Software and workloads used in performance tests may have been optimized for performance only on Intel microprocessors. Performance tests, such as SYSmark and MobileMark, are measured using specific computer systems, components, software, operations and functions. Any change to any of those factors may cause the results to vary. You should consult other information and performance tests to assist you in fully evaluating your contemplated purchases, including the performance of that product when combined with other products.

Relative performance is calculated by assigning a baseline value of 1.0 to one benchmark result, and then dividing the actual benchmark result for the baseline platform into each of the specific benchmark results of each of the other platforms, and assigning them a relative performance number that correlates with the performance improvements reported.

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Results have been estimated based on internal Intel analysis and are provided for informational purposes only. Any difference in system hardware or software design or configuration may affect actual performance.

Results have been simulated and are provided for informational purposes only. Results were derived using simulations run on an architecture simulator or model. Any difference in system hardware or software design or configuration may affect actual performance.

Intel does not control or audit the design or implementation of third party benchmarks or Web sites referenced in this document. Intel encourages all of its customers to visit the referenced Web sites or others where similar performance benchmarks are reported and confirm whether the referenced performance metrics are accurate and reflect performance systems available for purchase.

Intel® AES-NI requires a computer system with an AES-NI enabled processor, as well as non-Intel software to execute the instructions in the correct sequence. AES-NI is available on select Intel® processors. For availability, consult your reseller or system manufacturer. For more information, see Intel® Advanced Encryption Standard Instructions (AES-NI).

Intel® Hyper-Threading Technology Available on select Intel® Xeon® processors. Requires an Intel® HT Technology-enabled system. Consult your PC manufacturer. Performance will vary depending on the specific hardware and software used. For more information including details on which processors support HT Technology, visit http://www.intel.com/info/hyperthreading.

Intel® Turbo Boost Technology requires a Platform with a processor with Intel Turbo Boost Technology capability. Intel Turbo Boost Technology performance varies depending on hardware, software and overall system configuration. Check with your platform manufacturer on whether your system delivers Intel Turbo Boost Technology. For more information, see http://www.intel.com/technology/turboboost.

No computer system can provide absolute security under all conditions. Intel® Trusted Execution Technology (Intel® TXT) requires a computer system with Intel® Virtualization Technology, an Intel TXT-enabled processor, chipset, BIOS, Authenticated Code Modules and an Intel TXT-compatible measured launched environment (MLE). Intel TXT also requires the system to contain a TPM v1.s. For more information, visit http://www.intel.com/technology/security. In addition, Intel TXT requires that the original equipment manufacturer provides TPM functionality, which requires a TPM-supported BIOS. TPM functionality must be initialized and may not be available in all countries.

Intel® Virtualization Technology requires a computer system with an enabled Intel® processor, BIOS, and virtual machine monitor (VMM). Functionality, performance or other benefits will vary depending on hardware and software configurations. Software applications may not be compatible with all operating systems. Consult your PC manufacturer. For more information, visit http://www.intel.com/go/virtualization.

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Intel product plans in this presentation do not constitute Intel plan of record product roadmaps. Please contact your Intel representative to obtain Intel’s current plan of record product roadmaps.

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データセンターを高速化... 既存のアプリケーション、SAN、またはNASの変更は必要ありません。
インテル® Cache Acceleration Software (CAS) 概要

1. 初期の読み込みでは、データをバックエンド・ストレージから読み込み SSD のキャッシュにコピーします
2. 次の読み込みでは、データを DRAM システムメモリーへ移動します
3. 以降の読み込みでは、ハイ・パフォーマンスな DRAM や SSD シピードで返す
4. すべてのデータをバックエンド・ストレージとキャッシュの両方に同期化して書き込み

既存のアプリケーションを高速化（データベース、分析ツール、仮想化、…）
インテル® CAS の使用例

<table>
<thead>
<tr>
<th>データベース</th>
<th>特定のデータベース、テーブル、またはデータファイルをキャッシュ</th>
</tr>
</thead>
<tbody>
<tr>
<td>仮想化</td>
<td>キャッシュデバイスとして SSD を使用して IT インフラを拡大（VMware と Hyper-V）</td>
</tr>
<tr>
<td>ホスティング &amp; クラウド</td>
<td>特定のホスト・アプリケーションを高速化</td>
</tr>
<tr>
<td>ビッグデータ</td>
<td>キャッシュレイヤとして SSD を追加してビッグデータ、分析ツール、Hadoop* ワークロードを高速化</td>
</tr>
</tbody>
</table>

*Other names and brands are property of their respective owners
VMware* 5.5 と NVMe サーバーの仮想化
キャッシュドライブとしてインテル® CAS & インテル® P3700 SSD の利点:
複数の仮想化のワークロードのパフォーマンスを向上

テクノロジー・デモンストレーション: インテル® P3700 NVMe SSD キャッシュデバイスとインテル® CAS を使用してストレージ & I/O インテンシブ ワークロードを高速化

すべてのテストで共通の構成項目:
Dual Intel® Xeon E5-2680 @ 2.70GHz, 96GB DDR3, VMware 5.5*, Intel® 2600 GZ Server
合計 8 VM:
Microsoft Server 2008R2, 8GB DDR3, 2 Cores
VM の起動ワークロード:
2 x 4K OLTP (100% random, 87% Rd/ 33% Wr, 4K),
2 x Exchange 2010 - EDB (32K:90%/73%read, 32K:7%/100%read, 32K:3%/100/write)
2 x Web Server (100% Read, 100% Read, 4K:43%, 8K:30%, 16K:4%,32K:9%,64K:10%,128K:2%,512K:2%)の試験が行われました

構成 1 – ベースライン HDDs
Seagate 1TB SATA 7.2K RPM HDD for OS & App
LSI MegaRAID SAS 9271-8i HBA, Driver: 6.705.5.0
8ea Seagate 146GB 15K RPM SAS in RAID 5 for Data

構成 2 – HDDs + Intel CAS with Intel SSD
Seagate 1TB SATA 7.2K RPM HDD for OS & App
LSI MegaRAID SAS 9271-8i HBA, Driver: 6.705.5.0
8ea Seagate 146GB 15K RPM SAS in RAID 5 for Data
Intel P3700-800GB NVMe SSD as Caching Device
Intel CAS Linux release 2.6.0 (WT-RO) caching IOBW.tst file

構成 3 – Intel PS3700 SSD
Seagate 1TB SATA 7.2K RPM HDD for OS & App
Intel P3700-800GB NVMe SSD for Data , not utilizing 8ea Seagate 15K RPM drives/LSI MegaRAID HBA

Intel 社にて 10/31/2014 にデータを集計
Microsoft* Hyper-V と NVMe サーバーの仮想化

キャッシュドライブとしてインテル® CAS & インテル® P3700 SSD の利点:

複数の仮想化のワークロードのパフォーマンスを向上

1台の物理サーバー上に8 VMを構成し、8 VM間のIOMeterで合計IOPsのパフォーマンスを計測。以下のパフォーマンス結果が得られました

<table>
<thead>
<tr>
<th>ワークラード</th>
<th>パフォーマンス</th>
</tr>
</thead>
<tbody>
<tr>
<td>Media Streaming</td>
<td>最大 3倍高速化Xgain</td>
</tr>
<tr>
<td>Web Server</td>
<td>最大 57倍高速化</td>
</tr>
<tr>
<td>Exchange Server</td>
<td>最大 3倍高速化 gain</td>
</tr>
<tr>
<td>Transactional DB</td>
<td>最大 31倍高速化</td>
</tr>
</tbody>
</table>

すべてのテストで共通の構成項目:
Dual Intel® Xeon E5–2680 @ 2.70GHz, 96GB DDR3, Microsoft Hyper-V Server 2012R2, Intel® 2600 GZ
合計 8 VM:
Microsoft Server 2008R2, 8GB DDR3, 2 Cores
VMsの起動ワークロード:
2 x 4K OLTP (100% random, 67% Rd/ 33% Wr, 4K),
2 x Exchange 2010-EDB (32K:90%/73%read, 32K:7%/100%write),
2 x Web Server (100% Random, 100% Read, 4K:43%, 8K:30%,16K:4%,32K:9%,64K:10%,128K:2%,512K:2%),
2 x Windows Media Player (100% Seq, 100% Read, 32K)

構成 1 – ベースラインHDDs
Seagate 1TB SATA 7.2K RPM HDD for OS & App
LSI MegaRAID SAS 9271–8i HBA, Driver: 6.705.5.0
8ea Seagate 146GB 15K RPM SAS in RAID 5 for Data

構成 2 – HDDs + Intel CAS with Intel SSD
Seagate 1TB SATA 7.2K RPM HDD for OS & App
LSI MegaRAID SAS 9271–8i HBA, Driver: 6.705.5.0
8ea Seagate 146GB 15K RPM SAS in RAID 5 for Data
Intel P3700–800GB NVMe SSD as Caching Device
Intel CAS Linux release 2.6.0 (WT–RO) caching IOBW.tst file

構成 3 – Intel PS3700 SSD
Seagate 1TB SATA 7.2K RPM HDD for OS & App
Intel P3700–800GB NVMe SSD for Data , not utilizing 8ea Seagate 15K RPM drives/LSI MegaRAID HBA

10/31/2014 にデータを集計

テクノロジー・デモンストレーション: インテル® P3700 NVMe SSD キャッシュデバイスとインテル® CAS を使用してストレージ & I/O インテンシブ ワークロードを高速化

Non-Volatile Memory Solutions Group

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*Other names and brands may be claimed as the property of others.
Jetstress* と Exchange Server のワークロード
Microsoft Jetstress 2013 は Exchange Server のワークロードで、Microsoft Exchange をシミュレーションします
キャッシュドライブとしてインテル® CAS & インテル® P3700 SSD の利点:
より短時間で Microsoft Office Exchange Server Transactions を増加

Intel technologies may require enabled hardware, specific software, or services activation. Software and workloads used in performance tests may have been optimized for performance only on Intel microprocessors. Performance tests, such as JetStress 2013, are measured using specific computer systems, components, software, operations and functions. Any change to any of those factors may cause the results to vary. You should consult other information and performance tests to assist you in fully evaluating your contemplated purchases, including the performance of that product when combined with other products.

*Other names and brands may be claimed as the property of others

すべてのテストで共通の構成項目:
Dual Intel® Xeon E5-2680 @ 2.70GHz, 32GB DDR3, Microsoft Server 2012R2, Intel® 2600 GZ, JetStress 2013 Exchange Server workloads, 1000Mailbox/200MB per mailbox, 197GB Database Size

構成 1 - ベースライン HDDs
Seagate 1TB SATA 7.2K RPM HDD for OS & App
LSI MegaRAID SAS 9271-8i HBA, Driver: 6.705.5.0
4ea Seagate 146GB 15K RPM SAS in RAID 0 for Data

構成 2 - HDDs + Intel CAS with Intel SSD
Seagate 1TB SATA 7.2K RPM HDD for OS & App
LSI MegaRAID SAS 9271-8i HBA, Driver: 6.705.5.0
4ea Seagate 146GB 15K RPM SAS in RAID 0 for Data
Intel P3700-800GB NVMe SSD as Caching Device
Intel CAS Linux release 2.6.0 (WT-RO) caching IOBW.tst file

構成 3 - Intel PS3700 SSD
Seagate 1TB SATA 7.2K RPM HDD for OS & App
Intel P3700-800GB NVMe SSD for used for Data, not utilizing 4ea Seagate 15K RPM drives/LSI MegaRaid HBA

10/31/2014 にデータを集計
以下のWebサイトからリソースを入手可能です:


Webサイトから入手可能なリソース:

ソフトウェア・ダウンロード:
• Intel® I/O Assessment Tool – How Intel® CAS can benefit you
• 30-Day Trial Software – Try Before You Buy

概要紹介ビデオ:
• Intel Caching Explained Animation
• Introduction to Intel® CAS

ケーススタディとブリーフノート:
• Accelerating Business Analytics with Intel® CAS and Intel® Solid State Drives
• Accelerating Analysis and Simulation with Intel® CAS and Intel® Solid State Drives
• 3rd Party Performance Analysis Case Studies
• Intel® CAS Product Brief
• Intel® CAS Solution Brief