



DerivActiv, LLC
(dba HedgeStar)
Minneapolis, Minnesota

**Service Organization Controls Report on the Description
and Tests of Operating Effectiveness of its Hedging and
Investment Valuation and Monitoring System**

SOC 1SM Type 2 Report

January 1, 2016 to September 30, 2016



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CPAs and Consultants

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DerivActiv, LLC

Service Organization Controls Report on the Description and Tests of Operating Effectiveness of its Hedging and Investment Valuation and Monitoring System

January 1, 2016 to September 30, 2016

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Section 1

DerivActiv, LLC's Assertion on Controls



DerivActiv, LLC's Assertion on Controls

We have prepared the description of DerivActiv, LLC dba HedgeStar's (the "Company") hedging and investment valuation and monitoring system (the "description") for user entities during some or all of the period January 1, 2016 to September 30, 2016, and their auditors who have a sufficient understanding to consider it, along with other information, including information about controls implemented by user entities themselves, when assessing the risks of material misstatements of user entities' financial statements.

We confirm, to the best of our knowledge and belief, that:

1. The description fairly presents the hedging and investment valuation and monitoring system made available to user entities during some or all of the period January 1, 2016 to September 30, 2016 for processing their transactions. The Company uses various pricing and web-hosting subservice organizations to support the hedging and investment valuation and monitoring system. The description in Section 3 of this document includes only the control objectives and related controls of the Company and excludes the control objectives and controls of these third party organizations. The criteria we used in making this assertion were that the description:
 - a. Presents how the system made available to user entities was designed and implemented to process relevant transactions, including, if applicable:
 - i. The types of services provided including, as appropriate, the classes of transactions processed.
 - ii. The procedures, within both automated and manual systems, by which services are provided, including, as appropriate, procedures by which transactions are initiated, authorized, recorded, processed, corrected as necessary, and transferred to reports and other information prepared for user entities.
 - iii. The related accounting records, supporting information, and specific accounts that are used to initiate, authorize, record, process, and report transactions; this includes the correction of incorrect information prepared for user entities.
 - iv. How the system captures significant events and conditions, other than transactions.
 - v. The process used to prepare reports and other information for user entities.
 - vi. The specified control objectives and controls designed to achieve those objectives, including, as applicable, complementary user entity controls contemplated in the design of the Company's controls.
 - vii. Other aspects of our control environment, risk assessment process, information and communication systems (including related business processes), control activities, and monitoring controls that are relevant to processing and reporting transactions of user entities.



- b. Does not omit or distort information relevant to the scope of the hedging and investment valuation and monitoring system, while acknowledging that the description is presented to meet the common needs of a broad range of user entities of the system and their financial statement auditors, and may not, therefore, include every aspect of the hedging and investment valuation and monitoring system that each individual user entity and its auditor may consider important in its own particular environment.
 - c. Includes relevant details of the changes to the hedging and investment valuation and monitoring system during the period covered by the description.
2. The controls related to the control objectives stated in the description were suitably designed and operated effectively throughout the period January 1, 2016 to September 30, 2016 to achieve those control objectives. The criteria we used in making this assertion were that:
- a. The risks that threaten the achievement of the control objectives stated in the description have been identified by management;
 - b. The controls identified in the description would, if operating as described, provide reasonable assurance that those risks would not prevent the control objectives stated in the description from being achieved; and
 - c. The controls were consistently applied as designed, and manual controls were applied by individuals who have the appropriate competence and authority.

Section 2

Independent Service Auditor's Report



Independent Service Auditor's Report

Management of
DerivActiv, LLC

Scope

We have examined DerivActiv, LLC dba HedgeStar's (the "Company") description of its hedging and investment valuation and monitoring services system throughout the period January 1, 2016 to September 30, 2016 (the description), and the suitability of the design and operating effectiveness of controls to achieve the related control objectives stated in the description. The description indicates that certain control objectives specified in the description can be achieved only if complementary user entity controls contemplated in the design of the Company's controls are suitably designed and operating effectively, along with related controls at the service organization. We have not evaluated the suitability of the design and operating effectiveness of such complementary user entity controls.

The Company uses various subservice organizations including a third-party market pricing service organization for obtaining daily market rates. In addition, the Company uses a third-party web-hosting service organization to host all web-based reports. The Company's control objectives and related controls, which are listed in Section 3 of this document, include only the control objectives and related controls of the Company and exclude the control objectives and related controls of these subservice organizations. Our examination did not extend to controls at the subservice organizations.

Service Organization's Responsibilities

In Section 1 of this report, the Company has provided an assertion about the fairness of the presentation of the description and suitability of the design and operating effectiveness of the controls to achieve the related control objectives stated in the description. The Company is responsible for preparing the description and for the assertion; including the completeness, accuracy, and method of presentation of the description and the assertion; providing the services covered by the description; specifying the control objectives and stating them in the description; identifying the risks that threaten the achievement of the control objectives; selecting the criteria; and designing, implementing, and documenting controls to achieve the related control objectives stated in the description.

Service Auditor's Responsibilities

Our responsibility is to express an opinion on the fairness of the presentation of the description and on the suitability of the design and operating effectiveness of the controls to achieve the related controls objectives stated in the description, based on our examination. We conducted our examination in accordance with attestation standards established by the American Institute of Certified Public Accountants (AICPA). Those standards require that we plan and perform our examination to obtain reasonable assurance about whether, in all material respects, the description is fairly presented and the controls were suitably designed and operating effectively to achieve the related control objectives stated in the description throughout the period January 1, 2016 to September 30, 2016.

An examination of a description of a service organization's system and the suitability of the design and operating effectiveness of the service organization's controls to achieve the related control objectives stated in the description involves performing procedures to obtain evidence about the fairness of the presentation of the description and the suitability of the design and operating effectiveness of those controls to achieve the related control objectives stated in the description. Our procedures included assessing the risks that the description is not fairly presented and that the controls were not suitably designed or operating effectively to achieve the related control objectives stated in the description. Our procedures also included testing the operating effectiveness of those controls that we consider necessary to provide reasonable assurance that the related control objectives stated in the description were achieved. An examination engagement of this type also includes evaluating the overall presentation of the description and the suitability of the control objectives stated therein, and the suitability of the criteria specified by the service organization and described in management's assertion in Section 1. We believe that the evidence we obtained is sufficient and appropriate to provide a reasonable basis for our opinion.

Inherent Limitations

Because of their nature, controls at a service organization may not prevent, or detect and correct, all errors or omissions in processing or reporting transactions. Also, the projection to the future of any evaluation of the fairness of the presentation of the description, or conclusions about the suitability of the design or operating effectiveness of the controls to achieve the related control objectives is subject to the risk that controls at a service organization may become inadequate or fail.

Opinion

In our opinion, in all material respects, based on the criteria described in the Company's assertion in Section 1 of this report:

- The description fairly presents the Company's hedging and investment valuation and monitoring system process that was designed and implemented throughout the period January 1, 2016 to September 30, 2016.
- The controls related to the control objectives stated in the description were suitably designed to provide reasonable assurance that the control objectives would be achieved if the controls operated effectively throughout the period January 1, 2016 to September 30, 2016, and user entities applied the complementary user entity controls contemplated in the design of the Company's controls through the period January 1, 2016 to September 30, 2016.
- The controls tested, which together with the complementary user entity controls referred to in the scope paragraph of this report, if operating effectively, were those necessary to provide reasonable assurance that the control objectives stated in the description were achieved, operated effectively throughout the period January 1, 2016 to September 30, 2016.

Description of Tests of Controls

The specific controls tested and the nature, timing, and results of those tests are listed in Section 4 of this report.

Intended Use

This report, including the description of tests of controls and results thereof in Section 4 of this document, is intended solely for the information and use of the Company; user entities of the Company's hedging and investment valuation and monitoring system during some or all of the period January 1, 2016 to September 30, 2016, and the independent auditors of such user entities, who have a sufficient understanding to consider it, along with other information about controls implemented by user entities themselves, when assessing the risks of material misstatements of user entities' financial statements. This report is not intended to be and should not be used by anyone other than these specified parties.

Wipfli LLP

Wipfli LLP

November 18, 2016
St Paul, Minnesota

Section 3

Description of System Provided by DerivActiv, LLC

Description of System Provided by DerivActiv, LLC

Company Description

DerivActiv, LLC, (hereafter referred to as “HedgeStar” or the “Company”) has been providing independent valuations of financial derivatives to financial institutions, corporate institutions, health care institutions, public and private universities, nonprofit organizations and municipalities located throughout the United States since 2004. Currently HedgeStar has approximately 450 user entities. HedgeStar employs approximately 12 full-time and part-time employees during the normal five-day operating week. HedgeStar is located in Minneapolis, Minnesota, USA.

HedgeStar provides various services to its user entities, including:

- Independent market valuations for hedging products
- Independent market valuations for bond issues
- Cash flow verifications
- Threshold notification for posting collateral
- Hedge accounting assistance
- Fair value measurements per Accounting Standards Codification (ASC) 820 (formally known as Financial Accounting Standards ASC 815/820 and Governmental Accounting Standard 53/72)
- Electronic storage and client access of transaction documents
- Historical market data

Organization and Administration

Management Oversight

HedgeStar is responsible for input and maintenance of client data within its computer software programs that support the valuation of financial instruments for its user entities. Functional and administrative responsibilities at HedgeStar are broadly defined and communicated through an organizational chart. Personnel are well-informed of their individual job responsibilities and the lines of authority within HedgeStar, and written job descriptions have been established for all key positions.

HedgeStar’s organization can be broken out into the following general areas:

- Senior Management: Composed of the Chief Executive Officer, Head of Sales, Chief Operating Officer (COO), Director of Accounting and Administration and Director of Information Technology (IT). Senior management is responsible for general oversight of daily operations, strategic planning, and monitoring/managing client relationships.

Description of System Provided by DerivActiv, LLC

Organization and Administration (Continued)

Management Oversight (Continued)

- Information technology (“IT”) management and administration: HedgeStar has one full-time Director of Information Technology dedicated to the management and administration of the Company’s network and application systems. HedgeStar also subscribes to an IT management provider that monitors all servers and the computer performing network updates. The network is monitored, and an IT resource is on-call 24 hours per day to monitor IT functions.
- Operations: HedgeStar has four full-time staff who complete the day-to-day operations and client service offerings. Operations staff responsibilities are outlined in detail in this section under the heading “Operations.”
- Sales/Marketing: HedgeStar has a Head of Sales and a Marketing Manager who are responsible for establishing new client relationships, managing existing client relationships, and communicating new service offerings to existing and potential user entities. Marketing assesses and develops new products. New products are identified through client request, internal staff needs, industry requirements, or other industry developments, and are subject to approval by Senior Management.

The listed duties/responsibilities complement rather than conflict with one another. Each employee has a specific job function with active daily oversight by Senior Management. Most employees also provide backup for additional areas on an “as available” basis (depending on working hours, vacations, sick time, etc.).

It is currently the policy of HedgeStar to limit vacations of full-time personnel to maintain adequate coverage of operations and IT tasks in order to ensure all operations of HedgeStar continue to be performed without interruption during vacations and extended absences. For Operations, all duties regularly performed by an absent employee are performed by the remaining personnel. HedgeStar is under contract with an outside consultant to provide assistance for IT functions as needed.

HedgeStar ensures that personnel are adequately qualified for their job responsibilities through the initial screening process done by Senior Management. Senior Management interviews new hires, evaluates personal references and performs background checks of each new employee. All hiring decisions are approved by Senior Management. All new hires receive an employee handbook that outlines policies and procedures of the Company. All new employees must sign an acknowledgement form to verify they have reviewed the employee handbook.

Senior Management is responsible for providing the training and development to qualify personnel for their roles and responsibilities. Personnel training is accomplished primarily through supervised on-the-job training and instruction. Certain operations and IT staff may complete industry-specific training. Cross-training of employees is completed through rotation of key positions and operational support and coverage when other employees are absent or on vacation.

Description of System Provided by DerivActiv, LLC

Organization and Administration (Continued)

Management Oversight (Continued)

Senior Management has established the L-10 Management Committee (the “L-10”), consisting of employees representing IT, Accounting/Finance, Operations and Sales/Marketing, to set priorities, policies, and procedures; approve budgets; and monitor ongoing activities including batch processing concerns, problems, and unusual operational situations. The L-10 meets weekly.

At least monthly, management regularly reviews financial results and the financial condition of the Company. Accountant-prepared financial statements are reviewed by management.

Information Technology Oversight

IT management reports to Senior Management and the Board of Directors. HedgeStar has developed an information systems (“IS”) manual to document departmental policies, practices, and procedures and provide oversight for IT staff and senior management. Some of the areas currently covered in the IS manual include:

- On-site hardware/software listing
- Equipment configurations
- Computer operations schedules and procedures
- Physical security of the processing center
- Disaster recovery plan
- Job descriptions
- Local area network/end user computing
- Internet usage

Management has contracted with an independent third party to assist with the development, maintenance, and monitoring of various IT processes as follows:

- Internal and external vulnerability monitoring
- Policy implementation and analysis
- Assistance with various IT functions

Findings and recommendations are communicated to management, and potential weaknesses are addressed by management through policy and procedure changes.

Description of System Provided by DerivActiv, LLC

Organization and Administration (Continued)

Risk, Vendor, Client, and Change Management Processes

When creating a service or product offering, HedgeStar's Senior Management reviews the potential for success and identifies areas of exposure or potential difficulty. Once identified, alternatives are discussed and analyzed to determine the best blend of risk and return.

Senior Management annually reviews insurance policies and coverage for both physical assets and employee fidelity. Senior Management maintains current insurance coverage.

Vendor review is a combination of research, interviews, references, site visits (when applicable), and testing to determine the optimum workable solution. Vendors are evaluated by Senior Management based on criticality of the vendor. Vendors are discussed at L-10 meetings and evaluated as needed. Contracts are maintained for critical vendors and outline the responsibilities of each party.

HedgeStar requires signed written contracts for all new user entities. Standard contracts identify each party's responsibilities to maintain confidentiality and ownership of data. Client contracts are signed by both HedgeStar and the client.

L-10 meetings are HedgeStar's primary governance function. The following topics are subject to discussion, analysis, review and approval during the weekly L-10 meetings:

- Potential business and significant software changes,
- Significant expenditures and vendor contracts,
- Organizational changes such as reporting structure or managerial changes, and
- Significant operational or process changes.

Application Management

HedgeStar utilizes the following application software programs in day-to-day operations:

- **Primary Pricing System ("PPS"):** The main pricing software used for most client trades, allowing the Company to provide derivative valuation services to its user entities. This internally developed application was created to provide valuations of hedging transactions based on a series of data inputs. HedgeStar has a dedicated full-time IT employee involved in application software development/maintenance and has contracted with a third party to provide assistance with the development/maintenance of the application as needed. The PPS is housed on a server located at HedgeStar's headquarters.
- **Reval:** A web-based treasury and risk management application used for hedge accounting. Reval uses cloud technology to store derivative trade inventory and to process valuations, effectiveness tests and general ledger entries for client hedge relationships. Reval provides a more automated, scalable solution for delivering hedge accounting to clients. HedgeStar does not have access to the business logic of the Reval application or to the underlying market data that Reval supplies to its customers. Reval provides a SOC 1 and SOC 2 report on an annual basis that HedgeStar reviews and uses to enhance its system of internal control.

Description of System Provided by DerivActiv, LLC

Application Management (Continued)

- Account Management System (“AMS”): An internally developed SQL database is used to interface PPS with a web-hosting server and generate output data. All output reports available to user entities are independent of the pricing software. User entities have no access to modify facts and assumptions within the PPS system maintained at HedgeStar. The AMS is housed on a server located at HedgeStar’s headquarters.
- Website: The Company has developed a website that provides user entities and prospective user entities with general information on the services provided by HedgeStar, industry developments, links to websites related to financial product management services, and an overview/history of the Company. In addition, current user entities are able to review, analyze, and evaluate valuation reports generated during daily processing. The website is maintained and monitored by in-house IT staff. The website is hosted by a third-party vendor, and all client-prepared reports are maintained on servers located at the third-party vendor.

IT personnel regularly evaluate the operating effectiveness of the two operations software programs (PPS/AMS) to determine when updates or changes are required. Changes to the PPS are completed through use of a Microsoft Team Foundation server that tracks all software modifications.

Modifications are tested by operations staff as changes occur. All changes are tested on a duplicate offline version of PPS software application. Upon approval of the software modification, IT staff will implement modifications on the live PPS application. All changes/upgrades are discussed at L-10 meetings and approved by senior management. IT personnel have obtained and maintain contracts with vendors to assist with PPS maintenance and upgrades.

The COO and Director of Information Technology review the Reval SOC 1 and SOC 2 on an annual basis. This review helps to identify any control gaps or revisions necessary to sufficiently mitigate operational risk with use of the Reval system. Enhancements or changes resulting from this review are communicated to the broader Operations team.

Procedures for acceptable vendor security practices have been formally identified within the Company’s policies, which have been approved by Senior Management. Management regularly meets to evaluate and discuss vendor relationships.

Hardware maintenance (both reactive and preventative) is performed primarily by internal IT personnel with backup support from external consultants. The external consultants used are the same consultants who have assisted in the creation and implementation of the existing systems. External consultants are used as subject matter experts and as a backfill to cover the internal IT staff’s vacation and other times they are out of the office. Software maintenance is handled in a similar fashion as for hardware maintenance, as described above.

Description of System Provided by DerivActiv, LLC

Physical Security

Physical security of HedgeStar includes restricted facility access, protection of equipment, and various safety and emergency functions to provide protection against and early detection of hazardous environmental conditions or unauthorized access to the Company's equipment. Access to HedgeStar's office suite is restricted to two main entrances. HedgeStar employees are present during normal business hours and recognize visitors or unauthorized personnel. The floor plan is an "open office" format, and thus visitors and unauthorized personnel can be quickly identified by HedgeStar staff. Sprinklers are present throughout the office. Access to the building and office during non-business hours is granted by IT based on approvals by Senior Management. Vendors may gain access to critical areas of the office with a staff escort. Smoking is not allowed within the HedgeStar offices.

HedgeStar has a segregated secure server room maintained outside the main office space. Access to the server room is key controlled. Keys are maintained only by certain IT, operations, and management personnel. Locks to the server room are changed periodically. A visitor log is maintained within the server room which documents all non-employee access to the server room. Motion detectors are also present throughout the server room. Temperature and humidity within the server room is regulated by a dedicated air conditioner, as well as the building HVAC system. HedgeStar has installed multiple batter-powered uninterruptible power supply (UPS) devices as a redundant source of power for the server room. Each device is periodically tested.

HedgeStar web servers are hosted offsite by US Internet. US Internet is contracted to provide redundant power supplies, physical security devices, around-the-clock monitoring, backup services, patching, and redundant fail-over for the web hosting servers. HedgeStar management performs periodic visits to the vendor to ensure physical security appears appropriate.

Confidential documents are shredded when no longer needed. Retired computer equipment is retained on-site until data is thoroughly removed or destroyed.

Application/Network Security and Systems Backup

Application Security

Access to all computers' operating application software is managed by Network Domain restrictions. User identification codes and passwords are required to gain access to the Company's computer systems.

PPS

Access to the PPS application requires local software installation and both network and application user authentication. Operations personnel are present during normal business hours to ensure only authorized personnel are utilizing the PPS. Client data is segregated on the PPS through independent directory folders. Each client folder contains individual trade data. At the end of the day, terminals are shut down and require a network sign-on to reboot the computer.

Description of System Provided by DerivActiv, LLC

Application/Network Security and Systems Backup (Continued)

Application Security (Continued)

AMS

The AMS database is located on the local SQL server housed at HedgeStar. Access rights to the database are restricted by user identification code, and access is restricted to HedgeStar personnel only. All user identifications are maintained by IT staff, and access rights are restricted based on job responsibilities. Certain employees may access the database via VPN tunnel access.

Reval

Access rights to the Reval web-portal are restricted by user identification code, and access is restricted to HedgeStar personnel only. All user identifications are maintained by the COO, and access rights are restricted based on job responsibilities. New users and their Reval access are approved after new personnel have been hired and onboarded. Access rights for employees that have been terminated are removed from the Reval system.

Website

Client access to HedgeStar-prepared valuation reports occurs via secure website hosted by a third party. Secure socket layer 128-bit encryption is used for client access. Authentication requires a unique user identification code as well as a unique password. Passwords are suppressed during entry. User identification codes are restricted to authorized HedgeStar employees and client-authorized personnel. Client user identification codes are set up/modified/deleted by HedgeStar Operations staff. HedgeStar Operations staff are assigned user identification codes by the Director of IT. HedgeStar Operations staff and Director of IT have administrative access rights to all client data.

Network Security

HedgeStar has implemented security measures to protect its network by minimizing the threat from other networks including the Internet. A variety of hardware- and software-based tools including firewalls, routers, switches, audit logging, and monitoring have been deployed.

Industry-standard firewalls, switches, and routers have been implemented to provide a high level of availability of and security over the networks, systems, and data. The firewalls are strategically placed on the networks to filter data traffic according to predefined access rules. Configuration of the firewall systems for inbound traffic follows vendor recommendations and is based on the principle of least privilege, allowing only necessary and authorized protocols and services and denying all others. Administrative access to networking devices is limited to authorized IT personnel.

HedgeStar has retained an IT service vendor to subscribe to update notifications with the firewall provider to keep informed of published firewall system vulnerabilities and fixes/patches. The service vendor receives the notifications via e-mails from the vendors. The notifications report the vulnerability type, the impact, and remediation information. The firewall system software is maintained to run the current vendor versions.

Antivirus protection has been implemented at the server and workstation levels to protect HedgeStar's applications and data from infection by malicious code. The antivirus software is configured to receive virus definition updates from the software vendor on a regular basis.

Description of System Provided by DerivActiv, LLC

Application/Network Security and Systems Backup (Continued)

Network Security (Continued)

HedgeStar has implemented an intrusion detection system (“IDS”). Alerts and reports from the IDS are sent to the IT Department for investigation and remediation. HedgeStar has engaged a third-party to perform regular external vulnerability scans. All findings are reported to Senior Management.

Logical access controls are utilized to restrict access to HedgeStar’s networks and computer applications including the PPS and Reval applications. When a new employee is hired, Senior Management notifies the IT department and/or system administrators via e-mail to grant the employee access to IT resources. Employee access to IT resources is based on the employee’s job roles and responsibilities. Terminated employee user accounts and access rights are disabled or removed from the systems upon notification by Senior Management.

Written information systems policies and computer usage guidelines have been developed and distributed to HedgeStar employees to educate them on security, e-mail and Internet usage, and computer software licensing.

HedgeStar constructed its LAN using industry-standard networking operating systems. Access to the HedgeStar network, systems, and applications requires a unique user identification code for each user. Security groups are established, and users are added to the security groups based on their job responsibilities. Network administrative access is restricted to authorized HedgeStar IT network administrators only.

HedgeStar has established password standards to assist in controlling access to its network and systems. HedgeStar uses automated system utilities and functionalities whenever available to enforce password standards at the network operating system level. Password requirements adhere to industry best practice complexity requirements. System-provided default passwords are changed upon the installation of vendor-supplied software; default accounts that are not needed are disabled by IT personnel.

Systems Backup

Each night, HedgeStar systems are backed up to data files on backup storage media. It is the IT service provider’s responsibility to store and preserve storage media in a manner that would facilitate the reconstruction of data files in the event that any pricing data or a client’s current data files are lost for any reason. The digital media vendor supplies a weekly report on the status of backup procedures and to ensure stored data images can be recalled timely in the event of disaster or critical business disruption.

Description of System Provided by DerivActiv, LLC

Operations

General

Operations staff consist of four full-time employees. Operations staff are responsible for delivering both Valuation and Hedge Accounting services. Valuation services are delivered via website or e-mail and originate from the PPS system. Hedge Accounting services are delivered via e-mail and originate from the Reval system.

Valuations

Operations staff are responsible for new-client setup, input of trade data, preparation of cash flow analysis, processing of mark-to-market and fair value valuations, quality control checks, agency ratings, and client reporting. HedgeStar relies on information provided by the client for inputting data that will produce the valuation outputs. HedgeStar is not involved in the gathering or reconciling of information necessary to originate a hedging transaction.

New Client Setup

New user entities are set up in PPS by Operations staff as communicated from the Sales Department and/or management. A client file is created on the shared drive by Operations staff and includes a signed "subscription agreement," trade confirmations, and miscellaneous communications.

At the time of a new-client setup, the client communicates to the Company all users with access rights to review and monitor reports via HedgeStar's website. User identification codes and passwords to gain access to the website are assigned by operations personnel.

All client information is maintained electronically through AMS. Included in AMS is client contact information, reporting requests, collateral notification thresholds, authorized users, and trade detail. All client information is input by Operations personnel into AMS during the initial setup process.

Trade Activity

Each client is responsible for furnishing source documents for each trade that is to be valued by HedgeStar. All documentation, including trade confirmations, is received by Operations staff. Operations staff rotate duties and one of the four members are assigned responsibility for initially inputting trade information. All facts/assumptions from the trade confirmation are entered into PPS by Operations staff. All trades are assigned to individual client files within PPS. All new trades are reviewed by a second Operations staff person not involved in the original setup process. Once the trade has been reviewed and approved by Operations staff, the trade is valued during daily batch processing. Any hard copies of data with sensitive information (names, account numbers, balances, etc.) that are not maintained in the client's physical file are disposed of via a secured shred box.

On a daily basis, valuations from PPS are programmatically tested against previous values to determine whether the value falls within the statistical norm based on movements during the last 30 days. E-mail alerts are sent to the operations team, and any variances over a predetermined threshold are researched and resolved as needed.

Description of System Provided by DerivActiv, LLC

Operations (Continued)

Daily Processing

On each business day, HedgeStar runs a batch process to calculate updated valuations for an end-of-day valuation of derivative instruments. All batch processing runs automatically based on a run-time script. Market rates are obtained daily from third-parties and are interfaced electronically within AMS to update PPS. Operations personnel as well as senior management receive e-mail notifications indicating whether batches have run successfully or whether errors have occurred. All updated trade valuations are pushed to the web server daily for viewing by user entities.

Reporting

All output from the batch process is generated by AMS and is delivered to the client via the HedgeStar website on a daily basis. All reports, including daily valuations, can be viewed by authorized client employees. Report information cannot be modified through the website.

Additional valuation reports may be provided to user entities on a monthly, quarterly, or annual basis depending on contract terms with each individual client. These reports may include ASC 820 valuation reports. At a client's fiscal year-end, HedgeStar mails a letter to the client, representing the formal attestation to the correctness of the user entity's respective valuation. If a client requests notifications to occur at different points than when detailed above, HedgeStar will tailor the notification points to meet the request of the client. If any output is lost or damaged, the complete set of reports can be regenerated from the backup files kept at HedgeStar or data archived on the HedgeStar system. Each client can request reports that it finds suitable to fit its needs. No formal request procedures or forms are in place for user entities to request additional reports.

Hedge Accounting

Operations staff serve hedge accounting clients by creating hedge memos and establishing hedge instruments and hedged items in the Reval system. Operations staff are responsible for establishing hedge links, running effectiveness tests and generating reports that include fair values, effectiveness results and general ledger balances.

New Client Setup

New user entities are set up in Reval by Operations staff as communicated from the Sales Department and/or Senior Management. A client file is created on the shared drive by Sales and includes a signed "subscription agreement," trade confirmations, internal tracking worksheets, and miscellaneous communications.

A client entity is created in Reval by Operations staff. The client set-up process also includes assigning the client fiscal calendar, deliverables frequency, and assigning discount and credit curves for valuation purposes.

Description of System Provided by DerivActiv, LLC

Operations (Continued)

Trade Activity and Service Delivery

The service delivery process for hedge accounting begins with the Hedge Memo. The Hedge Memo includes key components to define the hedge relationship such as the client's risk management objective, nature of risk being hedged, description of hedging instrument and hedged item(s), counterparty risk, hedge effectiveness assessment (at inception and ongoing) and measurement of hedge ineffectiveness. The Hedge Memo is prepared by Operations staff and reviewed by the Hedge Accounting Manager or the COO. The Hedge Memo is then distributed to the client upon execution of the hedge instrument, or derivative.

Each client is responsible for furnishing source documents for each trade that is to be valued by HedgeStar. All documentation, including trade confirmations, is received by Operations staff. For the hedge instrument, all derivative terms from the trade confirmation are entered into Reval by Operations staff. For the hedged item, assumptions and terms representative of the hedged item and hedged risk are entered in Reval by Operations staff. Both the hedge instrument and hedged item are reviewed and approved by the Hedge Accounting Manager or COO.

After building the hedge instrument and hedged items, the hedge link is created by Operations staff. The hedge link is a tool used to assign both the hedge instrument and hedged item(s) to the hedge, select the hedged risk, retrospective/prospective testing methods, testing frequency and any Other Comprehensive Income (OCI) impacts. The hedge link is reviewed by either the Hedge Accounting Manager or COO.

On a monthly, quarterly or annual basis, hedge accounting reports are generated from the Reval system. Hedge accounting reports include the Fair Values report, Effectiveness report, and General Ledger Balances report. These reports are reconciled to one another by Operations staff to ensure the results are consistent. The reconciliation is shown in a control-check template called the TPS report. The TPS report includes affirmation of the Reval reports owed to the client, confirmation of signed subscription/engagement agreement, reconciliation results and a sign-off from the preparer and reviewer. The Reval reports are distributed to the client via e-mail.

Description of System Provided by DerivActiv, LLC

Operations (Continued)

Other Operations Activities

In addition to inputting and tracking trade valuations, Operations personnel complete various other services for user entities on a regular basis. All operations activities are tracked via a schedule maintained by the Operations department. This schedule, which is maintained on a shared online calendar, lists all functions to be performed on a daily basis by operations staff. A schedule is printed daily, listing all items required to be completed. Nonrecurring duties are rotated among staff monthly. Other operations activities include:

- Accounting Standards Codification (“ASC”) 820 Fair Value Measurements (formally known as Financial Accounting Standard 157) valuations: Certain user entities have requested fair value calculations per the provisions of ASC 820. These calculations vary from traditional mark-to-market calculations in that credit risk is incorporated into the fair value calculation. Management has extensively studied the provisions of ASC 820 to determine the best approach for determining ASC 820 valuations. Currently, all non-ASC 820 fair values are based on mid-market, mark-to-market pricing. ASC 820 valuations are prepared using a yield curve adjusted for client/counterparty credit risk. This adjustment is based on observable market yield curves based on ratings by national rating agency services. ASC 820 valuations are prepared monthly, quarterly, or annually based on client request. Management has provided a detailed memorandum to each ASC 820 client, outlining the ASC 820 valuation process. ASC 820 valuations are set up via PPS similar to normal valuation activities. ASC 820 valuations are provided to user entities via HedgeStar’s web reporting platform.
- Accounting and Financial Reporting of Derivatives for Entities Governed by the Governmental Accounting Standards Board (“GASB 53/72”): Certain user entities that prepare their financial statements according to GASB require a full range of services including performing certain calculations related to their derivatives, tracking the derivative valuations, calculating cash flows, producing the GASB 53/72 annual report for management, and helping the auditor prepare the additional disclosures that are now required for the annual report. Derivative valuations and cash flows are calculated through the PPS or Reval (depending on the client).

Complementary User Entity Controls

User entities must evaluate their own system of internal controls and management of risks. Since controls highlighted in the report occur at HedgeStar and cover only a portion of a comprehensive internal control structure, each user entity must address aspects of the internal control structure at their location. This section highlights those portions of the internal control structure that user entities have responsibility to develop and maintain. The items listed below include but are not limited to those areas which, in HedgeStar’s observations or experiences, describe the common control considerations among its user entities:

- User entities are responsible for reviewing terms of all contracts entered into with HedgeStar for accuracy and scope of work to be performed.
- User entities and their auditors should be aware of specific user entity responsibilities set forth in the subscription agreement.
- User entities are responsible for providing complete and final documents to support trade activity.

Description of System Provided by DerivActiv, LLC

Complementary User Entity Controls (Continued)

- User entities are responsible for initiating all trade and derivative activity through a third-party.
- HedgeStar is not intended to be a trading tool for the user entity, and therefore the user entity should not rely on HedgeStar's output for determining appropriate pricing for entering into or exiting from a security or derivative trade.
- User entities should determine that transactions are appropriately authorized, complete, and accurate.
- User entities are responsible for communicating any changes in derivative agreements, hedged items or hedge relationships.
- User entities should ensure output reports are reviewed by appropriate user entity personnel for completeness and accuracy and are reconciled to the general ledger and counterparty statements regularly.
- User entities should ensure output received from HedgeStar is routinely reconciled to relevant control totals such as recorded paydowns and that interest is agreed to amounts received.
- User entities should ensure that HedgeStar is informed of erroneously input data and that corrections are made.
- User entities are responsible for maintaining the integrity of their user identification codes and passwords for website access.
- User entities are responsible for communicating any changes in authorized personnel and related access rights. Changes related to authorized user entity personnel should be documented in writing to HedgeStar.
- User entities are responsible for evaluating the impact of credit agency rating changes in relationship to the derivative agreement. HedgeStar provides only notification of rating changes.
- Cash flow information provided by HedgeStar is for information purposes only and should not be relied on to verify actual cash receipts. All cash flow activity should be separately monitored and validated by user entities.
- For collateral posting, the user is responsible for requesting or posting collateral as required under the trade documents without notification from HedgeStar.
- User entities are responsible for evaluating the credit risk approach for fair value measurements under ASC 820/GASB 53/72. User entities are responsible for communicating the nonperformance risk methodology and adjustment process to their auditors.

Subservice Organizations

HedgeStar uses subservice organizations to perform a range of functions. The following describes the major subservice organizations utilized by HedgeStar:

- US Internet Corporation: US Internet Corporation provides web-hosting services for HedgeStar.
- Reval: HedgeStar uses Reval for hedge accounting services. Reval supports a web-based Software-as-a-Service platform that includes a valuation, analytics and reporting engine. Reval sources its market data from many different sources, most notably Thomson Reuters.

The above-mentioned subservice organizations are not subject to examination by Wipfli LLP. User entities are responsible for evaluation of controls specific to these subservice organizations.

Section 4

Description of Tests of Controls and Results

Description of Tests of Controls and Results

Objectives of the Examination

This report is intended to provide user entities of HedgeStar's hedging and investment valuation and monitoring system with information about HedgeStar's controls pertaining to its hedging and investment valuation and monitoring system and also to provide user entities and their financial statement auditors with information about the operating effectiveness of the controls that were tested. This report, when combined with an understanding and assessment of the controls in place at user entities, is intended to assist user entities' independent auditors in (1) planning the audit of user entities' financial statements and (2) assessing control risk for assertions in user entities' financial statements that may be affected by HedgeStar's controls.

The examination was restricted to those control objectives and the related controls specified by HedgeStar's management in the tables shown below under the heading "Control Objectives, Related Controls and Tests of Operating Effectiveness." HedgeStar's management believes these are the relevant key controls for the stated objectives and selected services provided to user entities of the hedging and investment valuation and monitoring system.

The control objectives and description of controls are the responsibility of HedgeStar's management.

Description of Testing Procedures Performed

This examination was conducted in accordance with the AICPA's Statement on Standards for Attestation Engagements ("SSAE 16"), which reports on the controls at a service organization relevant to the financial reporting at user entities, combined with the AICPA AT Section 801 standard for attest engagements.

In addition, our testing of the Company's controls was restricted to the control objectives and related controls listed in this section of the document and did not extend to controls described in Section 3 or to controls that may be in effect at user entities of the Company, and if certain complementary controls are not in place at the user entity, the Company's controls may not compensate for such a weakness.

Our tests of the effectiveness of controls included such tests as were considered necessary in the circumstances to evaluate whether those controls, and the extent of compliance with them, were sufficient to provide reasonable, but not absolute, assurance that the specified control objectives were achieved during the period January 1, 2016 to September 30, 2016. Our tests of the operational effectiveness of the controls were designed to cover a representative number of transactions throughout the period of January 1, 2016 to September 30, 2016, for each of the controls listed in this section, which are designed to achieve the specific control objectives.

Description of Tests of Controls and Results

Description of Testing Procedures Performed (Continued)

In selecting particular tests of operational effectiveness of controls, Wipfli LLP considered:

- Nature of the items being tested.
- Types of available evidential matter.
- Nature of the audit objectives to be achieved.
- Assessed level of control risk.
- Expected efficiency and effectiveness of the test.

As a part of the examination of the Company's controls, Wipfli LLP performed a variety of tests, each of which provided the basis for understanding the framework for controls, and determined whether the controls were actually in place and operating effectively with respect to the hedging and investment valuation and monitoring system in accordance with the Company's controls during the period from January 1, 2016 to September 30, 2016.

The procedures performed to test operating effectiveness are listed next to each of the Company's control procedures. Test procedures in connection with determining the operating effectiveness of controls include the following:

Test Procedure	Description
Inspection	Read documents and reports that contain an indication of performance of the control. This includes, but is not limited to, reading documents and reports to determine that authorization is evidenced and that transaction information is properly recorded and controlled and examining reconciliations and evidence of review to determine that outstanding items are properly monitored, controlled, and resolved.
Reperformance	Independently performed the relevant control. This includes, but is not limited to, comparing reconciliations to proper source documents, assessing the reasonableness of reconciling items, and recalculating mathematical solutions.
Observation	Witnessed the utilization of controls by Company personnel. This includes, but is not limited to, viewing the functionality of system applications, automated controls, and scheduling routines and witnessing the processing of transactions.
Corroborative Inquiry	Interviewed appropriate organizational personnel about the relevant control descriptions, processes, and procedures.

Description of Tests of Controls and Results

Results of Testing Performed

Test results are reported as “No exceptions noted,” or the exception is described.

The following tables describe the tests of operating effectiveness that were performed. The control objectives, along with the description of controls, are an integral part of management’s description of their system and were specified by the management of HedgeStar.

Description of Tests of Controls and Results

Management and Organization

Control Objective: Controls provide reasonable assurance that policies and procedures have been established to support HedgeStar enterprise functions.

Control Description	Description of Testing	Results of Testing
<p>HedgeStar has established leadership who has responsibility and accountability for the business. Management provides oversight of the business and is involved in day-to-day operations. Where possible, management responsibilities within the business have been segregated by appropriate functions.</p>	<p>Inspected organizational charts as of September 30, 2016, noting defined roles and responsibilities for each employee. Organizational chart provides a roadmap for oversight functions. Observed management presence during onsite visits. Inspected a sample of employee job descriptions noting responsibilities were defined.</p>	<p>No exceptions noted.</p>
<p>Management assumes responsibility for policy development and maintenance. Specific policies have been developed to address appropriate use of computers and network infrastructure. The written policies are updated periodically and reviewed by management.</p>	<p>Inspected a sample of written policies developed by management. Policies were evaluated for compliance with observed procedures.</p>	<p>No exceptions noted.</p>
<p>Management reviews employee's calendars to ensure that operations of HedgeStar continue to be performed without interruption during vacations and extended absences.</p>	<p>Inspected L-10 meeting minutes noting calendars were reviewed.</p>	<p>No exceptions noted.</p>

Description of Tests of Controls and Results

Management and Organization (Continued)

Control Objective: Controls provide reasonable assurance that the control environment of HedgeStar is periodically assessed and the results are communicated to management and user entities.

Control Description	Description of Testing	Results of Testing
Senior Management has designated certain employees to comprise the L-10 Committee. The committee meets weekly to discuss business or software changes, expenditures, vendor contracts, organizational changes, and operating or process changes.	Inspected L-10 meeting minutes noting discussion of business practices, software changes, expenditures, vendor contracts, organizational changes, and other operations.	No exceptions noted.
Management regularly evaluates insurance policies and coverage for IT assets and employee fidelity.	<p>Inspected L-10 meeting minutes noting insurance policies were reviewed within the past 12 months.</p> <p>Inspected insurance policy summaries noting coverage during the audit period.</p>	No exceptions noted.

Control Objective: Controls provide reasonable assurance that policies and procedures have been established to support new employee hiring and employee termination functions.

Control Description	Description of Testing	Results of Testing
Hiring needs are identified by Senior Management. Senior Management is involved in all new hire decisions. New hires are subject to background checks, including verification of educational and professional experience, character references, criminal history, and credit histories.	Inquired with Senior Management and determined that appropriate measures are performed during the interviewing and hiring process for new employees. Resumes, background checks, and evaluation of experience is completed as deemed appropriate. Hiring decisions are finalized by Senior Management. Formal employment agreements are drafted by Senior Management and signed by all new employees on hire date. Inspected signed employment agreement for all full time employees hired between January 1, 2016 and September 30, 2016.	No exceptions noted.

Description of Tests of Controls and Results

Management and Organization (Continued)

Control Description	Description of Testing	Results of Testing
New employees must sign a confidentiality clause and acknowledge receiving an Employee Handbook. All employees receive an Employee Handbook summarizing policies and procedures. New employees receive general training and orientation on policies and procedures.	Inspected confidentiality clause and Employee Handbook acknowledgement signed by all new full-time employees hired January 1, 2016 through September 30, 2016. Through inquiry with management, training and orientation procedures are informal in nature. All training is preapproved by Senior Management.	No exceptions noted.
HedgeStar has established procedures for setting up new employees and terminating employees related to physical and system access rights.	Inquired of Senior Management noting new employee hires and terminations are verbally communicated to applicable department managers and staff. Changes to physical and system access rights are performed by IT staff at the direction of Senior Management.	No exceptions noted.

Control Objective: Controls provide reasonable assurance that policies and procedures have been established to select and manage third-party service contracts to ensure that roles and responsibilities of third parties are clearly defined, adhered to, and continue to satisfy requirements.

Control Description	Description of Testing	Results of Testing
The management team evaluates, at least annually, current vendor relationships for continuity. New vendors are discussed as approved by the L-10 committee.	Inspected L-10 meeting minutes noting discussion of vendor relationships.	No exceptions noted.
Management has entered into formal contracts for shared services with vendors rated "critical" covering hardware and software services.	Inspected contracts maintained for "critical" vendors involved with providing daily pricing subscription and technology services noting roles and responsibilities were defined.	No exceptions noted.

Description of Tests of Controls and Results

Application Management

Control Objective: Controls provide reasonable assurance that internally created software applications are developed and implemented with proper segregation of duties, testing, redundancy, and documentation.

Control Description	Description of Testing	Results of Testing
HedgeStar has an Operations Committee that meets weekly. Included in weekly meetings are discussions related to application changes or upgrades.	Inquired of management to ensure Operations Committee meetings address applications to determine when patches, upgrades, or changes are necessary. Inspected Operations Committee minutes for January 1, 2016 through September 30, 2016 noting application patches, upgrades, and changes were discussed.	No exceptions noted.
Development, test, and production environments are properly segregated to prevent unauthorized changes.	Inquired of Chief Operations Officer, noting all software changes are approved by Senior Management prior to implementation.	No exceptions noted.
IT personnel regularly evaluate the operating effectiveness of internally developed software to determine when updates or changes are required.	Inquired of IT Manager, noting issues or potential changes are discussed by the Operations Committee.	No exceptions noted.
Formal documentation has been created to guide staff on the acceptable and secure use of HedgeStar network resources.	Inspected Acceptable Use Policy and Information Security Policy, noting they formally identify staff expectations for system use.	No exceptions noted.
Backups of data and software are taken prior to implementing new releases and software changes.	Inquired of IT Manager, and inspected backup system configurations, noting systems are automated to back up nightly.	No exceptions noted.
Current copies of HedgeStar data are available off-site.	Inquired of IT Manager and inspected backup restoration screenshots, noting all systems are backed up offsite and monthly recovery tests are performed.	No exceptions noted.
Reval's SOC 1 and SOC 2 reports are obtained on an annual basis and are reviewed by HedgeStar who uses it to enhance its system of internal control.	The SOC 1 and SOC 2 reports were obtained along with managements documented review.	No exceptions noted.

Description of Tests of Controls and Results

Physical Security

Control Objective: Controls provide reasonable assurance that physical security has been established at the HedgeStar office site, access to the HedgeStar office site is approved, and HedgeStar equipment that supports user entity operations are protected against unauthorized access.

Control Description	Description of Testing	Results of Testing
Access to the HedgeStar suite is restricted to two main entrances which are locked during non-business hours. The server room door is locked 24 hours per day.	Observed physical locks on the HedgeStar office suite and server rooms. Observed the server room door locked during on site visits. Inspected the server room key log noting only active and authorized individuals were listed.	No exceptions noted.
HedgeStar employees are present during normal business hours and recognize visitors or unauthorized personnel.	Observed the floor plan is an "open-office" format and thus visitors and unauthorized personnel can be quickly identified by HedgeStar staff. Entrance of auditor was immediately observed and acknowledged during onsite visits.	No exceptions noted.
Vendors may gain access to critical areas with a staff escort.	Observed an escort was present with the auditor during tour of office suite and the server room during on site visits.	No exceptions noted.

Control Objective: Controls provide reasonable assurance that physical security controls have been established within the server room.

Control Description	Description of Testing	Results of Testing
HedgeStar has a segregated secure server room maintained within the office space. Access to the server room from within the office is key-controlled and restricted to authorized personnel and visitors only. A visitor log is maintained within the server room which documents all non-employee access to the server room.	Observed entrances during two separate visits to confirm server room doors locked at all times. Inspected server room visitor log for use.	No exceptions noted.
Motion detectors are present throughout the server room.	Observed existence of motion detectors and fire suppression within the server room.	No exceptions noted.

Description of Tests of Controls and Results

Physical Security (Continued)

Control Description	Description of Testing	Results of Testing
Temperature and humidity within the server room are regulated by a dedicated air conditioner, as well as the building HVAC system.	Inquired of the Director of IT noting environmental factors such as temperature and humidity are monitored through periodic inspections of the server room.	No exceptions noted.
HedgeStar has installed multiple battery-powered uninterrupted power supply (UPS) hardware. Each device is periodically tested.	Inquired of the Director of IT noting the UPS system is tested periodically.	No exceptions noted.

Control Objective: Controls provide reasonable assurance that user entity data stored at US Internet is secure and supported by various physical security controls.

Control Description	Description of Testing	Results of Testing
HedgeStar web hosting servers are housed by US Internet. US Internet is contracted to provide redundant power supplies, physical security devices, around-the-clock monitoring, backup services, patching, and redundant fail-over for the web hosting servers. HedgeStar management performs periodic visits to the vendor to ensure physical security appears appropriate.	Inquired with the Director of IT noting period visits are completed to US Internet.	No exceptions noted.

Control Objective: Sensitive information and computer components are disposed of in a secure manner.

Control Description	Description of Testing	Results of Testing
Confidential documents are shredded when no longer needed.	Observed secure shred box in office. Inquired of management noting documents including user entity data is disposed of in the shred box. Inspected Shred-it invoice from the period under audit.	No exceptions noted.
Retired computer equipment is retained on-site until data is thoroughly removed or destroyed.	Inquiry of the Chief Operating Officer and the Director of IT revealed computers are kept on-site until hard drives are removed, sanitized, or destroyed.	No exceptions noted.

Description of Tests of Controls and Results

Application/Network Security and Systems Backup

Control Objective: Controls provide reasonable assurance that security controls and safeguards are in place to restrict access to processing applications and data based upon job responsibility and help safeguard information against unauthorized use, disclosure, modification, damage, or loss.

Control Description	Description of Testing	Results of Testing
Access to the HedgeStar network requires a unique user account and non-trivial password managed through Microsoft Active Directory.	Inspected Active Directory user database membership and group policy objects, noting employees utilize unique accounts and must use non-trivial passwords.	No exceptions noted.
Security groups are established and users are added to the security groups based on their job responsibilities for privilege controls over network resources.	Inquired of Chief Operations Officer and inspected Information Security Policy, noting access is based on least privilege.	No exceptions noted.
Network administrative access is restricted to authorized HedgeStar IT network administrators or selected technology vendors.	Inspected members of Administrators, Domain Admins, and Enterprise Admins groups in Active Directory, noting only the Director of IT or technology vendors have privileged access.	No exceptions noted.
Passwords are suppressed during authentication, must be complex and non-trivial, must change periodically, and users entering incorrect passwords are locked out.	Observed login processes for network access, noting use of unique credentials and confirming passwords are masked during the authentication process. Inspected default domain policy, noting users must use complex, non-trivial passwords which must change periodically, and are locked out upon entering several incorrect passwords.	No exceptions noted.
Only authorized users have access to the HedgeStar network. Certain staff may gain access via an encrypted VPN portal.	Inquired of Chief Operating Officer regarding VPN connectivity, noting users must provide unique, non-trivial credentials, must possess an active network account, and must use an encrypted tunnel for access.	No exceptions noted.
Network files are segregated into a reasonable domain configuration, limiting user access based on job duties and least privilege.	Inspected active directory domain structure, noting privileged access is restricted to IT administration and user access is based on least privilege.	No exceptions noted.

Description of Tests of Controls and Results

Application/Network Security and Systems Backup (Continued)

Control Description	Description of Testing	Results of Testing
Network assets are securely located on servers maintained in the server room; data is backed up on-site and remotely.	Inspected server room, noting door was locked and featured a motion detector.	No exceptions noted.
Terminated employee user accounts and access rights are disabled or removed from the systems upon senior management notification.	Inquired of IT staff to determine how user rights and permissions are revoked from network systems and applications noting that terminated employee accounts are not deleted, but are disabled. Inspected Active Directory user database noting disabling of terminated employee. Determined through inquiry that notice of terminated employees are communicated to the IT department by Senior Management. Inspected documentation outlining employee termination process to disable necessary access rights.	No exceptions noted.
Written information systems policies and computer usage guidelines have been developed and distributed to HedgeStar employees to educate them on security, e-mail and Internet usage, and computer software licensing.	Inspected Acceptable Use Policy and Information Security Policies, noting key topics are formally addressed.	No exceptions noted.

Control Objective: Controls provide reasonable assurance that procedures and controls have been established to monitor network activity and respond to security events as needed either through changes in security configurations or other means.

Control Description	Description of Testing	Results of Testing
HedgeStar has subscribed to update notifications with the firewall vendors to keep informed of published firewall system vulnerabilities and fixes/patches.	Inspected firewall console, noting use of current firmware and software.	No exceptions noted.
HedgeStar uses a third-party vendor to update system software as needed.	Inspected patch history, noting patches are deployed on an ongoing basis.	No exceptions noted.

Description of Tests of Controls and Results

Application/Network Security and Systems Backup (Continued)

Control Description	Description of Testing	Results of Testing
The IT department receives notification via e-mail of emerging threats and mitigation strategies.	Inspected sample email newsletter sent to the Director of IT, noting it addressed risk management and emerging trends.	No exceptions noted.
Antivirus protection has been implemented at the server and workstation level to protect HedgeStar applications and data from infection by malicious code.	Inspected antivirus console configuration settings noting that antivirus protection has been enabled.	No exceptions noted.
The antivirus software is configured to receive virus definition updates from the software vendor on a daily basis.	Inspected antivirus console configuration settings, noting that antivirus protection has been enabled on workstations and servers.	No exceptions noted.
HedgeStar has implemented an intrusion prevention system (IPS) to drop the network traffic of potential intruders.	Inspected firewall IPS settings, noting potentially malicious traffic is both dropped and logged.	No exceptions noted.
HedgeStar has engaged a third-party to perform regular external vulnerability assessments. All findings from external vulnerability assessments are reported to IT Management.	Inspected results of third party external vulnerability scan, noting the scans are performed monthly and the results are sent to IT Management.	No exceptions noted.

Control Objective: Controls provide reasonable assurance that perimeter and network security controls have been implemented and are updated as needed to limit access for network resources to authorized users and information is safeguarded against unauthorized use, disclosure, modification, damage, or loss.

Control Description	Description of Testing	Results of Testing
HedgeStar constructed its network using industry standard networking operating systems.	Inspected logical network diagram, noting deployment of industry-accepted appliances. Inquired of IT staff, noting only supported operating systems and virtualization technology has been deployed.	No exceptions noted.

Description of Tests of Controls and Results

Application/Network Security and Systems Backup (Continued)

Control Description	Description of Testing	Results of Testing
Industry standard firewalls, switches, and routers have been implemented to provide a high level of availability and security over the networks, systems, and data.	Inspected logical network diagram, noting deployment of firewalls. Observed physical presence of hardware, noting location within a secure facility.	No exceptions noted.
The firewalls are strategically placed on the networks to filter data traffic according to predefined access rules.	Observed firewall configuration settings, enabled services, and rules within the firewall administrative interface, noting they are based on least privilege.	No exceptions noted.
The firewall system software is maintained to run the current vendor software versions.	Inspected firewall management interface, noting recent update and use of current software.	No exceptions noted.
Administrative access to networking devices is limited to authorized IT personnel.	Examined firewall administrative interface to determine users allowed to administer firewalls. Inquired of IT staff how access to switches and routers is configured. Noted that administrative access to these devices is limited to authorized IT personnel and vendors. Observed physical presence of hardware in locked server room.	No exceptions noted.
HedgeStar has implemented standard password and user account controls.	Inspected Default Domain policy in Active Directory noting password length, complexity, change frequency, and retention criteria are enforced.	No exceptions noted.
Account lockout threshold has been set up to lock the user account after multiple invalid logon attempts.	Inspected Default Domain policy in Active Directory, noting multiple incorrect passwords lock accounts.	No exceptions noted.
Remote network access requires use of encrypted VPN and an active network account.	Inquired of Chief Operations Officer, noting VPN access is encrypted and requires a VPN password as well as an active network account.	No exceptions noted.
HedgeStar has implemented event logging to record security events on the network.	Inspected event logging console, noting security logging is enabled.	No exceptions noted.
Remote email access requires an active network account and use of encryption.	Inquired of Chief Operations Officer, noting remote email access is encrypted and requires an active network account.	No exceptions noted.

Description of Tests of Controls and Results

Application/Network Security and Systems Backup (Continued)

Control Objective: Controls provide reasonable assurance that HedgeStar has implemented adequate back-up and recovery services.

Control Description	Description of Testing	Results of Testing
Each night HedgeStar backs up all electronic data files remotely.	Inspected the back-up software tool configuration, noting all systems are included in the backup methodology.	No exceptions noted.
Backup data is stored both locally and at an off-site facility to provide redundancy.	Inquired of the Director of IT, noting offsite backups are located at least five miles from the main facility.	No exceptions noted.
The Director of IT periodically complete back-up restores to verify back-up procedures.	Inquired of the Director of IT to determine how data backups are configured, noting that test restorations occur and are reviewed monthly.	No exceptions noted.

Description of Tests of Controls and Results

Operations

Control Objective: Controls provide reasonable assurance that user entity data is input accurately and by authorized personnel. User entity files are secured and segregated.

Control Description	Description of Testing	Results of Testing
All user entities are required to sign a "subscription agreement" authorizing HedgeStar to monitor the fair value of trade activities.	Selected a sample of trades and inspected signed subscription agreements for a sample of user entities.	No exceptions noted.
Files are created by operations staff when a new user entity is activated. A separate file is created for each individual user entity. Included in the files are the signed subscription agreements, trade confirmations, web reporting authorizations, and other communications.	Selected a sample of trades and obtained files maintained. Sampled files were inspected for trade confirmations, web reporting authorization, and other communications.	No exceptions noted.
Trade information is entered into PPS and Reval by one operations employee. A second check of the inputs is completed by an independent operations employee. New trade input review is documented by using the audit trail function in PPS and Reval. Any changes are documented in this trail.	Through inquiry with operations staff, verified setup of trade information in PPS and Reval. Inspected the audit trail log for a sample of trades in PPS and in Reval for evidence that each trade was reviewed by an employee separate from the initial setup.	No exceptions noted.
Trade information in PPS is locked by operations staff upon completion of the trade set up. The locking feature prevents unplanned or unauthorized changes to trade data maintained in PPS.	For a sample of trades, observed that trade data was locked in PPS.	No exceptions noted.

Description of Tests of Controls and Results

Operations (Continued)

Control Objective: Controls provide reasonable assurance that market values are updated timely and accurately.

Control Description	Description of Testing	Results of Testing
HedgeStar has signed contracts with various data providers to provide daily market rate information.	Inspected signed contracts with data providers noting roles and responsibilities were defined.	No exceptions noted.
Information from the primary data source provider is synchronized daily through an AMS database script. All information is updated to the HedgeStar servers housing PPS. IT and Operations staff are notified of the successful update of all pricing information.	For a sample of days, inspected email communications received by IT and Operations personnel providing notification of successful download.	No exceptions noted.
An AMS database script updated market information with PPS during the daily batch process. IT and Operations staff are notified via email or text messaging if batch processing fails or market values are not appropriately updated. All issues are resolved by IT or Operations staff. IT and Operation staff are notified via email or text messaging if batch processing runs successfully.	For a sample of days, obtained and inspected batching processing emails and related communication completion of update.	No exceptions noted.
Management has a documented response and solution to address batch processing errors.	For a sample of errors that have occurred, obtained a response document to address batch processing error.	No exceptions noted.
IT and operations staff are notified via email that web results were compared to PPS successfully.	For a sample of days, obtained email communications notifying IT and operations personnel that the web results comparison to PPS was completed successfully.	No exceptions noted.

Description of Tests of Controls and Results

Operations (Continued)

Control Objective: Controls provide reasonable assurance that cash flow information is calculated accurately and timely.

Control Description	Description of Testing	Results of Testing
Cash flows for specific trades are calculated by PPS based on specific trade information input at trade setup date. Cash flow calculations are provided via the web hosting server.	Per inquiry of HedgeStar staff, cash flows are calculated based on information entered into PPS during trade setup. For a sample of trades, inspected trade information was entered correctly into PPS.	No exceptions noted.

Control Objective: Controls provide reasonable assurance that user entity information is updated timely and accurately on the web reporting server.

Control Description	Description of Testing	Results of Testing
Upon completion of the daily processing, all updated market values are pushed to the web reporting server through a secure connection.	For a sample of days, obtained transfer notification email indicating successful update on the web reporting server. Observation of network environment identified a secure connection to a third party web hosting provider.	No exceptions noted.

Description of Tests of Controls and Results

Operations (Continued)

Control Objective: Controls provide reasonable assurance that derivative trades valued under Accounting Standards Codification 820: Fair Value Measurements (ASC 820) are setup accurately, use observable market yield curves, consider the provisions of ASC 820, and valuations are provided to user entities.

Control Description	Description of Testing	Results of Testing
<p>HedgeStar has written procedures outlining its approach to Accounting Standards Codification 820: Fair Value Measurements (ASC 820) valuations and valuation techniques. Memorandums have been provided to ASC 820 user entities that outline HedgeStar's procedures for valuation. User entities must sign an engagement letter authorizing ASC 820 valuations.</p>	<p>Obtained ASC 820 memorandum provided to user entities, noting documentation of valuation techniques. Obtained signed engagement letters for a sample of user entities that have requested ASC 820 valuations.</p>	<p>No exceptions noted.</p>
<p>Management has developed a standard method for measuring non-performance risk for user entities and counterparties. Non-performance risk is calculated as the spread between non-performance risk yield curves and yield curves based on specific user entity/counterparty credit ratings. All yield and rating information is obtained from BPS and uploaded into a valuation spreadsheet. This spreadsheet then interfaces with PPS which calculates the resulting ASC 820 valuation.</p>	<p>Selected a sample of user entities receiving ASC 820 valuations during the period January 1 through September 30, 2016. Performed a walkthrough of the ASC 820 valuation process with operations staff. For the user entities selected for testing, assumptions per PPS were compared back to the valuation spreadsheet for accuracy including proper ratings and yield curves.</p>	<p>No exceptions noted.</p>

Description of Tests of Controls and Results

Operations (Continued)

Control Description	Description of Testing	Results of Testing
HedgeStar calculates bond fair values using a third-party software and external pricing data.	Per inquiry of HedgeStar staff, external data resources and software products are used to calculate each bond's fair value. For a sample of reporting dates, compared HedgeStar yield curve data for a sample of pre-designated ASC 820 yield curves to third-party software and external pricing data. Additionally, for a sample of reporting dates, traced a sample of yield curves prepared by HedgeStar to yield curve detail included in PPS for accuracy.	No exceptions noted.
Upon completion of ASC 820 valuations, valuations are pushed to the web reporting server through a secure connection. Valuations are provided on a per trade basis.	For a sample of user entities, compared web based user entity statements to PPS for accuracy. Per inquiry of operations staff, statements are generated from PPS data and uploaded to HedgeStar's web reporting server.	No exceptions noted.

Control Objective: Controls provide reasonable assurance that derivative trades valued for entities governed by the Governmental Accounting Standards Board (GASB) are setup accurately, reports include information required for GASB 53/72 disclosures, and information is provided to user entities.

Control Description	Description of Testing	Results of Testing
HedgeStar requires user entities to sign an engagement letter requesting GASB 53/72 financial statement disclosure	Inspected the signed engagement letter for a sample of user entities receiving GASB 53/72 financial information.	No exceptions noted.
GASB 53/72 reports are pushed to the website and contain information required by GASB 53/72, including the level within the fair value hierarchy and a description of inputs utilized for valuation	Selected a sample of user entities receiving GASB 53/72 reporting and inspected GASB 53/72 reports for proper valuation dates, fair value hierarchy disclosure, and related inputs.	No exceptions noted.