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 an internet service with sufficient bandwidth to support the operational needs of a hotel operation. Attempting to deploy OPERA Cloud over an unreliable or slow network will result in slow application performance, low staff productivity, and ultimately a poor user experience.

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Architecture

The architecture of OPERA Cloud has been designed to operate securely using the public Internet from redundant and highly scalable Oracle Cloud Data Centers. This ensures that users with different form factors like desktop, tablet, or mobile can access the same data.

For OPERA Cloud to perform well there are a number of network considerations that must be satisfied.

To ensure application performance is as expected, you must consider three main areas:

- Latency
- Available Bandwidth
- Jitter/Loss

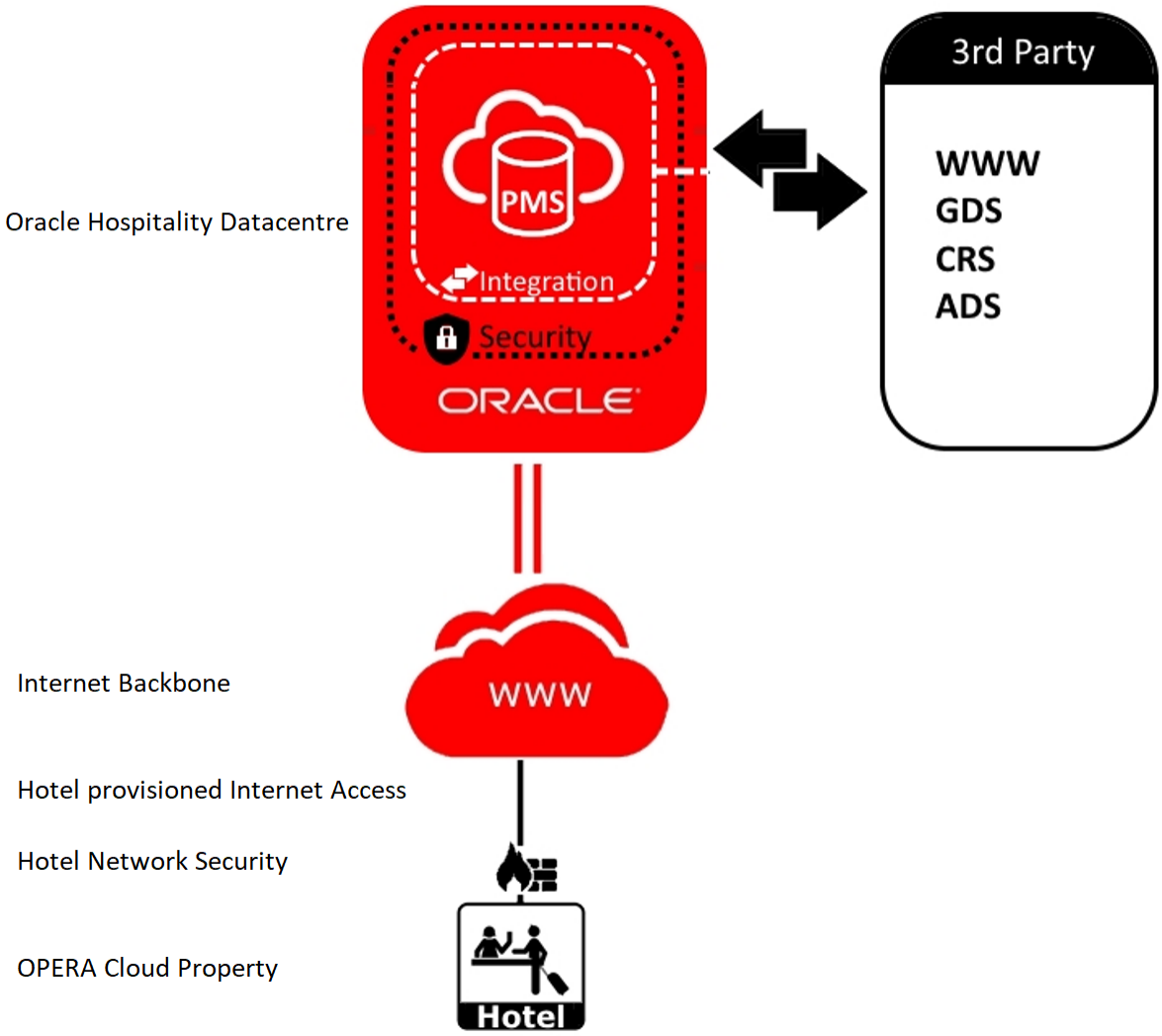


Figure 1. Showing the orientation of the data center, backbone networks and subscribing hotels.

Latency

Latency is the measurement of time taken for network packets to traverse a network and is a function of a number of factors, most notably distance from the data center, access technology, last-mile bandwidth, and network contention. It is the single biggest factor that affects perceived application performance and can easily be tested from the proposed site by running a web-based speed 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, high transactional operations with a heavy peak check-in/out workload should have an average latency to the data center under 250 ms. Beyond this, while the application continues 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
1–250 ms	✓	✓	✓
251–300+ ms		✓	✓

Table 1. Recommended latency limitations for OPERA Cloud.

How should latency be measured?

Latency can be measured in two ways, either by running a ping test or by running a Traceroute to the proposed datacenter for your hotel or chain.

Both tests measure network latency from the client network to the datacenter over the public Internet as shown in figure 2. This test also confirms that the client site is using the most efficient path available.

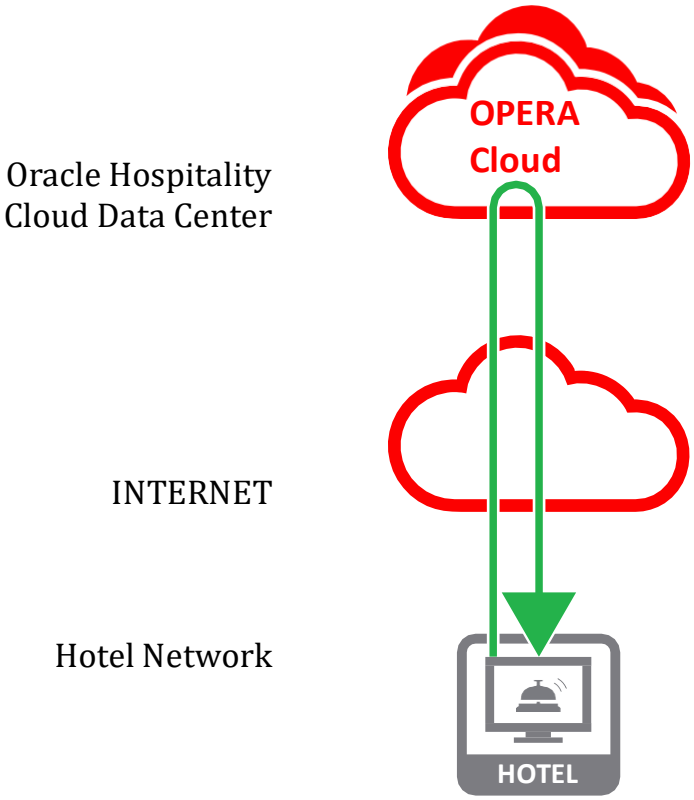


Figure 2. Showing packet originating from subscribing hotel to facility edge. By using either ping or the traceroute command, the network latency to the datacenter will be displayed.

Which Oracle Data Centers should be used?

When testing latency using ping or traceroute commands, latencies to the following facilities only should be recorded:

North America & Latin America – Ashburn, VA USA (Washington DC): 129.213.130.222

Europe, Middle East, and Africa – Frankfurt, Germany: 130.61.231.171

Asia Pacific – Sydney, Australia: 152.67.119.2

Asia Pacific - Singapore: 138.2.87.181

Asia Pacific – Mumbai, India: 140.238.254.31

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 hotel's size, growth strategy, and existing central reservation systems.

Figure 3. Geographic location of OPERA Cloud data centers.

How to perform Latency testing?

The following provides instructions to guide you in completing latency testing between your property and Oracle Cloud Infrastructure Region(s). It is intended solely to help you assess the network feasibility for your move to OPERA Cloud and to plan your Information Technology projects.

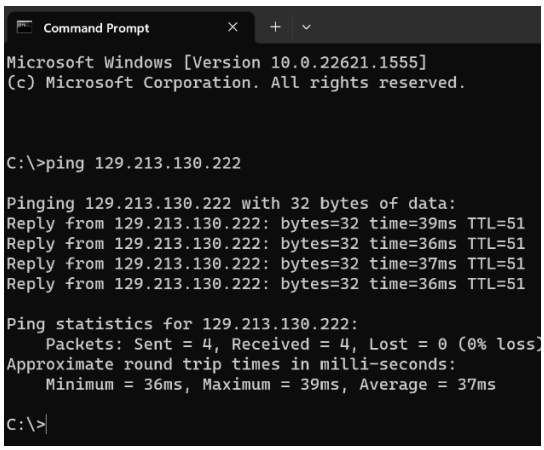
Information is supplied for both Windows and Mac Operating Systems.
When running your latency testing, please ensure you use the correct Oracle Cloud Infrastructure (OCI) region(s) public IP address listed below as your endpoint.

Windows Operating System

The below provides instructional steps to run Ping and Traceroute tests from your Windows Operating System machine.

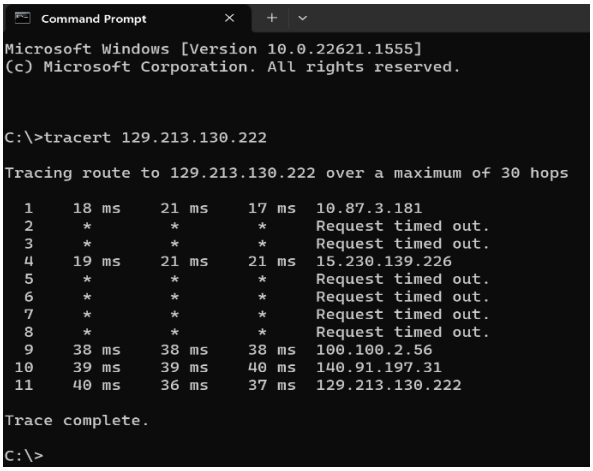
Ping Test

1) Open a Command Prompt window
    a. Search > cmd
2) Type the following
    a. Ping <<enter Oracle Cloud Infrastructure Region public IP Address>>
        i. Example (North America Ashburn): C:\>ping 129.213.130.222
3) Record Results as screenshot
    a. Example (North America Ashburn)



Traceroute Test

1) Open a Command Prompt window
    a. Search > cmd
2) Type the following
    a. tracert <<enter Oracle Cloud Infrastructure Region public IP Address>>
        i. Example (North America Ashburn): C:\>tracert 129.213.130.222
3) Record Results as screenshot
    a. Example (North America Ashburn)

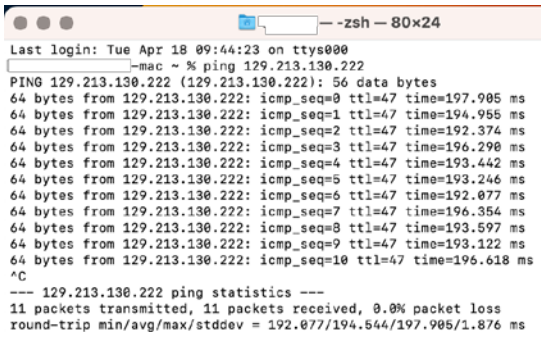


Mac Operating System

The below provides instructional steps to run Ping and Traceroute tests from your Mac Operating System machine.

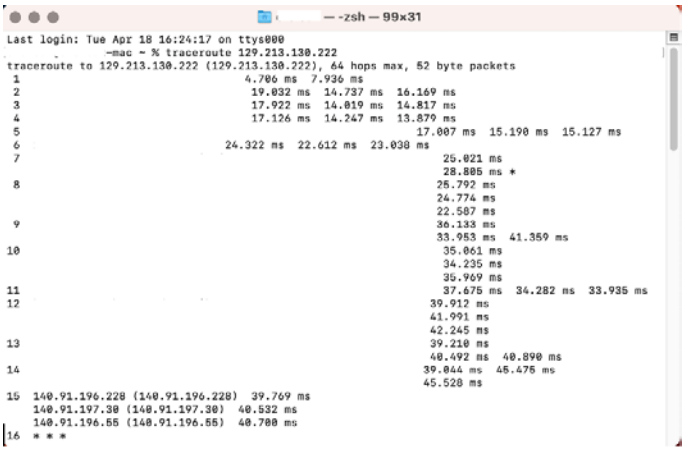
Ping Test

1) Open Terminal App
    b. Finder > Applications > Terminal (may be in Utilities folder)
2) Type the following
    a. Ping <<enter Oracle Cloud Infrastructure Region public IP Address>>
    b. Control + c may be required to stop ping test
    c. Example (North America Ashburn): x@x-mac ~ % ping 129.213.130.222
3) Record Results as screenshot
    a. Example (North America Ashburn)



Traceroute Test

1) Open Terminal App
    a. Finder > Applications > Terminal (may be in Utilities folder)
2) Type the following
    a. Traceroute <<enter Oracle Cloud Infrastructure Region public IP Address>>
        i. Example (North America Ashburn): x@x-mac ~ % traceroute 129.213.130.222
3) Record Results as screenshot
    a. Example (North America Ashburn)



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.

When designing the type of circuit required for OPERA Cloud, it is important 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 utilized, ensure sufficient free bandwidth is available during peaks.

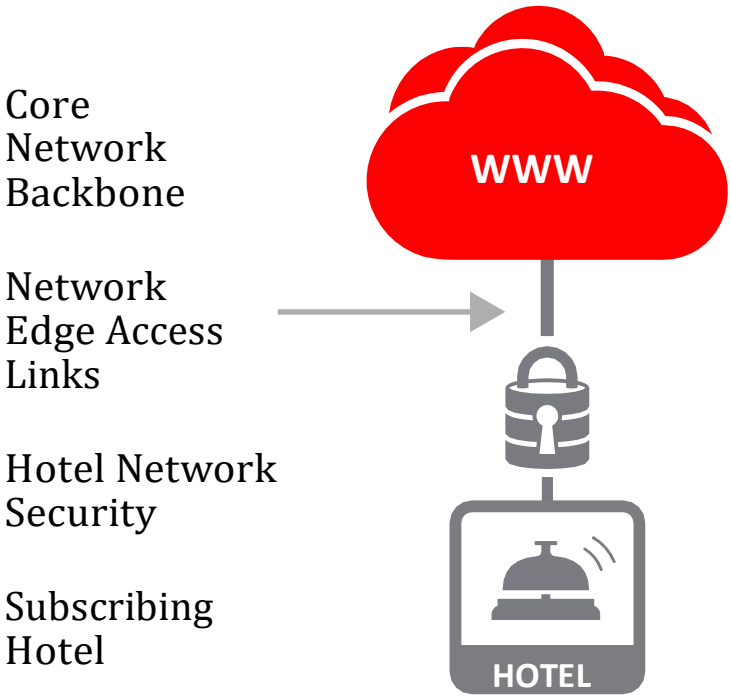


Figure 4. Showing network edge 'last mile' links which are typically limiting factors in corporate network designs.

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. To calculate this, the following formula can be used as aguide:

Recommended minimum bandwidth (Mbps) per hotel=(W×0.3)

Where: W=Total Physical Workstations

This formula results 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 the public Internet.

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 must allow HTTP and HTTPS/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).

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