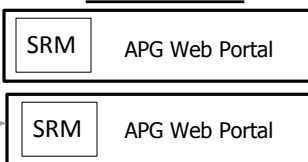


“SRM/South” Design for CitiGroup (SWDC/GTDC/QRDC)

SWDC

UI Portal Hosts

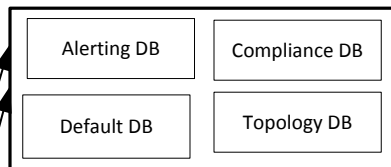
namusrmfe1



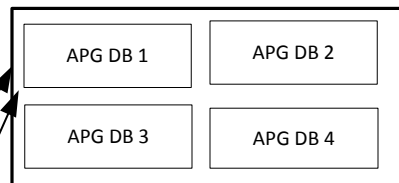
namusrmfe2

Users

Backend/Primary Database namusmpbe1



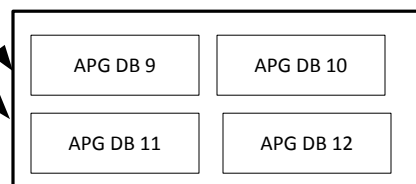
Backend/Secondary Database namusrmsbe1



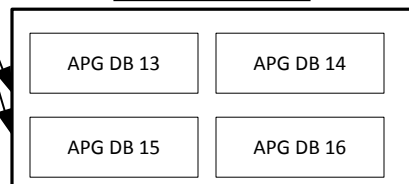
Backend/Scale Out Database1 namusrmsobe1



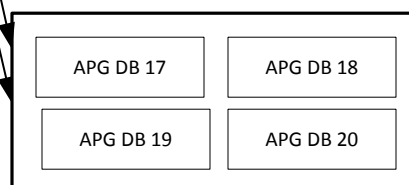
Backend/Scale Out Database2 namusrmsobe2



Backend/Scale Out Database3 namusrmsobe3



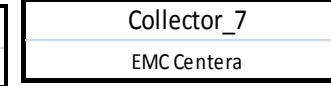
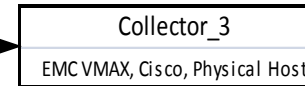
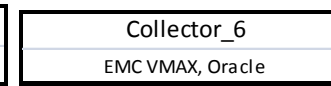
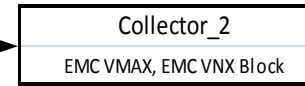
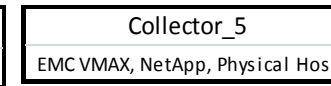
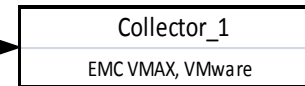
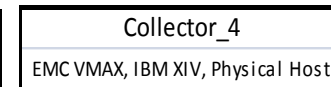
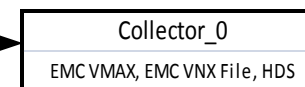
Backend/Scale Out Database4 namusrmsobe4



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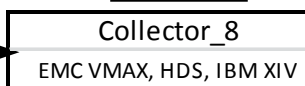
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SWDC



GTDC

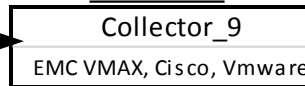
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vm-fafb-cef3



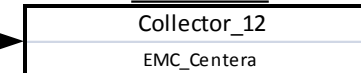
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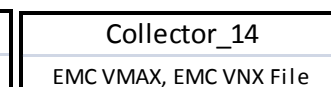
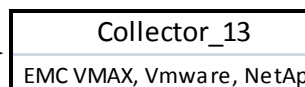
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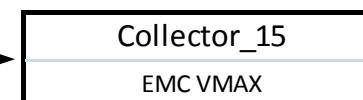
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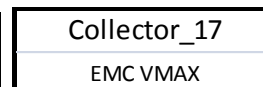
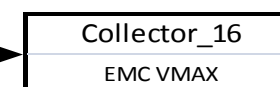
QRDC



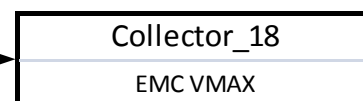
Jacksonville



Jardines



Monterrey



Note: All hosts will
have the EMC
Watch4Net Health
Solution Pack

Solution Pack	Count	Total Metrics	Growth Factor	Projection
Cisco MDS/Nexus - # Switches	92	181976	20	218371
Cisco MDS/Nexus - # Ports and Interfaces	21416	1884608	20	2261530
EMC VMAX - # Arrays	82	41492	20	49790
EMC VMAX - # Disks	46882	515702	20	618842
EMC VMAX - # LUNs	487660	9753200	20	11703840
EMC VMAX - # Pools	201	3216	20	3859
EMC VMAX - # Directors	638	58058	20	69670
EMC VNX Block - # Arrays	10	5970	20	7164
EMC VNX Block - # Disks	3315	53040	20	63648
EMC VNX Block - # LUNs	2463	68964	20	82757
EMC VNX Block - # Pools	24	576	20	691
EMC VNX File - # VNX File	75	102075	20	122490
EMC VNX File - # DataMovers	32	3744	20	4493
EMC Centera - # Storage Pools	34	170	20	204
EMC Centera - # Nodes	64	256	20	307
IBM XIV - # Disks	405	810	20	972
NetApp Filer V7 - # Arrays	190	79420	20	95304
VMware vCenter with Powerpath - # ESX hosts	164	23616	20	28339
Physical Hosts with Powerpath - # Hosts	5257	420560	20	504672
Physical Hosts with Powerpath - # CPUs	115750	1041750	20	1250100
Hitachi Device Manager - # Disks	9061	27183	20	32620
Hitachi Device Manager - # LUNs	52355	523550	20	628260
Oracle Database - # Database instances	8	2000	20	2400
Total Metrics Count		14791936		17750323

VM Purpose	Number of vCPU	Memory (GB)	OS Disk Space (GB)	Application Disk Space (GB)	Total Disk Space (GB)	Contains	Location	OS
Frontend_1	4 @3.0 GHZ	32	50	70	120	Front End 1	SWDC	Linux
Frontend_2	4 @3.0 GHZ	32	50	70	120	Front End 2	SWDC	Linux
Primary Backend	4 @3.0 GHZ	32	50	724	774	Compliance, Alerting, Topology, Default DB	SWDC	Linux
Secondary Backend	4 @3.0 GHZ	32	50	1,847	1,897	Data Base & Back End: DB1, DB2, DB3, DB4	SWDC	Linux
ScaleOut Backend_1	4 @3.0 GHZ	32	50	1,847	1,897	Data Base & Back End Scaleout_1: DB5, DB6, DB7, DB8	SWDC	Linux
ScaleOut Backend_2	4 @3.0 GHZ	32	50	1,847	1,897	Data Base & Back End Scaleout_2: DB9, DB10, DB11, DB12	SWDC	Linux
ScaleOut Backend_3	4 @3.0 GHZ	32	50	1,847	1,897	Data Base & Back End Scaleout_3: DB13, DB14, DB15, DB16	SWDC	Linux
ScaleOut Backend_4	4 @3.0 GHZ	32	50	1,847	1,897	Data Base & Back End Scaleout_4: DB17, DB18, DB19, DB20	SWDC	Linux
Collector_0	4 @2.6 GHZ	24	50	150	200	EMC VMAX1, EMC VMAX2, EMC VNX File, HDS	SWDC	Linux
Collector_1	4 @2.6 GHZ	24	50	150	200	EMC VMAX1, EMC VMAX2, VMware	SWDC	Linux
Collector_2	4 @2.6 GHZ	24	50	150	200	EMC VMAX1, EMC VMAX2, EMC VNX Block	SWDC	Linux
Collector_3	4 @2.6 GHZ	24	50	150	200	EMC VMAX1, EMC VMAX2, Cisco, Physical Host	SWDC	Linux
Collector_4	4 @2.6 GHZ	24	50	150	200	EMC VMAX1, EMC VMAX2, IBM XIV, Physical Host	SWDC	Linux
Collector_5	4 @2.6 GHZ	24	50	150	200	EMC VMAX1, EMC VMAX2, NetApp, Physical Host	SWDC	Linux
Collector_6	4 @2.6 GHZ	24	50	150	200	EMC VMAX1, EMC VMAX2, Oracle	SWDC	Linux
Collector_7	2 @2.6 GHZ	8	50	70	120	EMC_Centera	SWDC	Windows
Collector_8	4 @ 2.6 GHZ	24	50	150	200	EMC VMAX1, EMC VMAX2, IBM XIV, HDS	GTDC	Linux
Collector_9	4 @ 2.6 GHZ	24	50	150	200	EMC VMAX1, EMC VMAX2, Cisco, VMware	GTDC	Linux
Collector_10	4 @ 2.6 GHZ	24	50	150	200	EMC VMAX1, EMC VMAX2, EMC VNX File, Physical Host	GTDC	Linux
Collector_11	4 @ 2.6 GHZ	24	50	150	200	EMC VMAX1, EMC VMAX2, EMC VNX Block, Physical Host	GTDC	Linux
Collector_12	2 @ 2.6 GHZ	8	50	70	120	EMC_Centera	GTDC	Windows
Collector_13	4 @2.6 GHZ	16	50	150	200	EMC VMAX, VMware, NetApp	QRDC	Linux
Collector_14	4 @2.6 GHZ	16	50	150	200	EMC_VMAX, EMC VNX File	QRDC	Linux
Collector_15	4@2.6 GHz	16	50	70	120	EMC_VMAX	Jacksonville	Linux
Collector_16	4@2.6 GHz	16	50	70	120	EMC_VMAX	Jardines	Linux
Collector_17	4@2.6 GHz	16	50	70	120	EMC_VMAX	Jardines	Linux
Collector_18	4@2.6 GHz	8	50	70	120	EMC_VMAX	Monterrey	Linux

EMC Storage Prerequisites

EMC VMAX SolutionPack	
Support List:	DMX-3, DMX-4, DMX-4 950, VMAX, VMAX SE series
Requirements:	Solutions Enabler 7.6.2.8 or higher
	Unisphere for VMAX 1.6.2 or higher (Unisphere for VMAX must be setup to collect performance data)
	SMI-S Provider 4.6.2 for LUN Performance Metrics
	Symmetrix communications occur via GateKeepers. The two options available are outlined below)
	(Remote Mode - Option 1) - Assign 2 additional gatekeepers to existing SYMAPI server.
	SRM will utilize the existing SYMAPI Server to communicate with the Symmetrix Devices via SYMCLI.
	No additional software will need to be installed on the SYMAPI server.
	In the event that the SYMAPI Server uses a "nethost" file, ensure the collector hostname or IP Address is in it. For example, "vm-2981-564 *"
	(Local Mode - Option 2) - Assign 2 additional gatekeepers to existing SYMAPI server.
	Install the VMAX Collector on the SYMAPI server. A unique server can also be used if desired.
	If using ACL's - SRM will run the SYMCLI commands under a user called "apg".
	The "apg" user requires permissions to access the storapid daemon in the daemon_users file.
Info Needed:	Array Serial Number, IP Address for Unisphere for VMAX Server, Unisphere Credentials, SYMCLI Credentials if using ACL's
EMC VNX SolutionPack	
Support List:	Flare Code 4.30; 5.31 or higher
	Used with CLARiiON, VNX1 and VNX2 Models
	VNXe OE 3.0 (Block and File)
	Used with second generation VNXe modules as of VNXe3200
	First generation VNXe models such as VNXe3100, VNXe3150 and VNXe3300 are not supported.
	DART 5.6 and 6.0; VNX OE for File 7.0 or later
	Used with Celerra, VNX1 and VNX2 models
Requirements:	Naviseccli (The version should match the Flare code level.)
	Performance Statistics need to be enabled on SPA & SPB
	User Account (service account) with read only privileges (Block & File Accounts)
Info Needed:	Array Serial Numbers, IP Addresses SPA, SPB, Control Station(s), Credentials
EMC Centera SolutionPack	
Support List:	
Requirements:	Collector must be installed on Windows 2008, 2008R2
	Centera 4.3 must be installed on collector server
	User Account (Service Account) with monitor role privileges
Info Needed:	Hostname or IP Address of Management Node, Credentials
EMC XtremIO SolutionPack	
Support List:	XtremIO 2.4 and later
Info Needed:	Unique friendly name for XIO array
	Management IP Address or hostname
	Username (Read-only account) and Password

Third Party Storage Prerequisites

IBM XIV SolutionPack							
Support List:	IBM XIV						
Requirements:	The XIV CIM Agent must be available (In v10.1.0 and higher, it is preinstalled & enabled on the admin module)						
	User Account (Service Account).						
Info Needed:	(3) Management IP Addresses, Credentials						
Hitachi SolutionPack							
Support List:	AMS200, AMS2100, USP and USP-V, HUS and VSP						
Requirements:	Hitachi Command Suite 7.4.1 or higher (Full license; core license is not adequate.)						
	CIM/WBEM features must be enabled in Hitachi Device Manager						
	User Account with admin privileges on the Hitachi Device Manager system						
Info Needed:	Array name or IP Address for the Hitachi Device Manager, Credentials						
NetApp Filer SolutionPack							
Support List:	NetApp Filer 7-Mode on Ontap v7 or higher						
	NetApp Filer Cluster-Mode on Ontap v8 or higher						
	Note: The cluster management IP must be provided during C-Mode Filer discovery						
Requirements:	SRM utilizes NetApp CLI via SSH to communicate to NetApp arrays. SSH v2 must be enabled						
	SSH connection to the NetApp devices with the following role : login-ssh, cli-stats*, cli-snap*, cli-aggr*						
	cli-vol*, cli-disk*, cli-environment, cli-nfs*, cli-cifs* , cli-df, cli-sysconfig, cli-ifconfig, cli-version						
	C-Mode requires admin privilege for user to run commands of type 'run -node *' and 'statistics samples delete W4N*'						
	A full list of the CLI Commands can be provided as needed for proper user account access creation						
	Polling must be done to the real NetApp Filer (not a vFiler)						
Info Needed:	NetApp filer Mode, Hostname, IP Address, Credentials						

Cisco FC Switch Prerequisites

Cisco MDS/Nexus Switch SolutionPack						
Support List:	Cisco MDS (9xxx)					
	Cisco ONS (1520x)					
	Cisco Nexus (5548, 1000V)					
Requirements:	Supported MIBs:					
	CISCO-FLASH-MIB					
	CISCO-NS-MIB					
	CISCO-DM-MIB					
	CISCO-ENTITY-SENSOR-MIB					
	ENTITY-MIB					
	CISCO-FC-FE-MIB					
	IF-MIB					
	CISCO-ENTITY-FRU-CONTROL-MIB					
	CISCO-VSAN-MIB					
	CISCO-ZS-MIB					
	CISCO-SYSTEM-EXT-MIB					
	SNMPv2-MIB					
	CISCO-FCS-MIB					
	CISCO-FEATURE-CONTROL-MIB					
	SNMP must be enabled/configured. SRM Supports v1 ,v2C and v3 (SHA auth & AES128 privacy only)					

Host Prerequisites

VMware vCenter SolutionPack						
Support List:	VMware vCenter Server 4.1 or higher					
	Vmware ESX 4.1, 5.0, 5.1					
Requirements:	vCenter User Account - Read Only Account with Browse Datastore and all Storage View privileges					
	If PowerPath / VE is running and metrics are desired, PP /VE 5.8 or later is required					
Info Needed:	vCenter Hostname or IP Address, Credentials					
EMC Physical Hosts						
Support List:	HPUX 11iv1 11.11, HPUX11iv2 11.23, HPUXiv3 11.31					
	IBM AIX 5.1, 5.2, 5.3, 6.1, 7.1					
	Linux RHEL AS/ES 4.x, 5.x, 6.x					
	Linux SUSE es9, ES9.3, ES10, ES11					
	Solaris 9, 10, 11, SVM, VxVM, zfs					
	Microsoft Windows 2003, 2003 R2 SP2, 2003 SP2					
	Microsoft Windows 2008 Core, 2008 SP1, 2008 SP2, 2008 R2					
	Microsoft Windows 2012					
	Standard, Enterprise and Datacenter editions					
Requirements:	Host Prerequisites: (PowerPath is only needed if PowerPath metrics are desired)					
	HPUX - PowerPath 5.2, INQ 7.6.1 or higher, perl interpreter 5.6.1 or higher					
	IBM AIX - PowerPath 5.7b194, INQ 7.6.1 or higher, perl interpreter 5.6.1 or higher					
	RHEL & SUSE Linux - PowerPath 5.7, INQ 7.6.1.0 or higher, perl interpreter 5.6.1 or higher					
	Solaris - PowerPath 5.5 P02 HF02, INQ 7.6.1.0 or higher, perl interpreter 5.6.1 or higher					
	Windows - PowerPath 5.7, Powershell 2.0, INQ 7.6.1.0 (Optional)					
	Linux / Unix host connections will utilize SSH. A user account with sudo access is required					
	Sudo user needs root privileges to run the following commands: inq, powermt, sar, mpstat, vgdisplay					
	vxdisk (Solaris)					
	dmidecode, vgs, lvdisplay (Linux)					
	Windows hosts connections will utilize WinRM & PowerShell. PowerShell 2.0 or higher is required					
	WinRM Execution Policy should be set to unrestricted :set-executionpolicy unrestricted					
Info Needed:	HostName or IP Address, OS Version, Credentials					

Application Prerequisites

[illegible]

SRM Firewall Ports

Source	Protocol	Ports	Direction	Target	Notes
*	TCP	58080	<--Bi-Directional -->	UI Portal Host	App access via Web
UI Portal Host	TCP	389	<--Bi-Directional -->	LDAP Host	LDAP Authentication
All Collector Hosts	TCP	2020	Out -->	Backend 1-Primary Database Host	Load Balancer
All Collector Hosts	TCP	2001	<--Bi-Directional -->	Both Backend-Database Hosts	Control Interface
All Collector Hosts	TCP	2010	Out -->	Backend 1-Primary Database Host	Alerting
VNX Collector Hosts	TCP/UDP	2040	Out -->	Backend 1-Primary Database Host	VNX Alert Consolidation
All Collector Hosts	TCP	48443	<--Bi-Directional -->	Backend 1-Primary Database Host	TMS Service
All Collector Hosts	TCP	52001	<-- In	UI Portal Host, Both Backend-Database Hosts	Event Processing
All Collector Hosts	TCP	52004	Out -->	Backend 1-Primary Database Host	Event Processing
Generic RSC Collector	TCP	5985/5986	<--Bi-Directional -->	Windows Host to be discovered	WS-MAN
Generic RSC Collector	TCP	22	<--Bi-Directional -->	UNIX Host to be discovered	ssh
Vmware Collector	TCP	443	<--Bi-Directional -->	vCenter Host to be discovered	https
Cisco Collector	UDP	161	<--Bi-Directional -->	Cisco switches to be discovered	SNMP
VNX File Collector	TCP	80/443	<--Bi-Directional -->	VNX Control Stations	http/https
VNX Block Collector	TCP	22	<--Bi-Directional -->	VNX SPA/SPB	ssh
VMAX Collector	TCP	2707	<--Bi-Directional -->	Remote SYMAPI Servers	Remote SYMAPI Calls
Centera Collector	TCP	3218/3682/7069/8069	<--Bi-Directional -->	Centera Nodes	SDK/Centera API Calls
NetApp Collector	TCP	22	<--Bi-Directional -->	NetApp Node	ssh
HDS Collector	TCP	5988/5989	<--Bi-Directional -->	HDS Array Host	SMI-S
HDS Collector	TCP	1099/51099/2000/2001/51100	<--Bi-Directional -->	HDS Array Host	Text Collector
IBM XIV Collector	TCP	5988/5989	<--Bi-Directional -->	IBM CIM Agent Host	IBM CIM