSystem as a solution that entrenches their status as a “Strategic Vendor” and a high-value provider of Cloud-enabled DR Services and Solutions.

<table>
<thead>
<tr>
<th>USD (Millions)</th>
<th>Recovery as a Service (RaaS) Worldwide Forecast (2013)</th>
</tr>
</thead>
<tbody>
<tr>
<td>DR Service Providers</td>
<td>$314.91</td>
</tr>
<tr>
<td>Cloud Service Providers</td>
<td>$162.84</td>
</tr>
<tr>
<td>Telecom Providers</td>
<td>$73.44</td>
</tr>
<tr>
<td>Technology Suppliers</td>
<td>$61.78</td>
</tr>
<tr>
<td>Other Players</td>
<td>$27.88</td>
</tr>
<tr>
<td>Total Revenues</td>
<td>$640.85</td>
</tr>
<tr>
<td>YOY</td>
<td>51.50%</td>
</tr>
</tbody>
</table>

Source: MarketsAndMarkets Analysis 2013

Fig 1.3 – Analysts Market Forecast

Total market opportunity for RaaS alone is $5.7 Billion by 2018.

As a Strategic Vendor, companies are often afforded the opportunity to easily win business in markets widely deemed as lower down the value chain. Adding revenues from IaaS usage and additional services, the RaaS-associated revenue potential could easily surpass $10 Billion.

Utilization of the Cloud

Companies that are only offering IaaS solutions will find themselves at a distinct disadvantage when competing with organizations that have moved up the value chain by incorporating Geminare RaaS into their portfolio. RaaS affords businesses the opportunity to have strategic discussions with end clients, allowing them to better align their goals and services with the end-customer’s needs.

HP CloudSystem is the ideal platform for delivering RaaS solutions.
Solution Architecture

Overview
Geminare’s Cloud Recovery offering is sold as a managed, Cloud-hosted service that provides secure, real-time server replication with automatic failover and failback, ensuring data protection and high availability from an HP CloudSystem platform.

Failover
In the case of a server failure, scheduled downtime or a complete site loss, the Cloud Recovery service automatically redirects data and users to the HP CloudSystem Replica Servers, which operate in Failover Mode for the duration of the downtime event. Customers can securely access the replica environment from any remote location via the Internet, or continue to access it locally should their site remain available.

Failback
After running from the Replica Server for any period of time, failing a server back from the HP CloudSystem Cloud Recovery environment to the restored production servers—a process called Failback—is fast and transparent to end users, who continue working without any interruption regardless of whether they are onsite or remote. The Failback process synchronizes the changed data, while users continue to access their applications and data files, and then seamlessly redirects users to the production environment.

Managed Cloud Services
This service is a comprehensive, turn-key Business Continuity and Disaster Recovery (BC/DR) solution tailored to the SME market, especially those that have limited or strained IT resources and budgets. Geminare Cloud Recovery is a subscription-based, managed service that eliminates the need to purchase, install, oversee and support hardware, operating systems, application software, BC/DR software and DR data center facilities—helping customer eliminate upfront capital expenses, excessive deployment time and demands on IT resources.

The solution provides automated 24x7 BC/DR server protection, can be installed without any disruption to your operations in typically less than 24 hours and is integrated with top-tier public and private Cloud Providers. Cloud Recovery helps SMEs meet their continuous availability needs easily within the limits of their staff and budget, allowing IT to meet business and compliance accountability in a challenging economic environment.
Benefits to the End Customer

Protection Within Hours
Geminare’s Cloud Recovery starts with an online Readiness Assessment (RA) process to identify your mission-critical servers and applications that require continuous availability. Once the RA has been completed, secure communications channel is established to one or more of the server locations allowing essential applications and servers to be replicated to the Cloud and fully protecting businesses from unplanned server outages and negative economic impact.

Complete Control
Geminare’s Cloud Recovery service provides both partners and end customers auto-failover capabilities and easy, secure access to Geminare’s online Control Panel—a patented web-based interface that provides real-time visibility to protected servers and networks through the Virtual Network Operating Center (NOC). The virtual NOC is an automated engine that watches over the protected network environment 24/7 and allows monitoring of the environment status in real-time. And in the event of a production server interruption, the VNOC allows for instant failover to the replica environment in the Cloud.

In addition to ensuring business as usual during server downtime, Cloud Recovery affords businesses the opportunity to manage resources more effectively by scheduling system changes and updates on their timetable—even during normal business hours—with the guarantee of continuous application availability.

No Capital Investment Required
Geminare’s Cloud Recovery requires no capital investment for the end customers. Customers are billed on a monthly basis for each replicated server at prices far more economical than a traditional build-it-yourself solution.
RaaS Architecture Deployment Models

**Service Overview**
Customers Servers are protected within the HP CloudSystem platform by real-time ongoing data replication and controlled through the centralized Management Portal. Upon the declaration of a disaster, the Replica will become active with the click of a button and users will be redirected.

The Geminare RaaS solution, deployed on the HP CloudSystem infrastructure, can be configured in 2 ways: Premises-to-Cloud, and Cloud-to-Cloud.

1. **Customer Premises-to-Data Center Cloud Continuity**
   – Single HP CloudSystem Deployment
Replication between customer premises and an HP CloudSystem Data Center protects individual customer sites, whether they are using private or hybrid Clouds.

![Diagram of Customer Premises-to-Cloud Architecture](image)

**Fig 1.4 - Customer Premises-to-Cloud Architecture**

**Premises-to-Cloud Architecture Configuration**

**Production Servers**
At the customer premises are the mission critical application servers that have been selected for Cloud Recovery protection. Since Cloud Recovery is a software based service, the protected Servers can be physical hardware or running in a virtualization platform.
Cloud Recovery Site
The recovery site is the HP CloudSystem platform that hosts the Replica servers on standby, waiting for a disaster to be declared.

Replication Controller
A Cloud Recovery Controller is deployed in the HP CloudSystem site next to the Replica servers to provide ongoing monitoring, management, and control of the RaaS Services.

2. Data Center-to-Data Center Cloud Continuity – Geographic DR Protection on HP CloudSystem
Replication between HP CloudSystem Data Centers protects customer production environments for customers already hosted in the HP CloudSystem.

Fig 1.5 – Cloud-to-Cloud Architecture

Cloud-to-Cloud Architecture Configuration

Production Servers
The customer production servers are hosted in an HP CloudSystem platform located in one Data Center location. Access to the servers are available externally by users and by the Customer’s own employees.

Cloud Recovery Site
An HP CloudSystem platform deployed in a geographically separate location hosts the Replica servers on standby, waiting for a disaster to be declared.
Cloud Recovery Solution Specifications

Cloud Recovery Includes

- Cloud-side Operating System, Supported Applications and Replication
- Cloud Compute and Storage assigned per protected system
- Asynchronous block-level replication of data from the protected servers to a secure Cloud
- The ability to run protected applications from the replica data center while in Failover mode
- Remote Access into the secure replica Cloud for end users when the primary environment is offline
- Real-time audit and reporting statistics on data transfer and Failover status
- Capability to add further servers, virtually eliminating the restriction on the number of protected servers within a single environment.

Real-time Data Replication

- Red Hat Enterprise Linux Server version 4 through 6.3, 6.4 (i386 and x86-64)
- SUSE Linux Enterprise Server 9 through 11 SP1 (i386 and x86-x84)
- CentOS version 4 through 6.3, 6.4 (i386 and x86-x64)
- Oracle Enterprise Linux 5.7 running Oracle 10.x or Oracle 11.x

Application Level Protection

- Microsoft IIS 6.0, 7.0, 7.5, 8.0
- Microsoft SharePoint Server 2007, 2010
- Microsoft SharePoint Foundation 2010
- Microsoft Dynamics CRM Server 4.0
- Oracle 10.x, 11.x

All Cloud Recovery End Customer Installations Require the Following

- HP CloudSystem running in 1 or more Data Centers.
- Network connectivity between the production server network and Replica server network (through VPN or private circuit).
Demonstration of the Solution

The test scenarios outlined here show that Geminare’s Cloud Recovery RaaS service can protect data much faster than traditional data shipping methods. The Cloud Recovery service was tested within 3 customer scenarios between two geographically separated Cloud environments. The customer scenarios were:

1. Microsoft Windows File Server with protected files and folder data
2. Microsoft Windows SQL Server with an end customer application database
3. Linux File Server running web site with a MySQL database backend

The parameters tested for each of these 3 scenarios included:

A. Initial Data Transfer Times and
B. Replication Times (Data Update / Database Update), as compared to Windows and Linux data transfer and update rates.

Cloud Recovery Results
Data transfer times show consistent values whether data is being transferred for the first time or as a result of new data being added to the environment. In the following graphs transfer time is measured in seconds, and therefore lower numbers indicate better performance. and the Geminare service yield much lower times over traditional data transfers.

Scenario 1 – Windows File Replication
The Geminare service yielded an improvement of approximately 3x the transfer rate (or 1/3 of the transfer time), as compared to initial transfers via standard FTP or data transfer techniques.
Scenario 2 – SQL Database Replication
Similar to the files and folders scenario, database changes are replicated to the remote replica DR system approximately 3x faster using Geminare service than the traditional data transfers.
**Scenario 3 – Linux Data Replication**

In a Linux environment, data transfer rates replicating to the remote replica DR system saw more than 2x the rate as compared to traditional data transfers.
Getting Started

Geminare’s Partner Enablement Program (PEP) provides a fast and simple process for our Partners to integrate with, learn about, brand and sell our products. Our team acts as an extension of our Partner’s sales force, which means that we interact with our Partners’ customers when appropriate, we generate and respond to leads, and we drive customers to Partner-sponsored campaigns to support our Partners in moving the sales process along until the end-client is ready for a quote from the Partner. Each Partner on-boarding process is unique, and the following is an overview of the high-level components.

<table>
<thead>
<tr>
<th>Solution Models</th>
<th>Service Enablement:</th>
<th>Sales Enablement:</th>
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<tbody>
<tr>
<td></td>
<td>✓ Service agreements</td>
<td>✓ Sales model</td>
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<tr>
<td></td>
<td>✓ Licensing model</td>
<td>✓ Pricing model</td>
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<tr>
<td></td>
<td>✓ Roles &amp; responsibilities matrix</td>
<td>✓ Sales toolkits</td>
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<table>
<thead>
<tr>
<th>Solution Overview</th>
<th>Service Education Sessions:</th>
<th>Sales Enablement:</th>
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<tbody>
<tr>
<td></td>
<td>✓ RaaS solution overview</td>
<td>✓ Management overview</td>
</tr>
<tr>
<td></td>
<td>✓ DC setup guidelines</td>
<td>✓ Support overview</td>
</tr>
</tbody>
</table>

| Architecture      | Detailed Review of Partner Data Center: | Sales Enablement: |
|                   | ✓ Cloud infrastructure           | ✓ Portal access / integration |
|                   | ✓ Connectivity (VPN, VLANs, etc.) | ✓ Virtualization technology |

<table>
<thead>
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<th>Deployment Planning</th>
<th>Creation of Service Deployment Guides:</th>
<th>Sales Enablement:</th>
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<tr>
<td></td>
<td>✓ Guides are tailored to the Partner’s specific DC architecture and delivery models, and include specific additional hardware, software and networking requirements.</td>
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<table>
<thead>
<tr>
<th>Data Center Setup</th>
<th>Implementation Based on DC Service Deployment Guides:</th>
<th>Sales Enablement:</th>
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<tbody>
<tr>
<td></td>
<td>✓ Hardware provisioning</td>
<td>✓ Process documentation library</td>
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<tr>
<td></td>
<td>✓ Software licensing &amp; installation</td>
<td></td>
</tr>
<tr>
<td></td>
<td>✓ Testing &amp; certification</td>
<td></td>
</tr>
<tr>
<td></td>
<td>✓ Technical documentation library</td>
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<tbody>
<tr>
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<td>✓ Product Group</td>
<td>✓ Training documentation library</td>
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<tr>
<td></td>
<td>✓ Sales Engineers</td>
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<tr>
<td></td>
<td>✓ Operations</td>
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<td></td>
<td>✓ Support</td>
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<th>Process Development</th>
<th>Jointly-established processes:</th>
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<td>✓ Process documentation library</td>
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<tr>
<td></td>
<td>✓ Billing, invoicing</td>
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</tr>
<tr>
<td></td>
<td>✓ Operations</td>
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<tr>
<td></td>
<td>✓ Support</td>
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