RampRate Benchmark & Strategic Guidance for SAMPLE CLIENT

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A Decision Hub for IT Outsourcing

The Decision Hub for Buyers, Suppliers, Thought Leaders and Advisors

RampRate Services
- Benchmarking
- Procurement Services
- Lifecycle Management
- Planning & Analysis

Enables

For

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## RampRate Clients

<table>
<thead>
<tr>
<th>Media/Broadcast</th>
<th>Finance</th>
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</thead>
<tbody>
<tr>
<td>CBS Music Entertainment, Sony BMG, ABC</td>
<td>JPMorgan, Thomas Weisel Partners</td>
</tr>
<tr>
<td>Radio Networks, Sony, Technicolor, SIRIUS</td>
<td></td>
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<tr>
<td>CBS SportsLine.com, MTV, Miramax, iFilm</td>
<td>FORTIS, accenture, Münchener Rück Munich Re Group</td>
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<td>CBS, SIRIUS, iFilm, Miramax</td>
<td>Goldman Sachs, ZURICH, ZURICH</td>
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<td>NPR, NBC News, SIRIUS, Miramax</td>
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<table>
<thead>
<tr>
<th>High-Tech</th>
<th>Gaming</th>
<th>Publishing</th>
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<td>Blizzard Entertainment, iGE, GNI</td>
<td>The McGraw-Hill Companies, Scholastic</td>
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<td>T-Mobile, Trend Micro, Sonic Foundry</td>
<td>Linden Lab, OGame, Primedia</td>
<td>KnightRipper, Rodale, PRIMEDIA</td>
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<tr>
<td>SanDisk</td>
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<table>
<thead>
<tr>
<th>Internet/E-Commerce</th>
<th>Web 2.0</th>
<th>Telecommunications</th>
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<tbody>
<tr>
<td>Expedia.com, audible.com, Advertising.com</td>
<td>Stickman, Operator 11, Relegence</td>
<td>AT&amp;T, DF, Level (3), CacheLogic</td>
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<tr>
<td>eBay, Myspace.com, Facebook, LinkedIn</td>
<td>JumpTV, ShoZu, Solid State Network</td>
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</tr>
<tr>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

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RampRate’s Hosting/Co-Location Practice

Deep Knowledge of Hosting / Data Center Infrastructure
- More than 100 years of combined experience running, using, and analyzing hosting
- Pedigrees include leadership positions at AT&T, Carlyle Group, Exodus, others

50+ Data Center Locations Assessed and / or Procured Last Year
- Total contract value of placed services exceeds $2.4b
- Hundreds of vendor quotes collected
- Strong repeat business and credibility in buyer and seller communities

Experience with Optimizing for Every Client Need
- Cost reductions of up to 57% without changing providers
- Time to market reductions by weeks or months
- Industry’s most stringent demands for power, cooling, connectivity
- Target geographies as narrow as 3 miles (urban) and 40 miles (suburb / rural)
## Key RampRate Functions in Data Centers

### Benchmark / Audit
- Review cost structure / allocation and compare to market, peers, end-user needs
- Recommendations on cost reduction / efficiency increases
- Recommendations on justification of cost / promotion of non-financial metrics

### Site Pre-selection
- Regional mechanisms – based on tax, power sources / costs, number / type of providers
- Local mechanisms – based on vendor reputation, facility tier and quality, distance to client

### Procurement
- Apples-to-apples comparisons of both vendors and offers
- Balanced scorecard to evaluate cost vs. SLA vs. location vs. vendor stability / support, etc.
- Negotiation services that build solid, long-lasting relationships that are almost never terminated before contract expiration (98% success rate to date)
Example Site Selection: US at State Level
(Similar Mechanisms Exist for EU)

- Clean Energy: Strict
- Clean Energy: Loose
- Co-lo: Vendor Neutrality
- Co-lo: Site Quality
- Co-lo: Site Quantity
- Cost: Space (SPY)
- Cost: Power (SPY)
- Cost: Power (Utility)
- Cost: Labor
- Cost: Network
- Cost: Tax Impact

More…

Example Site Selection: US at State Level
(Similar Mechanisms Exist for EU)

Select Layer
Category
Weight
Tax Category
20%
Low Impact Category
10%
Low & Medium Impact Category
10%
Co-lo Quantity Category
50%
Power Pricing Category
20%
Approve

Network Layer
None
AT&T
Cogent
Level 3
Qwest
Savvis
XO
Combination…

Use Presentation View for Demo

1-4-08
Data Center Benchmark and Strategy for CLIENT

SAMPLE DELIVERABLE
Executive Summary -- Top Line Results

CLIENT Does not Publicize its Best Qualities Adequately

- Cost often bundles elements that are not included in competitor offerings
- Top-line SLA metrics *appear* to be below market due to stringent measurement methods
- No material deficiency in *actual* service levels

**Recommendations:**

- Increase number of SLAs tracked and publicly promote each metric tracked
- Create and maintain a client portal to directly demonstrate service quality
- Use commonly accepted definitions for terms like “uptime” for apples-to-apples benchmarks
- Develop a competitive strategy and externally-validated answers to client objections

Value of CLIENT vs. Market Varies Greatly by Buyer Type

- Some elements are priced way below market; others moderately / significantly above
- One-size-fits-all model very favorable to: small, dense buyers with stringent SLA
- Large properties, low density hardware, and low SLA needs can do better elsewhere

**Recommendations:**

- Introduce a more nuanced pricing model with service level and size-driven tiers
- Reallocate costs from above-market ones (e.g. space) to below-market ones (e.g. power)
- Change charge model for data center space costs to a per-kilowatt basis
Executive Summary - Top Line Results

CLIENT has Difficulties in Forecasting Costs Accurately

- Retroactive charge model gives,… for service owners to plan ahead well
- Extremely rapid growth forces compromises rather than bargain-hunting
- Budgeted expenses,… even as a rough guideline when growing

- **Recommendations:**
  - Introduce incentives for capacity to be reserved – funded by commitments to vendors
  - Develop a “reasonable” budget in addition to the “optimistic growth” budget in place
  - Develop criteria for tactical outsourcing when specific sites fall below current costs

Leasing 3rd Party Space can Bring Tactical Value

- Savings of up to X% conceivable for a large but less-demanding buyer
- Smaller or highly latency-sensitive properties would not do as well
- Rapid expansion biggest barrier to,… facilities / networks
- Inability to identify / split out low-requirement properties biggest barrier for bandwidth

- **Recommendations:**
  - Develop a performance,… bandwidth to source to low bid at <$X / mbps
  - Identify costs of a “bare-bones” cost structure for properties,… services
  - Develop a request for quote with RampRate to identify tactical growth opportunities
Benchmark Project Methodology

CLIENT Comparison Against Outsourced Data Center Services
- Large sample size – hundreds of real-world quotes for space, power, labor, etc.
- Quantitative conclusions
- Price benchmark
- Comparison of service level guarantees in contract
- Comparison of actual performance vs. guarantee when available

Comparison Against In-sourced / Shared Services Organizations
- Includes peers in the financial services industry
- Smaller sample size
- Focused on best practices
- Focus on outcome, not contract
- Qualitative conclusions
## Top-Line Performance Graph by Line Item

### Overall Data Center Spend

<table>
<thead>
<tr>
<th></th>
<th>Client</th>
<th>Peer Average</th>
<th>Market Median</th>
</tr>
</thead>
<tbody>
<tr>
<td>Labor (on-site only)</td>
<td>$170,000</td>
<td>$190,000</td>
<td>$340,000</td>
</tr>
<tr>
<td>Power (per kWh)</td>
<td>$130,000</td>
<td>$75,000</td>
<td>$140,000</td>
</tr>
<tr>
<td>Space (per KVA)</td>
<td>$300,000</td>
<td>$350,000</td>
<td>$150,000</td>
</tr>
<tr>
<td>vs. Market</td>
<td>-4.8%</td>
<td>-2.4%</td>
<td>0.0%</td>
</tr>
<tr>
<td>vs. Peer</td>
<td>-2.4%</td>
<td>0.0%</td>
<td>2.4%</td>
</tr>
</tbody>
</table>

**Total Data Center budget for 2 core DCs is 4.8% lower than market, 2.4% lower than peers**

**Space costs are above market (due to location); power / on-site labor below**

**Internal costs likely overestimated for power / underestimated for labor**

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Top-Line Performance Graph: Labor Excluded

Non-Labor Data Center Spend

<table>
<thead>
<tr>
<th></th>
<th>Client</th>
<th>Peer Average</th>
<th>Market Median</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power (per kwh)</td>
<td>$130,000</td>
<td>$75,000</td>
<td>$140,000</td>
</tr>
<tr>
<td>Space (per KVA)</td>
<td>$300,000</td>
<td>$350,000</td>
<td>$150,000</td>
</tr>
<tr>
<td>vs. Market</td>
<td>48.3%</td>
<td>46.6%</td>
<td>0.0%</td>
</tr>
<tr>
<td>vs. Peer</td>
<td>1.2%</td>
<td>0.0%</td>
<td>-31.8%</td>
</tr>
</tbody>
</table>

Tactical local co-location could save CLIENT 48% or more on facilities
Both Loc1 and Loc2 Central appear higher than market
As with peers, Tier IV vs. Tier III data center needs play a role
Budget Allocation

Budget Allocation Averages - "System Costs" Excluded

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Operating Costs

People Costs

System Costs

- Electricity
- Racks
- Project Mgmt
- System monitoring
- Engg. And installation
- Service
- Space
- Cooling equipment
- Power equipment

This analysis does not adjust costs for volume, but uses raw numbers – differences come from staffing / real estate space used, not unit rates.

Market rates represented in more detail in the chart to the right.

Primary takeaway: budget structure masks weight of labor in overall cost levels.
Top-Line Performance Graph by Line Item

FOR ILLUSTRATION ONLY

Client Performance Vs. Market & Peers

Percentile in Market: 92 45 86 25 90 71 86 64 13 84

Vs. Market Median: -5.9% 66.7% 25.0% -17.1% -25.9% 31.8% -41.7% -44.4% -26.8% -22.2%

Vs. Peer Average: -20.6% -1.6% -0.5% 1.1% -12.0% -4.0% -27.3% 1.2% 12.3% -57.5%

Percentile: If CLIENT were a vendor, what % of offers would be lower than its rates?

Vs. Market Median: How much above / below 50th percentile would CLIENT’s offer be?

Vs. Peer Average: How do CLIENT costs compare to average of peer costs?
### Detailed Summary

<table>
<thead>
<tr>
<th>Category</th>
<th>Metric</th>
<th>Quantities / Unit Rates per Month</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>CLIENT Quantity</td>
<td>CLIENT Rate</td>
</tr>
<tr>
<td>Space</td>
<td>Useable Sq. ft.</td>
<td>99282</td>
<td>$14.48</td>
</tr>
<tr>
<td></td>
<td>or Racks / Cabinets</td>
<td>1637</td>
<td>$155.23</td>
</tr>
<tr>
<td></td>
<td>or KVA to Equip*</td>
<td>4010</td>
<td>$69.48</td>
</tr>
<tr>
<td>Power</td>
<td>kwh used by IT Equipment*</td>
<td>26374</td>
<td>$0.24</td>
</tr>
<tr>
<td></td>
<td>OR Amps at 110V</td>
<td>36616</td>
<td>$17</td>
</tr>
<tr>
<td>Labor</td>
<td>Level 1 Hours</td>
<td>161334</td>
<td>$67</td>
</tr>
<tr>
<td></td>
<td>Level 2 Hours</td>
<td>78000</td>
<td>$12</td>
</tr>
<tr>
<td></td>
<td>Level 3 Hours</td>
<td>78000</td>
<td>$118</td>
</tr>
<tr>
<td>Storage</td>
<td>GB - Disk</td>
<td>12,393,748</td>
<td>$4.9</td>
</tr>
<tr>
<td></td>
<td>GB - Tape</td>
<td>2,075,995</td>
<td>$0.41</td>
</tr>
<tr>
<td>Network</td>
<td>Mbps of IP Transit</td>
<td>300</td>
<td>$36.28</td>
</tr>
</tbody>
</table>

* Preferred Metric.

Shaded cells indicate more data is required.
SAMPLE Detailed Drill-Down for CLIENT
Space – Price per Rack

Benchmark of Price per Rack / Cabinet or equivalent footprint

- Rack count estimated from known KVA loads based on 2.45 KVA / rack
- CLIENT is in the Xth percentile, Y% below median
Space – Price per Square Foot

Benchmark of Price/Useable Sq. ft.
- Rate calculated by dividing real estate costs by estimated useable square footage
- Useable square footage estimate based on x sq ft per rack
- CLIENT is in the X\textsuperscript{th} percentile Y\% above median
Space – Price per-Kw hosted

Benchmark on a Per-Kw Basis is the Most Advanced Way of Tracking Costs

- Data center market is fundamentally constrained by power / cooling, not physical space
- Pricing per Kw allows apples to apples comparisons between modern (high density) and legacy data centers
- By this metric, CLIENT is in the Xth percentile, Y% below median

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Market Pricing for Kw - Space
Power Costs per Kwh

Benchmark of Power Pricing Based on Actual Usage and Utility Bills

- Assumes that average usage is X% of peak
- Considers actual utility bills – which may be inaccurate for locations with office space
- CLIENT is Y% below median in the Xth percentile despite this overhead
- Any further reduction would likely require geographic relocation
- Market pricing trend is upwards, so maintaining these costs will be a win

![Market Pricing for Kwh](image_url)
Power Costs per Amp

Benchmark of Power Pricing Based on Amperage of Rack Circuits

- Assumes that peak loads are X% of rated amperage
- More precise estimate than on a per-kwh basis
- More popular (but less favorable to buyers) charging model in the broad market
- CLIENT is at Xrd percentile, Y% below median
Labor: Primarily On-site Remote Hands

Benchmark of Labor 1 – Significantly Below Median, on par With Peers

- Below market cost for first-level support (Xth percentile, Y% below median)
- Rates assume X hours of annual productive labor / non-manager FTE
- Rates include management overhead & G&A
- Market charges a premium based on 24x7 availability & rapid response time
- Peer organizations & Client assume X% utilization – which may or may not be real
Cost per 1GB per Month on a Redundant SAN or NAS-based Storage Utility

- CLIENT cost calculated based on weighted average of chargeback rates
- X\textsuperscript{th} percentile, Y\% above median
- Sample too small for tape-based storage curve (market charges per drive, not GB)

Source: RampRate, 2007
Network: 1 Mbps of IP Transit

Cost per 1 Mbps of Traffic to the Internet Cloud
- Xth percentile; Y% below market – primarily due to vendors selected
- Significantly higher than peers
- WAN expenditures are based on custom route pricing that’s not easily benchmarked
Follow-On Study: RampRate Data Center Greening
RampRate’s Green Data Center Commitment

Made as Part of Clinton Global Initiative and The Green Grid

Reduce Client Investment in Non-Renewable Energy by $10M

- At current electrical rates, a reduction of ~100 million kilowatt hours
- Translates into:
  - 152,000,000 pounds of CO2 emissions
  - 800,000 pounds of SO2
  - 490,000 pounds of Nitrogen Oxide

3 Levels of Client Commitment to Data Center Emissions Reduction

- Efficiency Improvement – green initiatives align with cost reduction
- Tiebreaker – green data centers are given a preference other factors being equal
- Sacrifice – business forgoes benefit or incurs cost to gain environment impact

RampRate’s Focus: Efficiency Improvements and Tiebreakers

- Vast majority of data center greening can be achieved with neutral or positive impact on the bottom line
4 Current Paths Being Implemented with Clients

**IT Hardware Efficiency**
- Which servers are used? Are they the right fit for the business task?
- Consolidation / upgrades of servers to blades, dual core, DC-powered systems
- Virtualization to reduce power-intensive resource utilization such as CPU and I/O

**Data Center Infrastructure Efficiency**
- Is the UPS and HVAC equipment sized right for current / upcoming needs?
- Is Tier 4 (2N+2) redundancy really needed in all the data centers?
- Are business users encouraged to monitor and manage power consumption?

**Geographic Efficiency**
- Is the data center located in a geography with low HVAC costs and renewable power?

**Data Center Vendor Tiebreakers**
- Is the vendor on an environmentally friendly grid?
- Does the vendor use geothermal heat exchange or similar for cooling?
- Does the vendor use renewable energy for backup power?
Case Studies / Inefficiencies Remedied to Date

Fortune 100 Global Media Company
- Benchmark revealed misaligned incentives for internal customers – power was “free”
- Designed new pricing structure to weight power consumption appropriately

Major Financial Services Firm
- Challenged universal Tier 4 mandate
- Separation of mission-critical from other hardware to improve efficiency by 10%+

Another Financial Services Leader
- Found 0%-20% CPU utilization in distributed computing grid benchmark
- I/O gating factors to be examined to develop remediation plan

Buying Guidance Towards Lower Emissions
- Directed initiatives towards Pacific Northwest (65%+ is hydro) and France (78% nuclear)
- Identified vendors that were best in class in managing power use
- Helped source co-lo using DC power and closely coupled cooling for high-density blades

Partnership Strategy for Metrics

Application of Green Grid’s PUE and DCE ratings
- Benchmarking against peers by data center tier, configuration, use scenario
- Drill-down and remediation

“Processor to Riverbed” Model
- Early stage joint project with top high-tech firm
- Detailed drill-down into environmental impact of each IT decision
- Findings to be validated with broad peer group

Research for Political Action Groups
- Should governments provide incentives / tax breaks for green IT decisions? If so, how?

RampRate’s Buying Ecosystem
- Green fit rating for SPY Index
- Enforcing pricing models that fight over-provisioning of power as a profit driver

Continued Refinement of Clinton Global Initiative Commitments
Essential Part of Broad-Based Searches

- Used more when specific location is not essential
- Disaster recovery is top scenario
- Difficult in geographically constrained deployments

Potential Hosting Providers

<table>
<thead>
<tr>
<th>Metric</th>
<th>Count</th>
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<tbody>
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<td>Total universe</td>
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</tr>
<tr>
<td>Region</td>
<td>207</td>
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<td>Address</td>
<td>207</td>
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<td>Tax constraints</td>
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<tr>
<td>Power costs</td>
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<tr>
<td>Power availability</td>
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<tr>
<td>DCE Rating</td>
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<tr>
<td>Space - amount</td>
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<tr>
<td>Space - density</td>
<td>46</td>
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<tr>
<td>Hurricane resistance</td>
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<td>On-site fuel</td>
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<tr>
<td>Redundancy</td>
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<td>Carrier neutrality</td>
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<td>Total bandwidth reach</td>
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<td>Overall peering</td>
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<td>&quot;Green&quot; data center</td>
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<td>Provider competence</td>
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<td>Historical pricing</td>
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<tr>
<td>RFQ sent to</td>
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</tr>
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</table>
Further Initiatives On Tap

Optimization of Physical Layout of Facility
- Going beyond the hot-aisle / cold-aisle to model and optimize airflow
- Commitment to closely coupled cooling projects

Data Center Infrastructure Fit
- UPS: Technology, topology, modularity
- DC power designs for blades, storage, etc.
- Power economization modes

Server-level Optimization
- Server consolidation & virtualization
- Power-down sleep modes vs. grid approach

Publicity for Vendors and Users of Green Data Centers
- White papers, case studies, etc.
- Creation of lists & indices enumerating top leaders

Source: Sawyer, Richard “Making Large UPS Systems More Efficient.”
Working Together with RampRate

Data Center Efficiency / Environmental Impact Audit

- How does your organization compare with its peers and dedicated ISP facilities?
- What are potential paths to improve from within?
- When is an outsourced solution better than self-owned facilities?
- What are the business decisions with greatest environmental impact?

Vetting of Existing and Prospective 3rd-party Hosting Relationships

- Are environmentally friendly vendors utilized?
- Are the locations used optimal for renewable energy / low HVAC impact?
- How to build a balanced scorecard including both green factors and business need?
- If external co-location or disaster recovery is planned, how to buy from the right environmentally conscious vendor at the market rate while hitting deadlines?

Ecosystem Research

- There is an ecosystem of green-friendly corporations, entities, initiatives
- Who would make the best partners, preferred vendors, good investments?
RampRate Sourcing Advisors

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Offices also in New York, Los Angeles, Boston, Chicago, Phoenix, and Seattle