

SUNSPD



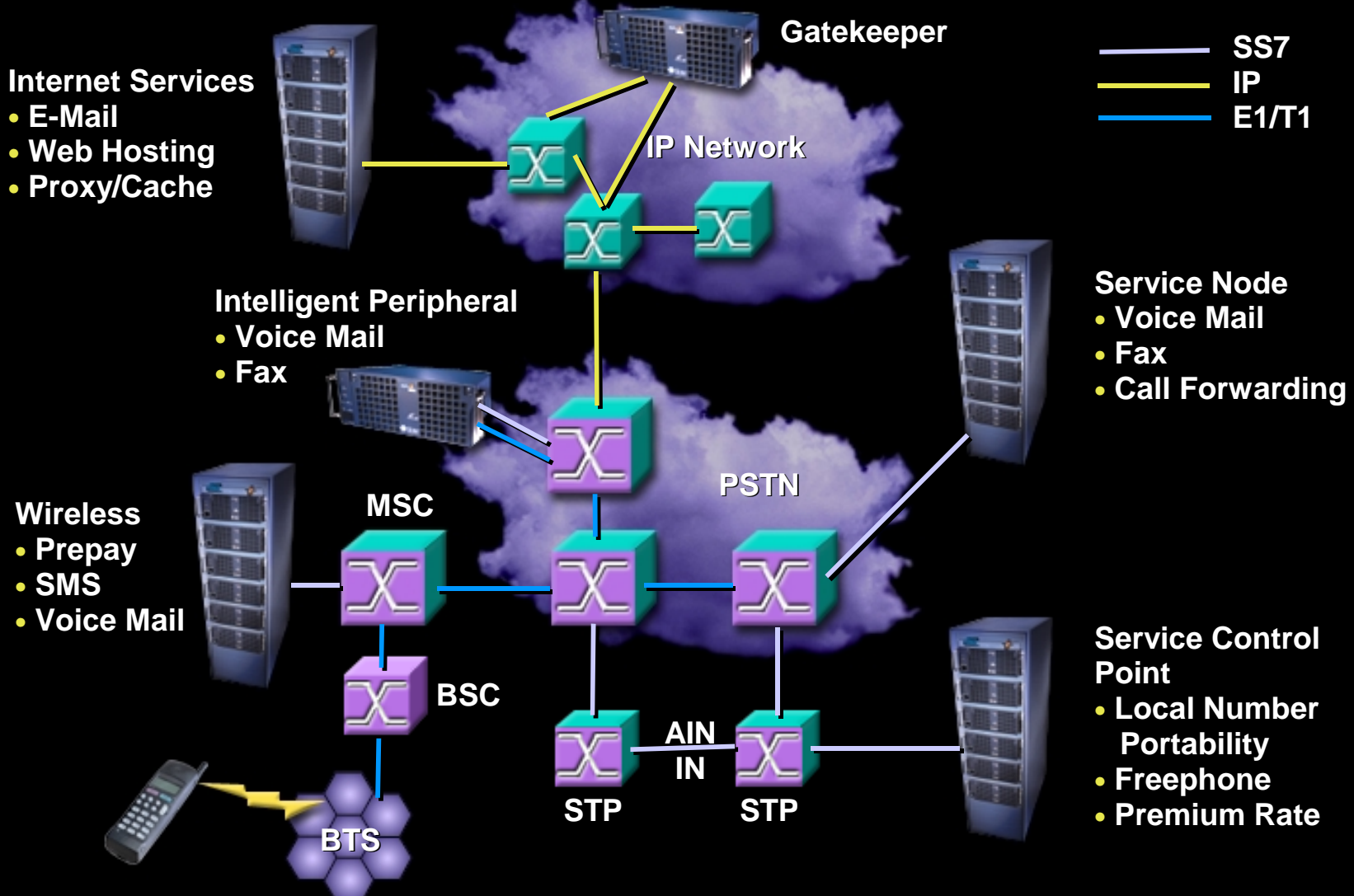
Network Service Providers

Network Systems' Mission

**Be the Leading Provider
of Carrier-Grade
Computing Platforms
for the Network
Service Providers**

We're the d●t in .com™

Market Strategy — Network Service Focus



Product Strategy – The Netra Philosophy

Netra

Carrier-Grade
NEBS

DC/Alarms
Rack Mount

Telecom Technology

JAIN
JAVA

Open Standard
Workstation

Solaris

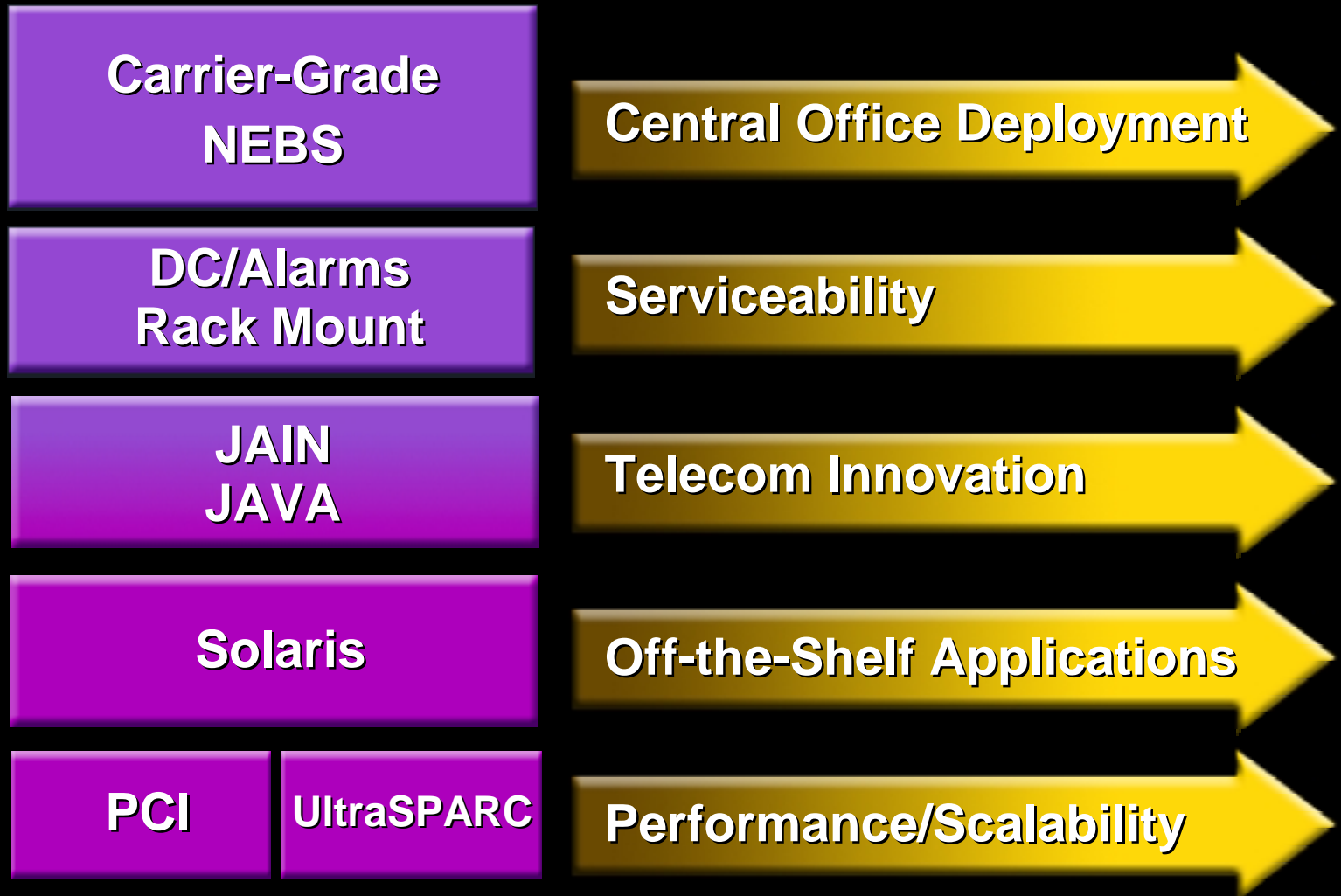
PCI

UltraSPARC

Telecom Value



The Netra Value Proposition for Telecom



Key Customer Needs

Central Office Deployment

Adaptable to Existing Infrastructure

Serviceability

Reliable Systems with Limited Downtime

Telecom Innovation

Keep Ahead in Changing Market

Off-the-Shelf Applications

Quick and Easy Deployment of New Services

Performance/Scalability

Be More Competitive in Their Market

Netra Product Distinction

- **Ruggedized packaging (NEBS-certified, ETSI-compliant)**
- **Optimized rack mount form factor (including depth)**
- **Front-to-back cooling**
- **DC power option**
- **CO service model**
 - **Local and remote alarms**
 - **Status LEDs**
 - **Front-accessible components**
 - **Rear cabling**

Network Systems Strategy

NEBS Level 3–Certified

NEBS – Level 1

GR-63

- System fire test and material/components criteria

GR-1089

- Electrical safety
- Listing requirements
- Bonding and grounding
- EMI emissions (or FCC part 15 compliance)
- Short circuit test
- Lightning immunity (second level)
- Current limiting protector test
- AC power fault immunity (second level)
- Voltage limiting protector test

NEBS – Level 2

GR-63

- Operational thermal (operating conditions)
- Earthquake (zone 2 level)
- Office vibrations
- Airborne contaminants (indoor levels)

GR-1089

- ESD (normal operation)
- EMI emissions
- EMI immunity
- Lightning immunity (first level)
- AC power fault immunity (first level)
- Steady state power induction requirements

Minimum Criteria for Placement into Central Office

NEBS – Level 3

GR-63

- Operational thermal (short-term conditions)
- Storage environment and transportation and handling
- Earthquake (zone 4 level)
- Airborne contaminants (outdoor levels)

GR-1089

- ESD (installation and repair)
- EMI Emissions (open doors)
- EMI immunity (open doors)
- Steady state power induction conditional requirements

Criteria for Placement into Central Office

Robust ... "Carrier-Grade"



High Temperatures to 55°C



High Humidity



Low Temperatures to 0°C



Flame Retardant/Fire Resistant



Corrosive Environments



Earthquakes
Zone 4 Level



High Level of Particles
Dusty/Dirty Environments



Low EMI/EMC

Netra Family Overview



Carrier-Grade ...

Fault-Tolerant Servers

The diagram consists of three overlapping circles arranged in a triangle. The top circle is teal and contains the text 'Fault-Tolerant Servers'. The bottom-left circle is blue and contains the text 'Servers'. The bottom-right circle is purple and contains the text 'Peripherals'. All circles have a slight gradient and shadow effect.

Servers

Peripherals

Netra Carrier-Grade Network Servers and Peripherals

Peripherals

st D130
Up to 3 18GB Disk
1U
AC/DC Power



st A1000/D1000
Up to 12 18GB Disk
4U
AC/DC Power



ft 1800 1+
1-4 400MHz
16 PCI Slots
DC Power



t1 Model 100/105
100 RR=GA 1/00
1P 360/440 MHz
1U, 1 PCI Slot
AC/DC Power



t 1120/1125
1-2P 440MHz
18GB Disk
4U, 4 PCI Slots
AC/DC Power



t 1400/1405
1-4P 440MHz
6U, 4 PCI Slots
AC/DC Power



Servers

A Complete Carrier Grade Product Portfolio!
Uniprocessors, SMP, FT, Storage, High-Availability Clusters

Netra t1

An extremely compact, low-profile, high-performance, carrier-grade, one-processor server for service providers and carriers



Netra t1 Distinguishing Features

- Front- and back-fault LEDs
- Removable, hot-swappable, front-access disk drives (SCSI)
- Removable host ID chip
- “Lights out” management
- Remote application restart
- Two 10/100 ethernet ports with base configuration
- Front-label area
- Low/zero maintenance FRU design



Netra t1

- 360/440Mhz UltraSPARC-IIi
- 1U form factor
- Multirack option
- Two 10/100 ports
- Single console port
- One ultrawide SCSI bus
- Front- and back-fault LEDs
- One PCI expansion slot
 - 33MHz 32Bit
- AC power
- “Lights out” management
- CD-ROM
- Alarms
- Front-back cooling



Netra t 1120/1125

A rugged and reliable, compact, high-performance, carrier-grade, two-processor server for telecom carriers and service providers



Netra t 1120/1125

Product Details

- Single or dual UltraSPARC-II
 - 300MHz or 440MHz
- 4U height, 19.5" deep
- 256MB – 2 GB memory
- Programmable alarms (DB15)
- 10/100 Mb Ethernet
- Console, modem serial ports
- Ultrawide SCSI bus
- 2 removable media devices
- 2 internal 18GB disk drives
- 4 PCI 2.1 slots (64 Bit)
 - 3x33MHz, 1x33/66MHz
- 19", 23", 24", 600mm rack mount kits
- Solaris 2.5.1/2.6/2.7
- Options
 - Memory, processors, disks, CD-ROM, DAT
 - Alarms software
- Power
 - 1120 – dual input -48/-60vdc
 - 1125 – 110/220vac

Netra t 1400/1405

A high-performance, configurable, rugged and reliable, four-processor, carrier-grade server for telecom carriers and service providers



Netra t 1400/1405



- **Processor**
 - 1-4 way UltraSPARC-II
 - 440MHz/4MB ecache
- **Memory**
 - 256MB-4GB
- **Power**
 - Redundant hot swap (N+1)
 - DC/AC option
 - Remote management
- **Primary I/O**
 - 2 PCI busses (33MHz and 66MHz)
 - 4 slots
- **Other I/O**
 - UltraSCSI
 - 2 serial, parallel, LOM ports
 - 10/100 Ethernet
- **Internal disk storage**
 - Up to 4 x 18GB 10K drives
- **Enclosure**
 - Carrier-grade rack-mountable
 - Fits 19", 23", 24" 600mm racks
 - Depth=19"
 - NEBS Level 3–certified
 - ETSI-compliant
- **Operating system**
 - Solaris 2.6
 - Solaris 2.7

Netra ft 1800

Next-Generation, Fault-Tolerant Server

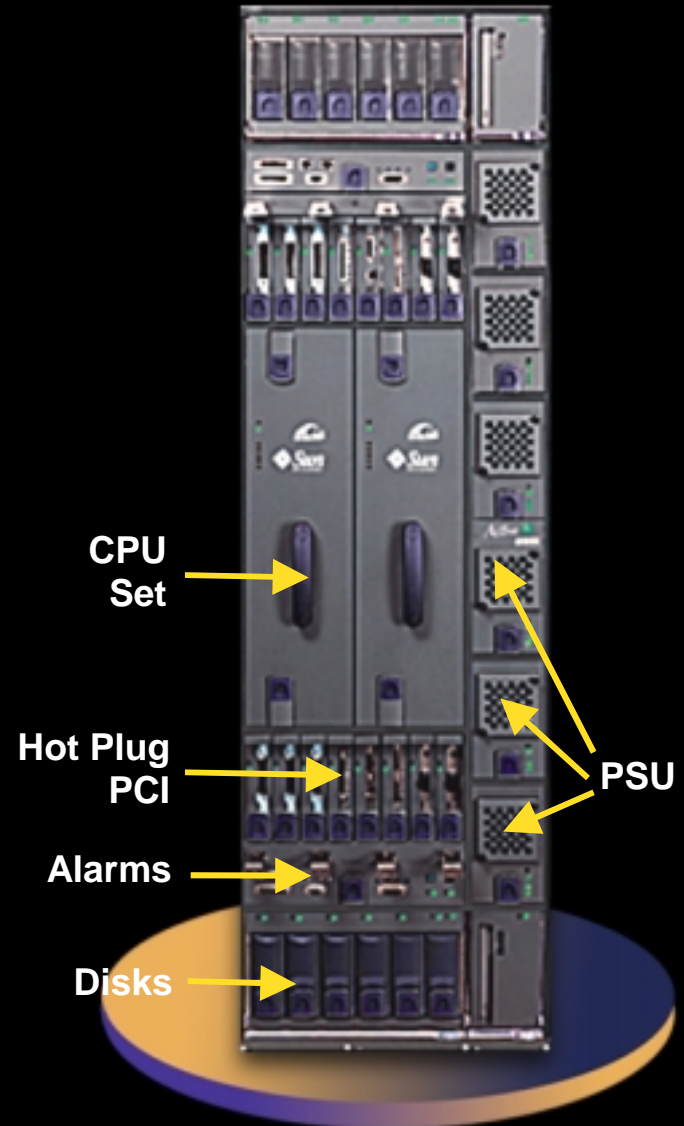
- Hardware-level availability > 99.999%
- Standard Solaris
- NEBS Level 3–certified and ETSI-compliant
- Scalable performance and availability
- Rack-mountable
- Alarm functionality
- No single point of failure



Netra ft 1800

Hardware Features

- **Dual synchronized SMP CPU sets**
 - 1-4 300 and 400 MHz UltraSPARC-II CPUs
- **Dual redundant, 8+8, PCI IO slots**
- **Dual redundant mirrored disk 18GB drives**
 - Redundant “n+1” DC power supplies
- **Redundant backplanes**
- **Hot-swap modules**
- **Split mode**



Netra ft 1800 Product Summary

- **True nonstop operation**
 - Parallel/redundant HW
 - Lock-step operation
 - Automated switchover
 - Hardened drivers
 - Mirrored disks
 - Independent power, N+1
 - Operation transparent to SW
- **Scalable/high performance**
 - 1-4 300 or 400 MHz UltraSPARC-II CPUs
 - Up to 6 18GB disk drives
 - Up to 4GB memory
 - Minimum CPU overhead for FT
- **Fast recovery from failures**
 - CPU set failover <100ms
 - Hot-swap components
- **Telco ready**
 - NEBS Level 3–certified, ETSI-compliant
 - 19", 23", 24", 600mm rack mount
 - DC power
- **Open systems technology**
 - Solaris
 - UltraSPARC
 - PCI
 - SCSI

Netra st A1000/D1000 Carrier-Grade Storage

- Controller-based RAID (A1000) or JBOD (D1000)
- 4 to 12 x 18GB (218GB)
- 4U, rack mount, multiple rack options
- Ruggedized, NEBS Level 3-certified, ETSI-compliant
- UltraSCSI Diff connect to host
- Hot-swap 10,000 rpm drives
- Dual hot-swap AC or DC power
- Dual hot-swap cooling
- Management software on host
- Power, fan, drive, temperature sensing
- Sun Cluster support



Netra st D130

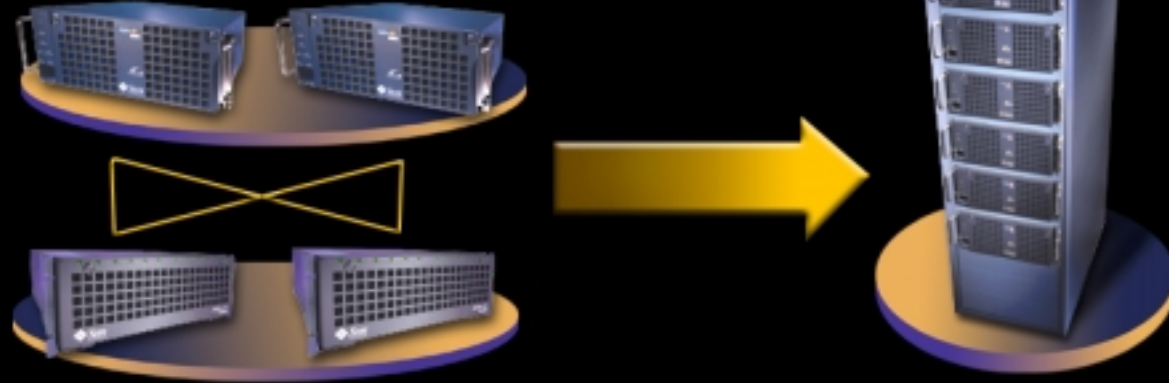
Rack Mount Carrier-Grade Storage

- Rackable thin storage
- 1U high, 19" rackmount, 18.6" deep
- Multiple rack options
- AC and -48v DC power options
- 3 x 18GB UltraSCSI, 10Krpm, hot-swap, front-accessible
- Front/back status LEDs
- Remote status software for server
- NEBS Level 3–certified



Carrier-Grade, High-Availability Netra Cluster

2-node Netra t + Netra st
Sun Cluster 2.2



- **Carrier-grade components**
 - Netra t 1120/1125 servers
 - Netra st A1000/D1000 storage arrays
 - Telcordia NEBS Level 3–certified
 - ETSI-compliant
- **High-availability cluster**
 - No single point of failure
 - Automatic failover
 - 2 to 4 nodes
- **Telecom/Internet fit**
 - Rack mount ready
 - AC/DC power options
- **Year 2000 compliance and internationalization support**
 - Solaris 2.6, 7
 - Sun Cluster 2.2

Fault-Tolerant Systems and High-Availability Clusters

Fault-Tolerant Systems



Nonstop	Application Availability	High Availability
Constant and Predictable	Performance	Variable and Not Predictable
Subsecond	Failover Time	Multiminute
E-911 Back-Bone Signaling	Typical Apps	Web Hosting E-Commerce

High-Availability Clusters



In Summary...

High Availability

- Up to 99.999% availability

Carrier-Grade

- Rack mount support
- NEBS certification
- Front accessibility
- DC power options
- Remote management capabilities

Netra

Scalable Open Architecture Platforms

- Uniprocessor
- Symmetric multiprocessor
- High availability
- Fault tolerant

SPARC/Solaris/Java

- Industry tested and proven

For More Information ...



.COM

<http://www.sun.com/netra>