ORACLE DATA SHEET

Oracle Hospitality OPERA Cloud Services

ORACLE HOSPITALITY

Network and Communications Guidelines

OPERA Cloud Services is a cloud-based mobile-enabled platform for next generation hotel management that can scale from small single property environments to large hotel chains with many thousands of rooms using the same underlying architecture.

To connect to OPERA Cloud, the hotel operator needs to select a network type and provider that can provide both the network performance and service uptime to support the operational needs of a hotel operation. Attempting to deploy OPERA Cloud over a network which is unreliable, or slow will result in slow application performance, low staff productivity and ultimately a poor guest experience.

ORACLE

Architecture

The architecture of OPERA Cloud has been designed to operate securely over a variety of network types from cost effective, 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 which must be satisfied to ensure application performance is as expected. The three main areas which need to be considered are:

- Latency
- Available Bandwidth
- Jitter/Loss

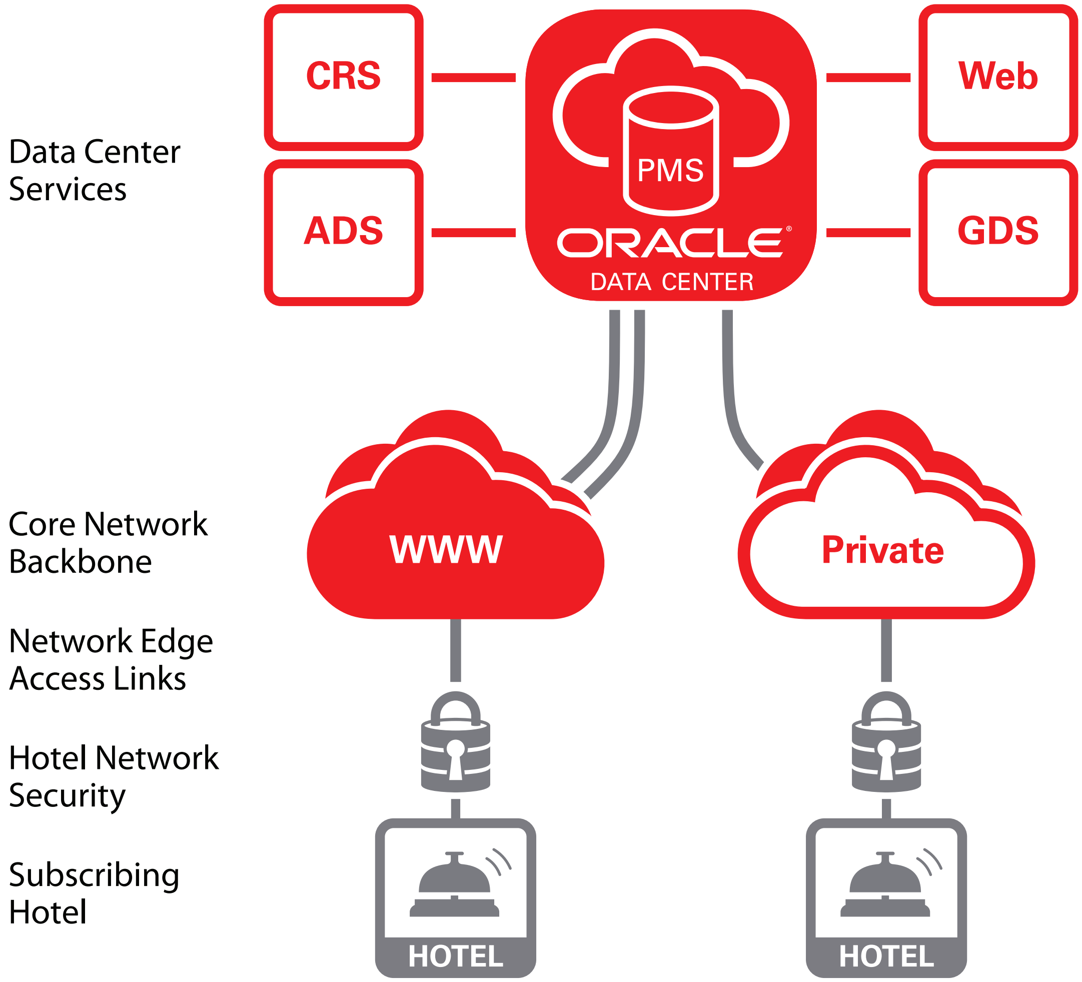

Figure 1. Showing the orientation of the data center, backbone networks and subscribing hotels.

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 data center, 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 Cloud, 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 200 ms. Beyond this, while the application will continue to run, the user experience will degrade.

Latency	Business Class hotel High Transactional Volume	Resort Style Medium Transactional Volume	Small and Boutique Style Low Transactional Volume
1–200 ms	✔	✔	✔
201–300 ms		✔	✔
>300 ms			✔

Table 1. Recommended latency limitations for OPERA Cloud.

How should latency be measured?

Ping tests can measure latency from the data center 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.

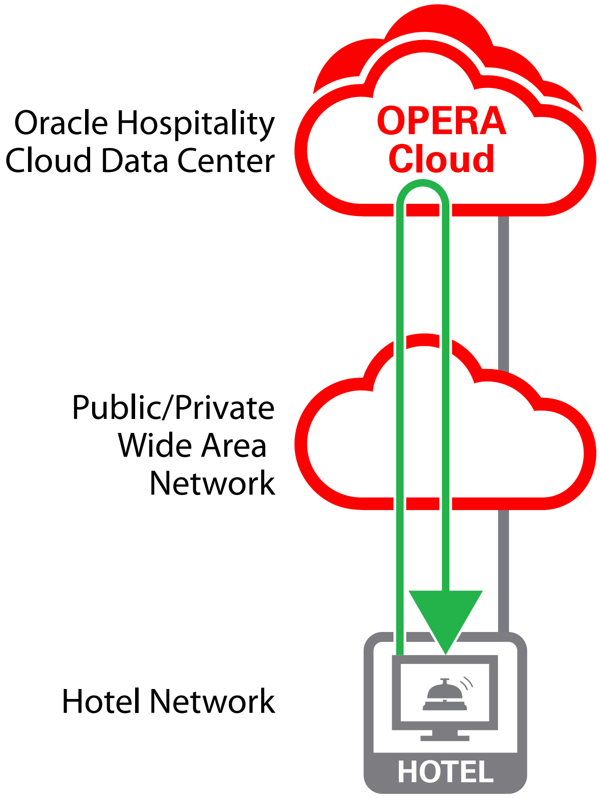

Figure 2. Showing ping packet location originating from subscribing hotel to facility edge. Green arrow shows ping test from front desk to addresses given in table 2 and figure 3.

Live IP Address Testing

Oracle Hospitality operates data centers out of each region. To measure the response times to each facility the following pingable addresses in each corresponding region can be used.

Regional Facility		Test Live IP Address
AMER	Chicago, Illinois, US	66.77.117.5
AMER	Denver, Colorado, US	66.77.4.228
JAPAC	Singapore	203.208.249.254
EMEA	Frankfurt, Germany	62.209.56.10
LAD	São Paulo, Brazil	200.186.94.194

Table 2: Publicly available IP addresses for ping tests.

Which Oracle Data Centers should be used?

Globally, OPERA Cloud will be available from major regional locations with each major regional presence (US, EMEA & AP) leveraging a minimum of two geographically redundant data centers to ensure that full geographic failover can be provided if required. A consistent design approach also allows all regions to adhere to a globally consistent service-level agreement depending on user requirements.

Oracle Hospitality's infrastructure team will determine which regional data center facilities to use by taking 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 hosting data center facility.

It is also possible to use multiple facilities however this can add to the cost and complexity and depends on the size, growth strategy and existing central reservation systems the hotel chain has.

Figure 3. Geographic location of OPERA Cloud 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 Cloud that the following requirements are adequately scoped:

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

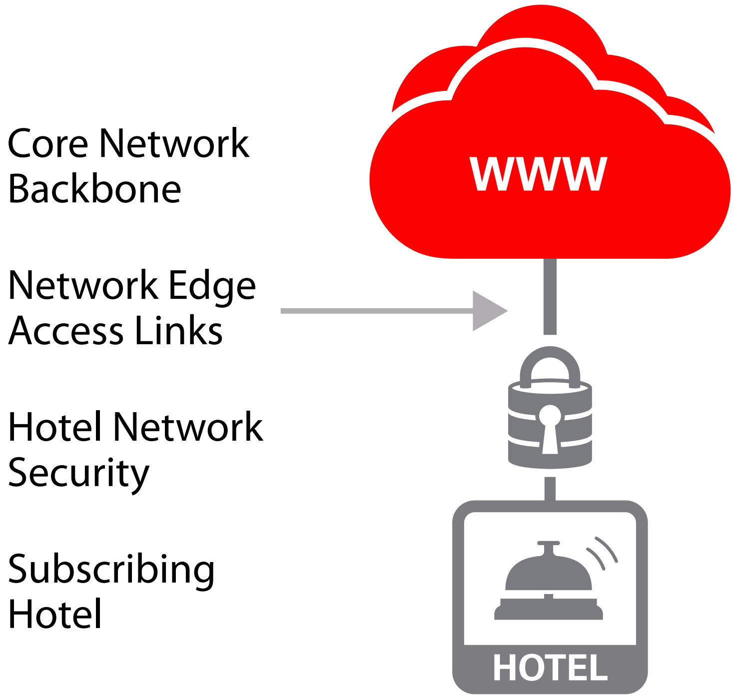

Figure 4. Showing network edge 'last mile' links which are typically limiting factors in corporate network designs.

Bandwidth Calculations

During the normal operation of OPERA Cloud 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=(W×0.3)

Where: W=Total Physical Workstations

This formula will result in the following bandwidth estimations. Depending on the available bandwidth tiers, the local access link should always be rounded up from the value calculated in table 3.

Workstations	Bandwidth (Mbps)
5	1.5
10	3
25	7.5
50	15
100	30
150	45

Table 3: Site bandwidth requirements by workstation count.

Capacity plan where existing links are used

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

What type of backbone network can be used?

OPERA Cloud is designed to be operated securely from a browser over a shared public or private network. The OPERA Cloud hosting 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 Cloud 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 Cloud, customers will be asked to ensure they allow TLS (TCP 443) outbound to the OPERA Cloud 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.

Ashburn	ASH																								
Bangalore	231	BANG																							
Beijing	295	162	BEIJ																						
Chicago	36	245	273	CHI																					
Wash. DC	2	230	296	35	DCA																				
Denver	55	257	250	27	56	DEN																			
Dallas	38	264	263	44	39	18	DFW																		
Frankfurt	101	166	301	116	100	140	135	FRA																	
Hong Kong	231	95	67	209	232	186	198	237	HKC																
Hyderabad	222	12	152	235	221	248	254	164	85	HYDE															
Los Angeles	67	239	231	63	68	43	37	161	167	230	LAX														
London	84	158	287	98	83	122	118	20	223	149	151	LON													
Mexico	65	297	289	70	66	51	35	159	225	288	61	149	MEX												
Miami	31	257	293	41	32	53	36	129	229	248	65	111	63	MIA											
New York	11	223	295	26	9	53	48	92	231	213	76	75	74	41	NYC										
Paris	92	160	295	107	91	131	127	12	231	157	160	11	157	120	84	PAR									
Philadelphia	7	226	298	30	6	56	44	96	234	216	73	78	70	37	5	87	PHL								
Sao Paulo	156	374	416	165	157	168	161	239	352	364	185	223	183	129	158	231	162	SAO							
Seattle	81	249	242	56	83	36	53	164	177	239	33	154	90	79	79	155	83	198	SEA						
San Fran.	77	230	223	59	78	32	48	161	166	221	12	151	70	75	76	160	79	194	23	SFO					
Shanghai	268	133	32	246	269	223	235	274	43	123	204	259	261	266	268	268	271	389	214	195	SHA				
Singapore	248	58	103	225	249	202	215	203	41	54	184	188	242	246	247	196	250	369	193	174	75	SIN			
Sydney	236	165	201	232	237	209	204	305	143	155	172	290	230	234	245	298	242	357	201	182	172	107	SYD		
Tokyo	175	134	127	160	176	135	150	263	59	124	117	246	169	173	174	254	177	296	127	107	98	76	174	TOK	
Toronto	25	235	285	14	24	41	57	106	221	226	75	88	83	54	15	97	19	164	68	65	257	236	244	164	TOR

Table 4. Typical city-to-city global network latencies from OPERA Cloud data center facilities (highlighted).

Peace of Mind

Cloud Services

Let us do the work with centrally-hosted managed services.

- Lower total cost of ownership
- Fast resolutions to less frequent issues

Support When You Need It

We are committed to ensuring that your business needs are met as quickly and efficiently as possible.

- Phone and internet-based customer support 24 hours a day, 7 days a week
- We provide both on-site and remote support, training, and services

Visit Our Internet Self Service or
Call (866) 287-4736 (US/CAN)

CONTACT US
For more information about Oracle Hospitality, visit oracle.com/hospitality or call +1.800.ORACLE1 to speak to an Oracle representative.

CONNECT WITH US

- blogs.oracle.com/hospitality
- facebook.com/OracleHospitality
- twitter.com/OracleHosp
- oracle.com

Integrated Cloud Applications & Platform Services

HOSPITALITY