

Johannesburg Stock Exchange

Colocation Services Documentation

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1. Document Control

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1.2. Document Information

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1.3. Revision History

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1.4. References

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Services Documentation	http://www.jse.co.za/Documents-and-Presentations/JseColocation/Co-location.aspx

1.5. Contact Details

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1.6. Glossary of Terms

#	Term	Definition
1.	Access Network	A network that allows JSE customers to connect to various JSE services.
2.	Additional Services	Secondary Products and Associated Services.
3.	API Specifications	The business and technical documents in relation to the Derivative Markets services provided to the Customer by the JSE from time to time.
4.	Associated Services	The services as elected by the Customer as detailed in section 4.2.
5.	Business Days	Any day other than Non-Business Days.
6.	Cabling	The cabling within a Hosting Unit.
7.	Colocation	A facility located in the JSE Primary Data Centre that allows for Customers to place their Equipment in closer proximity to the trading systems of the various JSE Markets.
8.	Colocation Services Order Form (CSOF)	The order form submitted by the Customer and signed off by the JSE for the Services.
9.	Cross Connect	The cabling between multiple Hosting Units across multiple Customers or the cabling between multiple Hosting Units nonadjacent or not in the same row to each other for the same Customer.
10.	Customer	A party that holds a contract with the JSE to utilise the Services.
11.	Customer Test Services	These are the test services for Equity Market and Derivative Markets' trading and information systems aimed at assisting Customers in the development and testing of their applications.
12.	Emergency Changes	Changes that are required to be implemented in the Hosting Unit by the Customer at a very short notice period in order to reinstate a disrupted service that has a high impact and is critical to the Customer business. This includes, without limitation, changes of existing Cabling, Inter-Connect or changes to existing applications in the Hosting Unit.
13.	Equipment	Customer's and or its Sub-Lessee's hardware and software installed in the Hosting Unit.
14.	Global Positioning System (GPS)	A space based satellite system that provides time information and will be used as the source for the Time Sync Service, this will not be available to Customers directly.
15.	Hosting Unit	A rack rented by the Customer from the JSE to colocate the Equipment within the JSE Primary Data Centre.

#	Term	Definition
16.	Information Subscribers	A party which has entered into one or more market data agreements with the JSE to cover access to the market data for the relevant JSE Markets.
17.	Inter-Connect	The cabling between multiple Hosting Units adjacent to each other in the same row, for the same Customer.
18.	JSE Customer Support	The help desk capability established to facilitate the resolution of queries and service requests relating to the Colocation Services.
19.	JSE Markets	For the purpose of the Services, being: <ul style="list-style-type: none"> • Equity Market (including JSE and the NSX) • Derivative Markets (including Equity Derivatives Market, Commodity Derivatives Market; Currency Derivatives Market; Interest Rate Market; and Interest Rate Derivatives Market)
20.	JSE Premises	One Exchange Square, 2 Gwen Lane, Sandown, South Africa.
21.	JSE Primary Data Centre	The secure data centre space allocated in the JSE Premises.
22.	JSE Services Agreement (JSA)	The agreement entered into by a party and the JSE which governs the use for certain JSE services.
23.	JSE Systems	The computer and/or communications systems and/or operated by or behalf of the JSE for the purposes of offering services.
24.	Live Connectivity Test	A test that is performed when a Customer requires a new production connection or changes to an existing production connection to the JSE.
25.	Managed Service Providers (MSP)	A service provider that manages the Equipment on behalf of a Customer. It will be the responsibility of the Customer to legalise this relationship.
26.	Meet Me Room	A facility within the JSE Primary Data Centre where telecommunication service providers can provide telecommunication services to Customers.
27.	Member	A party authorised in accordance with the JSE rules and directives to trade on the various JSE Markets.
28.	Member Client	A party that holds a contract with a Member to trade through such Member on the JSE Markets. A Member Client not sub-letting from a Member will be required to Cross Connect to a Member located in Colocation in order to trade on the JSE Markets that the Member is authorised for. It will be the responsibility of the Member Client and applicable Member to legalise this relationship.
29.	Namibian Stock Exchange (NSX)	The stock exchange for Namibia.
30.	Network Round Trip Latency	The average round trip latency measured between the Colocation network switch and the Equity Market trading/information gateways.

#	Term	Definition
31.	Network Service Providers (NSP)	A JSE accredited network service provider that provides telecommunications connectivity between the Colocation network and the Meet Me Room. It will be the responsibility of the Customer to legalise this relationship.
32.	Non-Business Days	Saturdays, Sundays and any public holiday as gazetted by the government of the Republic of South Africa from time to time.
33.	Non-Trading Hours	19h00 – 06h00 on Business Days.
34.	Personnel	Employees, agents, consultants, contractors, subcontractors of a party and their employees, agents, consultants, contractors and subcontractors.
35.	Planned Changes	Changes that follow the change management procedure and are approved and scheduled for implementation by the JSE. This includes, without limitation, JSE Planned Changes, new installations, new connects, setup or maintenance of Equipment in the Hosting Unit.
36.	Power Cycling	Soft and hard resetting of Equipment including servers, routers and switches. Connecting and disconnecting network cables and peripheral cards.
37.	Power Distribution Unit (PDU)	The device used to distribute power within the Hosting Unit.
38.	Precision Time Protocol (PTP)	It is a protocol used to synchronise systems clocks in compatible Equipment utilising a reliable time source i.e. GPS.
39.	Price List	The list of fees payable for the Services as published by the JSE from time to time.
40.	Primary Services	The services detailed in section 4.1.
41.	Remote Hands Support	The services detailed in section 6.
42.	Secondary Products	The services as elected by the Customer as detailed in section 4.3.
43.	Services	Renting of a Hosting Unit and any Additional Services as set out in the CSOF.
44.	Services Documentation	The business and technical documents in relation to the services provided to the Customer by the JSE, from time to time.
45.	Service Fees	The fees and charges as identified in the Price List.

#	Term	Definition
46.	Shared Infrastructure Providers (SIP)	<p>A JSE accredited entity that provides shared infrastructure services to more than one Member for trading or for the provision of market data to more than one Customer or Member Client in Colocation. This includes, without limitation:</p> <ul style="list-style-type: none"> • Application or application service hosting; • Platform hosting (e.g. virtual machines); • Shared network; • Physical infrastructure hosting services; • Colocation sub-letting.
47.	Sub-Lessee	A party to whom the Customer has sub-let the Hosting Unit.
48.	Time Sync Service	The services detailed in section 4.9.
49.	Trading Hours	06h00 – 19h00 on Business Days
50.	Visual Inspection	Observing, describing or reporting on Hosting Unit indicators.

2. Document Purpose

The purpose of this document is to provide Customers with detailed information relating to the Services. Additional documentation can be found on the JSE website:

<http://www.jse.co.za/Documents-and-Presentations/JseColocation/Co-location.aspx>

3. Service Overview

Colocation provides Customers with the fastest access to all the JSE Markets. It allows Customers to host their Equipment in the JSE Primary Data Centre so that they are closer to the trading and information systems, providing Customers with the lowest latency connectivity for trading and the receipt of real-time market data. There are several service benefits in using Colocation and these are described further in this document.

3.1. Customer Eligibility

The following parties will be eligible to subscribe to the Services:

- 3.1.1. Members
- 3.1.2. Member Clients
- 3.1.3. Information Subscribers
- 3.1.4. Shared Infrastructure Providers (SIPs)

3.2. Colocation Principles

The following key principles are applicable to Colocation:

- 3.2.1. Markets:** Colocation will be available for all JSE Markets.
- 3.2.2. Fees:** In increasing or varying any Colocation Service Fees, the JSE undertakes to treat the Customer equitably in relation to other Customers of the same Service, except for those Customers that take up the first 35 Hosting Units where the Time Sync Service will be free of charge for the first twelve months for those 35 Hosting Units only. Customers will require independent subscriptions to all other JSE services such as (not an inclusive list):
 - 3.2.2.1. Market data - The access to market data will be governed by the various market data agreements, as well as data fees which are separate to Colocation Service Fees.
 - 3.2.2.2. Trading - The access to trading will be governed by various agreements with the JSE.Separate fees are applicable to other JSE services e.g. enablement fees, COMP ID fees, JSE London PoP fees, etc.
- 3.2.3. Billing:** Customers will be billed monthly for all Services. Prorated billing is applicable for Customers enabled during a billing month.
- 3.2.4. Limited Capacity:** Hosting Units will be allocated on a first come first served basis within a limited capacity constraint in Colocation. It is important for Customers to note that once the available Hosting Units in Colocation have been rented by Customers; there will be NO further opportunity for any additional Hosting Units to be made available.
- 3.2.5. Service Equality:** The Colocation environment will be designed to provide equal performance from the trading/information gateways/proxies to each Hosting Unit regardless of the Hosting Unit location in Colocation.
- 3.2.6. Transparency:** The JSE will measure, monitor and report on Colocation network latency statistics and provide this information to Customers.
- 3.2.7. Redundancy:** Colocation has been designed to offer redundancy. The level of redundancy is set out further in this document.
- 3.2.8. Disaster Recovery:** Colocation will not be offered at the JSE remote disaster recovery site. Customers must therefore ensure that they can still connect and trade if the JSE operates out of the JSE remote disaster recovery site.
- 3.2.9. Customer Test Service:** Access to the Customer Test Services will only be facilitated via the Access Network and therefore access from Colocation is not facilitated.

3.3. Benefits of Colocation

3.3.1. New Trading Strategies: Enabler of low latency trading strategies through:

- High speed trading access
- Potential execution probability improvement
- Enhanced response to market movement

3.3.2. Cost Saving

- Reduced bandwidth cost

3.3.3. Risk Mitigation

- Reduced dependence on NSP performance
- Resilient Equipment throughout the Colocation environment

3.3.4. Network Latency Advantage

- Fastest trading/market data access across all JSE Markets. The diagram below illustrates the network latency¹ gain of Colocation compared to the Access Network. The latency of the trading engine is not included.

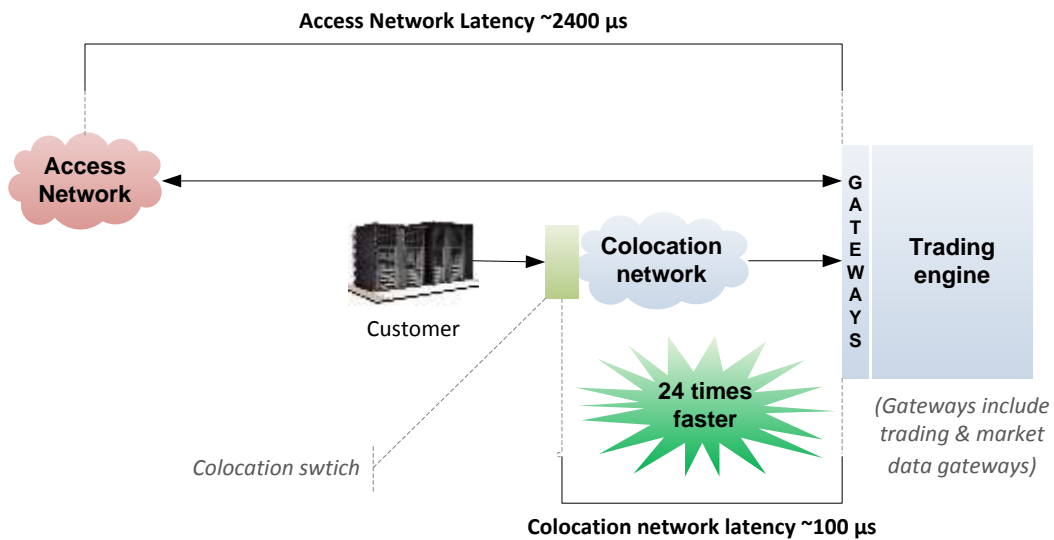


Figure 1: Network Latency

1: The latency measured in Colocation is from the Colocation network switch up until the relevant gateways and back to the Colocation network switch

3.4. Colocation Network Conceptual Design

The diagram below illustrates the conceptual design for Customers located in Colocation.

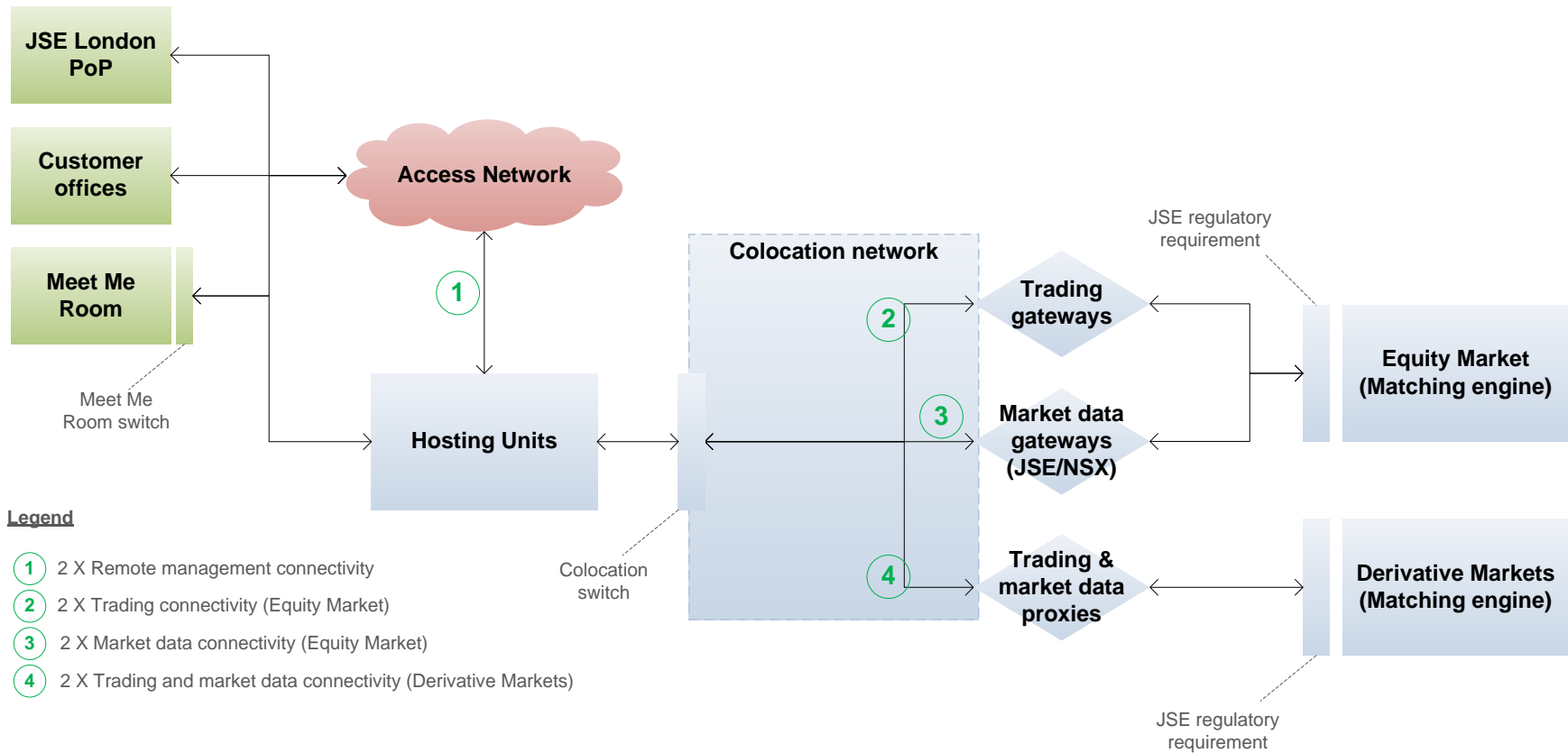


Figure 2: Colocation Network Conceptual Design

4. Service Summary

#	Service Specification	Service Specification	JSE Markets Applicable	Service Fee Applicable
4.1	Hosting Unit, which is inclusive of 4.1.1 to 4.1.5:	Primary Service	All JSE Markets	Included in monthly Hosting Unit Service Fee
	4.1.1 Equity Market trading and information connectivity	Primary Service	Equity Market	Included in monthly Hosting Unit Service Fee
	4.1.2 Derivative Markets trading and information connectivity	Primary Service	Derivative Markets	Included in monthly Hosting Unit Service Fee
	4.1.3 Remote management connectivity from the Access Network to Colocation	Primary Service	All JSE Markets	Included in monthly Hosting Unit Service Fee
	4.1.4 Network latency monitoring for 4.1.1 above	Primary Service	Equity Market	Included in monthly Hosting Unit Service Fee
	4.1.5 Power	Primary Service	All JSE Markets	Refer to JSE Price List for Service Fees
4.2	Hosting Unit initial setup	Associated Service	All JSE Markets	Refer to JSE Price List for Service Fees
4.3	Remote Hands Support	Associated Service	All JSE Markets	Included in monthly Hosting Unit Service Fee subject to available capacity on a first come first served basis
4.4	Remote Management Connectivity through the JSE London PoP to Colocation	Associated Service	All JSE Markets	Refer to JSE Price List for Service Fees
4.5	Inter-Connect	Secondary Product	All JSE Markets	Refer to JSE Price List for Service Fees
4.6	Cross Connect (s)	Secondary Product	All JSE Markets	Refer to JSE Price List for Service Fees
4.7	Sub-letting	Secondary Product	All JSE Markets	Refer to JSE Price List for Service Fees
4.8	Additional network latency monitoring	Secondary Product	All JSE Markets	Refer to JSE Price List for Service Fees
4.9	Time Sync Service	Secondary Product	All JSE Markets	Refer to JSE Price List for Service Fees
4.10	Additional Ports	Secondary Product	All JSE Markets	Refer to JSE Price List for Service Fees

Table 1: Service Summary

4.1. Primary Services Specifications

Primary Product Specifications	
4.1 Hosting Unit	<ul style="list-style-type: none"> ❖ The renting of a lockable Hosting Unit within Colocation with a maximum of 12 ports. ❖ Types of Hosting Units available include 3.3 kVA and 5.5 kVA. It should be noted that power usage is charged for separately. ❖ Only rental of full Hosting Units will be allowed and Customers cannot rent a portion of a Hosting Unit. ❖ The Hosting Unit is a high density enclosure unit with a height of 43U. ❖ Hosting Unit width X depth: 600mm x 1070mm. ❖ The removal of adjacent Hosting Unit panelling is not allowed. ❖ Included in the Hosting Unit Service Fee, is a JSE electricity consumption component which shall be subject to any revised charges or rates as notified by the Municipality of the City of Johannesburg or the National Energy Regulator of South Africa or any other authorised body from time to time as applicable to the JSE Premises.
4.1.1. Equity Market trading and information connectivity	<p><i>This connectivity uses 4 ports and enables Customers to connect to the Equity Market for trading and/or market data services via the Colocation network.</i></p> <ul style="list-style-type: none"> ❖ 10 X Giga bits per second fibre connectivity. ❖ 1 X primary trading connectivity through a single port to any or all of the Equity Market trading gateways that the Customer is entitled to be enabled for. ❖ 1 X redundant trading connectivity through a single port to the trading gateways enabled under the primary trading connectivity. ❖ 2 X market data connectivity (All A feeds on one port and all B feeds on one port) i.e. access to all market data gateways (Level 1 FIX, Level 2 ITCH, Indices, Regulatory News) depending on Customer contracted market data subscriptions. ❖ Only conformed software as per the Services Documentation may be used to connect to the trading and/or market data gateways.

4.1.2. Derivative Markets trading and information connectivity	<p><i>This connectivity uses 2 ports and enables Customers to connect to the Equity Derivatives Market, Commodity Derivatives Market, Currency Derivatives Market, Interest Rate Market and Interest Rate Derivatives Market for trading and/or market data services via the Colocation network.</i></p> <ul style="list-style-type: none"> ❖ 10 X Giga bits per second fibre connectivity. ❖ 1 X trading & market data connectivity through a single port. ❖ 1 X redundant trading & market data connectivity through a single port. ❖ Only conformed software as per the Services Documentation or API Specifications may be used to connect to either the trading or market data services.
4.1.3. Remote management connectivity from the Access Network to Colocation	<p><i>This connectivity uses 2 ports and enables Customers to connect remotely to the Equipment residing in Colocation via the Access Network. The Customer must have existing links from their own premises to the Access Network.</i></p> <ul style="list-style-type: none"> ❖ 1 X Giga bits per second fibre connectivity. ❖ 1 X Customer management connection. ❖ 1 X redundant Customer management connection. ❖ One public IP address to be supplied by Customer.
4.1.4. Network latency monitoring	<ul style="list-style-type: none"> ❖ Network latency monitoring for the Equity Market will be performed by the JSE during Trading Hours. ❖ Network latency monitoring statistics will be provided to Customers via monthly reports. The JSE may consider providing a Customer portal for real-time monitoring which will be an Additional Service.

<p>4.1.5. Power</p>	<p><i>The JSE will supply standard 32 Amp single phase Raritan PDUs for the Hosting Unit and the PDU is included in the Hosting Unit Service Fee. The power feeds per Hosting Unit are fully redundant through 2 PDUs, i.e. one PDU for the A power feed and the other for the B power feed. The PDU specifications are 20 x C13 and 4 x C19 per PDU (A and B respectively). The JSE will monitor power consumption and PDU usage reporting will be provided to Customers upon request.</i></p> <p>❖ Power Usage and Billing</p> <ul style="list-style-type: none"> • Power usage is separately charged for and will be from the date that power is drawn by the Hosting Unit. • Power usage may not be averaged across Hosting Units. • The electricity consumption component of the Service Fees shall be subject to any revised charges or rates as notified by the Municipality of the City of Johannesburg or the National Energy Regulator of South Africa or any other authorised body from time to time as applicable to the JSE Premises. <p>❖ Power Consumption Rate per Hosting Unit</p> <ul style="list-style-type: none"> • Usage <ul style="list-style-type: none"> ▪ Max of 2160 kW usage per billing month for a 3.3 kVA (power factor of 0.9 is applied) Hosting Unit is allowed <ul style="list-style-type: none"> ▪ It should be noted that the first 1344 kW are charged at a lower rate. ▪ Max of 3600 kW usage per billing month for a 5.5 kVA (power factor of 0.9 is applied) Hosting Unit is allowed <ul style="list-style-type: none"> ▪ It should be noted that the first 2240 kW are charged at a lower rate. • Voltage <ul style="list-style-type: none"> ▪ Max of 3.3 kVA per rolling 30 day period for a 3.3 kVA Hosting Unit. ▪ Max of 5.5 kVA per rolling 30 day period for a 5.5 kVA Hosting Unit.
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Table 2: Primary Services Specifications

4.2. Associated Services Specifications

Associated Services Specifications	
4.2. Hosting Unit initial setup	<ul style="list-style-type: none"> ❖ The following JSE support will provided for the initial setup of the Hosting Unit : <ul style="list-style-type: none"> • Requirement gathering and design advice. • Network connectivity test facilitation (subject to this being arranged in advance by the Customer). • Once-off rack and stack of Equipment up to a maximum of 12 hours. • Future changes will follow the JSE standard change management process and charged on a time & material basis. • Refer to section 5 for the setup procedure.
4.3. Remote Hands Support	<ul style="list-style-type: none"> ❖ Remote Hands Support will be available as per the detail in section 6 subject to available capacity on a first come first served basis.
4.4. Remote Management Connectivity through the JSE London PoP to Colocation	<p><i>This connectivity enables Customers to connect remotely to the Equipment residing in the Colocation via the JSE London PoP and will require the Customer to request a minimum of 5 Additional Ports referred to in 4.11.</i></p> <ul style="list-style-type: none"> ❖ The 5 additional ports are for: <ul style="list-style-type: none"> • Production port charge (1 x SA side & 1 X UK side) • Backup port charge x(1 x SA side & 1 X UK side) • Remote disaster recovery port charge X 1 ❖ The JSE London PoP is located in the Equinix LD4 Data Centre in Slough. ❖ The Customer will need to be enabled on the JSE London PoP for this specific connectivity and JSE London PoP fees are payable in respect of port and bandwidth costs which are detailed in the JSE Price List. ❖ The Customer will need to provide the JSE with their required bandwidth.

Table 3: Associated Services Specifications

4.3. Secondary Product Specifications

Secondary Product Specifications	
<p>4.5. Inter-Connect</p>	<ul style="list-style-type: none"> ❖ Customers will be required to order and purchase a cable trough from the JSE in advance. ❖ The JSE will install the cable trough. ❖ Customers will be responsible for installing and managing their Inter-Connects.
<p>4.6. Cross Connect (s)</p>	<ul style="list-style-type: none"> ❖ Cross connect (s) will be installed and managed by the JSE. ❖ If a Customer requires a Cross Connect to another Customer’s Hosting Unit, permission will be required from both parties who rent the Hosting Units before a Cross Connect will be installed between the two Hosting Units. ❖ If a Customer rents multiple Hosting Units and the Hosting Units are not adjacent to each other in the same row then Cross Connect(s) will be required for connectivity across such multiple Hosting Units. ❖ As the Remote Management Connectivity is through the Access Network, if a Customer’s needs to connect to their Hosting Unit from the Meet Me Room, the Customer will need to request a Cross Connect and pay for such Cross Connect. It should be noted that this Cross Connect will be 10 X Giga bits fiber single mode only. ❖ All Cross Connect cables will be 10 X Giga bits fiber connectivity (Single mode or multimode applicable). ❖ Cross Connect redundancy can be facilitated through the procurement of an additional Cross Connect. ❖ Cross Connects will be implemented in the production environment within 10 Business Days of a confirmed CSOF and the requisite network tests, Live Connectivity Tests and data centre tests have been passed subject to the availability of cables.

4.7. Sub-letting	<ul style="list-style-type: none"> ❖ Customers will be permitted to sub-let subject to the terms and conditions as detailed in the Colocation Services Schedule under the JSA. ❖ The following sub-letting is allowed: <ul style="list-style-type: none"> • Member to Member Client. • Information Subscribers to an Information Subscriber's client which may not be a Member but could be a Member Client provided the Information Subscriber is an approved SIP. • SIP to Member.
4.8. Additional network latency monitoring	<ul style="list-style-type: none"> ❖ Latency monitoring from the Hosting Unit to the Colocation network switch can be performed for a limited period of time upon request at an additional Service Fee.
4.9. Time Sync Service	<ul style="list-style-type: none"> ❖ Offers time synchronisation via PTP or NTP. ❖ The PTP option does require PTP server adapters to increase accuracy from milliseconds to microseconds or a PTP client to be installed by the Customer. The adapter will be used for normal network traffic.
4.10. Additional Ports	<ul style="list-style-type: none"> ❖ A Customer can request and pay for additional ports subject to availability on the JSE's infrastructure and whether the Customer has spare ports available on their Hosting Unit. If the JSE does not have any ports, there will be a lead time for the JSE to purchase the relevant infrastructure.

Table 4: Secondary Product Specifications

5. Customer Setup Procedure

Customer Setup Procedure	
5.1. Hosting Unit initial setup	<ul style="list-style-type: none">❖ Customers interested in renting a Hosting Unit in Colocation will need to:<ul style="list-style-type: none">• Enter into the Colocation Services Schedule under the JSA and any other associated agreements as referred to in section 3.2.2;• Submit a completed CSOF (http://www.jse.co.za/Documents-and-Presentations/JseColocation/Co-location.aspx) to JSE Customer Support at CustomerSupport@jse.co.za.• Customers will need to provide the JSE with the following information upon the submission of the CSOF:<ul style="list-style-type: none">▪ Inventory of Equipment to be installed in the Hosting Unit and any changes thereto.▪ “Access List” of Personnel allowed entry to the JSE Primary Data Centre on behalf of the Customer and any changes thereto.▪ It is the Customers responsibility to ensure that the JSE always has the latest lists.▪ Customers scheduling deliveries of Equipment to the JSE are required to supplement their requests with a list of Equipment and/or any special instructions.❖ Once the CSOF is approved by the JSE, Customers will be required to confirm the CSOF before the JSE can start any Customer setup process.❖ The JSE and Customer shall agree a setup timeline with relevant dates for the required activities (“Allocated Dates”). Should a Customer choose to only have certain connectivity enabled in the initial set up then at a later stage enable the remaining connectivity then additional set up charges will apply.❖ Customers will be required to rack, stack and test on their Allocated Dates.❖ The Customer shall ensure that its Equipment has been properly tested prior to installing it in the Hosting Unit and that it conforms to any requirements as set out in this document, the Services Documentation and API Specifications.❖ Customers must pass the relevant data centre tests, the network connectivity test, and Live Connectivity Test before the Hosting Unit can interact with any of the JSE Systems.

	<ul style="list-style-type: none"> ❖ Only conformed software as per the Services Documentation or API Specifications may be used to connect to the trading and/or market data gateways/proxies. ❖ The Hosting Unit will be implemented in the production environment on the next available go live date after the Customer is considered compliant (passed all the relevant tests and provided all the necessary signed documentation and agreements). ❖ Hosting Unit go live dates will as per the JSE Participant Test Weekend (PTW) schedule.
<p>5.2. Request for Additional Services</p>	<ul style="list-style-type: none"> ❖ Customers interested in subscribing to Additional Services will need to submit a completed CSOF (http://www.jse.co.za/Documents-and-Presentations/JseColocation/Co-location.aspx) to JSE Customer Support at CustomerSupport@jse.co.za. ❖ Once the CSOF is approved by the JSE, Customers will be required to confirm the CSOF before the JSE can enable the Additional Services. ❖ The JSE and Customer shall agree a setup timeline with relevant dates for the required activities (“Allocated Dates”). ❖ Customers will be required to test the Additional Services on their Allocated Dates. ❖ The Customer shall ensure that its Equipment has been properly tested prior to installing it in the Hosting Unit and that it conforms to any requirements as set out in this document, the Services Documentation and API Specifications. ❖ Customers must pass any relevant network connectivity test and Live Connectivity Test before any Cross Connect(s) can interact with any of the JSE Systems. ❖ Only conformed software as per the Services Documentation or API Specifications may be used to connect to the trading and/or market data gateways/proxies. ❖ Any Additional Service will be implemented in the production environment within 10 Business Days of a confirmed CSOF and the requisite network tests, Live Connectivity Tests and data centre tests have been passed subject to the availability of the equipment.

Table 5: Customer Setup Procedure

6. Remote Hands Support

Remote Hands Support is a service offered to Customers during Business Days providing them with onsite assistance, in the event that a Customer is unable to connect to their Hosting Unit via their remote management connectivity. JSE Personnel will perform simple troubleshooting and/or replace faulty Cables as instructed by the Customer. Any such activities shall be done by the JSE Personnel on a best effort basis and will be undertaken at the sole risk of the Customer. In this regard, neither the JSE nor any of its Personnel shall be responsible for any act or omission or outcome from the Remote Hands Support.

Requests for Remote Hands Support will need to be logged with the JSE Customer Support. Customers will need to describe in sufficient detail to enable the Remote Hands Support to understand the activities they need to perform. The JSE will prioritise, queue and address these requests on a priority or first come first serve basis.

6.1 Remote Hands Inclusions

Remote Hands Support Activities Permitted	
Trading Hours	<ul style="list-style-type: none">❖ Remote Hands Support will be available during Trading Hours for Customer Emergency Changes including Visual Inspection, Power Cycling, and cable diagnostics.❖ Remote Hands Support is subject to available JSE capacity on a first come first served basis therefore response times may vary.
Non-Trading Hours	<ul style="list-style-type: none">❖ Remote Hands Support will be available during Non-Trading Hours for Planned Changes and Customer Emergency Changes including but not limited to Power Cycling, Visual Inspection, Cross Connect installation, setup, Hosting Unit maintenance, testing of devices and cable diagnostics.❖ Remote Hands Support is subject to available JSE capacity on a first come first served basis therefore response times may vary.
Non-Business Days	<ul style="list-style-type: none">❖ Remote Hands Support will not be available on Non-Business Days except in the case of Customer Emergency Changes.

Table 6: Remote Hands Support Inclusions

6.2 Remote Hands Exclusions

6.2.1 Remote Hands Support excludes the following

- 6.2.1.1 Logging onto a Customer Equipment console to execute commands.
- 6.2.1.2 Software and operating system installation and trouble shooting.
- 6.2.1.3 Maintenance of the Customer Cabling within a Hosting Unit.
- 6.2.1.4 Maintenance of the Customer Inter-Connects across Hosting Units of the same Customer.

7. Change Management

Change requests must adhere to the following procedures:

	Procedure
Emergency Changes	<ul style="list-style-type: none"> ❖ Trading Hours: Customers to submit a request to the JSE Customer Support at CustomerSupport@jse.co.za or on +27 11 520 7777 ❖ Non-Trading Hours and Non-Business Days: Customers to contact the JSE on +27 11 520 7900 / +27 83 611 9315. ❖ Customers will need to provide the JSE with the following information: <ul style="list-style-type: none"> • Details relating to the actual physical/technical Emergency Change. • A description of the disrupted services. • A motivation of the urgency of the Emergency Change. • Risks associated with implementing/ not implementing the Emergency Change immediately. ❖ The JSE will approve / decline the Emergency Change depending on the risk and impact associated with the Emergency Change. ❖ The JSE and Customer shall agree a time for the Planned Change to be implemented. Customers will be allowed to access the JSE Primary Data Centre after the JSE has approved the Emergency Change. ❖ The Customer shall ensure that its Emergency Change has been adequately tested prior to installing it in the Hosting Unit and that it conforms to any requirements as set out in this document, the Services Documentation or the API Specifications.
Planned Changes	<ul style="list-style-type: none"> ❖ Customers to submit a request to the JSE Customer Support at CustomerSupport@jse.co.za or on +27 11 520 7777 during Trading Hours. ❖ Customers will need to provide the JSE with the following information: <ul style="list-style-type: none"> • A description of the Planned Change. • A motivation of the urgency of the Planned Change, if necessary. • Risks associated with implementing/ not implementing the Planned Change. ❖ The JSE will approve / decline the Planned Change depending on the risk and impact associated with the Planned Change. ❖ The JSE and Customer shall agree a time for the Planned Change to be implemented. Customers will be allowed to access the JSE Primary Data Centre after the approval of the Planned Changes. ❖ The Customer shall ensure that its Planned Changes have been adequately tested prior to installing it in the Hosting Unit and that it conforms to any requirements as set out in this document, the Services Documentation or the API Specifications.

Table 7: Change Management Procedure

Change activities permitted during the various time frames are as follows:

	Activities Permitted	Activities Not Permitted	Changes Permitted
Trading Hours	<ul style="list-style-type: none"> ❖ No activities are permitted except for approved Emergency Changes. 	<ul style="list-style-type: none"> ❖ Rack and stack. ❖ Cross Connects. ❖ Inter-Connects. ❖ Hosting Unit initial setup. ❖ Planned Changes. ❖ Customer Access to Colocation except in the case of an approved Emergency Change. 	<ul style="list-style-type: none"> ❖ Approved Emergency Changes.
Non-Trading Hours	<ul style="list-style-type: none"> ❖ Rack and stack. ❖ Cross Connects. ❖ Inter-Connects. ❖ Hosting Unit initial setup ❖ Planned Changes. ❖ Customer access to Colocation. ❖ Subject to the above being approved Planned Changes 		<ul style="list-style-type: none"> ❖ Approved Emergency Changes. ❖ Approved Planned Changes.
Non-Business Days	<ul style="list-style-type: none"> ❖ No activities are permitted except for approved Emergency Changes. 	<ul style="list-style-type: none"> ❖ Rack and stack. ❖ Cross Connects. ❖ Inter-Connects. ❖ Hosting Unit initial setup. ❖ Planned Changes. ❖ Customer access to Colocation except in the case of an approved Emergency Change. 	<ul style="list-style-type: none"> ❖ Approved Emergency Changes.

Table 8: Change Management Timetable

8. Colocation Facility Features and Procedures

8.1 Cabling

8.1.1. All cables between the Hosting Units and the Colocation network switches will be of equal length irrespective of the Hosting Unit position within Colocation. The JSE will only use fiber (i.e. single or multimode).

8.2. Customer Equipment and Storage

8.2.1. The JSE will accept delivery of Customer Equipment delivered to the JSE Primary Data Centre on behalf of the Customer and store Customer Equipment in accordance with the guidelines set forth below and any other reasonable directions given by the JSE from time to time.

8.2.2. Due to limited storage space in Colocation, the JSE, in its sole discretion, has the right to deny or limit the amount of storage space and storage time for Customers.

8.2.3. The Customer must schedule deliveries with the JSE Customer Support at least 48 hours in advance. If the delivery has not been scheduled with the JSE and approved by the JSE as a Planned Change, the JSE will not accept the delivery.

8.2.4. The Customer must provide the JSE with the following packing and shipping information with its notification to the JSE for the receipt of Customer Equipment:

- Customer account number
- Customer ticket number (assigned by JSE) on the shipping label
- Colocation address
- Customer Hosting Unit number (assigned by JSE)
- Special instructions

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- 8.2.5. Notwithstanding receipt of Customer Equipment, the risk in and to the Customer Equipment will remain at all times with the Customer and the JSE accepts no liability in respect thereof. Upon receipt of the Customer Equipment, the JSE will acting in good faith and using reasonable commercial endeavours provide the following:
- Verify that the shipment is for the Customer and for Colocation.
 - Conduct a visual inspection of the external packaging for possible damage.
 - Do an inventory of all boxes and verify that the carton count matches shipping receipt.
 - Place the Customer Equipment in the Customer's space or store the Customer Equipment in a secured area until Customer's space is ready or available in accordance with clause 8.2.9.
 - Notify the Customer of receipt of all Customer Equipment shipments and any damages or shortages thereto.
- 8.2.6. The Customer shall be responsible for the payment of all Customer Equipment shipments, freight, packages, etc. The JSE will not accept Customer Equipment that requires any payment. The Customer is solely responsible for all shipping and/or freight claims. The JSE shall incur no liability for refusing to accept any Customer Equipment that has any delivery payment/charges outstanding.
- 8.2.7. On completion of the Customer Hosting Unit setup, spare Customer Equipment cannot be stored in cardboard boxes within the confines of the Hosting Unit or any portion of the Colocation floor. The JSE may, in its sole discretion and at the sole risk of the Customer, store the Customer Equipment in a secure designated storage area if there is space to do so in accordance with clause 8.2.8.
- 8.2.8. The Customer will have 30 days in which to retrieve its Equipment from the storage area from the date the Customer Equipment was stored. All Customer Equipment left in the JSE storage areas for more than 30 days will be returned to the Customer at the Customer's sole risk, cost and expense.
- 8.2.9. The JSE shall incur no liability for any loss or damage to any Equipment stored on the JSE Premises or in transit if returned to the Customer.

8.3. Equipment Installation

- 8.3.1. The JSE requires an inventory list of all the Equipment installed in the Hosting Unit and configuration within 10 days from initial installation. Customers will notify the JSE in writing of any changes to such list within 5 days of such change. The JSE has the right to conduct, at any time and upon reasonable advance notice to Customer, an audit of the inventory of Customer's Equipment and Equipment configurations.
- 8.3.2. Customers will be allowed to only install Equipment that is approved by the JSE in their Hosting Units. The installation of cellular connectivity or customer preferred PDUs within the Hosting Unit is not permitted.
- 8.3.3. Customers shall not make any alterations, additions or improvements to the Hosting Unit.
- 8.3.4. The Customer shall install any Equipment that can be securely affixed or bolted into the Hosting Unit in a manner reasonably acceptable to the JSE. The Customer shall not stack or rest any equipment on any other equipment. No Equipment shall be placed directly on the floor. The Equipment shall be at least 100 millimetres off the floor using either shelves or rack rails. No other method shall be used (i.e. cardboard boxes to elevate the Equipment).
- 8.3.5. Customers agree to safely configure, operate, and maintain the Equipment in the Hosting Unit. This includes appropriate engineering and design of Equipment systems in adherence to manufacturer specifications. Failure to comply with these safety measures can result in the JSE having to shut down unsafe Equipment.
- 8.3.6. All wiring, connections, circuitry and utility ports shall be labelled to include appropriate information in accordance with the JSE standard procedure. Upon a Customer request the JSE shall provide such labels. The JSE accepts no liability for any act or omission in respect of such labels or the labelling.
- 8.3.7. All cables, Cross Connects and Inter-Connects, must be cleanly wrapped and tied together and kept within the applicable Hosting Unit in a manner satisfactory to the JSE. Upon request, the JSE shall assist with cleanly wrapping wiring or cables through the Remote Hands Support.
- 8.3.8. Customers connecting to NSP's in order to connect to the Internet, will be responsible for ensuring industry standard security is in place to protect the Equipment. This includes firewalls, IPS, etc.

8.4. Access Control and Security

- 8.4.1. Colocation will be accessible by Customers as detailed in table 8, subject to Customers complying with the access and security procedures as set out herein and any other reasonable directions given by the JSE from time to time. All Customers will be escorted in and out of Colocation at all times. The JSE shall use reasonable efforts to provide notice in advance to the Customer regarding material changes to or suspension of access to Colocation.
- 8.4.2. Upon execution of a Colocation contract, the Customer must complete an “access list” of permitted Personnel who will be allowed entry to the JSE Primary Data Centre and Colocation. It is the Customer’s responsibility to keep the “access list” updated at all times by contacting the JSE Customer Support with any changes. The JSE will only allow Personnel indicated on the “access list” to the JSE Primary Data Centre and Colocation.
- 8.4.3. Customers shall ensure that its Personnel, who are granted access to the JSE Premises and the JSE Primary Data Centre, comply with the policies and procedures as set out herein and individual facility policies and any other reasonable directions given by the JSE from time to time and Customers are responsible for all actions of their Personnel whilst on the JSE Premises.
- 8.4.4. The JSE Primary Data Centre is physically secure and accessible only with escorted access. A closed circuit television security system will be located at all entrances. A biometric scanner/card access system controls access to the JSE Primary Data Centre.
- 8.4.5. All visitors must sign in and be on the “access list” of permitted Personnel. All visitors must be in possession of a valid form of identification (ID Book, Passport, Driver’s license) when signing in.
- 8.4.6. Any Customer that wishes to grant temporary access to Personnel not on the permitted “access list” must complete a security form that grants such Personnel access and is accompanied by someone on the Customer “access list’ at all times.
- 8.4.7. Visitation calls must be logged with the JSE Customer Support, in order to gain access to Colocation.
- 8.4.8. Customers shall not, and shall ensure that its Personnel do not, prop open any doors within Colocation. It is prohibited to shield your face in any manner from the JSE security system. Customers Personnel must display their visitor badge prominently at all times.

8.5. General Facility Procedures

- 8.5.1. The JSE Primary Data Centre is designed according to TIER3 standards.
- 8.5.2. All individual power runs are to be installed and maintained by the JSE. Customers may not install any batteries in Colocation. Customers may not plug any Equipment into receptacles or courtesy power outlets without the express written permission of the JSE. No Equipment specifically designed to emit Radio Frequency (RF) energy is permitted to be installed in the Hosting Unit without express written consent of the JSE.
- 8.5.3. Customers must inform the JSE immediately upon discovery of any worn, frayed or cut cables by contacting the JSE Customer Support.
- 8.5.4. The use of any JSE facilities (including kitchenette, restrooms and work area) will be in accordance with the policies and procedures as set out herein or as posted/displayed at the JSE facility and any other reasonable directions given by the JSE from time to time.
- 8.5.5. Customers shall, and shall ensure that its Personnel, comply with all laws, orders and regulations of all governmental bodies having jurisdiction over the JSE Premises and/or Customer's activities and with the JSE's policies and procedures.
- 8.5.6. Customers shall, and shall ensure that its Personnel, keep the Hosting Unit free of litter, cartons, packing materials or packaging and related items (collectively "waste materials"). Customers and its Personnel shall deposit all waste materials in designated trash receptacles that will be located outside the JSE Primary Data Centre. Under no circumstances shall waste materials be discarded or left in Colocation, the JSE Primary Data Centre or the JSE Premises.
- 8.5.7. Customers shall, and shall ensure that its Personnel do, not eat, drink or smoke within Colocation, the JSE Primary Data Centre or the JSE Premises, except in areas designated as such by the JSE.
- 8.5.8. Customers shall, and shall ensure that its Personnel do, not bring any weapons, including guns, knives or mace, alcohol or drugs within Colocation, the JSE Primary Data Centre or the JSE Premises.
- 8.5.9. Customers shall, and shall ensure that its Personnel do, not photograph, videotape or film any areas (including the entrance) in Colocation, the JSE Primary Data Centre or the JSE Premises.

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- 8.5.10. Customers shall, and shall ensure that its Personnel, behave in a courteous and professional manner at all times while in Colocation, the JSE Primary Data Centre or the JSE Premises.
- 8.5.11. Customers shall, and shall ensure that its Personnel do, not touch, access, tamper, or interfere with another Customer's Hosting Unit without such Customer's written authorization, even if Customer's own Equipment is within another Customer's space or the JSE space or equipment.
- 8.5.12. Customers shall, and shall ensure that its Personnel do, not loiter or solicit within Colocation, the JSE Primary Data Centre or the JSE Premises.
- 8.5.13. Customers shall, and shall ensure that its Personnel do, not do or permit anything to be done or fail to do, on or about Colocation, the JSE Primary Data Centre or the JSE Premises that might constitute or result in a private or public nuisance or waste.
- 8.5.14. Customers shall, and shall ensure that its Personnel, wear slip-resistant shoes while in Colocation or the JSE Primary Data Centre and inform the JSE technicians immediately of any unsafe facility conditions of which the Customer is aware (e.g., loose ladder racks, slick floors or electrical issues).
- 8.5.15. Unless otherwise agreed to by the JSE, the JSE will maintain the confidentiality of a Customer's identity within Colocation, including, but not limited to, the location of the Customer's Equipment and accordingly Customers may not post any signage in the JSE facilities. Customers may choose to have their name displayed on the Customers Hosting Unit only if the signage does not interfere with the air flow of the Hosting Unit.