ORACLE DATA SHEET

Oracle Hospitality OPERA Property (vs 5.5+)

ORACLE HOSPITALITY

Network and Communications Guidelines

Oracle Hospitality's 'OPERA property' is an enterprise platform for hotel operations and distribution. It offers the comprehensive, next-generation capabilities hotels need to enhance guest experiences and improve operating efficiency. The core software can be self-hosted either at the customers location, within a 3rd party datacenter or it can be deployed from an Oracle Hospitality Cloud facility.

The product leverages Oracle 12c forms based architecture which is based on weblogic that results in less stringent latency requirements for application use.

Whilst this document outlines the current application communications requirements, it does not however extend to the many third party interfaces which connect to the product. These use a variety of different protocols and architectures, all of which require a separate certification and design process.

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Changes to Architecture

With the introduction of 12g forms server, the forms client runs natively on Java, which makes the client more responsive and easier to deploy securely over the public internet.

This upgraded forms architecture allows OPERA Property to function over a variety of communication networks from low cost, best effort public internet services to expensive, redundant private switched wide area private networks.

Regardless of network type however, there are a number of core fundamental requirements that must be satisfied to ensure the application's performance is as expected. The three main areas which need to be considered are:

- Latency
- Available Bandwidth
- Jitter/Loss

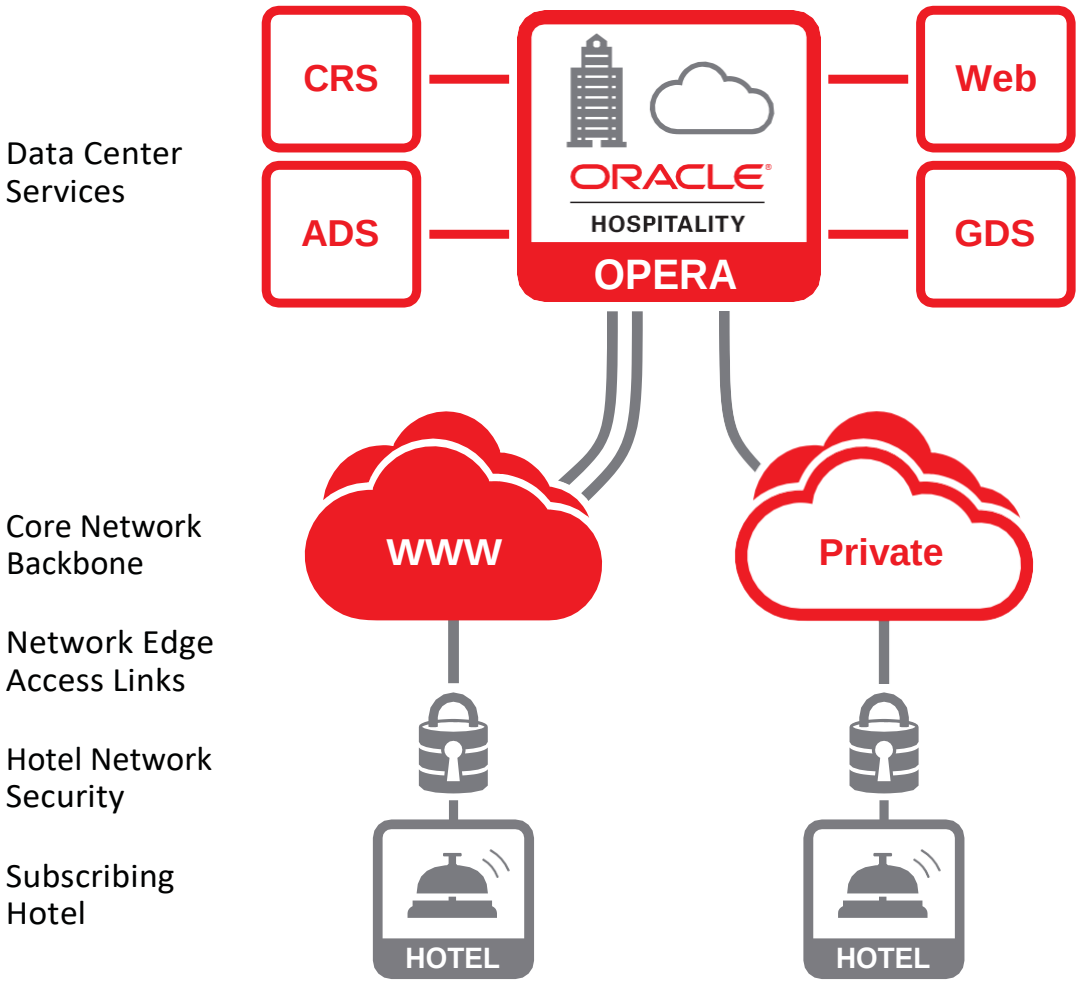

Figure 1. Showing the orientation of the data center, backbone networks and subscribing hotels.

Latency

Latency is the measurement of time taken for network packets to traverse a network and is a function of a number of factors but most notably **distance** from the Datacenter, **access technology**, **last- mile bandwidth** and **network contention**. It is the single biggest factor which will affect perceived application performance and can easily be tested by performing a network 'ping' test.

Table 1 below indicates recommended latency limitations when using OPERA Property, this should also take into account the type of hotel Operation considered.

For example, for high transactional Operations with a heavy peak check-in/out workload should have an average latency to the Data Center under 150ms, beyond this, whilst the application will continue to run, the User Experience will degrade progressively with additional latency.

Latency	Business Classhotel HighTransactional Volume	Resort Style MediumTransactional Volume	Small and Boutique Style LowTransactional Volume
1–120 ms	✔	✔	✔
121–200 ms		✔	✔
201–300 ms			✔

Table 1. Recommended latency limitations for OPERA 5.

How should latency be measured?

Ping tests can measure latency from the datacenter edge to the client machine where the test is running as indicated in figure 2. Ideally these tests should be run over a period of 7 days at a sample rate of every 5 minutes to ensure that representative stats are captured. There are a number of good network testing utilities to assist with this if network monitoring is not in place.

If a utility such as wireshark, gping, or nping is used to measure the ping times, it will also allow for the accurate capture of the minimum baseline response times. Response times which are above this minimum baseline are often referred to as 'jitter', and are a good indicator of oversubscribed access-links. In general network jitter should not exceed 10% or 1 in 10 packets.

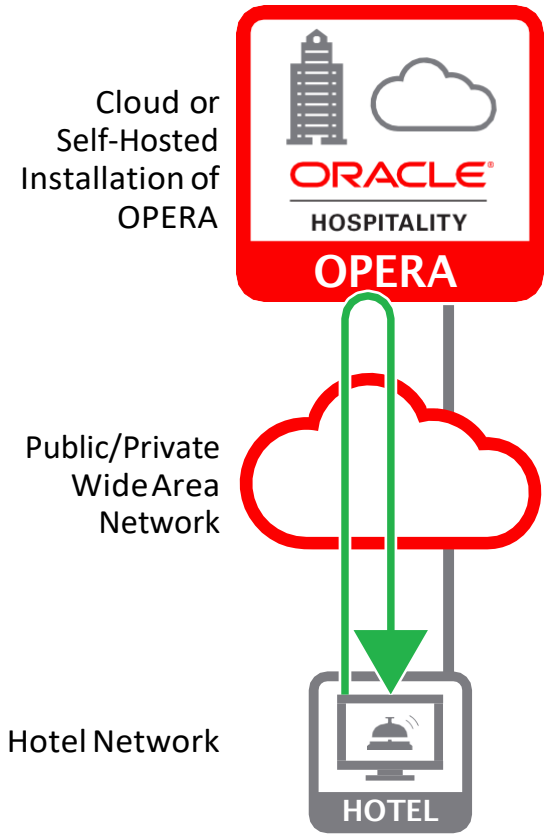

Figure 2. Showing ping packet location originating from subscribing hotel to facility edge. Green arrow shows ping test from front desk to locations given in and figure 3.

Where should OPERA Property be located?

OPERA Property can be located at the customers' preferred hosting facility or datacenter, or from an Oracle Cloud services facility which have multiple geographically redundant locations in each of the four major global regions. (US, EMEA, LATAM & AP).

When deciding on which regional datacenter facilities to use, you should take into account the geographic location of the hotel chain, the type of hotel Operations, and most importantly the network performance between the subscribing hotels and the datacenter facility.

If a chain decides to leverage Oracle Hospitality Cloud services then it should undertake network latency checks in the form of ping times from the subscribing hotel to the preferred Regional facility.

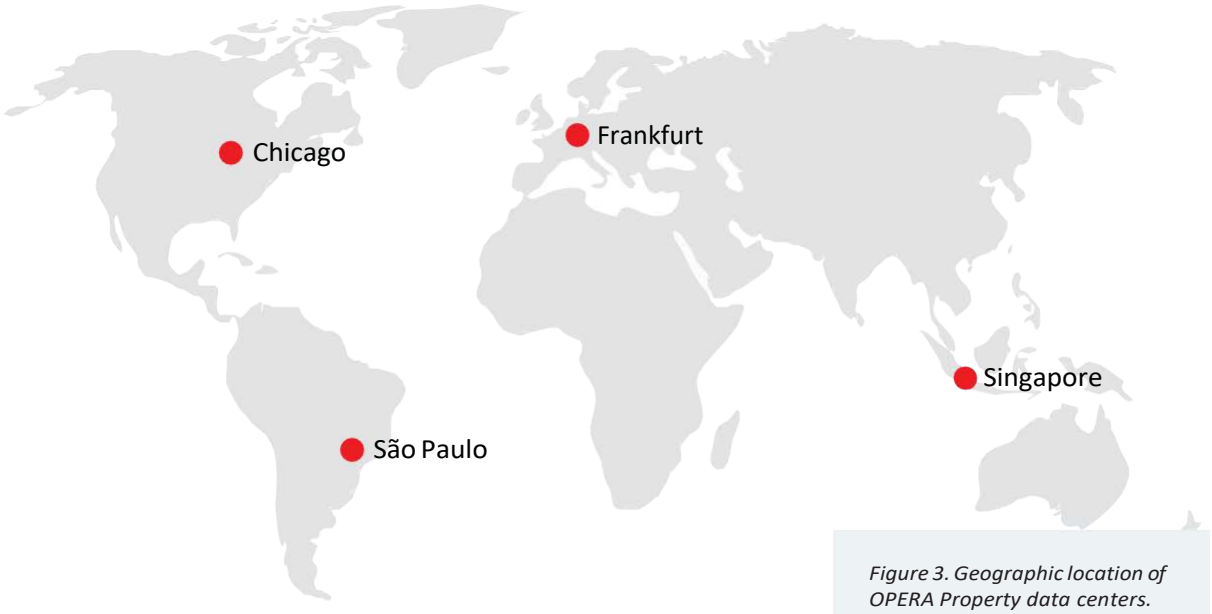

Figure 3. Geographic location of OPERA Property data centers.

Bandwidth Considerations Per Hotel

Network bandwidth refers to the data rate and is a measure of a network's ability to transfer data.

In most networks it is usually limited by the capacity of the local network edge access link between the subscribing hotel and its core network backbone, as shown at right.

It is important therefore, that when designing the type of circuit required for OPERA Property that the following requirements are adequately scoped:

- Total number of physical workstations within the property which will be required to access OPERA Property.
- If existing links are to be utilized, that a capacity plan of available bandwidth during peaks is undertaken.

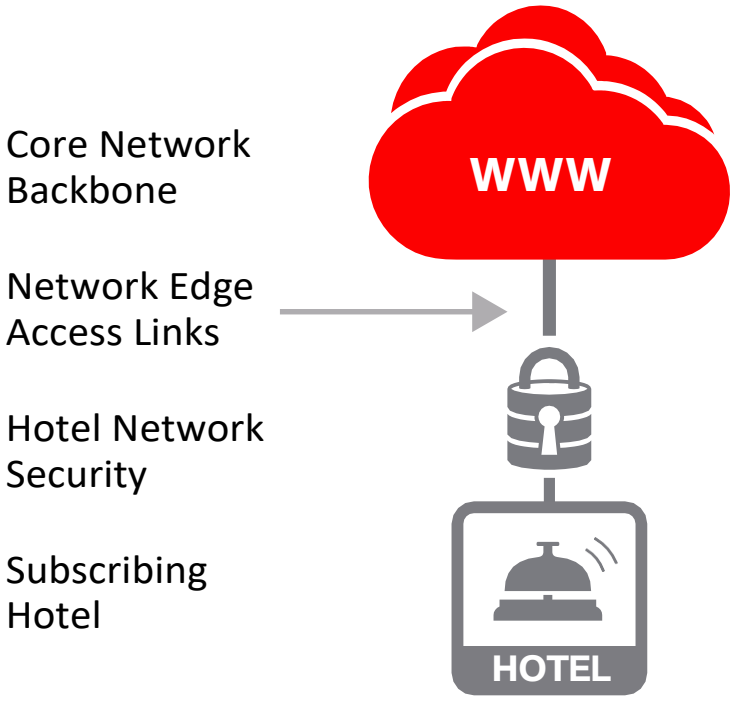

Figure 4. Showing network edge 'last mile' links which are typically limiting factors in corporate network designs.

Bandwidth Calculations

During the normal operation of OPERA Property the bandwidth requirements are relatively small, however these do peak when a user requests data to print, or requires a download of exported data. Modelling this data usage during normal operations can be challenging however the following formula can be used as a guide:

Recommended minimum bandwidth (Mbps) per hotel =

Bandwidth (Mbps) = W x 0.1

Where: W=Total Physical Workstations

This formula will result in the following bandwidth estimations which take into consideration printing and interfaces.

Depending on the available bandwidth tiers, the local access link should always be rounded up from the value calculated in table 3.

Workstations	Min. Bandwidth (Mbps) (Rounded)
10	1
50	5
100	10

Table 2: Site bandwidth requirements by workstation count.

Capacity plan where existing links are used

Where existing circuits are planned to also carry OPERA traffic, it is important that a capacity plan is undertaken to ensure that sufficient spare bandwidth is available.

Primary & Redundant Network Considerations

A good reliable network is a fundamental requirement for any cloud based or remotely hosted application. An increased use of cloud applications which leverages the internet as the core backbone has resulted in a migration away from more expensive private switched networks to internet based ones to reduce costs. Hotel Group IT Operations should still review the need for access link redundancy to determine if there is a sufficient business case to provide dual access circuits and mitigate the risk of single telco based network outage. Core to this process should be the risk involved, the type of local vendors available, the access technology available and how to quickly detect and fail over links.

What type of backbone network can be used?

OPERA Property is designed to be operated securely from a browser over a shared public or private network. The Oracle hospitality cloud facilities have redundant internet circuits in place and depending on the type of application service used, can also accommodate the deployment of private network CPE devices allowing customers to connect their private core network if required.

What type of local access link technology can be used?

The type of the access technology used does not affect the ability to use OPERA as long as the network allows TCP/IP connectivity to the Oracle Hospitality Data centers and latency and bandwidth requirements are met.

Security and Port Considerations

To connect to OPERA Property deployed from an Oracle Cloud facility, customers will be asked to ensure they allow TLS (TCP 443) outbound to the OPERA data center on their local hotel network security devices.

Jitter definition

Jitter is defined as a variation in the delay of received packets. The sending side transmits packets in a continuous stream and spaces them evenly apart. Jitter occurs where network congestion, improper queuing, or configuration errors results in an inconsistent delay in delivery at the receiver.

			CHI														
			35	DCA													
			27	56	DEN												
			44	39	18												
Frankfurt	166	301	116	100	140	135	FRA										
			209	232	186		237										
			235	221	248		164										
			63	68	43		161										
			98	83	122		20										
			70	66	51		159										
			41	32	53		129										
			26	9	53		92										
			107	91	131		12										
			30	6	56		96										
Sao Paulo	374	416	165	157	168	161	239	352	364	185	223	183	129	158	231	162	SAO
			56	83	36		164										198
			59	78	32		161										194
			246	269	223		274										389
			225	249	202		203										369
			232	237	209		305										357
			160	176	135		263										296
			14	24	41		106										164

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