

## Virtana Description of Service for the Cloud Migration Readiness (CMR) Product Family

**Background.** This document contains a Description of Service (“DOS”) for Virtana, Inc.’s (“Virtana”) Cloud Migration Readiness Service (“CMR”) identified by the following part number: CM Cld Migr Readiness.

Virtana will perform the services described herein (“Services” or “CMR”) provided that (1) Virtana issues, and the ordering party (“Purchaser”) accepts, a quote referencing the part number(s) given above; and (2) Virtana and the Purchaser are bound by terms and conditions that incorporate by reference this document. If no such terms and conditions have been agreed upon between us, Virtana will perform the Services on an “AS IS” basis without warranties of any kind. The recipient of the Service is the customer (“Customer”). The Purchaser of the Service may be either the Customer or Virtana’s authorized reseller or distributor (“Partner”). If Partner is the Purchaser, then Partner must either facilitate direct communication between Virtana and Customer or secure from Customer all required access, instructions and other commitments outlined in this DOS for Virtana to perform the Service.

To purchase these Services or inquire about this or other Virtana service offerings, please contact [sales@virtana.com](mailto:sales@virtana.com).

### SERVICE-RELATED DEFINITIONS.

**Workload:** A unit of interacting software that is moved as a single component. A workload typically has connections of various kinds with other workloads and/or systems. A workload is a single virtual machine or physical bare metal server with a supported OS (Windows/Linux).

**Discovery Phase:** The CMR stage where migration objectives, scope and approach are confirmed. Target Workloads are instrumented for data collection. Workload characteristics are measured. Workload network dependencies are revealed.

**Profiling Phase:** The CMR stage where specialized advanced analytics are applied to the workloads that were measured during the Discovery phase. “Affinity Groups”, “Representative Workloads” candidate cloud configuration and initial cost estimates are produced.

**Affinity Group:** A group of workloads with similar resource utilization levels and temporal characteristics.

**Representative Workload:** A single set of all the relevant utilization and temporal attributes that represents the multiple workloads within an Affinity Group.

**Playback Phase:** The CMR stage where the representative Workloads are run on the

candidate cloud configurations of the targeted cloud service provider “IaaS” to determine if the workload is “fit” or “unfit” to be migrated to the candidate cloud and to obtain the final estimated cost.

**Cloud Monitoring Phase:** The post-migration CMR stage where the migrated workloads are monitored, and a Utilization, cost and Performance report is produced.

**SERVICE DESCRIPTION AND SCOPE.** The Service is designed to help de-risk cloud migrations by validating the suitability of the targeted workloads or virtual machines based on their on-premises performance, their dependencies, their performance in the Cloud, and a Cloud cost estimate. The data that will be used in the analysis will be collected from the VirtualWisdom Server software product and associated software products such as ProbeVM and NetFlow data collectors. Other required on-premise and cloud data will be collected by services’ tools such as the CMR software appliance.

The Service includes resources and tools appropriate to the levels of the three Service Phases purchased, and each Phase can be purchased independently. For example, the Service might include one (1) customer data center; two (2) to six (6) weeks of work related to the Discovery Phase; four (4) weeks of work related to the Profiling Phase; and two (2) weeks of work related to the Playback Phase.

The Services will be provided during normal business hours (Monday through Friday, 8:00 AM – 5:00 PM) at the monitored location. To the extent the Services are provided remotely, they will be provided in the range of 7:00 AM – 5:00 PM Pacific Time US unless both companies agree to an alternative work schedule. Virtana requires five (5) business days advance notice prior to scheduling any work related to these Services; ten (10) days if travel is required.

The Services will generally be conducted remotely, but some travel may be required for certain aspects of the Services.

**ACTIVITIES.** The Service entails the following activities:

1. A Virtana Project Manager will:
  - a. Coordinate Virtana resource schedules with the Customer’s schedule, including calls, web meetings, and onsite work.
  - b. Provide deployment preparation materials to the Customer, collect them when completed, and distribute as appropriate to project staff.
  - c. Coordinate further distribution of materials required during the service.

2. Verify the following: (a) the VirtualWisdom software deployment is collecting healthy data from all relevant data collection points.
3. Remote activities are limited to reviewing the collected data. Monitoring and analysis will focus on the targeted workloads specified during the Discovery Phase.
4. Final webinar to review recommendations and deliverables with the Customer.

**ESTIMATED START DATE.** The Service will commence on a mutually agreeable date following receipt of a valid purchase order from Purchaser.

**DELIVERABLES.** Virtana will provide the following to the Customer and/or Partner:

**Discovery Phase**

- Target Workload Inventory
  - Virtual Machines, Hosts, Datastores
- Dependency Mapping (Consultative Approach)
  - End Points External/Internal Communications
  - Port Numbers, Network Service, Bandwidth
  - Insight into "Move Groups and "Move Events" design
- Workload Characteristic Baseline Assessment based on integrations configured during service

**Profiling Phase (if included in the Service)**

- Rightsized Candidate Cloud Configuration recommendations
- Rightsized Candidate Cloud Configuration Estimated Cost

**Playback Phase (if included in the Service)**

- Validated candidate cloud configurations on the playback
- Validate candidate cloud configuration costs based on playback and performance of workloads developed during this service (Azure/AWS)
- Synthetic workload cloud performance report
  - Fit/Unfit Scorecard.

**SERVICE DELIVERY PRE-REQUISITES**

In order to deliver this service, Virtana requires the following data be made available at the start of the engagement in order to provide accurate and timely data back. Failure to provide any of the following may result in additional costs billed to Purchaser to provide a deeper forensic analysis and increased efforts required in order to deliver dependencies.

- vDS is enabled in target environment to forward NetFlows

- NetFlow is enabled on all vCenters and/or Level 3 Switches and can be pointed at VirtualWisdom
- NetFlow from edge switches aggregated and pointed at VirtualWisdom
- Virtual environments statistics/data are set at appropriate levels. (e.g. vCenter – Statistics Level 2)
- App to VM and Bare Metal Server mapping is documented (a template will be provided by Virtana)
- List of Customer's domain external IPs documented
- Application priority and criticality identified (Top 10 Applications)

**Assumptions:**

- Physical servers are counted as 2:1
- Servers must be on currently available OS versions of Windows and/or Linux and confirmed that they are supported. See the "Supported Systems" section below.
- Single data center or access to all DCs from a single VW instance
- Partner or Customer will:
  - Configure vCenter(s) and/or Level 3 Switches to forward NetFlows to VW. If NetFlow data is missing for specific VMs or bare metal servers, Customer/Partner will rectify or agree to exclude from dependency mapping analysis
  - Define mapping scenarios to be analyzed based on move application/groups/business criteria etc.
  - For environments with Hyper-V, deploy VirtualWisdom Flow Summarizer in each Hyper-V host.

**SERVICE REQUIREMENTS.** The Service entails the following activities to be completed by Customer and/or Partner as applicable:

1. Designation of a Partner or Customer (as applicable) project manager to whom all communications shall be addressed. The project manager will provide (a) information and resources in a timely manner as needed by Virtana to enable Virtana to complete the Service described in this SOW; and (b) will provide logical and physical access as required by Virtana to complete the Service; and (c) will be readily available and on-site as and when required by Virtana for the duration of the Service.
2. Completion of the deployment checklist prior to Virtana scheduling the on-site portion of the Service.
3. Ongoing remote access to any facilities and systems necessary for completion of the Service.
4. Ongoing communication between Customer and Partner personnel with the designated Virtana personnel and make their appropriate staff available (such as network,

system and storage administrators) to participate in the project activities as required, during or outside of normal business hours.

5. For any remote Services that require access to the Customer's VirtualWisdom server(s), a client system to run a web session (such as GoToMeeting® or WebEx®) or enabled Virtana RemoteWisdom® remote desktop access.
6. Ensure that instrumented host systems, switches and storage components are on-site or accessible remotely and functional.
7. Prompt feedback and response to Virtana requests by Partner and Customer, particularly concerning data, documentation and attendance.
8. If any portion of the Service must be rescheduled, Customer and/or Purchaser agrees to provide at least ten (10) business days advance written notice to Virtana. Failure to provide any of these requirements may result in additional costs billed to Purchaser for rescheduled travel.

Failure to comply with these requirements may inhibit or prevent Virtana' ability to provide the Service.

**TRAVEL AND EXPENSE GUIDELINES.** Travel expenses are not included in the Service. Purchaser will reimburse Supplier for any reasonable and actual travel expenses incurred solely in connection with services furnished under this DOS.

#### **SUPPORTED SYSTEMS.**

##### **CMR Compliant Operating Systems:**

- **Linux**
  - Ubuntu (16.0.4.2, 17.0.4)
  - SUSE (11, 12)
  - CentOS (6.8, 7.4)
  - Red Hat Enterprise Linux (6.9)
- **Windows**
  - Windows 2016
  - Windows 2012 R2
  - Windows 2008 R2

##### **CMR Compliant Operating Systems:**

- **VMWare vSphere**
  - "Read Only" access credentials are required to access vCenter via an inventory script (Python 3.)
- **Microsoft Hyper-V**
  - "Read Only" access credentials are required to access to System Center Virtual Machine Manager via an inventory script (PowerShell).

##### **CMR Compliant NetFlow Sources:**

Dependency mapping is obtained primarily analyzing NetFlow associations, IP address, Port Services and Bandwidth.

The NetFlow Integration receives flow records from the below following compatible NetFlow sources:

- NetFlow - Versions 1,5,7,9,10
- sFlow - Versions 2,4,5

For virtualized environments, NetFlow is collected at the hypervisor level to observe intra-host and inter-host traffic.

For bare metal servers, NetFlow is collected from layer 3 network switches or routers.

Further analysis may be augmented by leveraging the OS metric data.

- VMware, leveraging vCenter's virtual Distributed Switch (vDS) is the first choice. In case, vDS NetFlows are already being consumed by another tool or if for some reason vDS is not available, Virtana's Flow Summarizer virtual machine is deployed in each host where the targeted virtual machines reside. The Flow Summarizer will forward the NetFlows to VirtualWisdom.
- Hyper-V: Virtana's Flow Summarizer virtual machine is deployed in each of the Hyper-V hosts where the targeted virtual machines reside. The Flow Summarizer will forward the NetFlows to VirtualWisdom.
- Bare Metal Servers: The primary source of NetFlow data for the bare metal or physical servers are the layer 3 switches. The switch should be configured to forward the NetFlows to the VirtualWisdom appliance or virtual machine.