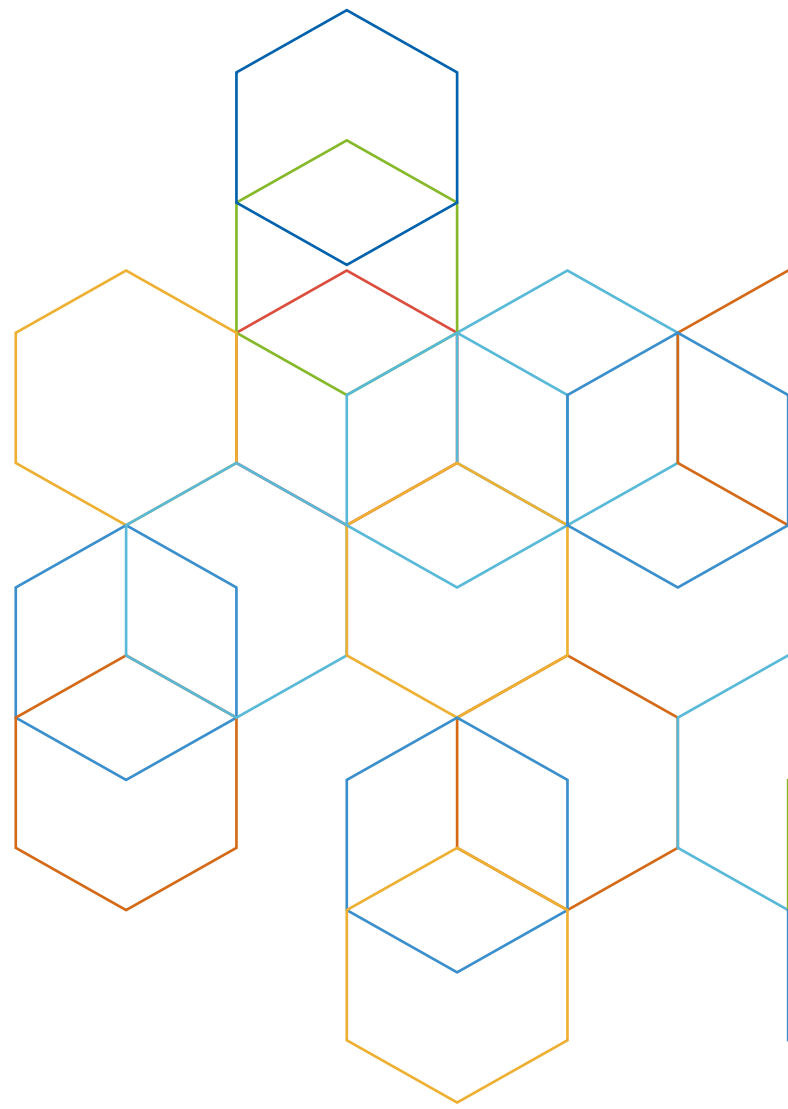




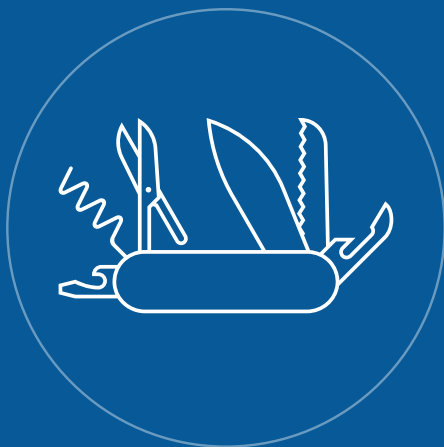
Inspur HANA integrated solution

浪潮HANA一体机解决方案



解决方案核心价值

简化



HANA有效的简化了系统开发维护的工作量和难度

加速



内存计算平台的极致性能，推动企业实现实时运营

创新



帮助企业创建全新的数据驱动型业务模式，让创新成为企业发展动力

强强联手，互惠双赢，引领行业发

No.1 + No.1 =

浪潮服务器

全球前三，中国第一

SAP HANA计算平台

全球唯一HANA开拓者



浪潮 SAP HANA一体机

浪潮与SAP战略合作签约



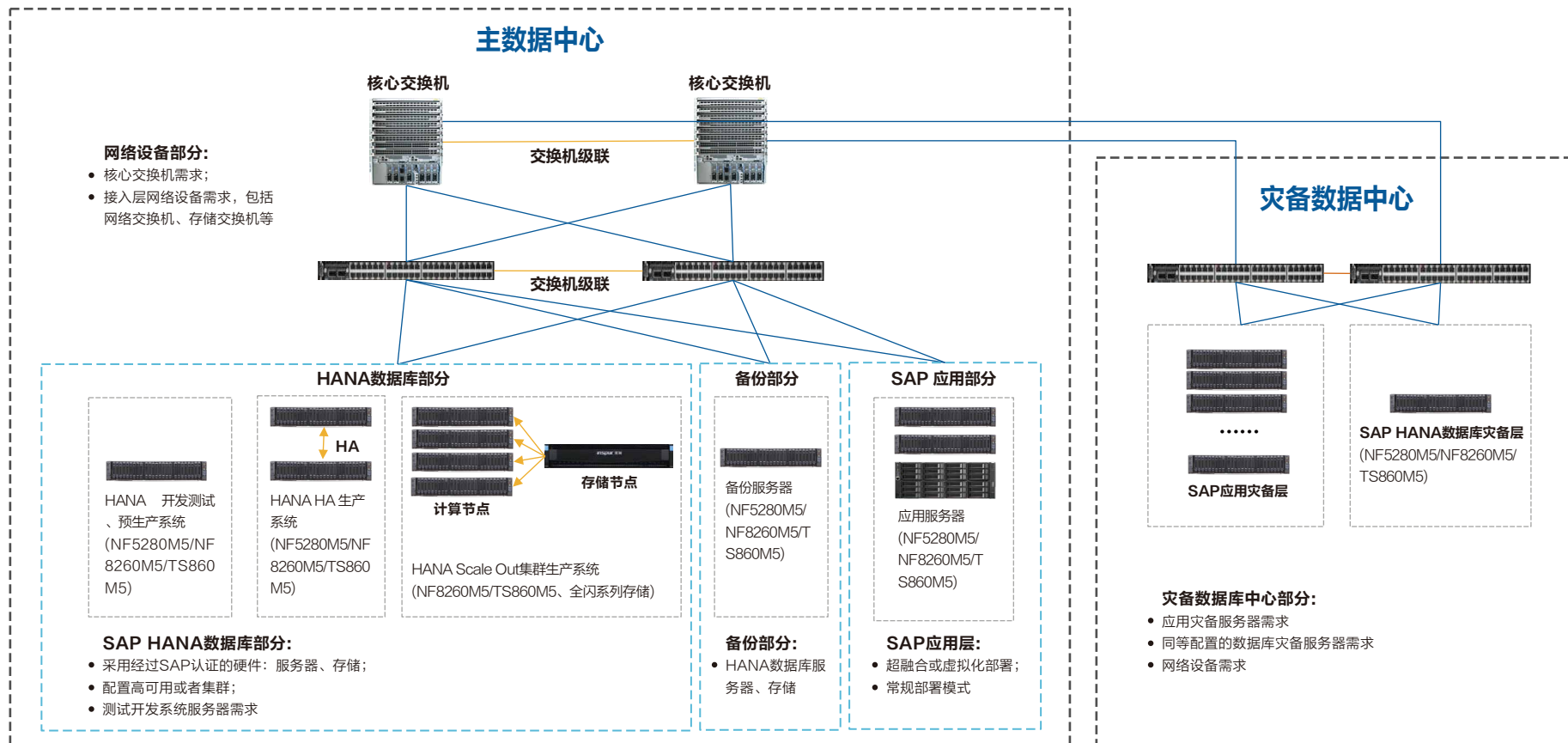
浪潮与SAP共同签署战略合作协议



浪潮集团董事长兼CEO孙丕恕和SAP全球CEO孟鼎铭

双方将在智能制造、企业云等方面展开深度合作，推动浪潮服务器和SAP工业软件融合创新和优势互补，加快浪潮服务器与SAP的MES、MII、PCO等工业软件的集成，联合打造适合中国市场的智能制造解决方案。

HANA一体机解决方案总体架构



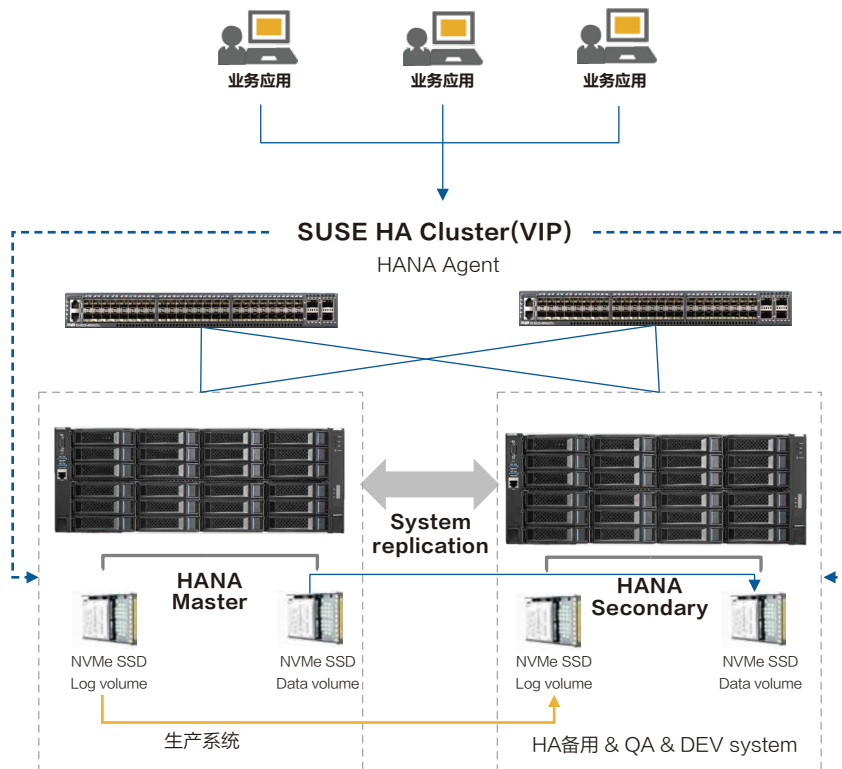
HANA HA解决方案

SAP HANA HA方案核心:

- 主备节点数据通过SAP HANA System Replication进行同步
- 主备节点的实时监控和故障切换通过OS HA软件自动完成
- SUSE HA Cluster 代理通过 SAP HANA 的监控程序进行状态监控
- Primary Instance 出现故障, SUSE HA Cluster 软件会自动完成 System Replication 切换操作, HANA 的Secondary Instance 会接管 Primary Instance 业务
- 备节点不需要进行数据加载操作, 直接就可以接管主节点的业务
- 通过 SUSE HA Cluster 软件对上层提供VIP 联接, 上层业务可以不需要修改连接主机 IP 地址连接备节点, 有效保障业务连续性

SAP HANA HA方案机型:

- 推荐CLX平台2路服务器NF5280M5
- 推荐CLX平台4路服务器NF8260M5
- 推荐CLX平台8路服务器TS860M5



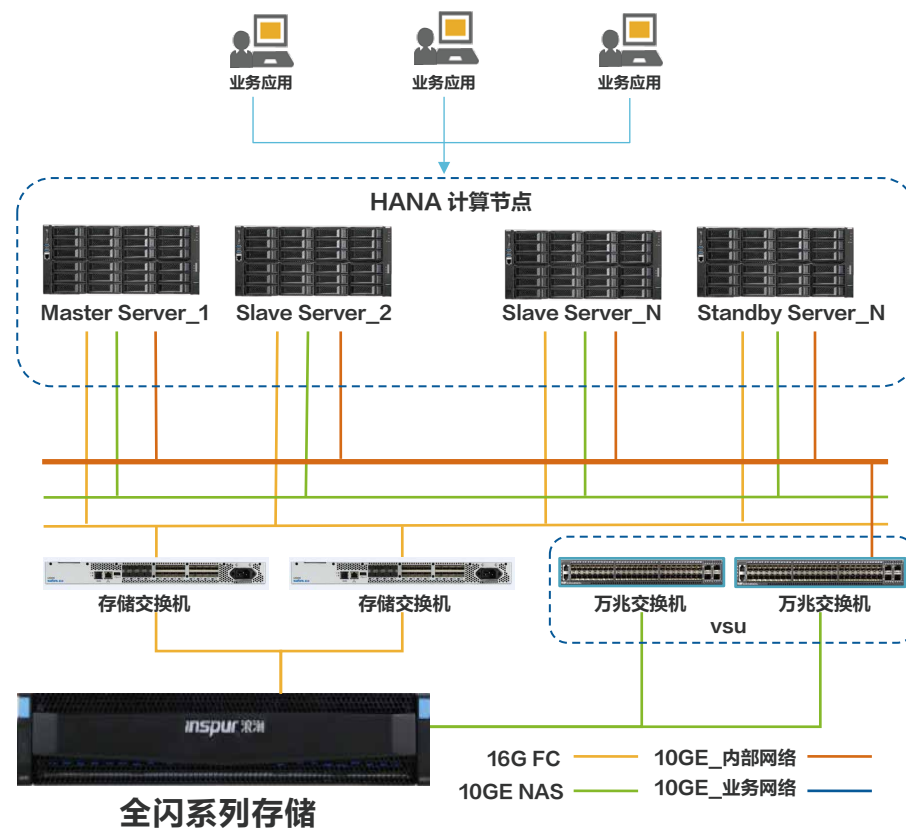
HANA SCALE OUT解决方案

Scale Out方式集群/多节点场景特点:

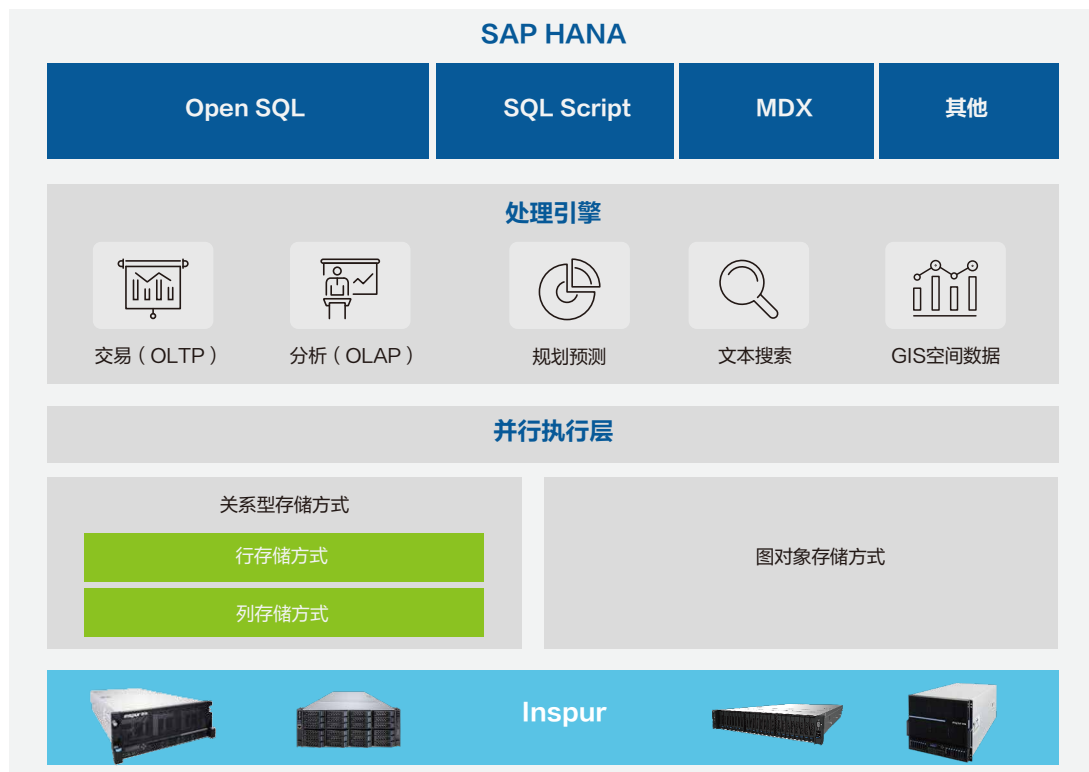
- 一个HANA数据库以分布式的方式，在多个节点上部署，一般只用于BWoH
- 通过扩大安装规模方式增加内存容量，提供强大的横向扩展能力，承载大的数据量
- SAP NetWeaver Business Warehouse的数据，在集群中自动分布式部署
- 支持多个备节点，利用Host-auto-failover提高集群系统高可用性
- 多节点之间通讯网络开销大
- 数据表跨节点分割、多节点查询、结果汇聚等过程，具有性能损耗
- 集群部署，需要有独立的交换网络、存储，成本较高

Scale Out方式集群/多节点场景服务器要求:

- OLAP场景（Business Warehouse on HANA）：
 - 4x 28 cores Intel CLX CPU，单节点1.5TB、3TB内存（NF8260M5）
 - 8x 28 cores Intel CLX CPU，单节点3TB、6TB内存（TS860M5）
 - 标准最大扩展至16节点
- OLTP场景（SAP Business Suite on HANA）：
 - 8x 28 cores Intel CLX CPU，单节点12TB内存（TS860M5）
 - 最大扩展至4节点
 - 当单节点内存容量能满足业务需求时，不推荐使用scale out



HANA一体机解决方案联合认证



业务应用处理层

数据库在内存计算，性能优异
高效进行各种复杂数据分析等业务

硬件设备管理层

SAP® Certified

标准X86平台，可多节点集群扩展

HANA认证产品总览

一体机	2 路灵动型服务器	4 路计算密集型服务器		8 路关键业务型服务器
	 NF5280M5 (2U)	 NF8260M5 (2U)	 NF8480M5 (4U)	 TS860M5 (4U)
规格	Business suite on HANA(SoH/OLTP)	Business suite on HANA(SoH/OLTP)		Business suite on HANA(SoH/OLTP)
	192GB~3TB	192GB~6TB		192GB~12TB
	Business warehouse on HANA(BWoH/OLAP)	Business warehouse on HANA(BWoH/OLAP)		Business warehouse on HANA(BWoH/OLAP)
	192GB~1.5TB	192GB~3TB		192GB~6TB
IO 加速	RAID Cache+ SAS SSD 加速技术 	Bcache+ NVMe SSD 加速技术 		全闪 NVMe SSD 加速技术 

更佳的设备密度和能耗

- 全系列规格无需外置磁盘框
- 4路2U、8路4U设计

更平滑的扩容路径

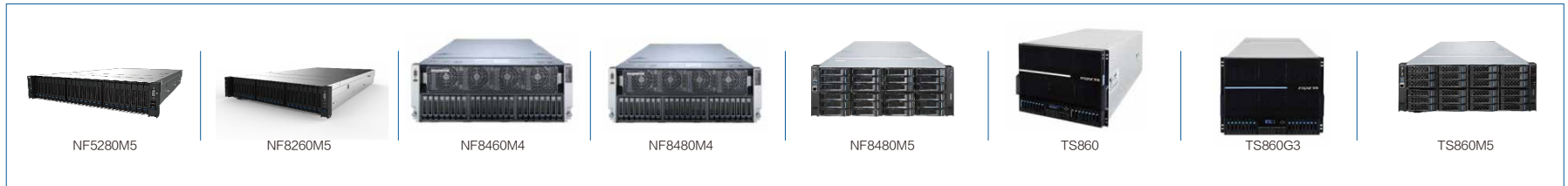
- 扩容仅需增加CPU或内存
- 无需增加外置磁盘框或硬盘
- 无需重装OS和HANA

更快的Log读写性能

- 专为HANA模型优化
- 更低的时延
- 更高的IOPS

三大亮点-认证服务器覆盖完备

浪潮 8 款服务器通过SAP HANA认证



Certificate SAP INTEGRATION SAP SE hereby confirms that the appliance NF8460M4 of the company Inspur (Beijing) Electronic Information Industry Co., Ltd. has been certified for operating SAP HANA. This certificate confirms the appliance's compliance with the SAP certification procedures. SAP only certifies successful integration of the product with SAP HANA. Vendor is responsible for the product itself, its error-free operation, and adherence to applicable laws. The certification test is documented and expires March 31, 2019. Appliance Specification used for Test: Server System: NF8460M4 Model: NF8460M4 Version / Year: 2018 / 2018 Manufacturer: Inspur Appliance Type: Single Node Storage Setup: Data and Log File System: LogFS Operating System: SLES 15 SP1 Hardware: 2TB and 4TB Appliances included in Appliance Model: NF8460M4 Validated: July 19, 2018 SAP SE	Certificate SAP INTEGRATION SAP SE hereby confirms that the appliance NF8460M4 of the company Inspur (Beijing) Electronic Information Industry Co., Ltd. has been certified for operating SAP HANA. This certificate confirms the appliance's compliance with the SAP certification procedures. SAP only certifies successful integration of the product with SAP HANA. Vendor is responsible for the product itself, its error-free operation, and adherence to applicable laws. The certification test is documented and expires March 31, 2019. Appliance Specification used for Test: Server System: NF8460M4 Model: NF8460M4 Version / Year: 2018 / 2018 Manufacturer: Inspur Appliance Type: Single Node Storage Setup: Data and Log File System: LogFS Operating System: SLES 15 SP1 Hardware: 2TB and 4TB Appliances included in Appliance Model: NF8460M4 Validated: July 19, 2018 SAP SE	Certificate SAP INTEGRATION SAP SE hereby confirms that the appliance TS860 of the company Inspur (Beijing) Electronic Information Industry Co., Ltd. has been certified for operating SAP HANA. This certificate confirms the appliance's compliance with the SAP certification procedures. SAP only certifies successful integration of the product with SAP HANA. Vendor is responsible for the product itself, its error-free operation, and adherence to applicable laws. The certification test is documented and expires March 31, 2019. Appliance Specification used for Test: Server System: TS860 Model: TS860 Version / Year: 2018 / 2018 Manufacturer: Inspur Appliance Type: Single Node Storage Setup: Data and Log File System: LogFS Operating System: SLES 15 SP1 Hardware: 2TB and 4TB Appliances included in Appliance Model: TS860-IC1 Validated: July 19, 2018 SAP SE	Certificate SAP INTEGRATION SAP SE hereby confirms that the appliance TS860G3 of the company Inspur (Beijing) Electronic Information Industry Co., Ltd. has been certified for operating SAP HANA. This certificate confirms the appliance's compliance with the SAP certification procedures. SAP only certifies successful integration of the product with SAP HANA. Vendor is responsible for the product itself, its error-free operation, and adherence to applicable laws. The certification test is documented and expires March 31, 2019. Appliance Specification used for Test: Server System: TS860G3 Model: TS860G3 Version / Year: 2018 / 2018 Manufacturer: Inspur Appliance Type: Single Node Storage Setup: Data and Log File System: LogFS Operating System: SLES 15 SP1 Hardware: 2TB and 4TB Appliances included in Appliance Model: TS860G3-IC1 Validated: July 19, 2018 SAP SE	Certificate SAP INTEGRATION SAP SE hereby confirms that the appliance NF8480M5 of the company Inspur Electronic Information Industry Co., Ltd. has been certified for operating SAP HANA. This certificate confirms the appliance's compliance with the SAP certification procedures. SAP only certifies successful integration of the product with SAP HANA. Vendor is responsible for the product itself, its error-free operation, and adherence to applicable laws. The certification test is documented and expires March 31, 2019. Appliance Specification used for Test: Server System: NF8480M5 Model: NF8480M5 Version / Year: 2018 / 2018 Manufacturer: Inspur Appliance Type: Single Node Storage Setup: Data and Log File System: LogFS Operating System: SLES 15 SP1 Hardware: 2TB and 4TB Appliances included in Appliance Model: NF8480M5 Validated: July 19, 2018 SAP SE	Certificate SAP INTEGRATION SAP SE hereby confirms that the appliance NF5280M5 of the company Inspur Electronic Information Industry Co., Ltd. has been certified for operating SAP HANA. This certificate confirms the appliance's compliance with the SAP certification procedures. SAP only certifies successful integration of the product with SAP HANA. Vendor is responsible for the product itself, its error-free operation, and adherence to applicable laws. The certification test is documented and expires March 31, 2019. Appliance Specification used for Test: Server System: NF5280M5 Model: NF5280M5 Version / Year: 2018 / 2018 Manufacturer: Inspur Appliance Type: Single Node Storage Setup: Data and Log File System: LogFS Operating System: SLES 15 SP1 Hardware: 2TB and 4TB Appliances included in Appliance Model: NF5280M5 Validated: July 19, 2018 SAP SE	Certificate SAP INTEGRATION SAP SE hereby confirms that the appliance NF8260M5 of the company Inspur (Beijing) Electronic Information Industry Co., Ltd. has been certified for operating SAP HANA. This certificate confirms the appliance's compliance with the SAP certification procedures. SAP only certifies successful integration of the product with SAP HANA. Vendor is responsible for the product itself, its error-free operation, and adherence to applicable laws. The certification test is documented and expires March 31, 2019. Appliance Specification used for Test: Server System: NF8260M5 Model: NF8260M5 Version / Year: 2018 / 2018 Manufacturer: Inspur Appliance Type: Single Node Storage Setup: Data and Log File System: LogFS Operating System: SLES 15 SP1 Hardware: 2TB and 4TB Appliances included in Appliance Model: NF8260M5 Validated: July 19, 2018 SAP SE	Certificate SAP INTEGRATION CERTIFICATION SAP SE hereby confirms that the appliance TS860M5 of the company Inspur Electronic Information Industry Co., Ltd. has been certified for operating SAP HANA. This certificate confirms the appliance's compliance with the SAP certification procedures. SAP only certifies successful integration of the product with SAP HANA. Vendor is responsible for the product itself, its error-free operation, and adherence to applicable laws. The certification test is documented and expires March 31, 2019. Appliance Specification used for Test: Server System: TS860M5 Model: TS860M5 Version / Year: 2018 / 2018 Manufacturer: Inspur Appliance Type: Single Node Storage Setup: Data and Log File System: LogFS Operating System: SLES 15 SP1 Hardware: 2TB and 4TB Appliances included in Appliance Model: TS860M5 Validated: July 19, 2018 SAP SE
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三大亮点-SAP TDI灵活方案

TDI为可裁剪数据中心集成(Tailored Data Center Integration)方案的简称，作为SAP HANA一体机的一个替代可选方案，由经过SAP HANA认证的服务器和存储产品灵活组合，为客户提供定制化的SAP HANA解决方案，旨在让客户充分利用其数据中心中现有旧资源，降低客户成本。

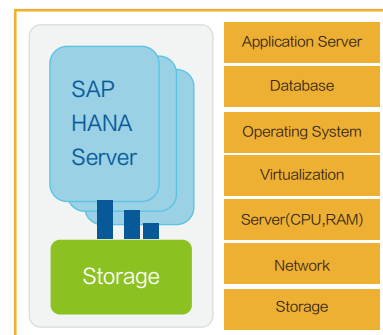
SAP HANA TDI 方案特点：

- 服务器必须是经过SAP HANA一体机认证的服务器
- 存储必须是经过SAP认证的存储
- 可以搭载Intel Optane Persistent Memory (PMem) 使用

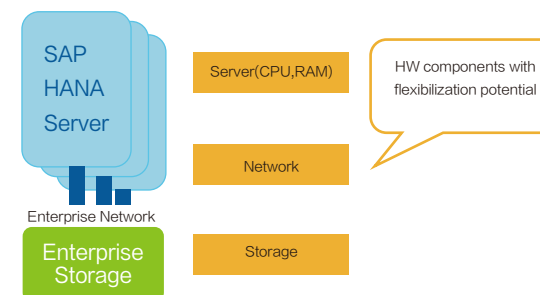
SAP HANA TDI 方案价值：

- 搭载Intel PMem时，单节点内存最大可扩展至24TB
- 灵活选择和组合服务器与存储产品
- 数据中心资源利用率及节省成本

Appliance building blocks:All in one box



SAP HANA TDI: Use your own preferred HW



三大亮点-INTEL PMEM高价值方案

内存容量	6TB DATA IN MEMORY DB SIZE	9TB DATA IN MEMORY DB SIZE	1.5X 更大数据量
启动时间	20 mins Restart time	90 seconds Restart time	13X 更快启动时间
总成本	~\$62,495 USD	~\$38,357 USD	39% 更少的成本
	 CPU: 4 Intel® Xeon® Platinum 8280M processor MEMORY: 48 x 128 GB DDR4 for 6 TB system	 CPU: 4 Intel Xeon Platinum 8280L processor MEMORY: 24 x 128 GB DDR4 + 24 x 256GB Intel Optane DC persistent memory for 9 TB system	

• 更高容量的Main内存区域

• 更少的停机时间和更短的启动时间增强了业务的连续性

• 降低了总体拥有成本

认证详情-NF5280M5

		BWoH/BW4H/DM	SoH/S4H
Server Model		NF5280M5	
CPU		2 * Intel Cascade Lake SP 8276/8276L/8276M/8280/8280L/8280M	
Memory Sizing		192GB/384GB/576GB/768GB/1152GB/1536G	192GB/384GB/576GB/768GB/1152GB/1536G/2304GB/3072GB
Configuration1	Data & Log & Shared Volume	pool from 4/6/9x 1.8TB SAS HDD (RAID5, bcache), based on minimal capacity requirements	
Configuration2	Data & Log & Shared Volume	pool from 4/6/9x 1.8TB SAS HDD (RAID5, bcache), based on minimal capacity requirements	
	Log Volume	2* 2TB NVMe SSD,RAID1	
Configuration3	Data & Log & Shared Volume	pool from 3/5/8 x 2TB NVMe SSD (RAID5) based on minimal capacity requirements	
File System		XFS	
OS		SLES 12 SP4/SLES 15 for SAP/SLES 15 SP1 for SAP	

认证详情-NF8260M5

		BWoH/BW4H/DM/SoH/S4H	SoH/S4H
Server Model		NF8260M5	
CPU		4 * Intel Cascade Lake SP 8276/8276L/8276M/8280/8280L/8280M	
Memory Sizing		384GB/768GB/1152GB/1536G/2304GB/3072GB	384GB/768GB/1152GB/1536G/2304GB/3072GB/4608GB/6144G
Configuration1	Data & Log &Shared Volume	pool from 6/9/18x1.8TB SAS HDD (RAID5, bcache), based on minimal capacity requirements	
Configuration2	Data & Shared Volume	pool from 6/9/18x1.8TB SAS HDD (RAID5, bcache), based on minimal capacity requirements	
	Log Volume	2* 2TB NVMe SSD,RAID1	
Configuration3	Data & Log & Shared Volume	pool from 2/3/5x 8TB NVMe SSD (RAID5) based on minimal capacity requirements	
File System		XFS	
OS		SLES 12 SP4/SLES 15 for SAP	

认证详情-TS860M5

		BWoH/BW4H/DM	SoH/S4H
Server Model		TS860M5	
CPU		Intel(R) Xeon(R) Platinum 8276/8276M/8276L/8280/8280M/8280L	
Memory Sizing		2&4&8	2&4&6&8
Memory Sizing		192GB/384GB/576GB/768GB/1152GB/1.5TB/2304GB/3072GB/4608GB/6144GB/	192GB/384GB/576GB/768GB/1152GB/1.5TB/2304GB/3072GB/4608GB/6144GB/9TB/12TB
Configuration1	Data&Log& shared Volume	pool from 2* (RAID 1), 3/5/8*(RAID 5) 8TB SAS HDD; based on minimal capacity requirements	
Configuration2	Data & Shared Volume	pool from 2* (RAID 1), 3/5/8*(RAID 5) 8TB SAS HDD; based on minimal capacity requirements	
	Log Volume	2*2TB NVMe SSD ,RAID1	
Configuration3	Data&Log & Shared Volume	pool from 2* (RAID 1), 3/5/8*(RAID 5) 8TB NVMe SSD; or 3/5/8*(RAID 5) 4TB NVMe SSD, Support maximum memory 12T; based on minimal capacity requirements	
File System		XFS	
OS		SLES 12 SP4 For SAP/SLES 15 For SAP/SLES15 SP1 for SAP	