

# IBM PureSystems

**Вычислительный узел**

**Flex System x220**

Юрий Алексеев  
[alekseev@landata.ru](mailto:alekseev@landata.ru)

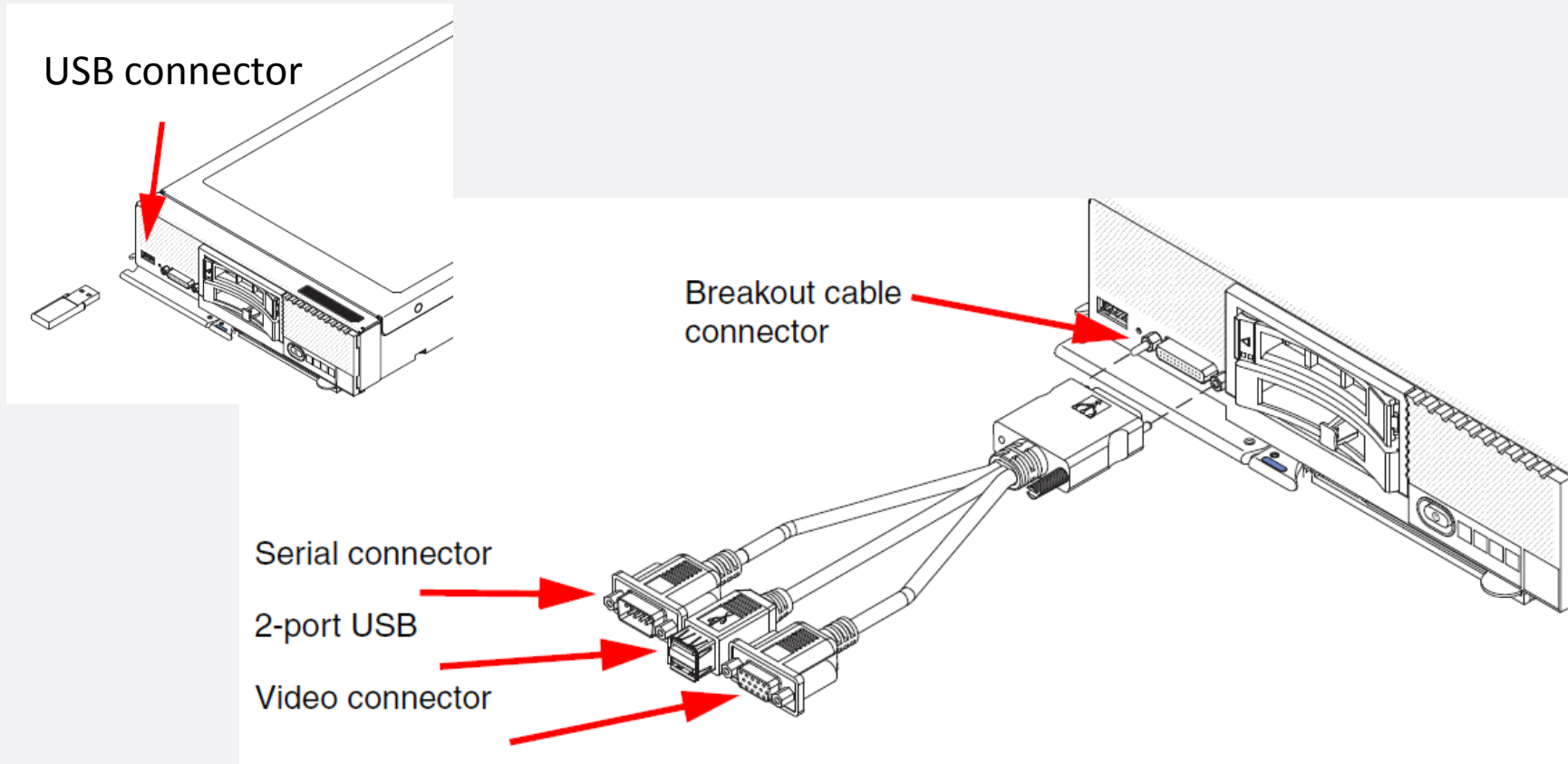
## История изменений:

- v1 (05/2013) – первая редакция
- v2 (10/2013) – внесены небольшие изменения (новые диски, контроллеры)

# Шасси IBM PureSystems







Hot-swap drive bay backplane

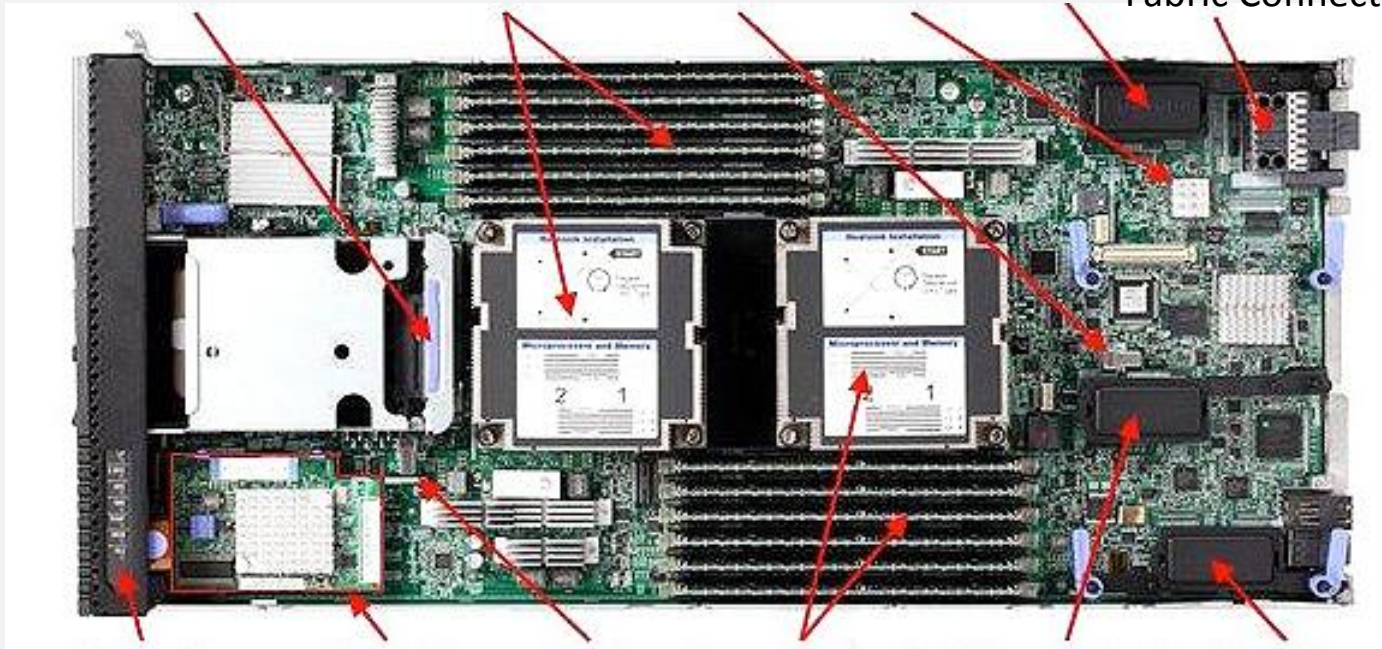
CPU 2 + 6 memory

USB порт 2

Broadcom Ethernet

I/O Connector 1

Fabric Connector



Light path diagnostics

ServerRAID H1135 (опц.)

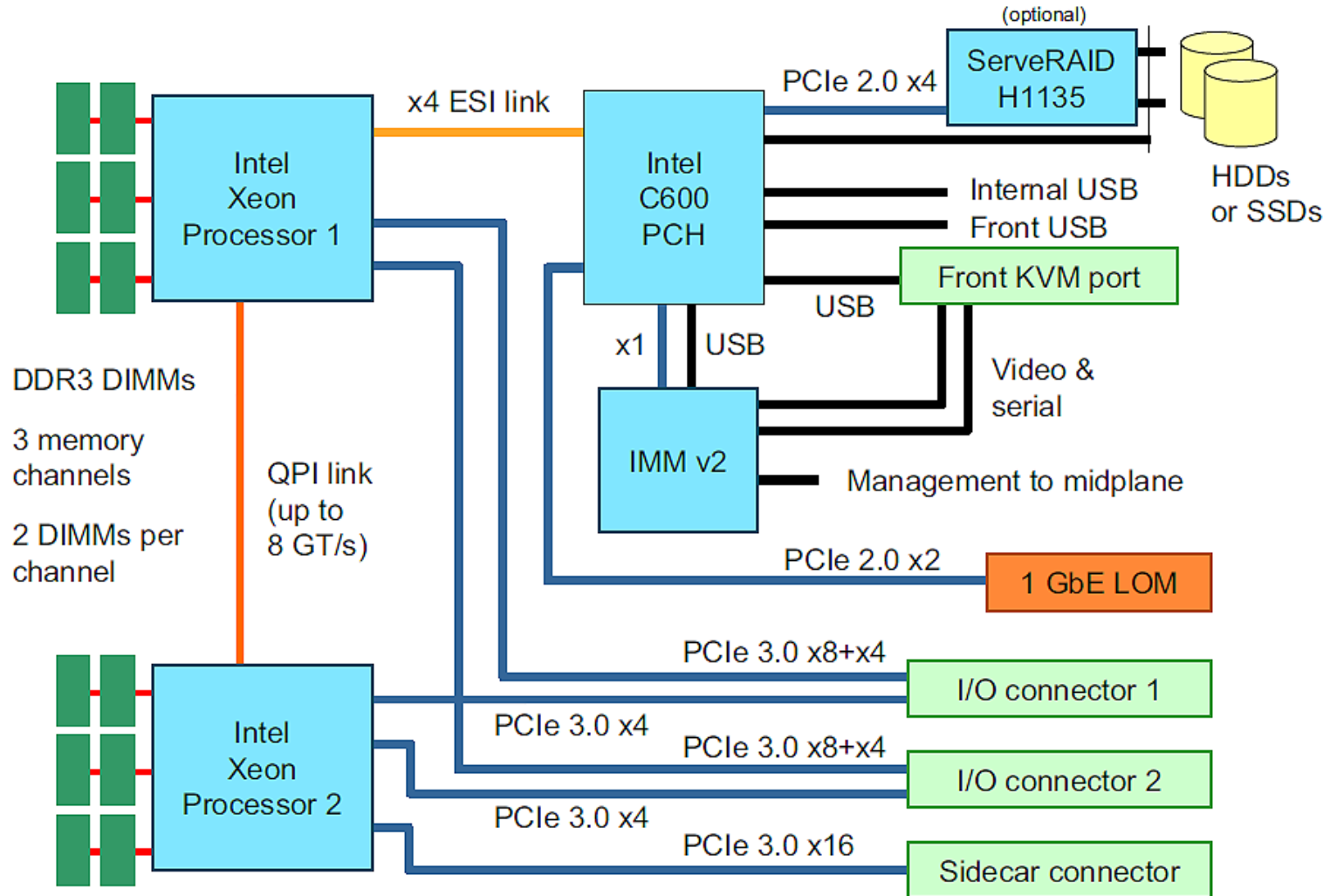
USB порт 1

CPU 1 + 6 memory

I/O Connector 2

Expansion Connector

# x220: блок-схема



## Совместимые диски

Тип	IBM P/N	Описание	ServeRAID C105	ServeRAID H1135	ServeRAID M5115	Макс.
HDD 10K SAS	42D0637	300 GB 10K 6Gbps SAS 2.5" SFF Slim-HS HDD	—	+	+	2
	49Y2003	600 GB 10K 6Gbps SAS 2.5" SFF Slim-HS HDD	—	+	+	2
	81Y9650	900 GB 10K 6Gbps SAS 2.5" SFF HS HDD	—	+	+	2
	00AD075	1.2TB 10K 6Gbps SAS 2.5" G2HS HDD	—	+	+	2
HDD 15K SAS	42D0677	146 GB 15K 6Gbps SAS 2.5" SFF Slim-HS HDD	—	+	+	2
	81Y9670	300 GB 10K 6Gbps SAS 2.5" SFF HS HDD	—	+	+	2
	90Y8926	IBM 146GB 15K 6Gbps SAS 2.5" SFF G2HS HDD	—	+	+	2
SAS-SSD Hybrid drive	00AD102	IBM 600GB 10K 6Gbps SAS 2.5" G2HS Hybrid	—	+	+	2
HDD NL SATA	81Y9722	250 GB 7.2K 6Gbps NL SATA 2.5" SFF HS HDD	+	+	+	2
	81Y9726	500 GB 7.2K 6Gbps NL SATA 2.5" SFF HS HDD	+	+	+	2
	81Y9730	1 TB 7.2K 6Gbps NL SATA 2.5" SFF HS HDD	+	+	+	2
HDD NL SAS	42D0707	500 GB 7.2K 6Gbps NL SAS 2.5" SFF Slim-HS HDD	—	+	+	2
	81Y9690	1 TB 7.2K 6Gbps NL SAS 2.5" SFF HS HDD	—	+	+	2
	90Y8953	500GB 7.2K 6Gbps NL SAS 2.5" SFF G2HS HDD	—	+	+	2
SSD 2.5" Enterprise Value	90Y8643	256 GB SATA 2.5-inch MLC HS Enterprise Value SSD	—	+	+	2
	90Y8648	128 GB SATA 2.5-inch MLC HS Enterprise Value SSD	—	+	+	2
	49Y5844	512GB SATA 2.5" MLC HS Enterprise Value SSD	—	+	+	2
	49Y5839	64GB SATA 2.5" MLC HS Enterprise Value SSD	—	+	+	2



## Совместимые диски

Тип	IBM P/N	Описание	ServeRAID C105	ServeRAID H1135	ServeRAID M5115	Макс.
SSD 2.5" Enterprise	41Y8331	S3700 200GB SATA 2.5" MLC HS Enterprise SSD	—	+	+	2
	41Y8336	S3700 400GB SATA 2.5" MLC HS Enterprise SSD	—	+	+	2
	41Y8341	S3700 800GB SATA 2.5" MLC HS Enterprise SSD	—	+	+	2
	00W1125	100GB SATA 2.5" MLC HS Enterprise SSD	—	+	+	2
	43W7718	200 GB SATA 2.5-inch MLC HS SSD	—	+	+	2
	49Y6129	200GB SAS 2.5" MLC HS Enterprise SSD	—	+	+	2
	49Y6134	400GB SAS 2.5" MLC HS Enterprise SSD	—	+	+	2
	49Y6139	800GB SAS 2.5" MLC HS Enterprise SSD	—	+	+	2
	49Y6195	1.6TB SAS 2.5" MLC HS Enterprise SSD	—	+	+	2
SSD 1.8" Enterprise	43W7726	IBM 50GB SATA 1.8" MLC SSD	—	+	+	8
	43W7746	IBM 200GB SATA 1.8" MLC SSD	—	+	+	8
	49Y6119	IBM 200GB SATA 1.8" MLC Enterprise SSD	—	+	+	8
	49Y6124	IBM 400GB SATA 1.8" MLC Enterprise SSD	—	+	+	8
	00W1120	IBM 100GB SATA 1.8" MLC Enterprise SSD	—	+	+	8
SSD 1.8" Enterprise Value	00W1222	IBM 128GB SATA 1.8" MLC Enterprise Value SSD	—	+	+	8
	00W1227	IBM 256GB SATA 1.8" MLC Enterprise Value SSD	—	+	+	8
	49Y5834	IBM 64GB SATA 1.8" MLC Enterprise Value SSD	—	+	+	8
	49Y5993	IBM 512GB SATA 1.8" MLC Enterprise Value SSD	—	+	+	8

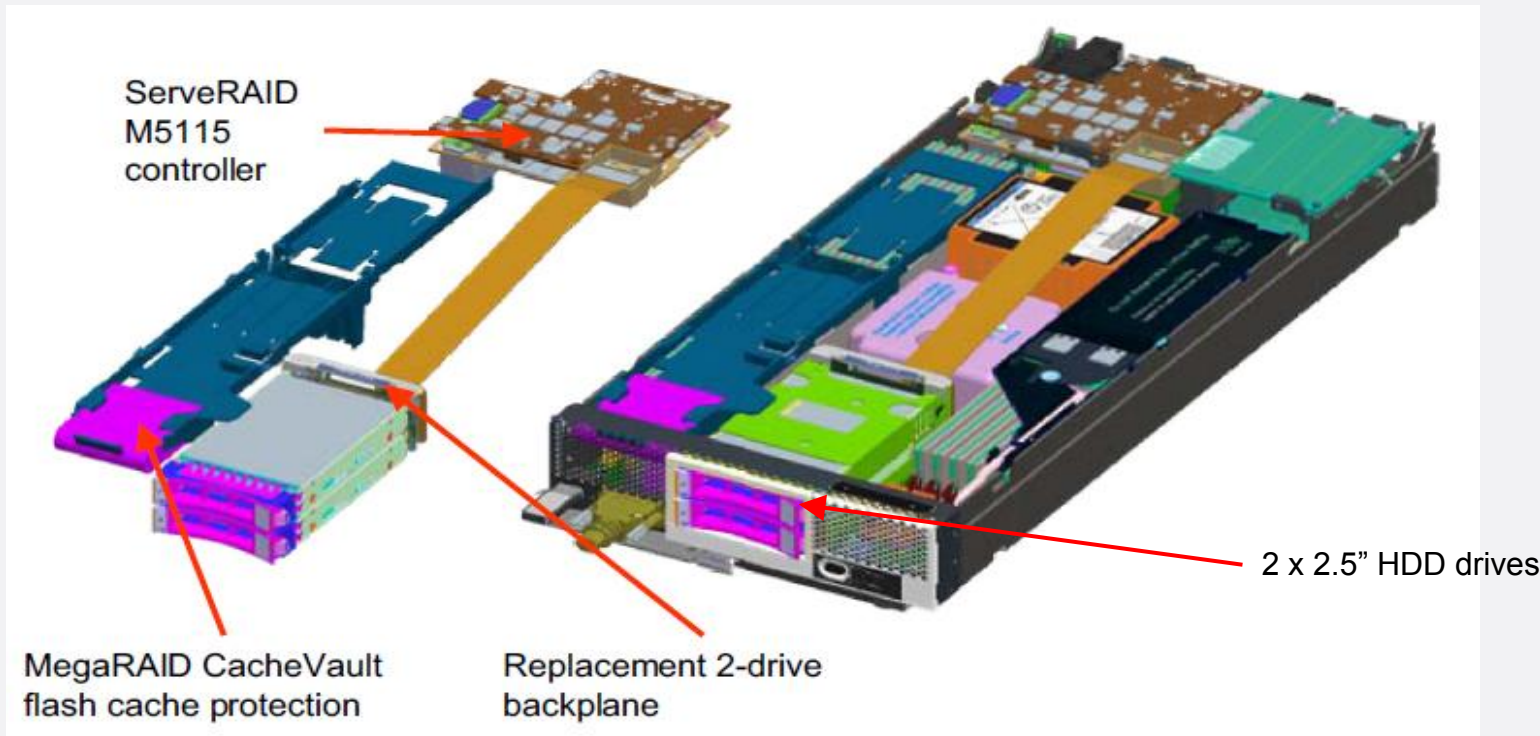
### Примечание:

диски с шифрованием (Self-encrypting drives = SED) недоступны в России.

# x220: дисковая система

**ServeRAID M5115 (90Y4390) +  
ServeRAID M5100 Enablement Kit x220 (90Y4424)**

**ServeRAID M5115:**  
1GB cache + RAID 0, 1, 10, 5, 50  
дополнительно: RAID 6/60, flash-  
backup for cache, SSD performance  
enabler

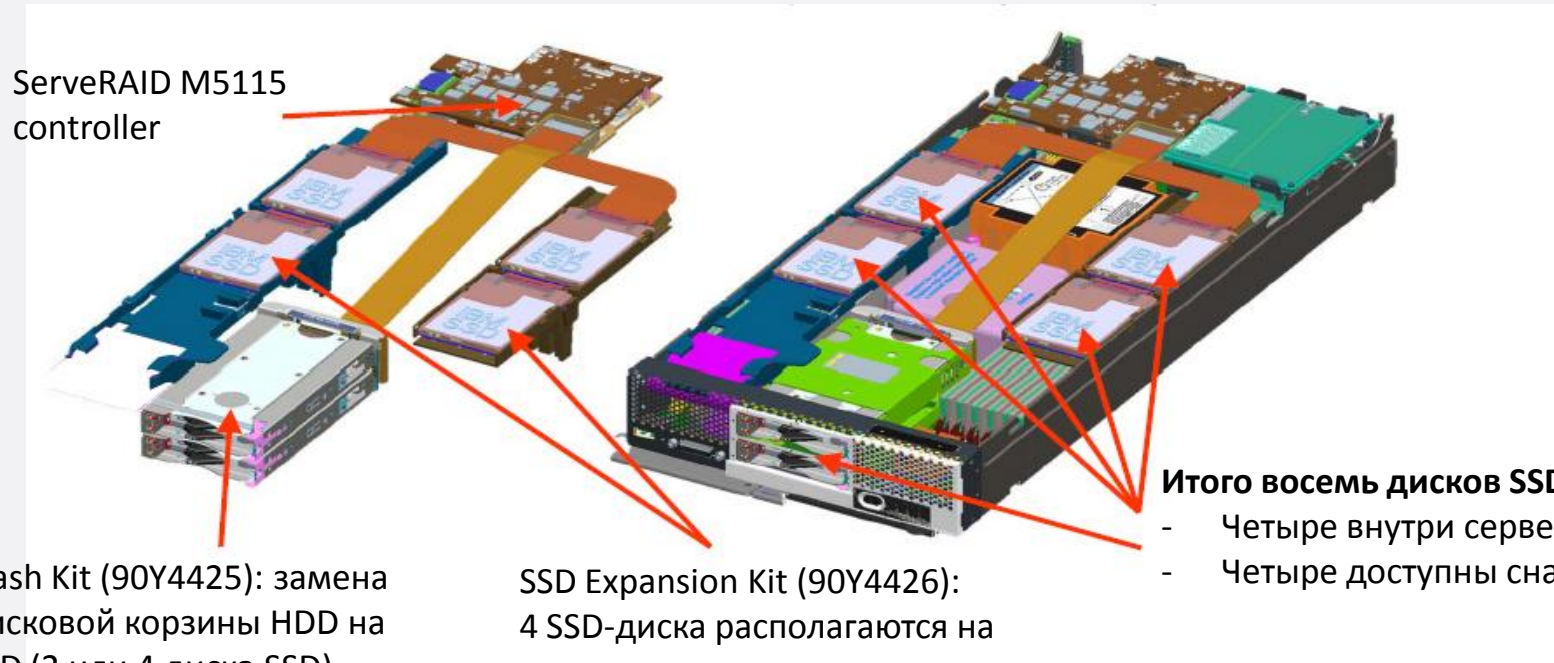


# x220: дисковая система

**ServeRAID M5115 (90Y4390) +  
ServeRAID M5100 Flash Kit x220 (90Y4425) +  
ServeRAID M5100 SSD Expansion Kit x220 (90Y4426)**

**ServeRAID M5115:**

1GB cache + RAID 0, 1, 10, 5, 50  
дополнительно: RAID 6/60, flash-  
backup for cache, SSD performance  
enabler



ServeRAID M5115  
controller

Flash Kit (90Y4425): замена  
дисковой корзины HDD на  
SSD (2 или 4 диска SSD)

SSD Expansion Kit (90Y4426):  
4 SSD-диска располагаются на  
крышках над памятью

**Итого восемь дисков SSD 1.8":**

- Четыре внутри сервера
- Четыре доступны снаружи

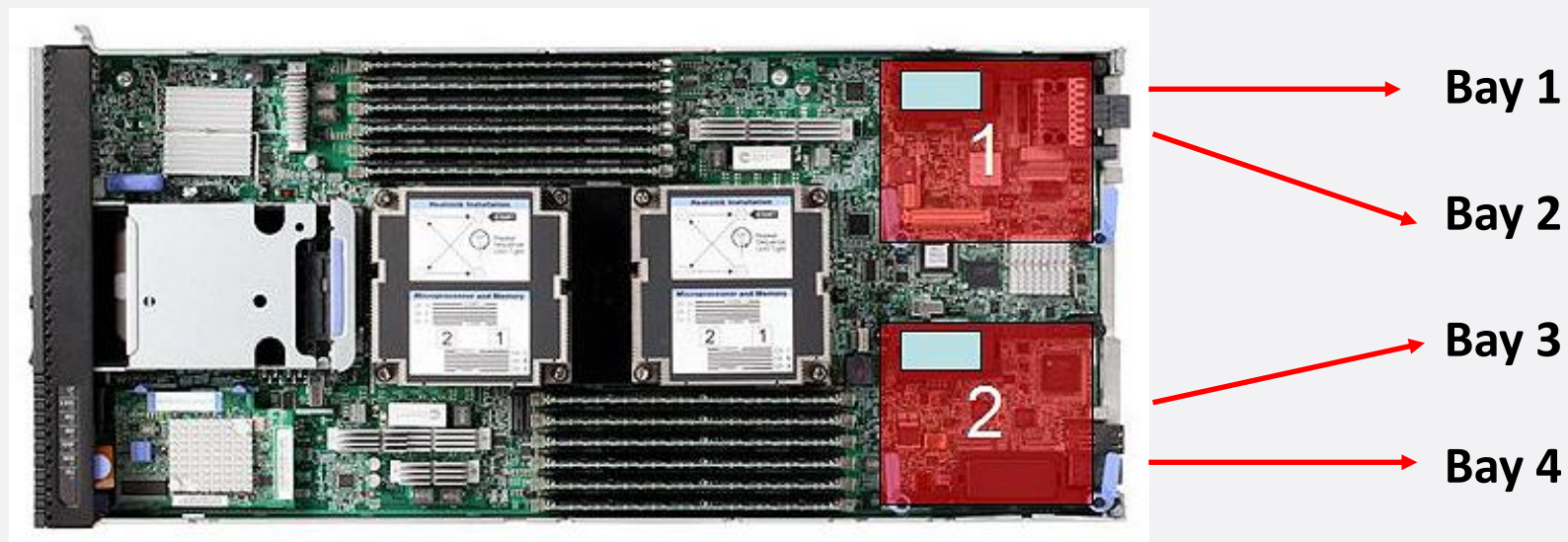
## Сетевые адаптеры для вычислительных узлов x220

P/N	Порты	Описание
<b>Ethernet adapters</b>		
49Y7900	4	IBM Flex System EN2024 4-port 1Gb Ethernet Adapter
90Y3466	2	IBM Flex System EN4132 2-port 10Gb Ethernet Adapter
88Y5920	2	IBM Flex System CN4022 2-port 10Gb Converged Adapter
00Y3306	4	IBM Flex System CN4054R 10Gb Virtual Fabric Adapter
90Y3554	4	IBM Flex System CN4054 10Gb Virtual Fabric Adapter
90Y3558	License	IBM Flex System CN4054 Virtual Fabric Adapter (SW Upgrade) (FoD to provide FCoE \ iSCSI; one license per adapter)
90Y3482	2	IBM Flex System EN6132 2-port 40Gb Ethernet Adapter
<b>InfiniBand adapters</b>		
90Y3454	2	IBM Flex System IB6132 2-port FDR InfiniBand Adapter

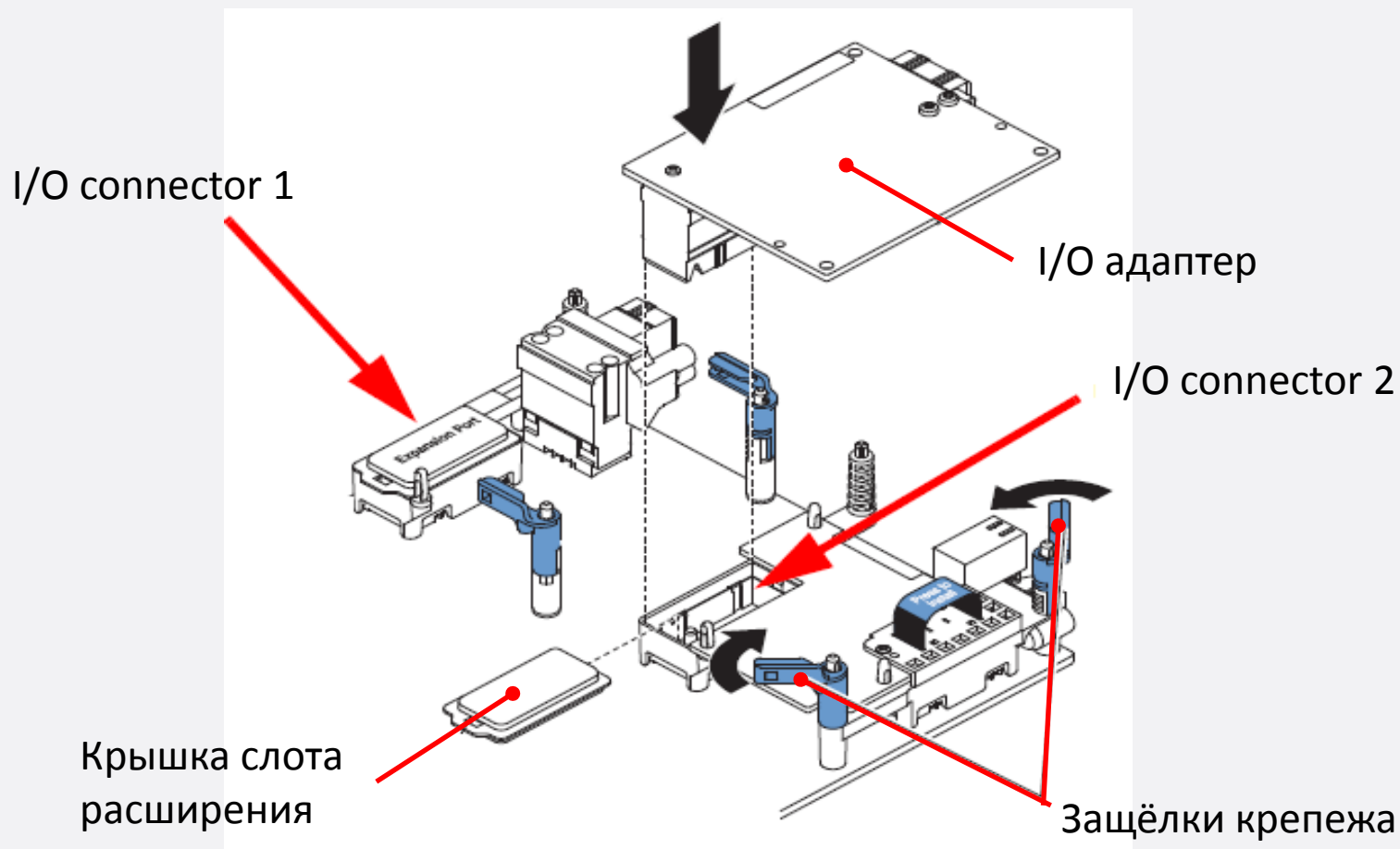
## Адаптеры FC для вычислительных узлов x220

P/N	Порты	Описание
<b>Fibre Channel adapters</b>		
69Y1938	2	IBM Flex System FC3172 2-port 8Gb FC Adapter
95Y2375	2	IBM Flex System FC3052 2-port 8Gb FC Adapter
88Y6370	2	IBM Flex System FC5022 2-port 16Gb FC Adapter
95Y2386	2	IBM Flex System FC5052 2-port 16Gb FC Adapter
95Y2391	4	IBM Flex System FC5054 4-port 16Gb FC Adapter
69Y1942	2	IBM Flex System FC5172 2-port 16Gb FC Adapter

**x220 имеет два слота для установки адаптеров:**



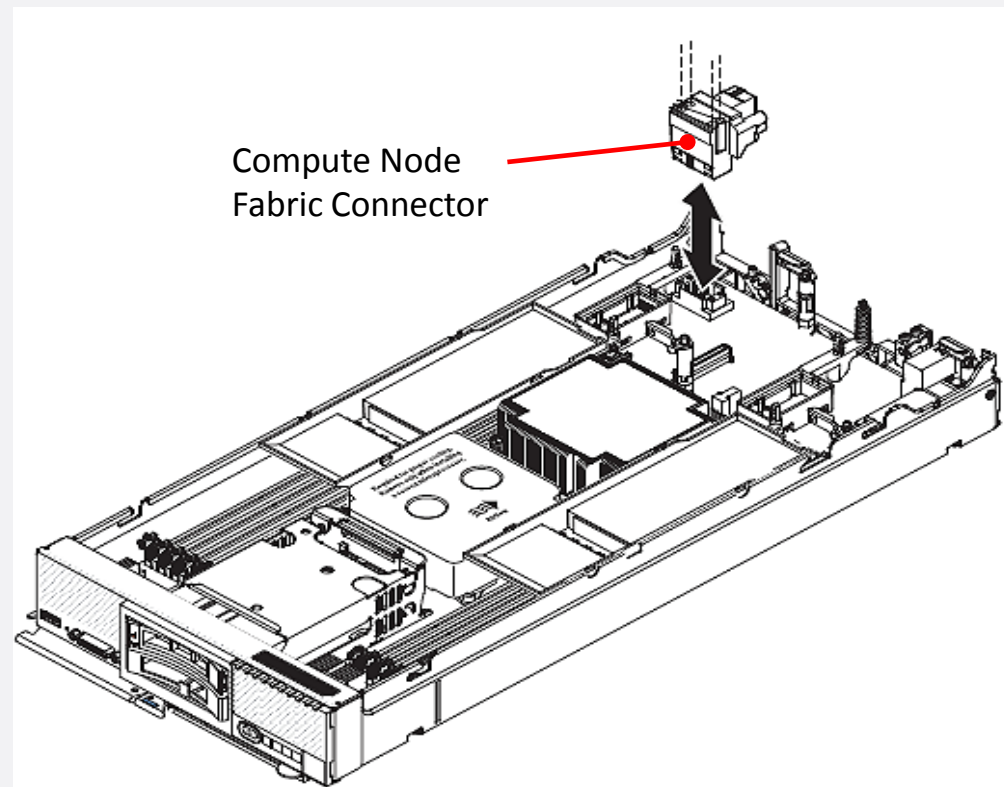
# x220: установка адаптера



**1Gb Ethernet controller занимает I/O слот!**

Модель	1 Gb Virtual Fabric Adapter	I/O slots (исп./max)	Ethernet
7906-G2x, J2x, L2x	Нет	0 / 2	Нет
7906-A2x, B2x, C2x, D2x, F2x, G4x, H2x	Есть	1* / 2	Есть, через 1Gb Ethernet controller

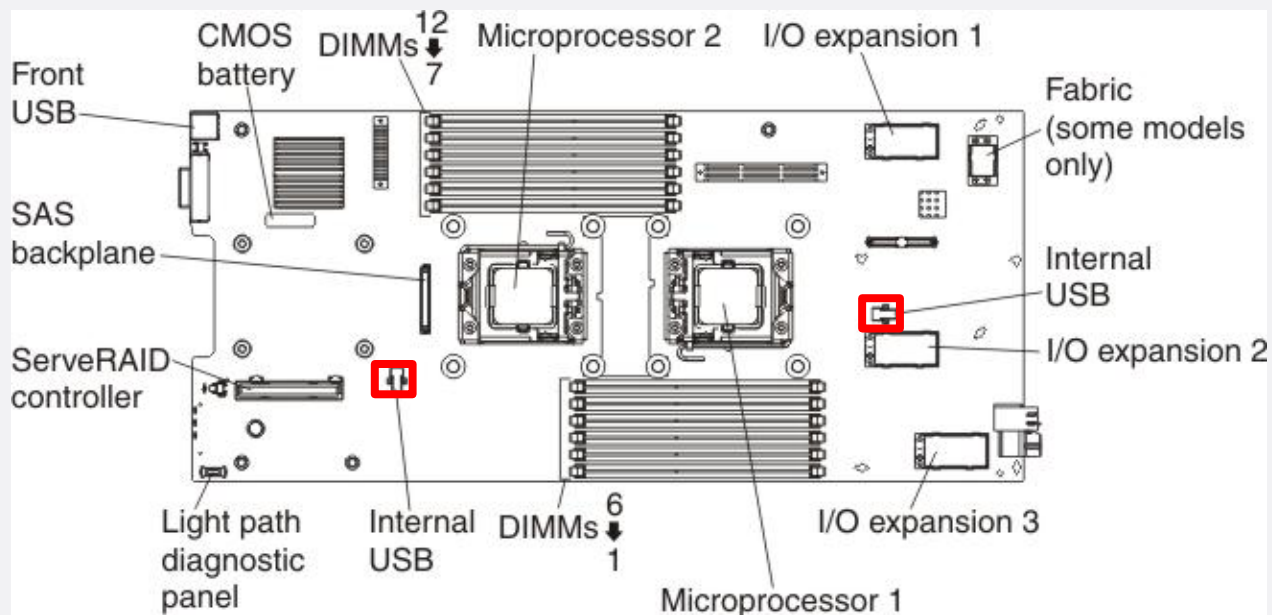
**\*) слот, занятый 1Gb Ethernet Controller, может быть использован только после демонтажа Compute Node Fabric Connector (не относится к ServeRAID Controller)**





P/N	Описание
41Y8300	USB Memory Key for VMware ESXi 5.0
41Y8307	USB Memory Key for VMware ESXi 5.0 Update 1
41Y8298	Blank USB Memory Key for VMware ESXi Downloads

В случае двух flash-накопителей с ESXi загрузка с них производится не будет. Один из накопителей должен быть либо пустым, либо указан в качестве резервного для загрузки (boot backup).



**VMware не поддерживается в комбинации с контроллером ServeRAID C105!**

<b>Processor</b>	Up to two Intel Xeon Processor E5-2400 product family processors with eight-core (up to 2.3 GHz), six-core (up to 2.4 GHz), or quad-core (up to 2.2 GHz), one QPI link running at 8.0 GTps, L3 cache up to 20 MB, and memory speeds up to 1600 MHz. The server also supports one Intel Pentium Processor 1400 product family processor with two cores, up to 2.8 GHz, 5 MB L3 cache, and 1066 MHz memory speeds.
<b>Chipset</b>	Intel C600 series.
<b>Memory</b>	Up to 12 DIMM sockets (six DIMMs per processor) using Low Profile (LP) DDR3 DIMMs. RDIMMs, UDIMMs and LRDIMMs are supported. 1.5 V and low-voltage 1.35 V DIMMs are supported. Support for up to 1600 MHz memory speed, depending on the processor. Three memory channels per processor (two DIMMs per channel). Supports two DIMMs per channel operating at 1600 MHz (2 DPC @ 1600 MHz) with single and dual rank RDIMMs.
<b>Memory maximums</b>	With LRDIMMs: Up to 384 GB with 12x 32 GB LRDIMMs and two E5-2400 processors. With RDIMMs: Up to 192 GB with 12x 16 GB RDIMMs and two E5-2400 processors. With UDIMMs: Up to 48 GB with 12x 4 GB UDIMMs and two E5-2400 processors. Half of these maximums and DIMMs counts with one processor installed.
<b>Memory protection</b>	ECC, Chipkill (for x4-based memory DIMMs), and optional memory mirroring and memory rank sparing.
<b>Disk drive bays</b>	Two 2.5-inch hot-swap SAS/SATA drive bays supporting SAS, SATA, and SSD drives. Optional support for up to eight 1.8-inch SSDs. Onboard ServeRAID C105 supports SATA drives only. Up to 12 additional 2.5-inch drive bays with the optional Storage Expansion Node.
<b>Maximum internal storage</b>	With two 2.5-inch hot-swap drives: Up to 2 TB with 1 TB 2.5-inch NL SAS HDDs, up to 1.8 TB with 900 GB 2.5-inch SAS HDDs, or up to 2 TB with 1 TB 2.5-inch SATA HDDs, or up to 512 GB with 256 GB 2.5-inch SATA SSDs. An intermix of SAS and SATA HDDs and SSDs is supported. With 1.8-inch SSDs and ServeRAID M5115 RAID adapter: Up to 1.6 TB with eight 200 GB 1.8-inch SSDs.

<b>RAID support</b>	<p>Software RAID 0 and 1 with integrated LSI-based 3 Gbps ServeRAID C105 controller; supports SATA drives only. Non-RAID not supported.</p> <p>Optional ServeRAID H1135 RAID adapter with LSI SAS2004 controller, supports SAS/SATA drives with hardware-based RAID 0 and 1. An H1135 adapter is installed in a dedicated PCIe 2.0 x4 connector and does not use either I/O adapter slot.</p> <p>Optional ServeRAID M5115 RAID adapter with RAID 0, 1, 10, 5, 50 support and 1 GB cache. M5115 uses the I/O adapter slot 1. Can be installed in all models, including models with embedded a 1 GbE with Fabric connector. Supports up to eight 1.8-inch SSD with expansion kits. Optional flash-backup for cache, RAID 6/60, and SSD performance enabler.</p>
<b>Network interfaces</b>	<p>Some models: Embedded dual-port Broadcom BCM5718 Ethernet Controller that supports Wake on LAN and Serial over LAN, IPv6. TCP/IP Offload Engine (TOE) not supported. Routes to chassis I/O module bays 1 and 2 through a Fabric Connector to the chassis midplane. The Fabric Connector precludes the use of I/O adapter slot 1, with the exception that the M5115 can be installed in slot 1 while the Fabric Connector is installed. Remaining models: No network interface standard; optional 1 Gb or 10 Gb Ethernet adapters</p>
<b>PCI Expansion slots</b>	<p>Two connectors for I/O adapters; each connector has PCIe x8+x4 interfaces.</p> <p>Includes an Expansion Connector (PCIe 3.0 x16) to connect an expansion node such as the PCIe Expansion Node Dedicated PCIe 2.0 x4 interface for ServeRAID H1135 adapter only.</p> <p>PCIe Expansion Node supports two full-height PCIe adapters, two low-profile PCIe adapters and two Flex System I/O adapters.</p>
<b>Ports</b>	<p>USB ports: One external and two internal ports for an embedded hypervisor. A console breakout cable port on the front of the server provides local KVM and serial ports (cable standard with chassis; additional cables optional).</p>
<b>Systems management</b>	<p>UEFI, IBM Integrated Management Module 2 (IMM2) with Renesas SH7757 controller, Predictive Failure Analysis, light path diagnostics panel, automatic server restart, and remote presence. Support for IBM Flex System Manager, IBM Systems Director and Active Energy Manager, and IBM ServerGuide.</p>

Systems management	UEFI, IBM Integrated Management Module 2 (IMM2) with Renesas SH7757 controller, Predictive Failure Analysis, light path diagnostics panel, automatic server restart, and remote presence. Support for IBM Flex System Manager, IBM Systems Director and Active Energy Manager, and IBM ServerGuide.
Security features	Power-on password, administrator's password, and Trusted Platform Module V1.2.
Video	Matrox G200eR2 video core with 16 MB video memory integrated into the IMM2. Maximum resolution is 1600x1200 at 75 Hz with 16 M colors.
Limited warranty	Three-year customer-replaceable unit and on-site limited warranty with 9x5/NBD.
Operating systems supported	Microsoft Windows Server 2008 R2, Red Hat Enterprise Linux 5 and 6, SUSE Linux Enterprise Server 10 and 11, VMware ESX 4.1 and 5. See "Supported operating systems" for details.
Service and support	Optional service upgrades are available through IBM ServicePac® offerings: 4-hour or 2-hour response time, 8-hour fix time, 1-year or 2-year warranty extension, remote technical support for IBM hardware and selected IBM and OEM software.
Dimensions	Width: 217 mm (8.6 in.), height: 56 mm (2.2 in.), depth: 492 mm (19.4 in.)
Weight	Maximum configuration: 6.4 kg (14.11 lb).

- **IBM Flex System x86 compute nodes**  
<http://www-03.ibm.com/systems/flex/compute-nodes/x86/bto/>
- **Redbooks: IBM Flex System x220 Compute Node**  
<http://www.redbooks.ibm.com/abstracts/tips0885.html>
- **Redbooks: IBM PureFlex System and IBM Flex System Products and Technology**  
<http://www.redbooks.ibm.com/abstracts/sg247984.html>
- **Redbooks: IBM Pure System Redbooks**  
<http://www.redbooks.ibm.com/Redbooks.nsf/portals/puresystems?Open&page=pgbycat>
- **Совместимость: IBM Flex System Interoperability Guide**  
<http://www.redbooks.ibm.com/abstracts/redpfsig.htm>
- **Совместимость: ServerProven: Compatibility for IBM Flex System**  
<http://www-03.ibm.com/systems/info/x86servers/serverproven/compat/us/flexsystems.html>
- **Совместимость: ServerProven hardware compatibility page for the x220**  
<http://ibm.com/systems/info/x86servers/serverproven/compat/us/flex/7906.html>

## Ландата - дистрибьютор IBM

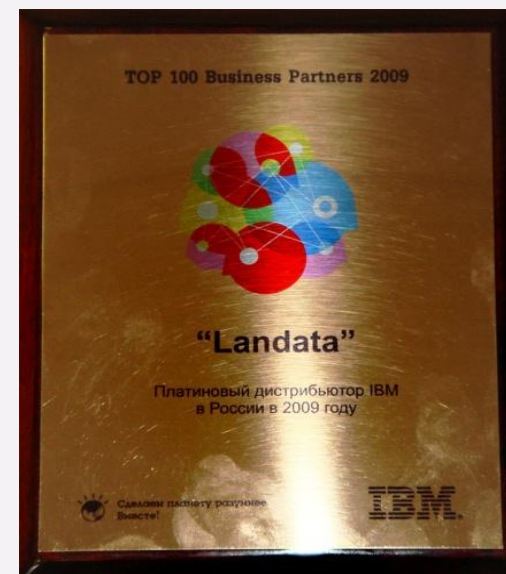
Дистрибьюторский контракт подписан в апреле 2004 года.

### Продуктовые линейки:

- Серверы семейства IBM System x
- Серверы семейства IBM System p
- Серверы семейства IBM System i
- Системы хранения данных IBM System Storage
- Системы хранения данных IBM Storage XIV
- POS-терминалы IBM

## Ландата: награды от IBM

- «Платиновый партнер по дистрибьюции IBM»  
- 2009, 2010 гг
- «Золотой партнер по дистрибьюции IBM»  
- 2008, 2011 гг
- «Крупнейший партнер по дистрибьюции IBM»  
- 2007, 2006 гг
- «Самый динамично развивающийся дистрибьютор IBM»  
- 2005, 2004 гг
- «Лучший дистрибьютор IBM»  
- 2012 год



Октябрь 2013



## Направление IBM в бизнесе Landata

Линейка IBM – занимает **30%** от общего бизнеса Landata.

- С момента подписания контракта в 2004 году, данное направление являлось самым быстро развивающимся в компании и демонстрировало ежегодную динамику роста от **50% до 90%**
- **В Landata существует выделенный Департамент** по данному направлению, в котором работают 13 квалифицированных специалистов. Команда по данному направлению признана экспертами одной из лучших на рынке
- В 2010 году Landata получила награду «**Платиновый партнер по дистрибьюции IBM**» в России и стала единственным дистрибьютором IBM, дважды получившем эту награду



## Landata: адреса и телефоны

### Отдел IBM

Общий адрес: [ibm@landata.ru](mailto:ibm@landata.ru)

Россия, 121471, г. Москва, 2-й пер. Петра Алексеева, д.2

Тел. (495)925-7620

### Менеджеры по предпродажной подготовке оборудования:

Алексеев Юрий      [alekseev@landata.ru](mailto:alekseev@landata.ru)      Внутр.тел. 4262

Фомичев Сергей      [fomichev@landata.ru](mailto:fomichev@landata.ru)      Внутр.тел. 4351

Петров Константин      [petrov@landata.ru](mailto:petrov@landata.ru)      Внутр.тел. 4243

Кочергин Максим      [kochergin@landata.ru](mailto:kochergin@landata.ru)      Внутр.тел. 4269

### Руководитель сектора предпродажной подготовки:

Кабанов Кирилл      [kabanov@landata.ru](mailto:kabanov@landata.ru)      Внутр.тел. 4287