New BM&FBOVESPA Data Center

Trading Platform Migration

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Highlights and Recommendations

The Project

- BM&FBOVESPA PUMA Trading System Update

- Hardware, network, OS and middleware upgrade

- No new functionalities

- Migration to Data Center at Santana de Parnaíba

- Colocation (Praça site) and Proximity (UEC contingency unit site) migration

en.datacenterdabolsa.com.br

SANTANA DE PARNAÍBA
NEW DATA CENTER

- Tier III Certification (Uptime Institute)

- LEED Certification

- Stabilized and redundant power

- Precision control of temperature and humidity

- VESDA smoke detection system

- Inergen and dry pipe sprinklers fire fighting system

- High-level physical security (24x7x365), with biometric access control and state-of-the-art recording system

- 72 hours autonomy at full capacity

- Specialized technical team

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New Colocation

Rack Technical Details (40U):
- Height: 2,000 mm | Width: 600 mm | Depth:1,200 mm | Tracks:19"

2 Hosting Offers:
- Trading Racks – ½ Rack with 20 U and 3kW
- Web Racks (DMZ) – ¼ Rack with 10 U and 1.5kW

Cross Connections:
- 2 points between the racks and the telecom room / Optic Fiber OM3 Single Mode
- 2 points between the racks and the trading network – 10Gb / Optic Fiber OM3 Multi Mode (Trading) or 1Gb / Copper (Web)
- Guaranteed equal distance from Colocation to BM&FBOVESPA PUMA Trading System

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Migration Timetable

April 24th
Start of Migration/Deployment of the Dedicated Circuits

November 11th
PUMA Migration

2017

2018

June 5th
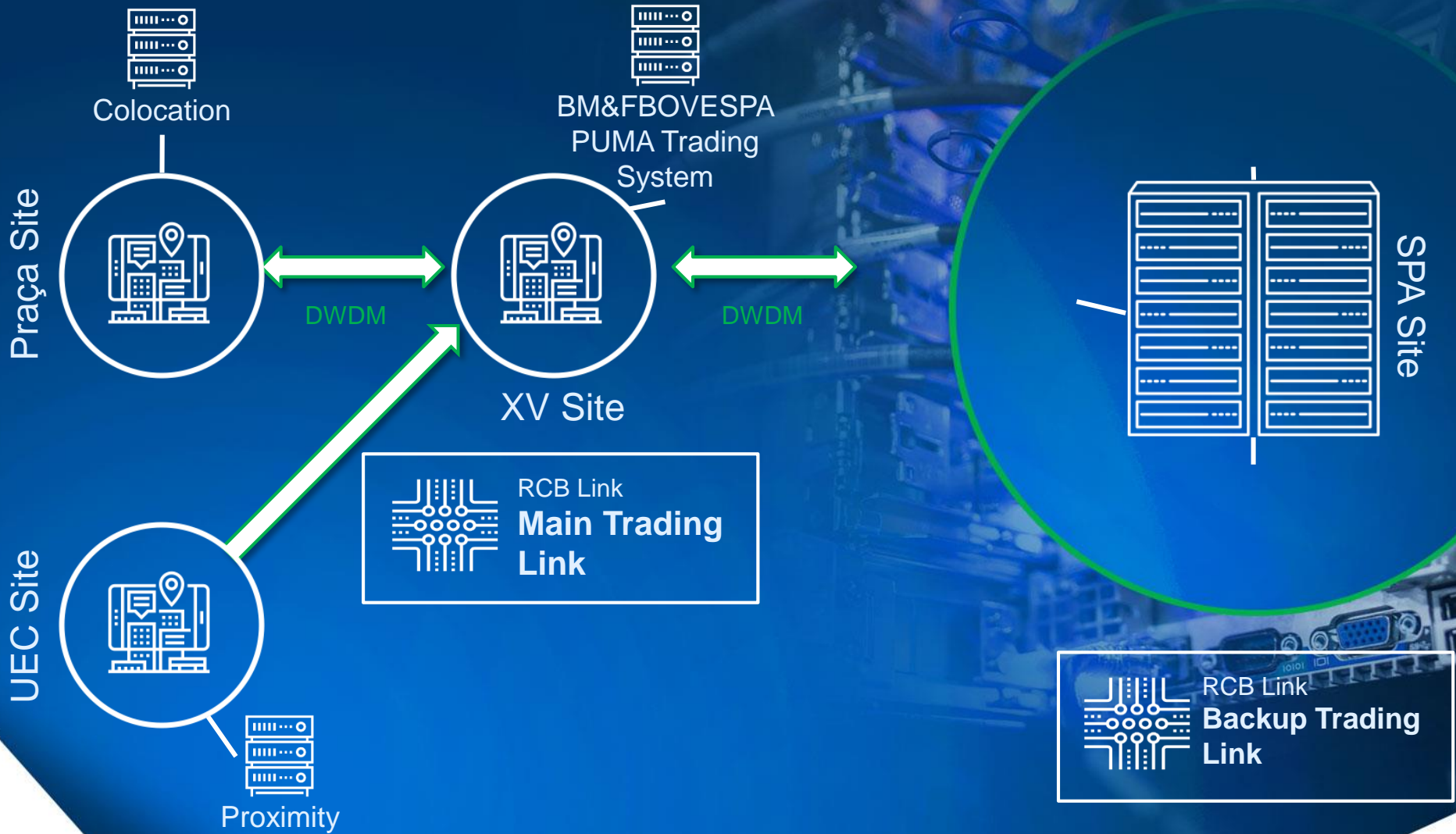Start of customer hardware deployment at Santana de Parnaíba

August to October
Parallel Production

March 31st
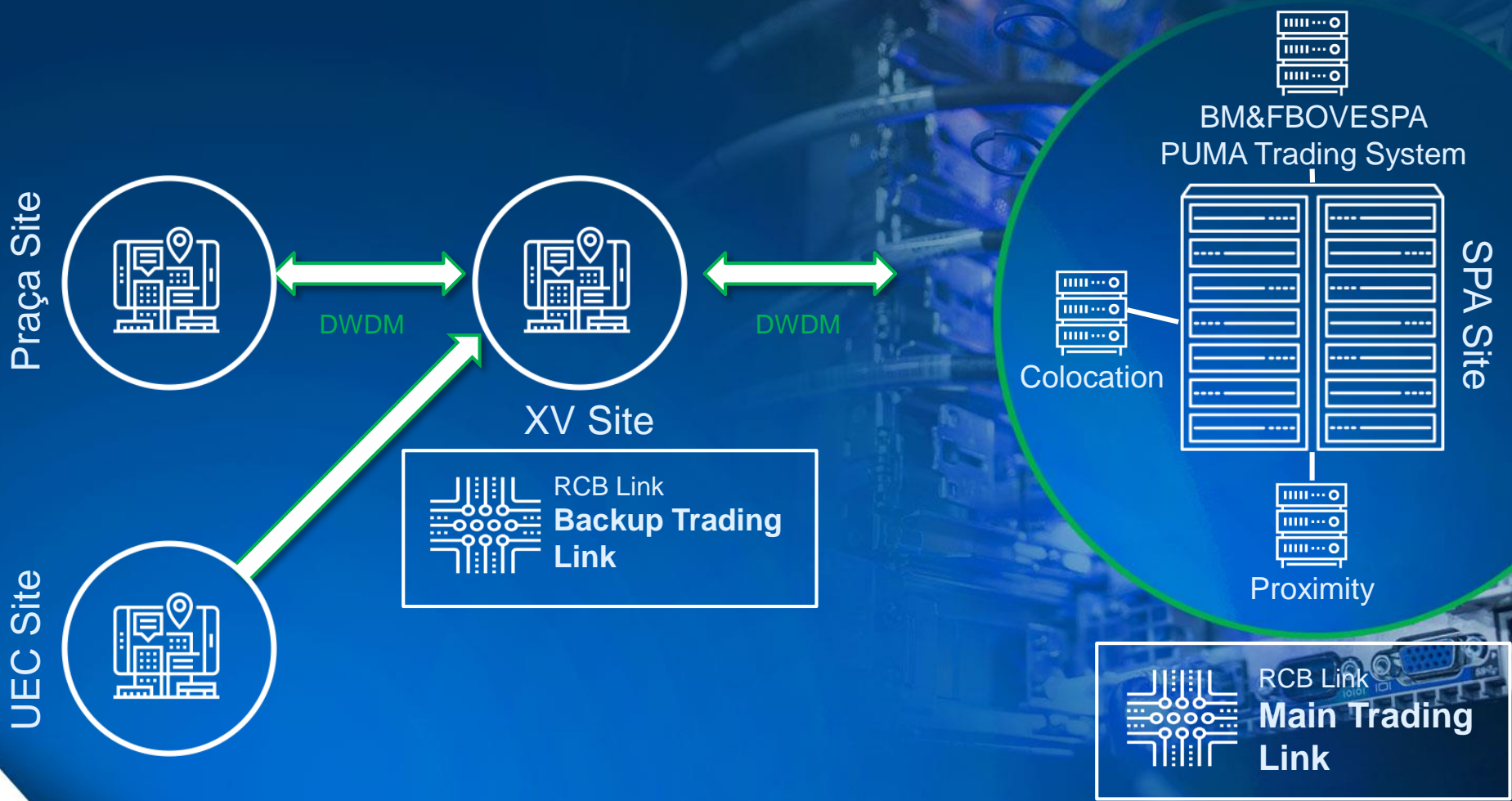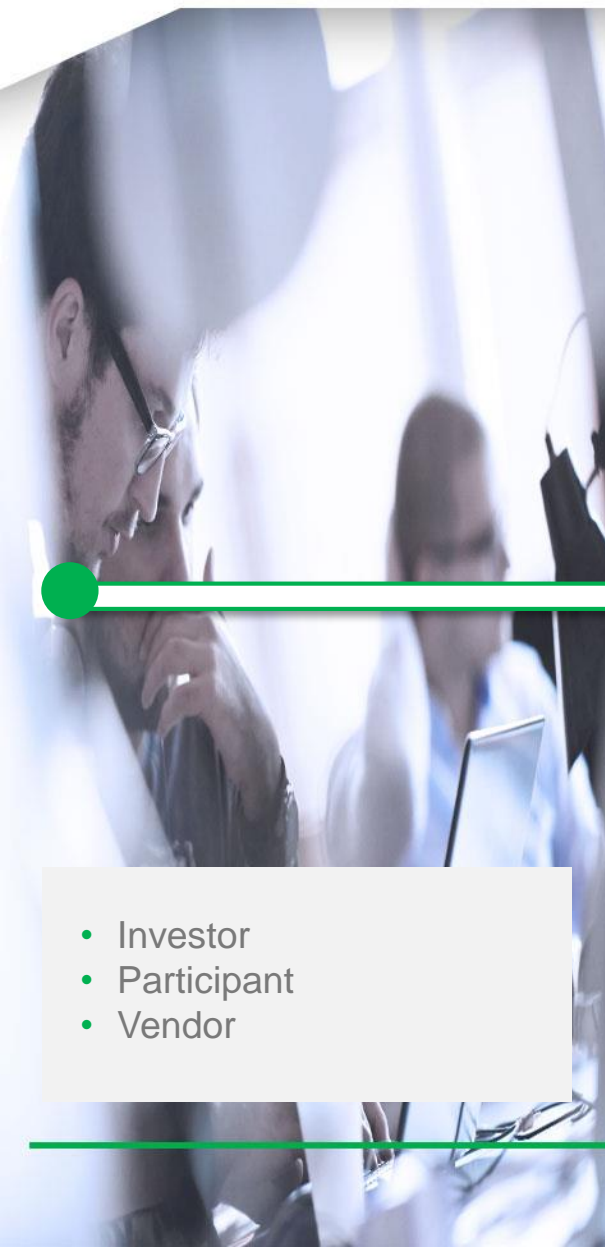Deadline for Deactivation of Praça and UEC sites

BM&FBOVESPA DATA CENTERS - DIAGRAM

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CONNECTIVITY MAP
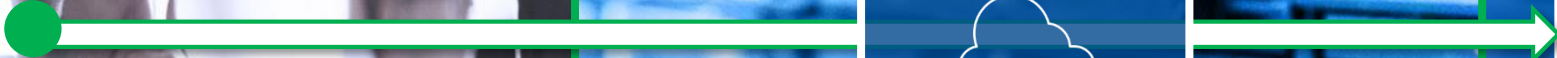
Customer

Colocation

DMZ

Firewall

TRADING

PUMA Trading System

web

- Investor
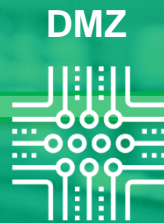- Participant
- Vendor

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Customer

Colocation

web

DMZ
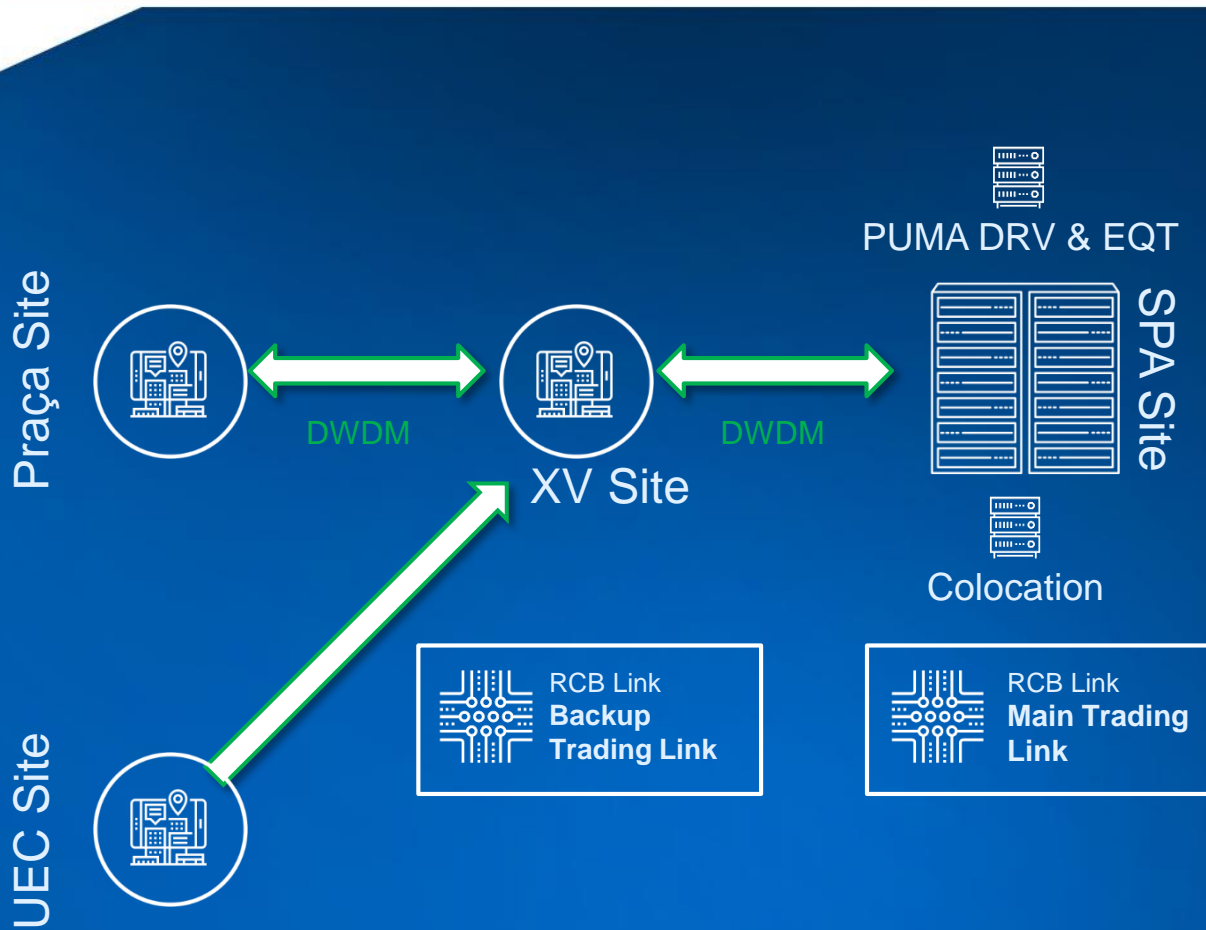
Firewall

PUMA Trading System

- Investor
- Participant
- Vendor

Migration Plan

- Single migration wave for both segments

  - Lower migration rollback risk

  - Lower rollback plan complexity

  - Higher Parallel Production similarity

  - Lower Data Center management complexity

- Parallel Production Period

  - Order Entry / Drop Copy

  - Market Data Feeds

- No expected impacts for order entry and Market Data protocols (UMDF 2.0)

- 4 Mock Trading Sessions

- Possibility of trading between Colocation and other BM&FBOVESPA Data Centers

Praça Site

UEC Site

DWDM

XV Site

DWDM

PUMA DRV & EQT

SPA Site

Colocation

RCB Link
Backup Trading Link

RCB Link
Main Trading Link

Colocation Praça
- OE => EQT ~1.9ms | DRV ~1.9ms
- MktData => EQT ~1.0ms | DRV ~1.0ms

Colocation SPA
OE => EQT ~1.1ms | DRV ~1.1ms
MktData => EQT ~0.6ms | DRV ~0.6ms

RCB XV*
OE => EQT ~2.1ms | DRV ~2.1ms
MktData => EQT ~1.1ms | DRV ~1.1ms

RCB SPA*
OE => EQT ~1.3ms | DRV ~1.3ms
MktData => EQT ~0.8ms | DRV ~0.8ms

*Estimated latency considering only BM&FBOVESPA internal network

BM&FBOVESPA Colocation Access Models

- Restricted to trading applications

- New authorizations for BM&FBOVESPA Colocation

    - Order routing and reception
    - Reception and distribution of market data inside and outside Colocation (including other exchanges)
    - OMS hosting
    - Supervisor Session usage
    - Cross Connections between racks of different clients
        - Except between Full Trading Participants (PNP); between Trading Participants (PN); between investors; and between Full Trading Participants/Trading Participants and an investor

BM&FBOVESPA Colocation Access Models

Nº	Connection Origin	Type of Trade	Hosting	
1	PNP (P) /PN (N)	Trading Desk (MES)	Outside (F)	Model 1
2	PNP (P) /PN (N)	Order Conveyor (ASR)	Outside (F)	
3	PNP (P) /PN (N)	Bank Order Conveyor (ASB)	Outside (F)	
4	PNP (P) /PN (N)	Investor (CLI)	Outside (F)	
5	PNP (P) /PN (N)	Trading Desk (MES)	Colo (C)	Colo Broker
6	PNP (P) /PN (N)	Order Conveyor (ASR)	Colo (C)	
7	PNP (P) /PN (N)	Bank Order Conveyor (ASB)	Colo (C)	
8	PNP (P) /PN (N)	Investor (CLI)	Colo (C)	
9	Vendor (XXXX)	Trading Desk (MES)	Outside (F)	Model 2
10	Vendor (XXXX)	Order Conveyor (ASR)	Outside (F)	
11	Vendor (XXXX)	Bank Order Conveyor (ASB)	Outside (F)	
12	Vendor (XXXX)	Investor (CLI)	Outside (F)	
13	Vendor (XXXX)	Trading Desk (MES)	Colo (C)	Colo Provider
14	Vendor (XXXX)	Order Conveyor (ASR)	Colo (C)	
15	Vendor (XXXX)	Bank Order Conveyor (ASB)	Colo (C)	
16	Vendor (XXXX)	Investor (CLI)	Colo (C)	
17	Investor (C)	Investor (CLI)	Outside (F)	Model 3
18	Investor (C)	Investor (CLI)	Colo (C)	Colo Investor

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New Colocation

Hosting Costs
- R$ 7,000.00 per ½ Trading rack
- R$ 3,500.00 per ¼ Web rack

Modular Fees
- Market Data charged separately (as per current commercial policy)
- Lower FIX Session fee for order entry and Drop Copy: R$ 300.00

Cross Connections
- R$ 300.00 activation fee
- R$ 300.00 monthly maintenance

Included 10 hours per month of Smart Hands services
- R$ 252.00 per additional hour

Colocation Reservation and Storage Policy

- Current customers have priority for migration

- Reservations must be made as of April 3rd by email with the Market Data & Colocation team

  - Subject to prior analysis by BM&FBOVESPA

- Equipment storage space

  - R$ 2,000/month per ½ rack
  - Solely for equipment and maintenance material storage

Workshop Highlights

- Start of Colocation Reservations: April 3rd

- Start of Migration/Deployment of Dedicated Circuits: April 24th

- Start of customer equipment deployment at Santana de Parnaíba: June 5th

- Parallel Production: from August until October

    - Participation in Mock Tests is mandatory

- BM&FBOVESPA PUMA Trading System migration: **November 11th**

- New Access Models

- New Colocation Authorizations

- New Colocation Commercial Policy

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