

Project ID: **FY16-999**

PES NEC ExpressCluster Worksheet
Professional Engineering Services
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DEFINITION OF TERMS

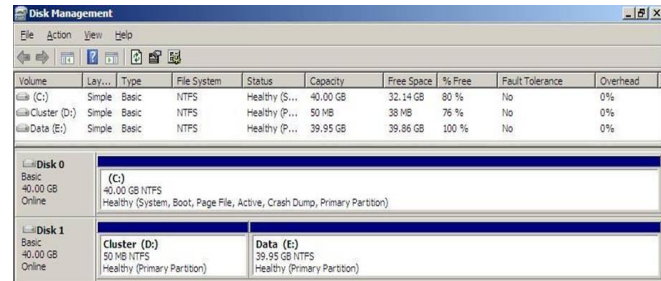
- **Public Network:** The network, either LAN or WAN, that client computers and hardware use to communicate with the clustered servers.
- **Private Network:** The network, either LAN, WAN or crossover cable that is used by ExpressCluster to mirror data between servers.
- **Physical Disk:** A disk that contains usable data storage space. A Physical Disk may be a single physical hard drive, or may be comprised of several physical hard drives configured in a RAID array, but presented to the operating system as a single storage device. Physical Disk may contain one or more partitions, each having their own drive letters.
- **Logical NIC (Network Interface):** An IP endpoint on the server that may be a single physical network adapter, or a fault-tolerant network adapter team comprised of several physical network adapters.

CORE REQUIREMENTS - ALL INSTALLATIONS

- Both servers must be configured with at least two NIC cards
- Proper network routing between the client systems and the **Public Network** must be configured to enable network communication between client and server systems. Must be able to ping from clients to either server by the host name and IP address.
- Only the primary and secondary servers are allowed to be on the **Private Network**. This will result in a **dedicated** network for the **Private Connection**.
- **Private Network** round trip time (RTT) for 1500-byte PING packets must be low enough to ensure proper operation of ExpressCluster WAN/LAN and the target application. Typically this means the RTT must be less than 50ms.
- **Private Network** bandwidth must be sufficient to meet expected target application transaction performance. Typically T1 (1.5Mbps) or greater bandwidth is required.
- The previous requirements can be verified by utilizing a ping command. (**Ping [Target Private IP Address] -S [Source Private IP Address] -L 1500 -T**)
- It is required that the Public and Private Connections reside on separate subnets.
- It is **highly recommended** that separate network equipment (routers, switches, etc.) is utilized for the Public and Private networks to aid in eliminating single points of failure.
- The required ports below must be opened on the Public and Private networks.
 - TCP: 29001-29005
 - UDP: 29003, 29106
 - TCP/UDP: 29007
- This sheet **must** be completed and returned to the Systems Engineer assigned to this project prior to their arrival on-site.

HARD DRIVES REQUIREMENTS - ALL INSTALLATIONS

- Both servers must have at least two Physical Disks: one for the Operating System and one for the Mirror Disk (see example).
- RAID can be used in any capacity as long as the OS Drive and Mirror Disk appear as separate physical disks in Windows Disk Management.
- The mirror disk drives in both servers must have identical partitioning (layout, drive letters, and physical byte size).



LAN CONFIGURATION REQUIREMENTS

- Servers must be on the same local area network – No routed network traffic.
- Servers must be on the same IP subnet for the Public network segment.
- Servers must be on the same IP subnet for the Private network segment.
- Management IP and Floating IP Address is required and must be on the Public network segment.
- Private network segment must be a different subnet than the Public network segment.
- Ping Resource is strongly recommended, although not required.

WAN CONFIGURATION (SEPARATE SUBNETS) REQUIREMENTS

- Active Directory integrated DNS infrastructure is required
- DNS administrator(s) required to be onsite at the time of deployment
- On the DNS Server the following settings are required:
 - **DCOM Settings-** Under Component Services and My Computer either everyone or the service account must be granted Remote Activation permissions.
 - **DCOM Settings-** Windows Management Instrumentation must be granted the Remote Activation permission to the service account.
 - **WMI Control Settings-** the service account under MicrosoftDNS must have Remote Enable permissions.
 - **DNS Settings:** At the highest level, the service account will need to be granted Read permissions.
 - **DNS Settings:** A static DNS entry must be created for the Virtual Computer Name.
 - **DNS Settings:** Under that Virtual Computer Name DNS Entry, the service account must be granted Read/Write permissions.
- A domain user must be created with
 - A non-expiring password.
 - Local administrator privileges on the NEC ExpressCluster servers.
- Client-side DNS caching should be disabled
- Both servers in the cluster should be directed to the same preferred and alternate DNS Servers.
- Clients should be pointed to the same preferred and alternate DNS Servers as the cluster.
- Private network segment IPs must be a different subnet than the Public network segment.
- Ping Resource is strongly recommended (although not required)

LAN OVER WAN (“LEGACY”) REQUIREMENTS

- A logical IP subnet is required to span both sites for the Public network segment
- A logical IP subnet is required to span both sites for the Private network segment
- Servers must be on the same IP subnet for the Public network segment.
- Servers must be on the same IP subnet for the Private network segment.
- Private network segment must be a different subnet than the Public network segment.
- Management IP and Floating IP Address is required and must be on the Public network segment.
- Ping Resource is strongly recommended (although not required).

PROJECT INFORMATION

	VAR	End User
Company Name	Signals Inc.	YYZ
Contact Person	Neal Lee	Geddy Peart
Contact Phone Number	555-213-8888	555-667-8888
Contact Email Address	NL@Signalsinc.com	GeddyP@YYZ.com

Planning Session Completed	Completed
Bit Architecture	64-Bit
ExpressCluster Edition	LAN

SERVER INFORMATION

	Primary Server	Secondary Server
Hostname	PRODServer1	PRODServer2
Location	Building 101 East	Building 102 West
Number of Physical Drives	2	2
Size of OS Partition	50gb	50gb
Size of Mirror Partition(s)	100gb	100gb
Do the OS and Mirror Disk appear as separate physical disks in Windows Management?	Yes	Yes
Number of Logical NICs	2	2
Public IP Address	192.168.1.1	192.168.1.2
Public IP Subnet Mask	255.255.255.0	255.255.255.0
Public IP Gateway	192.168.1.5	192.168.1.5
Private IP Address	1.1.1.1	1.1.1.1
Private IP Subnet Mask	255.255.255.0	255.255.255.0
Private IP Gateway * MAY NOT BE REQUIRED	Not required	Not required

CLUSTER INFORMATION

ExpressCluster LAN Edition or Optional "LAN over WAN" Configuration Only	
Management IP Address	192.168.1.3
Floating IP Address	192.168.1.4

WAN Edition Only	
Dynamic DNS Updates	Choose an item.

Virtual Computer Information	
Virtual Computer Name	VirtualComp1
Service Monitoring Enabled	No
Bandwidth/Latency Requirements Verified	Yes