

Oracle Utilities Meter Solution Cloud Service

Overview Guide

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Contents

Chapter 1

Oracle Utilities Meter Solution Cloud Service Overview	1-1
Welcome to Oracle Utilities Meter Solution Cloud Service.....	1-2
Oracle Utilities Meter Solution Cloud Service Applications.....	1-3
Documentation	1-4
Supported Client Platforms and Browsers	1-5
Supported Integrations	1-6
Oracle Utilities Product Integrations	1-6
Head-End System Integrations	1-7
Using Oracle Utilities Testing Accelerator with Oracle Utilities Meter Solution Cloud Service	1-7
High-Level Roles and Responsibilities	1-9
Hardware, Storage, Technology, and Application Software.....	1-9
Security.....	1-9
Database	1-9
Implementation, Configuration, and Extensions	1-10
Patching and Upgrading.....	1-10
Batch Processing	1-10
Support	1-11
Integration	1-11
Performance Guidelines	1-12
Initial Measurement Data and Event Processing.....	1-12
Usage Transactions	1-12
User Interfaces.....	1-13
Commands and Events	1-13
General Topics	1-14
Functional Limitations and Restrictions	1-15
Usage and Event Data Formats	1-15
Smart Meter Commands	1-15

Chapter 2

Implementation Support and Live Operate Services	2-1
Implementation Support Services	2-2
Live Operate Services	2-4

Chapter 3

Oracle Utilities Cloud Services	
Third Party Software and Licenses.....	3-1
Third Party Software Notices	3-2
Third Party Software Licenses	3-5
Notice Concerning Usage of Software Covered Under the Apache 2.0 License.....	3-5
Notice Concerning Usage of Google Software	3-9
Notice Concerning Usage of Software Covered Under the MIT License	3-9
Notice Concerning Usage of DOM4J	3-10
Notice Concerning Use of OCI-JAVA-SDK.....	3-11

Notice Concerning Use of Python	3-11
Notice Concerning Usage of Software Covered Under the GNU General Public License.....	3-26
Notice Concerning Usage of ICU	3-31

Chapter 1

Oracle Utilities Meter Solution Cloud Service Overview

This guide provides an overview of the Oracle Utilities Meter Solution Cloud Service, including:

- [Welcome to Oracle Utilities Meter Solution Cloud Service](#)
- [Oracle Utilities Meter Solution Cloud Service Applications](#)
- [Documentation](#)
- [Supported Client Platforms and Browsers](#)
- [Supported Integrations](#)
- [High-Level Roles and Responsibilities](#)
- [Performance Guidelines](#)
- [Functional Limitations and Restrictions](#)

Welcome to Oracle Utilities Meter Solution Cloud Service

Oracle Utilities Meter Solution Cloud Service is used to maintain information about meters and the service points at which they are installed. The solution provides a means of recording measurements and events associated with meters in the field as well as the ability to compute usage for the recorded measurements, and process smart meter commands.

Oracle Utilities Meter Solution Cloud Service comprises the following functional areas:

- Asset Management: Maintenance of physical assets, including meters and components
- Device Management: Maintenance of physical meters in the field
- Device Installation: Maintenance of service points and the installation of meters in the field. This includes the means of registering outside systems to Oracle Utilities Meter Data Management for provider/consumer-specific processing of meter events and activities
- Device Communication: Maintenance of communications between Oracle Utilities Meter Data Management and head-end systems, including import of usage and events, as well as two-way communications used in issuing meter commands
- Validation, Editing, and Estimation (VEE): Maintenance of measurement data and the engine used to validate and modify that data as it comes in
- Usage Management: Calculation of billable usage recorded on devices, applying factors and dividing the usage into configurable time of use periods
- Aggregation: Summarization of measurement data for reporting and analysis purposes
- Data Synchronization: Synchronization of data between Oracle Utilities Meter Data Management and other Oracle Utilities applications (including Oracle Utilities Operational Device Management and Oracle Utilities Customer Care and Billing).
- Oracle Utilities DataConnect: Extraction of consumption and master data for use in external systems.
- Smart Grid Gateway: Payload Processing and Smart Meter Commands
- Oracle Utilities Cloud Service Foundation: tools used to orchestrate and automate infrastructure related processes and migrate data from legacy applications into the cloud service.

Oracle Utilities Meter Solution Cloud Service Applications

Oracle Utilities Meter Solution Cloud Service includes the following Oracle Utilities applications:

- Oracle Utilities Meter Data Management v2.3.0.1.0
- Oracle Utilities Smart Grid Gateway v2.3.0.1.0
- Oracle Utilities Smart Grid Gateway Adapter for Echelon v2.3.0.1.0
- Oracle Utilities Smart Grid Gateway Adapter for Itron OpenWay v2.3.0.1.0
- Oracle Utilities Smart Grid Gateway Adapter for Landis+Gyr v2.3.0.1.0
- Oracle Utilities Smart Grid Gateway Adapter for Sensus RNI v2.3.0.1.0
- Oracle Utilities Smart Grid Gateway Adapter for Silver Spring Networks v2.3.0.1.0
- Oracle Utilities Smart Grid Gateway MV-90 Adapter for Itron v2.3.0.1.0
- Oracle Utilities Service Order Management v2.3.0.1.0
- Oracle Utilities Cloud Service Foundation v19B
- Oracle Utilities Customer Care and Billing to Meter Data Management 12.1.0
- Oracle Utilities Integration for Device Operations 12.1.0
- Oracle Utilities Testing Accelerator
- Oracle BI Publisher

Documentation

Configuration and use of Oracle Utilities Meter Solution Cloud Service is described in the following documentation:

- Oracle Utilities Meter Solution Business User's Guide
- Oracle Utilities Meter Solution Administrative User's Guide
- Oracle Utilities Meter Solution Cloud Service Release Notes
- Oracle Utilities Cloud Services documentation, including:
 - Oracle Utilities Cloud Service Foundation Administrative User Guide
 - Oracle Utilities Cloud Services Data Upload Support Guide
 - Oracle Utilities Cloud Services End User Provisioning Guide
 - Oracle Utilities Cloud Services File Based Integration Guide
 - Oracle Utilities Cloud Services Object Storage Setup Guide
- Oracle Utilities Testing Accelerator documentation

Supported Client Platforms and Browsers

Users access Oracle Utilities Meter Solution Cloud Service via a supported web browser.

Oracle Utilities Meter Solution Cloud Service supports the following operating system & web browser combinations:

Operating System	Web Browser
Windows 7 (32-bit or 64-bit)	Microsoft Internet Explorer 11 Firefox ESR 60, Google Chrome for Enterprise 74
Windows 8.1	Microsoft Internet Explorer 11 Firefox ESR 60, Google Chrome for Enterprise 74
Windows 10	Microsoft Internet Explorer 11 Firefox ESR 60, Google Chrome for Enterprise 74

Supported Integrations

Oracle Utilities Meter Solution Cloud Service supports integration with a number of other products. See the following sections for details:

- [Oracle Utilities Product Integrations](#)
- [Head-End System Integrations](#)
- [Using Oracle Utilities Testing Accelerator with Oracle Utilities Meter Solution Cloud Service](#)

Oracle Utilities Product Integrations

The table below lists Oracle Utilities products that can be integrated with the Oracle Utilities Meter Solution Cloud Service, and provides the product name, supported versions, and the integration products that enable the integration.

Oracle Utilities Product	Version(s)	Integration Product(s)
Oracle Utilities Customer Care and Billing	2.7.0.1	Oracle Utilities Customer Care and Billing Integration to Oracle Utilities Meter Data Management 12.1*
	2.6.0.x	
	2.5.0.x	
	2.4.0.x	
	2.7.0.1	Oracle Utilities Service Order Management Integration to Oracle Utilities Customer Care and Billing 12.2*
	2.6.0.x	
	2.5.0.x	
	2.4.0.x	
Oracle Utilities Mobile Workforce Management	2.3.0.x	Oracle Utilities Service Order Management Integration to Oracle Utilities Mobile Workforce Management 12.2*
	2.2.0.x	
Oracle Utilities Network Management System	2.3.0 1.12.0.x	Oracle Utilities Smart Grid Gateway Integration for Outage Operations Release 12.2*
Oracle Utilities Operational Device Management	2.1.x	Oracle Utilities Integration for Device Operations 12.1*
	2.2.0.x	

* The above integrations require separate licenses. In addition, the Business Process Execution Language (BPEL) composites used by the Service Order Management integrations are not installed as part of Oracle Utilities Meter Solution Cloud Service, and must be installed locally.

Head-End System Integrations

Oracle Utilities Meter Solution Cloud Service supports integration with a number of vendor-specific head-end systems via Oracle Smart Grid Gateway Adapters (included as part of Oracle Utilities Meter Solution Cloud Service). The table below lists the supported versions of head-end system for each Adapter available with Oracle Utilities Meter Solution Cloud Service.

Adapter	Head-End System Version
Adapter for NES	NES 5.0, 5.3
Adapter for Itron OpenWay	6.6, 7.0 Itron OpenWay Operations Center SR 4.1, 4.5
Adapter for Landis+Gyr	Gridstream Command Center 6.3, 6.5, 7.1
Adapter for Sensus RNI	Sensus RNI 3.1, 3.3
Adapter for Silver Spring Networks	UtilityIQ Version 4.9, 4.10, 4.12
MV-90 Adapter for Itron	N/A SGG supports the .mv9 binary, mainframe data format.

Using Oracle Utilities Testing Accelerator with Oracle Utilities Meter Solution Cloud Service

Oracle Utilities Testing Accelerator (OUTA) is a testing framework based on Java and Selenium used for automated testing of Oracle Utilities applications and cloud services. It allows for developing, managing and executing web service and user interface based automated tests, using meta-data based approach, without any programming language. Oracle Utilities Testing Accelerator has a user friendly graphical web interface that enables people without much programming knowledge to develop automated test flows.

Along with the automation framework, Oracle Utilities Testing Accelerator includes an accelerator that supports automated testing of Oracle Utilities cloud services, such as Oracle Utilities Customer Cloud Service and Oracle Utilities Work and Asset Cloud Service. The accelerator contains several hundred re-usable components that are the modular building blocks of an automated test flow. The Oracle Utilities Testing Accelerator user interface allows for these components to be laced together to form an automated test flow. The test data can then be coupled to the automated test flow and executed using the browser-based execution engine within the Oracle Utilities Testing Accelerator web application.

The browser-based test execution engine should be used for the execution of web service based test automation flows. In addition to the web interface, Oracle Utilities Testing Accelerator includes an eclipse IDE plugin that supports the execution of tests from local desktops or laptops. This mode should be used for executing user interface based tests that are developed using the Oracle Utilities Testing Accelerator web application. The script generation engine in the Oracle Utilities Testing Accelerator web interface auto generates the scripts for user interface based tests, which can then be executed via the Eclipse IDE (with the Oracle Utilities Testing Accelerator plugin).

The following features of Oracle Utilities Testing Accelerator have been enhanced so that they work with Oracle Utilities cloud services:

1. For executing the web service based test automation flows, the Flow Configuration that contains the web service URL along with additional properties such as smtp server, etc is pre-defined to work with Oracle Utilities cloud services. Users need not create a new Flow Configuration.

See the **Executing Test Flows** and **Executing Test Flows Using a Browser** sections in the *Oracle Utilities Testing Accelerator User Guide* for more information.

(UTA_User_Guide_6.0.0.1.pdf document, section :),

2. For generating components using the component generator tool, the complete WSDL URL need not be specified in the field, only the web service end point name needs to be provided.

See the **Development Accelerator Tools** and **Component Generation Tool** sections in the *Oracle Utilities Testing Accelerator User Guide* for more information.

3. For fetching test data from the Oracle Utilities cloud services, the WSDL URL need not be specified, only the web service end point name should be specified.

See the **Fetching Test Data From an Utilities Application** section in the *Oracle Utilities Testing Accelerator User Guide* for more information.

4. Oracle Utilities Testing Accelerator is integrated with Oracle Identity Cloud Service when using it with cloud services. The management of users in Oracle Utilities Testing Accelerator web application should be done through Oracle Identity Cloud Service. See the *Oracle Utilities Cloud Services End User Provisioning Guide* for more information about creating and managing users.

High-Level Roles and Responsibilities

This section outlines high-level roles and responsibilities involved in the deployment, configuration, and maintenance of Oracle Utilities cloud services, and the party responsible for each. The **Owner** column in the tables below indicates the party responsible for each role and responsibility.

Hardware, Storage, Technology, and Application Software

Role and Responsibility	Owner
Provide, deploy and monitor hardware and storage	Oracle
Provide, deploy, run and monitor all required technology (e.g containers, operating systems, databases, clustering, monitoring, tracing)	Oracle
Provide, deploy, run and monitor all Oracle Utilities base application software	Oracle

Security

Role and Responsibility	Owner
Monitor cloud service infrastructure security	Oracle
Administer Oracle network security	Oracle
Administer customer network security, including integrating with the Oracle networks	Customer
Configure & maintain cloud service users and access	Customer
Integrate with Oracle networks	Customer

Database

Role and Responsibility	Owner
Database administration services (monitoring, administration, etc)	Oracle
Backup and Restore	Oracle
Backup retention	Oracle
Data replication for Disaster Recovery (where applicable)	Oracle
Disaster Recovery database fail-over	Oracle
Refresh of TEST DB from PROD (upon request and within prescribed limits)	Oracle

Role and Responsibility	Owner
Information Lifecycle Management	Customer

Implementation, Configuration, and Extensions

Role and Responsibility	Owner
Plan and execute implementation project	Customer
Perform configuration of enterprise software features and functions	Customer
Execute functional, system, load and performance testing of configuration and extensions	Customer
Ensure operational readiness	Customer
Schedule all gate review services	Customer

Patching and Upgrading

Role and Responsibility	Owner
Patch and upgrade underlying infrastructure software	Oracle
Patch and upgrade Oracle Utilities base application software	Oracle
Decide the cloud service upgrade schedule (within prescribed limits)	Customer
Trigger environment upgrades (Development, Test and Production)	Customer
Perform regression testing of configuration and extensions after patching / upgrades	Customer

Batch Processing

Role and Responsibility	Owner
Monitor underlying batch infrastructure	Oracle
Provide infrastructure logs for batch incidents	Oracle
Resolve infrastructure batch issues	Oracle
Determine batch schedule	Customer
Monitor batch stream/job completion	Customer
Perform first level investigation of batch issues	Customer
Provide customer logs of batch incidents	Customer

Support

Role and Responsibility	Owner
Resolve functional batch issues and stream/job restart	Customer
Resolve data issues	Customer

Role and Responsibility	Owner
Triage, analyze, and resolve issues with the cloud service	Oracle
Triage, analyze, and resolve issues with configuration and extensions	Customer
Raise Service Requests via My Oracle Support and provide all requested information	Customer

Integration

Role and Responsibility	Owner
Provide productized integrations (where explicitly agreed)	Oracle
Integrate Oracle Utilities cloud services with all other services or applications	Customer

Performance Guidelines

This section provides a number of performance-related guidelines and recommendations to take into account when implementing Oracle Utilities Meter Solution Cloud Service. This includes guidelines related to the following:

- [Initial Measurement Data and Event Processing](#)
- [Usage Transactions](#)
- [User Interfaces](#)
- [Commands and Events](#)
- [General Topics](#)

Initial Measurement Data and Event Processing

- **Initial Measurement and Event Loading:** The initial measurement data and event loading processes should be scheduled to avoid overlap with other intense processes. For instance, do not produce bill determinants when loading meter readings.

In addition, when processing measurement data coming from head end systems, payload files should be broken up into multiple files (containing approximately 100 measurement records each) to allow for parallel processing.

- **VEE Rules:** Any VEE Rules, whether provided as part of base product or custom developed, should be configured to query no more than 30 cumulative days of historical data (i.e., High/Low) to achieve an efficient data loading process.
- **Raw Data:** The raw data section of the initial measurement data record should not be populated in a production environment.
- **Tracing:** Use the **Trace** section of the **IMD Log** to troubleshoot VEE rules. When an initial measurement data is in *Pending* status, the **Trace On** button can be used to trace all VEE Rules fired during initial measurement data processing. Once processing is complete, view the **Log** tab of the initial measurement data and review the results in the **IMD Trace Log** zone. For any custom developed VEE rules, the average run time should be no longer than the average run time of other base product VEE rules.
- **VEE and Usage Rule Configuration:** VEE and usage rule configurations can affect performance; test runs are needed during implementation to tune these processes.
- **Initial Measurement Data Business Objects:** Avoid modifying the initial measurement data business objects.

Usage Transactions

- **Number of Usage Transactions:** The number of usage transactions per day should not exceed 20% of the total service point volume.
- **Daily Scalar Usage Rule:** The Daily Scalar Usage usage rule should be used when calculating usage for frequently read scalar channels (one or more reading per day). This rule only exports the beginning and ending readings.

- **Vector and Service Quantity Math Rule:** Only use the Vector and Service Quantity Math rule when other usage rules cannot perform the same calculations. For example, although the Vector and Service Quantity Math rule can perform TOU mapping, you should use the Get TOU Mapped Usage rule if TOU mapping functionality is the only requirement.
- **Measurement Data in Usag Transactions:** Minimize the amount of measurement data included in the Usage Transaction results, as individual interval records included with the usage transaction will slow down processing. Saving derived interval data and sending the data to an external system via the **Save Interval Vector** and **Extract Interval Data** options on the Vector and Service Quantity Math and Get Interval Data usage rules can have a noticeable impact on usage transaction processing. Usage transaction processing can be improved by up to 45% if extraction of interval data is eliminated. Use of these options should be limited to situations in which they are absolutely required.
- **Interval Data Export:** Usage transactions should not be used as an ETL tool to perform the mass export of interval data.

User Interfaces

- **Zones:** For better performance, user interface zones should be initially collapsed when not required for 90% or more of business processes. The initial state of zones (collapsed or not) can be controlled via the **Portal Preferences** tab on the **User** portal.
- **Number of Records:** The number of records returned to the user interface for a zone should be limited to 50 rows when building custom zones against large transactional tables.
- **Troubleshooting Screens:** To troubleshoot a screen in the user interface, click **Preferences** in the top right corner of the application and choose the **Portal Preferences** tab. Choose the appropriate portal and set all zones to "Initially Collapsed". Navigate back to the screen that has performance issues, expand the zones one by one, and measure the execution time of each zone. This should be an accurate step-by-step representation of the full screen execution.
- **Performance Optimization:** For optimal user interface performance, laptop users should ensure their computer is in high performance mode.

Commands and Events

- **Meter Events:** Only meter events that have significant business value should be imported into the cloud service. These are generally events that involve billing or outage processes. Superfluous events such as hourly meter communication confirmations should not be sent to the service.
- **Meter Commands:** Meter command processing should be configured such that it does not slow billing processes and can be supported by the advanced metering infrastructure (AMI) network. For example, meters should not be pinged every five minutes.

General Topics

- **Performance Tests:** Performance tests should be performed on all configurations to ensure daily processing windows are adequate. This includes configurations for: usage rules, VEE rules, aggregations processes, etc.
- **Solution Changes:** Oracle should be consulted before significant solution changes are made. For example, adding new meter channels, adding a large number of meters, network changes, or new integrations, etc.

Functional Limitations and Restrictions

This section outlines some specific limitations and restrictions regarding the functionality of Oracle Utilities Meter Solution Cloud Service, including:

- [Usage and Event Data Formats](#)
- [Smart Meter Commands](#)

Usage and Event Data Formats

Oracle Utilities Meter Solution Cloud Service provides no data transformation or conversion functionality. Usage and event data being imported into Oracle Utilities Meter Solution Cloud Service must be converted or transformed into a format supported by one of the following vendor-specific adapters prior to import:

- NES
- Itron OpenWay
- Landis+Gyr
- Sensus RNI
- Silver Spring Networks
- MV-90 Adapter for Itron

Smart Meter Commands

Oracle Utilities Meter Solution Cloud Service supports smart meters commands as described in the Smart Grid Gateway Adapter documentation (see **Documentation** on page 1-4). Additional smart meter command functionality must be implemented external to Oracle Utilities Meter Solution Cloud Service. This includes the following:

- Extensions to currently supported smart meter commands for supported head-end systems (see **Head-End System Integrations** on page 1-7)
- New smart meter commands beyond those currently supported
- Commands for non-supported head-end systems

Additional smart meter command functionality can be implemented via a Platform-as-a-Service or integration cloud service, or on premise at a customer site.

Chapter 2

Implementation Support and Live Operate Services

This chapter describes implementation support and live operate services for Oracle Utilities Meter Solution Cloud Service:

- [Implementation Support Services](#)
- [Live Operate Services](#)

Implementation Support Services

Implementation Support Services are services that relate to the initial set up of Oracle Utilities cloud services. If Implementation Support Services are included in your Oracle Utilities cloud service(s), it will be stated in the relevant services descriptions.

The scope of the Implementation Support Services provided by Oracle is limited and currently includes (but is not limited to) the following:

Oracle will work to:

- Provide pre-configured templates (where available). These templates may be limited in scope (and may not completely align with the scope of the implementation project) and may only be available in the English language.
- Provide Utility Reference Model and other documentation describing the business processes that are the basis for the template configuration.
- Conduct any mandatory gate reviews
- To the extent necessary and under exceptional circumstances, execute scripts (authored by the customer) to resolve data issues.
 - Scripts submitted for execution to correct data issues will be subject to review for compliance with Oracle's Software Security Assurance standards. Scripts that do not comply will be returned for correction; resubmission will require a further compliance review with approval before execution will be scheduled.
 - There is a limit of four (4) script reviews in any calendar month. Review requests beyond this entitlement may be subject to additional fees.

Customers/Implementers retain complete responsibility for all other aspects of implementing the cloud service, including (but not limited to):

- Overall setup project management, including responsibility for management of the scope, the project plan/schedule and budget.
- End-user training activities and organizational change management.
- Leading and managing the user system review.
- Designing and testing all configurations and extensions to ensure they do not adversely affect performance.
- Identifying, designing, documenting and implementing any business process changes and system operation processes.
- Coordinating with external vendors or service providers to manage dependencies that could impact the overall project scope and schedule.
- Designating a project manager who shall be responsible for coordinating all customer/implementation related activities and responsibilities with respect to provisioning these Oracle Cloud Services.
- Business process change activities including end-user communication (e.g., status updates, newsletters, forums, etc.).
- Planning and executing all testing activities.
- All cut-over and roll-out activities.

- Business intelligence or data warehouse implementation/integration (if required).
- Procuring, setting up or otherwise provisioning any additional hardware, software or services as required.
- Providing any network hardware and/or software that may be required to connect to the Oracle Utilities cloud service(s).
- Scheduling any mandatory gate reviews, and ensuring that the customer and implementation meets any specified gate review entry conditions or other criteria.
- All data conversion/migration/cleansing activities such as:
 - Extracting, transforming and loading data into migration staging tables
 - Using cloud service data conversion tools (where available) to load data into the production environment
 - Creating or updating any required validation scripts
 - Any/all data cleansing activities that may be required (NB: these must be done in the source application(s) and not directly in the cloud service environment(s))
- Providing all in-scope data conversions and interfaces in formats supported by the relevant Oracle Utilities cloud service(s).
- The following interface/integration related activities:
 - Building and testing of any interfaces to or from the Oracle Utilities cloud service(s) (unless stated otherwise)
 - Any ongoing synchronization and interface monitoring activities between customer owned Customer Information System(s) (CIS) and Oracle Utilities cloud service(s)
 - Complete end to end integration flows using template interfaces
 - Any configuration of interfaces external to the Oracle Utilities cloud service(s) that are required to match the published specification for interfacing with the Oracle Utilities cloud service(s)

The provision of these Implementation Support Services is contingent on the following:

- Any integration middleware used to implement any integration will not be hosted within any Oracle Utilities cloud service(s).
- Turnaround time will be no longer than two (2) working days unless otherwise agreed. Turnaround time refers to time taken by the customer/implementation team to respond to and confirm design elements and decision points during the performance of the Implementation Support Services.

Live Operate Services

Live Operate services are services that Oracle provides to assist you with the ongoing operation of supported Oracle Utilities cloud services, once live and in production. If Live Operate Services are included in your Oracle Utilities cloud service(s), it will be stated in the relevant services descriptions.

The scope of the Live Operate Services provided by Oracle is limited and currently includes the following:

Oracle will work to:

- Assign a Customer Success Manager ("CSM") to manage delivery of the Oracle Utilities cloud service(s). The CSM will be the primary point of contact, will act as the first point for escalations, will monitor the progress of any related service requests ("SR") and confirm that all Oracle Utilities cloud services are performed in accordance with targets.
- Provide access to information about incidents and changes made to any of your Oracle Utilities cloud service environment(s).
- Upon request, create and deliver a Quarterly Status Report summarizing the activities undertaken over the past quarter and those scheduled as major future events.
- Upon request, offer quarterly meetings with customer/implementation oversight team to present, review and discuss the Quarterly Status Report.
- Monitor infrastructure and application availability and resolve any incident that is within Oracle's scope or responsibility.
- Provide primary Help Desk Services from 08:00 to 17:00 your local time on Oracle working days.
- Respond to severity 1 incidents 24 hours per day, 365 days per year.
- Provide incident management and problem management services for events related to Oracle Utilities Cloud Services, including:
 - Analyzing issues and resolving any incidents that are within Oracle's scope or responsibility
 - Escalating any issues not within Oracle's scope or responsibility to you for resolution
 - Provide infrastructure logs to assist in the diagnosis and remediation of incidents within your scope or responsibility. NB: these logs may be scrubbed for security purposes and other sensitive data.
 - Executing scripts authored by You to resolve data issues, but only to the extent such execution is necessary and the circumstances necessitating execution are exceptional
 - Scripts submitted for execution to correct data issues will be subject to review for compliance with Oracle's Software Security Assurance standards. Scripts that do not comply will be returned for correction; resubmission will require a further compliance review with approval before execution will be scheduled.
 - There is a limit of two (2) script reviews in any calendar month.

Customers remain completely responsible for all other aspects of using or otherwise operating the cloud service. Examples of customer obligations in this regard would be to:

- Assign a manager to act as the primary conduit for all issues relating to the delivery of these services.
- Provide Oracle with the dates for key business and technology events (i.e. testing calendar, refresh schedule etc.) at least thirty (30) days prior to the event.
- Assign appropriate resources to support your activities.
- Support scheduling of meetings as required.
- Participate in all scheduled meetings.
- Manage all activities, including:
 - Prioritizing work activities
 - Providing coordination across any teams and/or interested parties external to Oracle.
 - Escalation of issues to the Oracle CSM in a timely manner.
 - Providing any information required to progress service requests. Oracle is not responsible for meeting any agreed (or stated) targets or objectives if required or requested information is not forthcoming in a timely manner.
 - Assigning appropriate resources to conduct all required acceptance testing for all software packages delivered.
 - Accepting all software packages prior to promotion to the Production environment.
 - Maintaining a contact list for all persons performing governance functions.
 - Participating in Oracle's internal quality assurance processes on a mutually agreed schedule.
- Manage the Oracle Utilities cloud services, including:
 - Defining and (as necessary) modifying batch schedules to meet business needs.
 - Monitoring batch and interface processes to confirm and verify completion.
 - Defining, implementing, testing and deploying any changes to the configuration and extensions required to:
 - Resolve incidents or problems within the customers scope or responsibility
 - Meet evolving business needs
 - Conform with upgrades, patches or any other Oracle Utilities cloud service requirements or prerequisites.
- Notify Oracle of any incidents detected.
- Action each SR in accordance with the relevant Oracle Cloud Hosting and Delivery Policies.
- Establish the method of communication between the incident management team and the Oracle team for each incident.
- Redirect any SRs to the correct (non- Oracle) support team if the SR is not within the scope of the Oracle Utilities cloud service(s).

- Assist the Oracle team with SR analysis of data originating outside the applications.
- Correct business data as reasonably requested by Oracle to achieve closure of an identified problem.
- Monitor customer network and network connections to ensure sufficient bandwidth and performance.
- Conduct all functional, regression, performance, system integration, acceptance and/or user acceptance testing as appropriate, and accept and approve all software changes, prior to the production roll out of any change, in accordance with any agreed-on release management process, for any change resulting from:
 - An incident remedy or fix, or
 - Any service pack update or upgrade.
- Provide authorizations and/or validations for data correction and/or adjustments to the supported environments.
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The `_random` module includes code based on a download from <http://www.math.sci.hiroshima-u.ac.jp/~m-mat/MT/MT2002/emt19937ar.html>. The following are the verbatim comments from the original code:

A C-program for MT19937, with initialization improved 2002/1/26.

Coded by Takuji Nishimura and Makoto Matsumoto.

Before using, initialize the state by using `init_genrand(seed)` or `init_by_array(init_key, key_length)`.

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<http://www.math.sci.hiroshima-u.ac.jp/~m-mat/MT/emt.html>

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Sockets

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Modified by Jack Jansen, CWI, July 1995:

- Use binascii module to do the actual line-by-line conversion between ascii and binary. This results in a 1000-fold speedup. The C version is still 5 times faster, though.
- Arguments more compliant with Python standard

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Original location:

<https://github.com/majek/csiphash/>

Solution inspired by code from:

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djb (supercop/crypto_auth/siphhash24/little2)

Jean-Philippe Aumasson (<https://131002.net/siphhash/siphhash24.c>)

strtod and dtoa

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cfuhash

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