SuperSubsidio

CERTIFICACIÓN DE CUMPLIMIENTO PARA TRÁMITE DE PAGO

MINTRABAJO TODOS POR UN NUEVO PAÍS

Código: FO-CAD-ECON-004 Versión: 1

1. DATOS GENERALES DEL CONTRATO, CONVENIO O ACEPTACIÓN DE OFERTA

No. del Contrato:	063 del 25 abril de 2017	Valor total del Contrato ($159.967.769):	$ 159.967.769	Fecha de trámite:	12/12/2017		
Fecha suscripción contrato:	25/04/2017	Nombre del Contratista:	BRANCH OF MICROSOFT COLOMBIA INC	Fecha de aprobación de la garantia única -si aplica-			NO APLICA
Requiere Acta de Inicio	SI	No. De Registro Presupuestal:	19417	Fuente de los Recursos	Inversión		
Fecha Acta de Inicio:	22/05/2017	Fecha terminación	31/12/2017	Tipo Identificación	NIT	No. de Identificación:	800.198.591-3
Objeto:	CONTRATAR EL SERVICIO DE HORAS DE SOPORTE PREMIER DE MICROSOFT, PARA LA INFRAESTRUCTURA TECNOLÓGICA DE LA SUPERINTENDENCIA DEL SUBSIDIO FAMILIAR.						

2. PAGOS REALIZADOS DEL CONTRATO SEGÚN CERTIFICACIÓN DE PAGO DE SIIF NACIÓN

No. Cuota	Valor	No. Cuota	Valor
1	$ 19.805.533,4	7	
2	$ 12.188.020	8	
3	$ 25.391.709	9	
4	$ 19.805.533	10	
5	$ 21.836.870	11	
6	$ 19.805.533	12	

Notas:
*Aquí se debe consignar el valor de los pagos efectuados al contratista, sin incluir el que se va a tramitar con la presente certificación.

% EJECUCIÓN 74%

TOTAL $ **118.833.198,4**

3. INFORMACIÓN SOBRE EL PAGO QUE SE VA A TRAMITAR CON LA PRESENTE CERTIFICACIÓN

No. Del pago	7	SALDO PENDIENTE X CERTIFICAR	$ 21.329.037,60	Factura No.	8288
Valor a pagar incluido IVA:	$ 19.805.533			Fecha de la Factura:	11/12/2017

4. SOPORTES PRESENTADOS POR EL CONTRATISTA PARA TRAMITAR EL PAGO

Informe de Actividades:		X
Fotocopia del formato de ingreso de bienes al almácen de la entidad (emitido por el grupo de Gestión Administrativa y Documental), cuando aplique:		NA
Persona Natural: Constancia de pago de aportes a Salud, Pensión, y Riesgos Laborales. **Nota:** Los valores descritos en esta certificación deben ser verificados de acuerdo a la proporcion y porfentajes establecidos por la Norma.	Valor Salud	
	Valor Pensión	
	Valor ARL	
	Total Pagos	$ -
Persona Juridica: Certificación de pago de aportes al Sistema de Seguridad Social Integral (Salud, Pensión, y Riesgos Laborales y parafiscales)		X

Por medio del presente documento, en mi calidad de supervisor (o interventor) del contrato anteriormente descrito, certifico que el contratista ha cumplido a satisfacción con las obligaciones pactadas en el contrato para tramitar el correspondiente pago, y que revisados los documentos que soportan dicho pago, los mismos se encuentran elaborados y expedidos de conformidad con lo estipulado en el respectivo contrato

Firma Supervisor o Interventor

Nombre: Yadira León Vargas

Documento Identidad: 52.265.965

Cargo: Jefe de oficina de tecnología.

Dependencia: Oficina de TIC

12 DIC 2017

Branch of Microsoft Colombia Inc
N.I. 800.198.591-3
Calle 92 No. 11 - 51 Piso 10
Tel. (57-1) 629 1700
Bogota D.C. Colombia

Centro de Atencion Microsoft Colombia
Numero Nacional Gratuito 01800 093 1234
desde Bogota 587-0300
microsoft.com/latam/ciudadanos

Microsoft

1 – 2017 – 020300 11/12/2017 15 59 57
FACTURA.txt
Folios: 7 Anexos: 0

Bogotá, D.C. 11 de diciembre de 2017

Señores:
SUPERINTENDENCIA DEL SUBSIDIO FAMILIAR
Att. Jorge Eliecer Amaya

Apreciados Señores:

Con la presente radicamos factura n° 8288 por concepto de prestación de servicios premier según el contrato n°063 del 25 de Abril de 2017, por valor de COP $19.805.533, junto con la Certificación de parafiscales, soportes de pago, RUT y Certificación Bancaria Vigente.

Atentamente.

Edith Garcia

Edith Garcia
BEO Analyst

Superintendencia de Subsidio Familiar
CORRESPONDENCIA
11 DIC 2017
SuperSubsidio

Microsoft

BRANCH OF MICROSOFT COLOMBIA INC.
NIT. 800.198.591-3
IVA RÉGIMEN COMÚN

Calle 92 No. 11-51 Piso 10
Conmutador 326 4700
Fax 317 3494
BOGOTA, D.C.
COLOMBIA

FACTURA DE VENTA No. P- 8288

ACTIVIDAD ECONÓMICA 6201
TARIFA 6.9 x 1000
NO SOMOS AUTORRETENEDORES
SOMOS GRANDES CONTRIBUYENTES
RES. 10738 DE DIC. 22/2000

RESOLUCIÓN DIAN No. 310000085661
FECHA: 2015/06/05
INTERVALO DEL P7028 - P10000

SEÑORES:

SUPERINTENDENCIA DEL SUBSIDIO FAMILIAR
NIT: 860.503.600-9
DIRECCION: Calle 45 A N° 9 - 46
CONTACTO: Jorge Eliecer Amaya
TELEFONO: 3487800 EXT 7824

FECHA FACTURA		
11	12	2017

FECHA FACTURA		
10	1	2018

CODIGO CLIENTE	TERMINOS DE PAGO	CUOTA No.	FECHA VCTO.	VALOR

CODIGO	DESCRIPCIÓN	CANTIDAD	VALOR UNITARIO	VALOR TOTAL
	CONTRATO DE PRESTACION DE SERVICIO SOPORTE TECNICO PREMIER DE MICROSOFT No. 063 DEL 25 DE ABRIL DE 2017 VALOR TOTAL DEL CONTRATO COP$ 159.967.769 (Incluido IVA) VALOR FACTURA POR SERVICIOS COP$ 19.805.533 SAP INVOICE: 9620924777 SERVICIOS: PREMIER FECHA DE EMISION DE FACTURA: 11 DE DICIEMBRE DE 2017 FECHA DE VENCIMIENTO DE FACTURA: 10 DE ENERO DE 2017 HABILITACION NUMERACION DE FACTURACION No. 18762003591375 FECHA: 2017/06/08 DEL No. P-8048 AL P-10000			16.643.305

OBSERVACIONES:

Favor consignar en el Citibank Cuenta Corriente No. 0060534012 y notificar pago al Fax No. 3173494 indicando número de la factura pagada.

SON:

Diecinueve millones ochocientos cinco mil quinientos treinta y tres COP 00/00

SUBTOTAL	16.643.305
DESCUENTO	
IVA	3.162.228
TOTAL	19.805.533

FIRMA Y SELLO AUTORIZADO	RECIBIDO POR	ACEPTADA
	Nombre: _____ Cédula: _____ Firma: _____ Fecha: _____	

* ESTA FACTURA DE VENTA SE ASIMILA EN TODOS SUS EFECTOS A UNA LETRA DE CAMBIO.

Deloitte.

Deloitte & Touche Ltda.
Carrera 7 No. 74 - 09
Nit. 860.005.813-4
Bogotá
Colombia
Tel: +57 (1) 546 1810
Fax: +57 (5) 217 8088
www.deloitte.com/co

LUISA FERNANDA CHAVES ZORRO
Bogotá D.C.
Obrando en calidad de Revisor Fiscal Principal de
DE BRANCH OF MICROSOFT COLOMBIA INC. (La Sucursal)
NIT: 800.198.591-3

CERTIFICO QUE:

1. Los estados financieros de la Sucursal se encuentran revisados y dictaminados con corte al 31 de diciembre de 2016.

2. Para los efectos de esta certificación he obtenido de la Gerencia la información necesaria y he seguido los procedimientos aconsejados por las Normas Internacionales de Auditoria Aceptadas en Colombia.

3. La auditoría de los estados financieros de la Sucursal para la vigencia fiscal 2017, se encuentra en proceso y concluirá con la emisión del dictamen de la revisoría fiscal durante el primer trimestre del año 2018.

4. De acuerdo con registros contables y documentos soportes que he tenido a la vista, la Sucursal ha realizado el pago de las liquidaciones por concepto de aportes a los sistemas de pensiones y riesgos profesionales y a las cajas de compensación familiar, Instituto Colombiano de Bienestar Familiar (ICBF) y Servicio Nacional de Aprendizaje (SENA), durante los últimos seis (6) meses (junio a noviembre de 2017), así como los aportes al sistema de salud correspondientes a los últimos seis (6) meses (julio a diciembre de 2017).

Esta certificación se expide por solicitud de la Administración de la Sucursal, a los cinco (5) días del mes de diciembre de 2017.

LUISA FERNANDA CHAVES ZORRO
Revisor Fiscal Principal
Tarjeta Profesional. No 222171-T
Designada por Deloitte & Touche Ltda.

ARL | sura

SEGUROS DE RIESGOS LABORALES SURAMERICANA S.A
ARL SURA S.A.
NIT 800.256.161 - 9
CERTIFICADO POR CONCEPTO DE APORTES A RIESGOS LABORALES

DEL 01 DE NOVIEMBRE DEL 2017 AL 31 DE NOVIEMBRE DEL 2017

DATOS GENERALES

RAZÓN SOCIAL:	BRANCH OF MICROSOFT COLOMBIA INC	**NIT:**	N800198591
DIRECCIÓN:	AV 92 # 11 - 51 APTO 10	**CIUDAD:**	BOGOTA
SUCURSAL:	TODAS LAS SUCURSALES		

Periodos Cotizados	1
Valor Cotización	$18.049.200
Intereses Pagados	$0
Total Aportes	$18.049.200

DATOS DE LOS SALDOS PENDIENTES POR CANCELAR

TOTAL DE LAS NOTAS POR PAGAR O ACLARAR

Períodos de las notas	201602-201603-201612-201701-201702-201703-201704-201705-201706-201708-201709- 201710
Valor	$-6.649.208

TOTAL COTIZACIONES EN MORA

Periodos en cartera	
Valor	$0

Las notas son documentos que reflejan las diferencias entre el valor pagado por el empleador y el esperado por ARL SURA S.A.. Es posible que posterior a la expedición de este certificado se generen notas débito correspondientes a períodos que no aparecen relacionados, debido a cualquier modificación en la información inicialmente reportada.

CAMILO ANDRES ARISTIZABAL ZAPATA
Director de Afiliaciones y Recaudos
Firma Autorizada

Medellín, diciembre 06 de 2017

compensar | miplanilla.com

PLANILLA INTEGRADA DE AUTOLIQUIDACION DE APORTES

DATOS DEL APORTANTE							
TIPO	NÚMERO	NOMBRE APORTANTE		DIRECCIÓN	TELÉFONO	CORREO	EXONERADO PAGO PARAFISCALES Y SALUD
NI	800198591-3	BRANCH OF MICROSOFT COLOMBIA INC		Carrera 7 No. 71 - 21 Torre B Piso 7	3264700	sgarcia@humancapital.com.co	
FORMA PRESENTACIÓN	CLASE APORTANTE	NOMBRE SUCURSAL	CÓDIGO	DEPARTAMENTO	CIUDAD / MUNICIPIO		
SUCURSAL	B – menos de 200 c	PRINCIPAL	PPAL	BOGOTÁ D. C.	BOGOTÁ, D.C.		SI

DATOS DE LA PLANILLA							
PERIODO COTIZACIÓN				TIPO PLANILLA	FECHA PAGO (DIA/MES/AÑO)	NÚMERO PLANILLA	TOTAL A PAGAR
SALUD		DIFERENTE A SALUD					
MES	AÑO	MES	AÑO				
12	2017	11	2017	E	24/11/2017	23698667	$1.002.449.800

TOTALES POR SUBSISTEMAS

TOTALES SALUD

Código EPS	Nombre	NIT	Cotización Obligatoria	UPC Adicional	Incapacidades		Licencia Maternidad		Días Mora	Valor Mora Cotización	Valor Mora UPC	Total a Pagar	No. Afiliados
					No. Autorización	Valor	No. Autorización	Valor					
EPS001	ALIANSALUD EPS S.A.	830113831-0	38.999.700	0		0		0	0	0	0	38.999.700	20
EPS002	Salud Total EPS	800130907-4	10.453.900	0		0		0	0	0	0	10.453.900	6
EPS005	Sanitas EPS	800251440-6	173.752.500	0		0		0	0	0	0	173.752.500	99
EPS008	Compensar EPS	860066942-7	9.984.800	0		0		0	0	0	0	9.984.800	7
EPS010	EPS Sura	800088702-2	39.846.200	0		0		0	0	0	0	39.846.200	26
EPS016	Coomeva EPS	805000427-1	6.298.400	0		0		0	0	0	0	6.298.400	5
EPS017	Famisanar EPS Cafam Colsubsidio	830003564-7	4.117.100	0		0		0	0	0	0	4.117.100	3
EPS037	Nueva Promotora de Salud - Nueva EPS	900156264-2	4.212.700	0		0		0	0	0	0	4.212.700	2
EPS044	MEDIMAS EPS SAS	901097473-5	9.809.200	0		0		0	0	0	0	9.809.200	7

TOTALES PENSIÓN

Código AFP	Nombre	NIT	Cotización Obligatoria	Aporte Voluntario Afiliado	Aporte Voluntario Aportante	Aporte FSP - Solidaridad	Aporte FSP - Subsistencia	Días Mora	Valor Mora Cotización	Valor Mora FSP	Total a Pagar	No. Afiliados
230201	Proteccion (ING + Proteccion)	800229739-0	106.238.000	0	0	3.317.800	7.884.000	0	0		117.439.800	48
230301	Porvenir	800224808-8	106.005.000	0	0	3.315.500	7.285.000	0	0		116.605.500	52
230901	Old Mutual	800253055-2	121.851.200	0	0	3.811.300	9.191.900	0	0		134.854.400	53
231001	Colfondos	800227940-6	12.601.200	0	0	394.200	654.700	0	0		13.650.100	7
25-14	Administradora Colombiana de Pensiones - Colpensiones	900336004-7	29.552.500	0	0	924.400	2.287.100	0	0		32.764.000	12

TOTALES RIESGOS LABORALES

Código ARL	Nombre	NIT	Cotización Obligatoria	Incapacidades		Aportes Otros Sistemas	Valor Neto Cotización	Días Mora	Valor Mora Cotización	Subtotal Cotización	No. Radicado Saldo a Favor	Valor Saldo a Favor	Fondo Solidaridad	Total a Pagar	No. Afiliados
				No. Autorización	Valor										
14-28	ARP Sura	800256161-9	18.049.200				18.049.200	0	0	18.049.200			180.492	18.049.200	175

TOTALES CAJAS

Código CCF	Nombre	NIT	Valor Aporte	Días Mora	Valor Mora Aporte	Total a Pagar	No. Afiliados
CCF04	Comfama Caja de Compensacion Fliar	890900841-9	10.167.200	0	0	10.167.200	19

Bogotá D.C., 04 de diciembre de 2017

Señores
A quien interese
Ciudad

Ref: Información de Cuenta

De acuerdo con su solicitud, nos permitimos informar que la compañía BRANCH OF MICROSOFT COLOMBIA I con NIT 800.198.591-3 es cliente de Citibank Colombia S.A. a través de su cuenta corriente número 0060534012 desde julio de 1993.

Lo anterior no implica responsabilidad alguna de nuestra parte por efectos que se deriven en consecuencia de la presente.

Cualquier información adicional en CitiService: Bogotá 6383838 o desde el resto del país al 018000523838.

Cordialmente,

Sandra Jiménez Cano

Country Manager
Citibank Colombia S.A.

DIAN® Dirección de Impuestos y Aduanas Nacionales

Formulario del Registro Único Tributario
Hoja Principal

MUISCA Modelo Único de Ingresos, Servicio y Control Automatizado

001

2. Concepto 0 2 Actualización

Espacio reservado para la DIAN

4. Número de formulario 14424301971

(415)7707212489984(8020) 000001442430197 1

5. Número de Identificación Tributaria (NIT):	6. DV	12. Dirección seccional	14. Buzón electrónico
8 0 0 1 9 8 5 9 1	3	Impuestos de Grandes Contribuyentes 3 1	

IDENTIFICACION

24. Tipo de contribuyente:	25. Tipo de documento:	26. Número de Identificación:	27. Fecha expedición:
Persona jurídica 1			

Lugar de expedición 28. País:	29. Departamento:	30. Ciudad/Municipio:

31. Primer apellido	32. Segundo apellido	33. Primer nombre	34. Otros nombres

35. Razón social:
BRANCH OF MICROSOFT COLOMBIA INC

36. Nombre comercial:
BRANCH OF MICROSOFT COLOMBIA INC

37. Sigla:

UBICACION

38. País:	39. Departamento:	40. Ciudad/Municipio:
COLOMBIA 1 6 9	Bogotá D.C. 1 1	Bogotá, D.C. 0 0 1

41. Dirección principal
CL 92 11 51 P 10

42. Correo electrónico:	43. Código postal	44. Teléfono 1:	45. Teléfono 2:
cchaua@microsoft.com		3 2 6 4 7 0 0	3 2 6 4 7 9 2

CLASIFICACION

Actividad económica

Actividad principal		Actividad secundaria		Otras actividades		Ocupación	
46. Código	47. Fecha inicio actividad:	48. Código	49. Fecha inicio actividad:	50. Código	1 / 2	51. Código	52. Número establecimientos
6 2 0 1	2 0 1 2 1 2 0 1	6 2 0 2	2 0 1 2 1 2 0 1		6 2 0 9 / 7 3 1 0		2

Responsabilidades, Calidades y Atributos

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
53. Código:	3	5	7	8	9	1	1	4	1	8	1	3	1	0	1	6	2	6	3	5	4	0	4	2		

03- Impuesto al patrimonio
05- Impto. renta y compl. régimen ordinar
07- Retención en la fuente a título de rent
08- Retención timbre nacional
09- Retención en la fuente en el impuesto
11- Ventas régimen común
14- Informante de exogena
18- Precios de transferencia
13- Gran contribuyente
10- Obligado aduanero
16- Obligación facturar por ingresos bienes
26- Declaración individual precios de tran
35- Impuesto sobre la renta para la equid
40- Impuesto a la Riqueza
42- Obligado a llevar contabilidad

Obligados aduaneros

54. Código	1	2	3	4	5	6	7	8	9	10
	2 2	2 3								
	11	12	13	14	15	16	17	18	19	20

Exportadores

55. Forma	56. Tipo
3	3

Servicio	1	2	3
57. Modo	2		
58. CPC	8 3		

IMPORTANTE: Sin perjuicio de las actualizaciones a que haya lugar, la inscripción en el Registro Único Tributario -RUT-, tendrá vigencia indefinida y en consecuencia no se exigirá su renovación

Para uso exclusivo de la DIAN

59. Anexos: SI [ ] NO [X] 60. No. de Folios: 0 61. Fecha: 2 0 1 7 0 8 1 0

La información contenida en el formulario, será responsabilidad de quien lo suscribe y en consecuencia corresponde exactamente a la realidad, por lo anterior, cualquier falsedad o inexactitud en que incurra podrá ser sancionada.
Artículo 18 Decreto 2460 de Noviembre de 2013
Firma del solicitante:

Sin perjuicio de las verificaciones que la DIAN realice.
Firma autorizada:

984. Nombre CHAU ARGUELLES CAROLINA
985. Cargo: Representante Legal Suplente Certificado

Microsoft

Reporte de Actividades

Período del Reporte: Contrato Actual
A la fecha de 30/11/2017

Para

SUPERINTENDENCIA DEL SUBSIDIO FAMILIAR

Calle 45A No. 9-46 Bogota

Support Enterprise Classic

170004262 - Superintendencia de Subsidio Familiar
22/05/2017 Hasta 31/12/2017

Jorge Eliecer Amaya
Gerente de Soporte del Cliente

Yadira Leon
Supervisora del Contrato

Lorena Pareja
Gerente Técnico de Cuenta

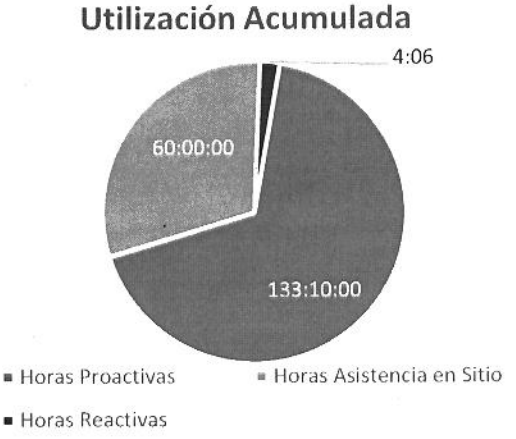
If you have any questions about this report, please contact **Lorena Pareja** (lopuente@microsoft.com) or **Victor Rosa** (victorr@microsoft.com)

Resumen de Contrato

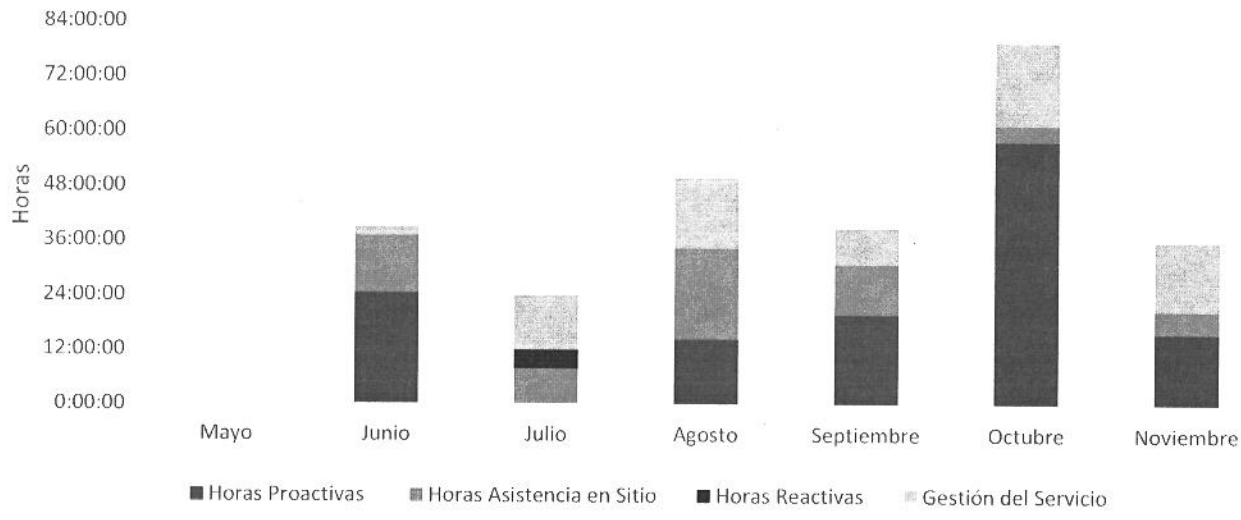
Resumen de Consumo

	Adquirido	Transferidas	Total	Utilizado Noviembre	Acumulado	Consumido	Disponible	Programadas	Saldo
Horas Proactivas	105	45:00:00	150:00:00	16:00:00	133:10:00	78%	**16:50:00**	8:00:00	**8:50:00**
Horas Asistencia en Sitio	91	-31:00	60:00:00	5:00	60:00:00	93%	**0:00:00**	0:00:00	**0:00:00**
Horas Reactivas	30	-14:00	16:00:00	0:00	4:06	20%	**11:54:00**	N/A	**11:54:00**
Gestión del Servicio de Soporte (Horas)	89	0:00	89:00:00	15:00	70:32:00	42%	**18:28:00**	N/A	**18:28:00**

Total Horas Ejecutadas en Noviembre: 36:00 horas



Consumo de Servicios por Mes



	Mayo	Junio	Julio	Agosto	Septiembre	Octubre	Noviembre
Horas Proactivas	0:00:00	24:40:00	0:00:00	14:30:00	20:00:00	58:00:00	16:00:00
Horas Asistencia en Sitio	0:00:00	12:30	8:00	20:00:00	11:00	3:30	5:00
Horas Reactivas	0:00:00	0:00	4:06	0:00:00	0:00	0:00	0:00
Gestión del Servicio	0:00:00	1:50	11:54:00	15:30:00	8:00	18:18	15:00
Total	**0:00:00**	**39:00:00**	**24:00:00**	**50:00:00**	**39:00:00**	**79:48:00**	**36:00:00**

Horas Proactivas

Servicios entregados

Los servicios proactivos ejecutados en Noviembre fueron:

Servicio	Ingeniero (PFE)	Producto	Costo (Horas)	Status
Acompañamiento en la revisión de servidores de base de datos y transferencia de conocimiento	John James Serna	SQL Server	16:00	Cerrado
Total			**16:00**	

Servicios programados

Servicio	Ingeniero (PFE)	Producto	Costo (Horas)	Fecha
Acompañamiento en la revisión de servidores de base de datos y Transferencia de Conocimiento	John James Serna	SQL Server	8:00*	4 Dic/17
Total			**8:00**	

* Horas estimadas. La cantidad de horas real se cargará una vez el ingeniero ejecute el servicio.

Horas Asistencia en Sitio

Servicios entregados

El acompañamiento de Ingeniero en Sitio ejecutado en Noviembre fue:

Servicio	Fecha	Ingeniero	Producto	Costo (Horas)	Status
Revisión y ajustes servidor SIGER	16/11/2017	David Bolivar	Windows	05:00	Cerrado
Total				**5:00**	

Horas Reactivas

Casos Abiertos

En Noviembre no se presentaron casos reactivos.

Gestión del Servicio

Resumen de Ejecución

Descripción	Tiempo
Noviembre	
Administración y control de las horas del contrato	4:00
Investigación y asesoría en los servicios proactivos de valor para la Entidad	3:00
Gestión y coordinación de servicios	3:00
Elaboración de reporte de ejecución	3:00
Gestión para el diseño de oferta de renovación	2:00
Total	**15:00**

Contactos

Nombre	Rol	Teléfono	e-mail
Jorge Eliecer Amaya	CSM / Administrator	5713487800	jamayar@ssf.gov.co
Juan José Olivella	Group Web	573008153099	jolivella@ssf.gov.co
Yadira León Vargas	Group Web	5713487800	yleonv@ssf.gov.co
Clara Ines Martinez	Group Web	5713487800	cmartinezb@ssf.gov.co

Lorena Pareja
Gerente Técnico de Cuenta
Soporte Premier – Microsoft

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Microsoft

RAP as a Service for Hyper-V

Superintendencia Subsidio Familiar

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Senior Premier Field Engineer

Agenda

Introduction

- Objective
- Environment Details

RAP as a Service Findings

- Reviews Scorecards, Health and Risks
- Issue Details

Introduction

Premier Health Program: Phases

Phase 4:
Desired State Verification
Reassess to verify the desired state after remediation.

Phase 3:
Remediation Execution
Remediate issues and mitigate risks identified in the remediation plan. (by Customer, Partner or Premier)

Phase 1:
Risk Assessment & Knowledge Transfer
Identify issues and risks for a given technology leveraging a suite of tools and MS best practices

Phase 2:
Remediation Planning
Create a remediation plan to address identified improvement points and risks that have been aligned to customer specific business impact

Objective

RAP as a Service Session:

- Explain your **RAP as a Service results: Health and Risks issues** on your environment.
- Knowledge Transfer: Explain and discuss why health and risk issues must be remediated.

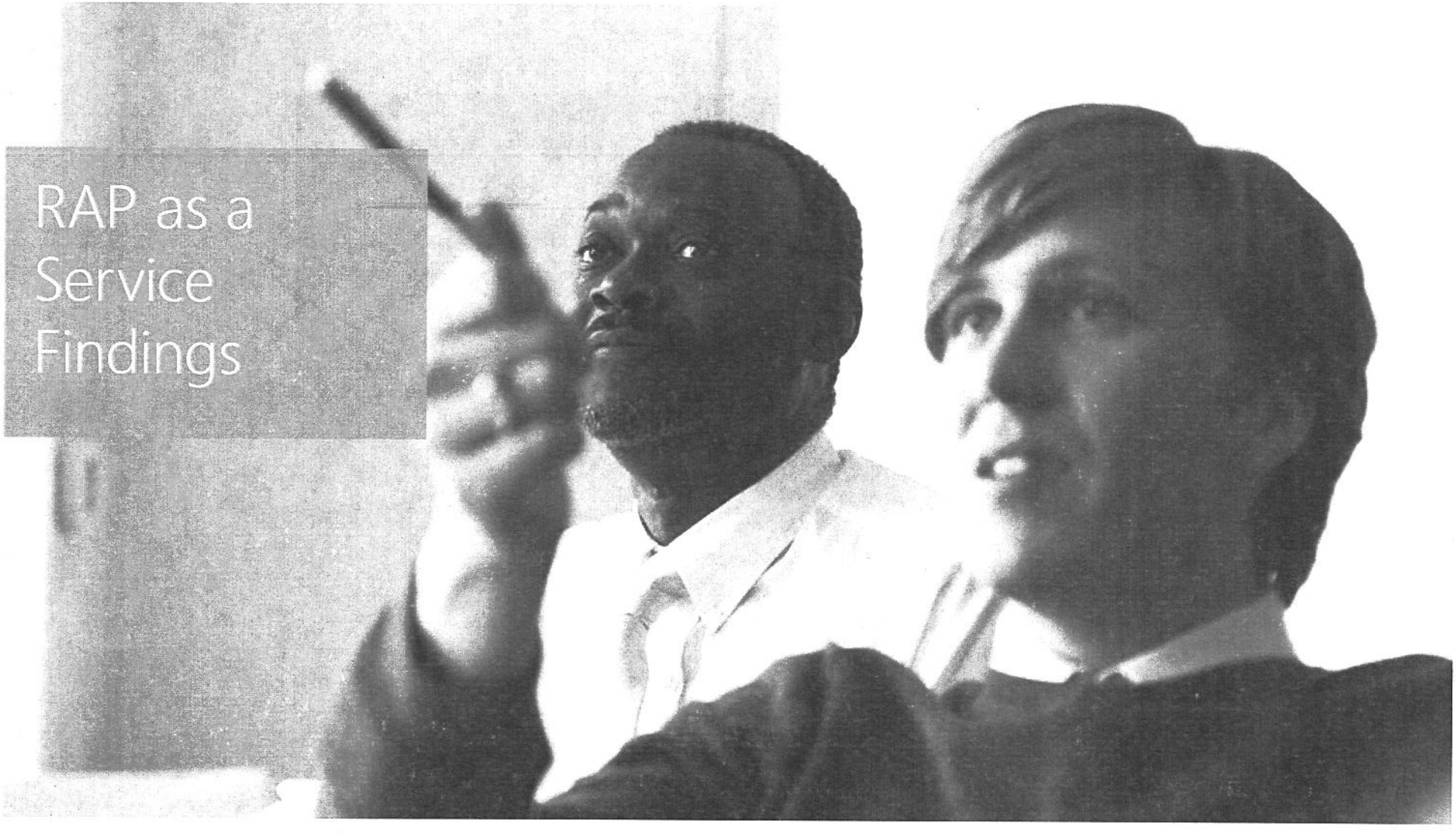
Environment Details

Hyper-V Cluster	Number of Cluster Nodes	Number of Clustered Virtual Machines
ADMDOCGESHV	2	8

Hyper-V Server	Model and CPU	Memory	Operating System
SW2K12R2DOCGES1	HP ProLiant BL465c Gen8 2 x AMD Opteron(tm) Processor 6380 (32 LPs)	64 GB	Microsoft Windows Server 2012 R2 Datacenter
SW2K12R2DOCGES2	HP ProLiant BL465c Gen8 2 x AMD Opteron(tm) Processor 6380 (32 LPs)	64 GB	Microsoft Windows Server 2012 R2 Datacenter
SW2K12R2GTSS1PR	HP ProLiant DL580 G7 2 x Intel(R) Xeon(R) CPU X7560 @ 2.27GHz (32 LPs)	24 GB	Microsoft Windows Server 2012 R2 Standard
SW2K12R2GTSS2PR	HP ProLiant DL580 G7 2 x Intel(R) Xeon(R) CPU X7560 @ 2.27GHz (32 LPs)	24 GB	Microsoft Windows Server 2012 R2 Datacenter
SW2K12R2-IV3	HP ProLiant BL460c Gen9 2 x Intel(R) Xeon(R) CPU E5-2698 v3 @ 2.30GHz (64 LPs)	128 GB	Microsoft Windows Server 2012 R2 Standard
SW2K12R2-HYPER10	HP ProLiant BL460c G1 1 x Intel(R) Xeon(R) CPU X5460 @ 3.16GHz (4 LPs)	16 GB	Microsoft Windows Server 2012 R2 Standard
SW2K12R2-HYPER12	HP ProLiant BL460c G1 1 x Intel(R) Xeon(R) CPU X5460 @ 3.16GHz (4 LPs)	24 GB	Microsoft Windows Server 2012 R2 Standard
SW2K12R2-HYPER13	HP ProLiant DL380 G5 2 x Intel(R) Xeon(R) CPU 5160 @ 3.00GHz (4 LPs)	8 GB	Microsoft Windows Server 2012 R2 Standard
SW2K12R2-HYPER14	HP ProLiant BL460c G1 1 x Intel(R) Xeon(R) CPU X5460 @ 3.16GHz (4 LPs)	16 GB	Microsoft Windows Server 2012 R2 Standard
SW2K12R2-HYPER15	HP ProLiant DL580 G7 2 x Intel(R) Xeon(R) CPU X7560 @ 2.27GHz (32 LPs)	16 GB	Microsoft Windows Server 2012 R2 Standard
SW2K12R2-HYPER5	HP ProLiant BL460c G1 1 x Intel(R) Xeon(R) CPU 5160 @ 3.00GHz (2 LPs)	4 GB	Microsoft Windows Server 2012 R2 Standard
SW2K12R2-HYPER6	HP ProLiant DL380 G5 2 x Intel(R) Xeon(R) CPU 5160 @ 3.00GHz (4 LPs)	8 GB	Microsoft Windows Server 2012 R2 Standard
SW2K12R2-HYPER8	HP ProLiant BL460c G1 1 x Intel(R) Xeon(R) CPU X5460 @ 3.16GHz (4 LPs)	24 GB	Microsoft Windows Server 2012 R2 Standard

12/12/2017

RAP as a Service Findings



Risk and Health Assessment Methodology

Overall Health Result

- Primarily relates to the current state of the environment. Are key components and services functioning the way they should, systems online and responsive, and so on.
- Typical health issues equate to active problems.

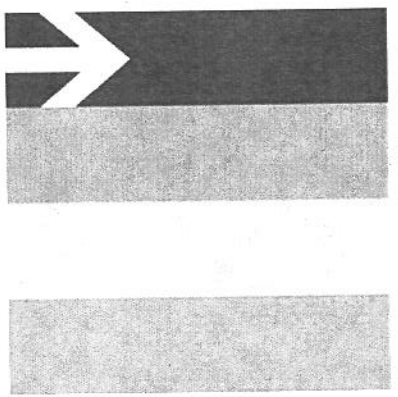
Overall Risk Result

- Primarily relates to the potential future state of the environment. Are there processes, documentation and systems in place that would help mitigate future problems in the environment. This can include change control, monitoring, SLAs, training, and so on.
- Typical risk issues equate to increased chances of new or worsening problems in the future.

Good Results

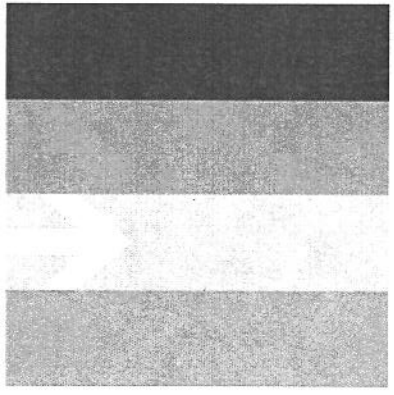
- ✓ VDI
- ✓ CSV
- ✓ SCVMM
- ✓ Disk Performance
- ✓ Network Performance
- ✓ Service Strategy
- ✓ Service Operation
- ✓ Continual Service Improvement

Overall Health Result



- ✓ Device is not ready for access yet
- ✓ Multiple disks with the same signature
- ✓ Integration Services must be updated
- ✓ No redundancy for host network or storage
- ✓ More than one VM VHDs on a clustered disk
- ✓ Only one NIC connected on the host
- ✓ No SLAT support or is disabled
- ✓ Recommended Updates
- ✓ Ocnd64.sys driver version with known issues
- ✓ Synth NIC not responding
- ✓ Bandwidth Reservation is not Weigh
- ✓ Many things on the System Disk
- ✓ High Process Processor Time on the host
- ✓ Live Migration enabled on all networks
- ✓ NTFS not using 64k
- ✓ Remote NUMA Memory
- ✓ VM Offline Action not set to Shutdown
- ✓ Old VHD format used

Overall **Risk** Result



- ✓ DRP not documented
- ✓ Hyper-V environment not monitored
- ✓ Inconsistent Authentication for Live Migration
- ✓ No SLA
- ✓ No procedure to detect missing security updates
- ✓ Only one NIC connected on the host
- ✓ VM networks should use teamed NICs
- ✓ Pass-Through Disks
- ✓ Old BIOS
- ✓ No policy for Checkpoints
- ✓ Reboot Pending
- ✓ RestartAction not default
- ✓ Standard edition used on the host
- ✓ Unnecessary Window features (iSCSI Target?)
- ✓ Virtual Switch contains # in the name

Scorecard

Consolidated Scorecard	Risk Level	Health Level
Hyper-V	Medium	High
Hyper-V Configuration	Low	Low
Virtual Machine Configuration	Medium	High
Virtual Desktop Infrastructure (VDI)	No Issues	No Issues
Integration Components	No Issues	Medium
Hyper-V Replica	Low	No Issues
Hardware	Medium	High
Hardware	Medium	High
Management Operating System	Medium	Critical
Management OS	Medium	Low

Scorecard

Consolidated Scorecard	Risk Level	Health Level
Management Operating System	Medium	Critical
Event Logs	No Issues	Critical
Hotfixes	No Issues	High
Storage And Networking	High	High
Storage	High	Medium
Network	High	High
Cluster Configuration	Medium	Medium
Cluster Properties	Medium	No Issues
Cluster Shared Volumes	No Issues	No Issues
Cluster Network	No Issues	Medium

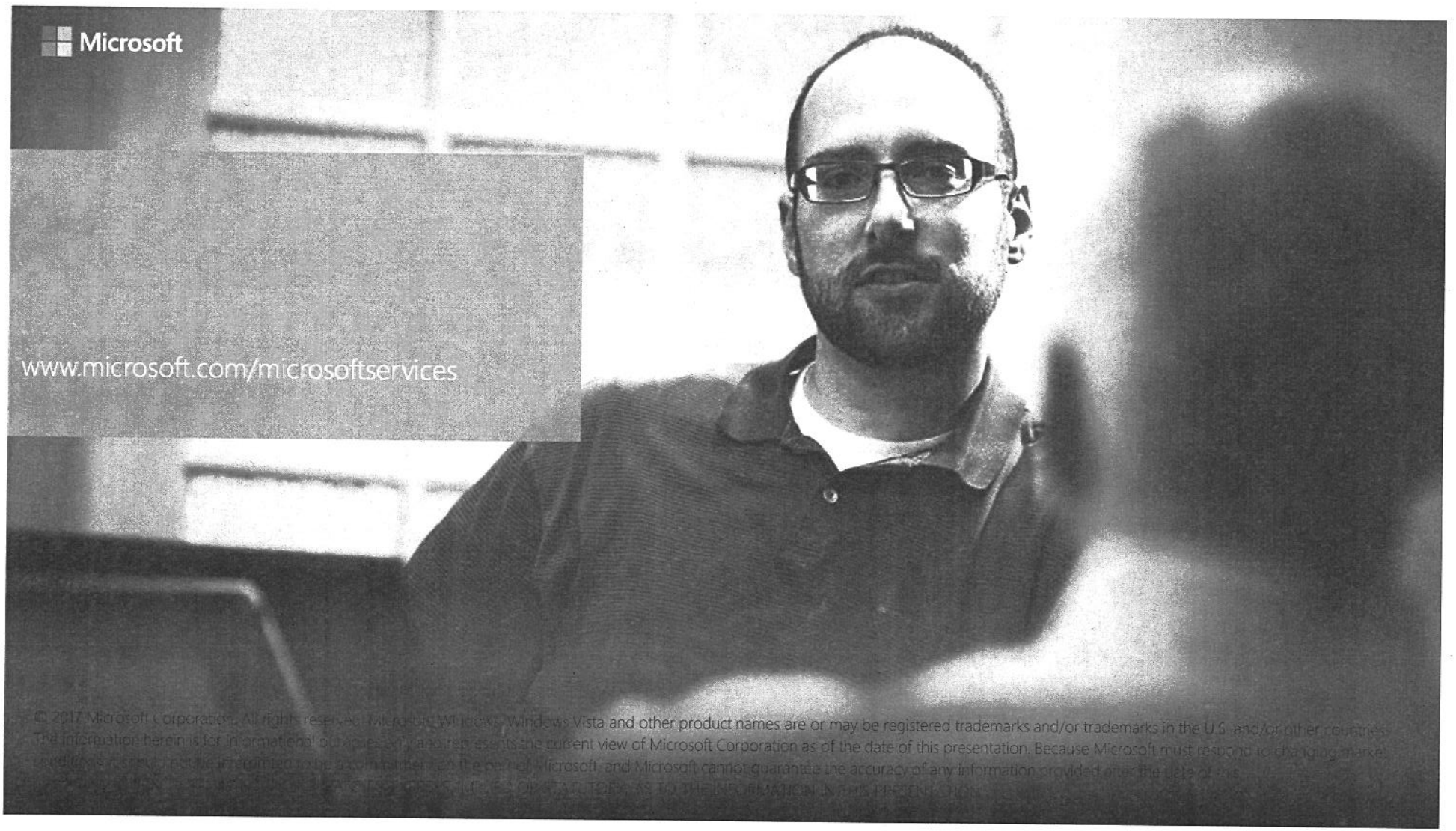
Scorecard

Consolidated Scorecard	Risk Level	Health Level
Cluster Configuration	Medium	Medium
Cluster Virtual Machine Settings	No Issues	Low
SCVMM	No Issues	No Issues
SCVMM	No Issues	No Issues
Performance	No Issues	Medium
Performance Disk	No Issues	No Issues
Performance Memory	No Issues	Medium
Performance Network	No Issues	No Issues
Performance Processor	No Issues	Medium

Scorecard

Consolidated Scorecard	Risk Level	Health Level
Operational Excellence	High	High
Service Strategy	No Issues	No Issues
Service Design	High	High
Service Transition	High	High
Service Operation	No Issues	No Issues
Continual Service Improvement	No Issues	No Issues


Questions?



Issue Details

Issue Details Scorecard	Severity	Type	Status
Hyper-V			
Hyper-V Configuration			
Live Migration Enabled For Kerberos Authentication Without Credential Delegation	Low	Health	Failed
Hyper-V Default Data Path Not Configured	Low	Risk	Failed
Hyper-V Default VHD Path Not Configured	Low	Risk	Failed
Virtual Machine Configuration			
More Than One Virtual Machines Virtual Disks Found On A Clustered Disk	High	Health	Failed
A Synthetic Network Adapter Is Not Responding In The Virtual Machine	Medium	Health	Failed

Issue Details

Issue Details Scorecard	Severity	Type	Status
Hyper-V			
Virtual Machine Configuration			
Checkpoint File Location Is The System Disk	Medium	Health	Failed
Dynamic Memory Is Not Enabled For Virtual Machines	Medium	Health	Failed
One Or More Virtual Network Adapters Are Disabled	Medium	Risk	Failed
Smart Paging Location Is On The System Disk	Medium	Risk	Failed
The Virtual Machine Data File Path Is The System Disk	Medium	Health	Failed
Virtual Machine Offline Action Is Set To Turn Off	Medium	Health	Failed

Issue Details

Issue Details Scorecard	Severity	Type	Status
Hyper-V			
Virtual Machine Configuration			
A Single Virtual Processor Is Assigned To Windows Server Virtual Machine	Low	Health	Failed
Multiple Virtual Hard Disks Are Connected To IDE Controllers	Low	Risk	Failed
Integration Components			
Integration Components Should Be Updated In Virtual Machines	Medium	Health	Failed
Integration Services Are Disabled Or Not Working In Virtual Machine(s)	Medium	Health	Failed
Hyper-V Replica			
Hyper-V Replica Broker Is Not Configured In Cluster	Low	Risk	Failed

Issue Details

Issue Details Scorecard	Severity	Type	Status
Hardware			
Hardware			
Processors Are Not SLAT Compatible Or SLAT Is Disabled	High	Health	Failed
The Ocnd64.Sys Driver Version In Use Has Known Issues	High	Health	Failed
BIOS Version Is Greater Than 18 Months Old	Medium	Risk	Failed
Management Operating System			
Management OS			
The Hyper-V Server Has A Graphical User Interface Enabled	Medium	Risk	Failed
The Management Operating System Is Not Datacenter Edition	Medium	Risk	Failed

Issue Details

Issue Details Scorecard	Severity	Type	Status
Management Operating System			
Management OS			
Unnecessary Windows Features May Be Installed	Medium	Risk	Failed
Server Has A Pending Reboot Setting In The Registry	Medium	Risk	Failed
Unnecessary Applications May Be Installed On Hyper-V Server	Low	Health	Failed
Event Logs			
Event ID 15, System, The Device Is Not Ready For Access Yet		Health	
Event ID 59, System, This Error Usually Occurs When 2 Disks Share The Same Signature		Health	

Issue Details

Issue Details Scorecard	Severity	Type	Status
Management Operating System			
Event Logs			
Event ID 6, Storvsp, Storage Integration Component Version Is Unsupported	High	Health	Failed
Event ID 19544, Microsoft-Windows-Hyper-V-VMMS, Insufficient Memory To Start Virtual Machine	Medium	Health	Failed
Event ID 4096, Microsoft-Windows-Hyper-V-Config, Inaccessible Virtual Machine Configuration File	Medium	Health	Failed
Event ID 16150, Microsoft-Windows-Hyper-V-VMMS, Cannot Delete Directory	Low	Health	Failed
Hotfixes			
Recommended Cluster Updates Are Not Installed	High	Health	Failed

Issue Details

Issue Details Scorecard	Severity	Type	Status
Management Operating System			
Hotfixes			
Recommended Hyper-V Updates Are Not Installed	High	Health	Failed
Storage And Networking			
Storage			
Virtual Machines Are Using Pass-Through Disks	High	Risk	Failed
NTFS Allocation Unit Size Is Not 64K For Disks Containing Virtual Machine Data	Medium	Health	Failed
Virtual Machines Are Using VHD Format Virtual Disks	Medium	Health	Failed
Network			
Storage Network Performance May Be Constrained	High	Health	Failed

Issue Details

Issue Details Scorecard	Severity	Type	Status
Storage And Networking			
Network			
Only One Network Adapter Is Connected On Hyper-V Server	High	Both	Failed
Live Migration Is Enabled On All Networks	Medium	Health	Failed
Bandwidth Reservation Mode Is Not Weight	Medium	Health	Failed
Shared Nothing Live Migration Is Enabled On All Network Adapters	Medium	Health	Failed
Virtual Switch Name Contains The Number Sign (#)	Medium	Risk	Failed
Server Does Not Have A Valid DNS Server Defined For Name Resolution On The Public Interface	Medium	Risk	Failed

Issue Details

Issue Details Scorecard	Severity	Type	Status
Cluster Configuration			
Cluster Properties			
The Affect The Group RestartAction Is Not Default	Medium	Risk	Failed
Preferred Owner Not Default	Low	Risk	Failed
Cluster Network			
Live Migration Is Enabled On All Networks	Medium	Health	Failed
Cluster Virtual Machine Settings			
Highly Available Virtual Machine Offline Action Is Not Set To Shutdown	Low	Health	Failed
Performance			
Performance Memory			

Issue Details

Issue Details Scorecard	Severity	Type	Status
Performance			
Performance Memory			
Remote NUMA Memory Is Being Used	Medium	Health	Failed
Performance Processor			
High Process Processor Time	Medium	Health	Failed
Operational Excellence			
Service Design			
Host Network Or Storage Traffic Does Not Have Redundant Communication Path	High	Health	Failed
No Backups Are Performed Of Hyper-V Operating System	High	Health	Failed
Hyper-V Environment Is Not Monitored	High	Risk	Failed

Issue Details

Issue Details Scorecard	Severity	Type	Status
Operational Excellence			
Service Design			
No Documented Service Level Agreements	High	Risk	Failed
Disaster Recovery Plan Is Not Documented	High	Risk	Failed
Virtual Machine Networks Should Use Teamed Physical Network Adapters	High	Risk	Failed
Resource Usage Is Not Tracked To Plan For Future Requirements	Medium	Risk	Failed
Disaster Recovery Plan Is Not Tested And Practiced Regularly (At Least Annually)	Medium	Health	Failed
Regular Host Based Backups Should Be Performed Using VSS Aware Backup Software	Low	Risk	Failed

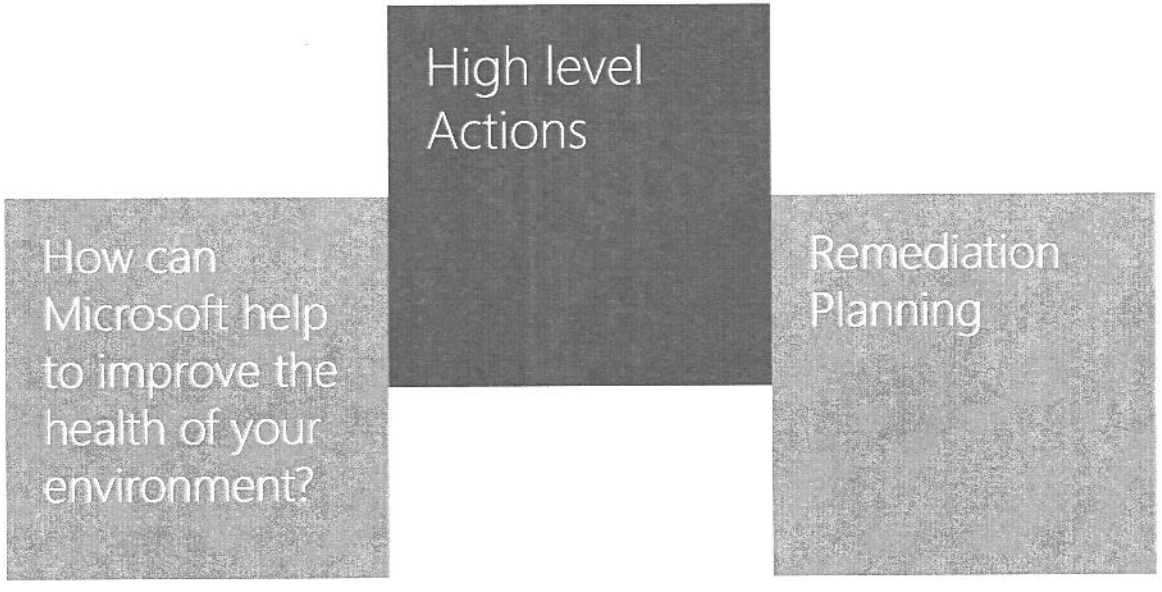
Issue Details

Issue Details Scorecard	Severity	Type	Status
Operational Excellence			
Service Transition			
No Procedures And Tools In Place For Checking Missing Security Updates And Service Packs	High	Risk	Failed
Formal Change Management Process Is Not Defined, Documented And Audited	High	Health	Failed
The Process For Applying Host Updates Should Be Documented	Medium	Risk	Failed
Patch Reports Are Not Regularly Generated For Management	Medium	Risk	Failed
No Policy Exists For The Use Of Checkpoints	Medium	Risk	Failed
No Measure Of The Progress And Success Level Of Security Updates Deployment	Low	Risk	Failed

Issue Details

Issue Details Scorecard	Severity	Type	Status
Operational Excellence			
Service Transition			
No Test Environment Available For Security Update Management	Low	Risk	Failed
No Rollback Plans Defined As Part Of Security Update Management Process	Low	Risk	Failed

Remediation Planning


High level Actions
How can Microsoft help to improve the health of your environment?
Remediation Planning

Microsoft

Key Findings Report

RAP as a Service for Hyper-V

Prepared for

Superintendencia Subsidio Familiar

Last saved date: 6 October 2017

Version 1.0

Prepared by

Roberto Martinez Lima

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Executive Summary

Microsoft has completed a Microsoft RAP as a Service for Hyper-V through interviews with the staff and by running a suite of tools to collect data from target systems and their dependent systems. The assessment provides findings and guidance based on analysis by the Microsoft Advanced Services Delivery (ASD) team and the accredited Premier Field Engineer (PFE) that performed the engagement.

The assessment provides you results grouped in two areas: health issues and risk issues. Risk issues cover areas such as configuration, change control, monitoring, design, service level agreements and other items that if left unresolved increase the chances of problems in the environment. Health issues cover areas such as performance, configuration items and the proper function of the major components that make up virtualization systems such as network infrastructure, storage, physical hardware, and so on.

The overall assessment gives you a high-level understanding of the health and risk items together. You will see a summary for each of the two areas, health and risk, giving an introductory view into the findings of the environment.

The severity calculation is as follows: Whenever a critical issue is found the overall score is critical. When no critical issue is found the average of all issues is calculated.

Health Assessment Result

The reason the overall health result reached the top is because of the existence of two critical symptoms due to storage activity, those two things are expected to be corrected immediately in order to prevent service disruptions or even data corruption.

With less severity we have identified some configurations that are not following our recommendations in areas such as Integration Services versions, Network Redundancy, Clustered Storage Layout, the use of old Processors lacking virtualization improvements and Patch Management.

Risk Assessment Result

The risk perspective resulted much better than health, not typically seen on most customers. There is room for improvement in Disaster Recovery Planning, Monitoring, Service Level Management, High Availability Design, Hardware Life Cycle Management and Capacity Trending.

Risk & Health Scorecard

This scorecard shows the overall health and risk severity levels for each major and minor category. This is determined by the highest severity issue found per category, per health and risk.

Consolidated Scorecard	Risk Severity	Health Severity
Hyper-V	**Medium**	**High**
Hyper-V Configuration	Low	Low
Virtual Machine Configuration	Medium	High
Virtual Desktop Infrastructure (VDI)	No Issues	No Issues
Integration Components	No Issues	Medium
Hyper-V Replica	Low	No Issues
Hardware	**Medium**	**High**
Hardware	Medium	High
Management Operating System	**Medium**	**Critical**
Management OS	Medium	Low
Event Logs	No Issues	Critical
Hotfixes	No Issues	High
Storage And Networking	**High**	**High**
Storage	High	Medium
Network	High	High
Cluster Configuration	**Medium**	**Medium**
Cluster Properties	Medium	No Issues
Cluster Shared Volumes	No Issues	No Issues
Cluster Network	No Issues	Medium
Cluster Virtual Machine Settings	No Issues	Low
SCVMM	**No Issues**	**No Issues**
SCVMM	No Issues	No Issues
Performance	**No Issues**	**Medium**
Performance Disk	No Issues	No Issues
Performance Memory	No Issues	Medium
Performance Network	No Issues	No Issues
Performance Processor	No Issues	Medium
Operational Excellence	**High**	**High**
Service Strategy	No Issues	No Issues
Service Design	High	High
Service Transition	High	High
Service Operation	No Issues	No Issues
Continual Service Improvement	No Issues	No Issues

Issue Level Summary

The following are details about the issues discovered in your environment. Where applicable the status has been updated to the current state at the time of this report.

Issue Details Scorecard	Severity	Type	Status
Hyper-V			
Hyper-V Configuration			
Live Migration Enabled For Kerberos Authentication Without Credential Delegation	Low	Health	Failed
Hyper-V Default Data Path Not Configured	Low	Risk	Failed
Hyper-V Default VHD Path Not Configured	Low	Risk	Failed
Virtual Machine Configuration			
More Than One Virtual Machines Virtual Disks Found On A Clustered Disk	High	Health	Failed
A Synthetic Network Adapter Is Not Responding In The Virtual Machine	Medium	Health	Failed
Checkpoint File Location Is The System Disk	Medium	Health	Failed
Dynamic Memory Is Not Enabled For Virtual Machines	Medium	Health	Failed
One Or More Virtual Network Adapters Are Disabled	Medium	Risk	Failed
Smart Paging Location Is On The System Disk	Medium	Risk	Failed
The Virtual Machine Data File Path Is The System Disk	Medium	Health	Failed
Virtual Machine Offline Action Is Set To Turn Off	Medium	Health	Failed
A Single Virtual Processor Is Assigned To Windows Server Virtual Machine	Low	Health	Failed
Multiple Virtual Hard Disks Are Connected To IDE Controllers	Low	Risk	Failed
Virtual Desktop Infrastructure (VDI)			
Integration Components			
Integration Components Should Be Updated In Virtual Machines	Medium	Health	Failed
Integration Services Are Disabled Or Not Working In Virtual Machine(s)	Medium	Health	Failed
Hyper-V Replica			
Hyper-V Replica Broker Is Not Configured In Cluster	Low	Risk	Failed
Hardware			
Hardware			
Processors Are Not SLAT Compatible Or SLAT Is Disabled	High	Health	Failed
The Ocnd64.Sys Driver Version In Use Has Known Issues	High	Health	Failed
BIOS Version Is Greater Than 18 Months Old	Medium	Risk	Failed
Management Operating System			
Management OS			
The Hyper-V Server Has A Graphical User Interface Enabled	Medium	Risk	Failed
The Management Operating System Is Not Datacenter	Medium	Risk	Failed

Issue Details Scorecard	Severity	Type	Status
Edition			
Unnecessary Windows Features May Be Installed	Medium	Risk	Failed
Server Has A Pending Reboot Setting In The Registry	Medium	Risk	Failed
Unnecessary Applications May Be Installed On Hyper-V Server	Low	Health	Failed
Event Logs			
Event ID 15, System, The Device Is Not Ready For Access Yet	Critical	Health	Failed
Event ID 59, System, This Error Usually Occurs When 2 Disks Share The Same Signature	Critical	Health	Failed
Event ID 6, Storvsp, Storage Integration Component Version Is Unsupported	High	Health	Failed
Event ID 19544, Microsoft-Windows-Hyper-V-VMMS, Insufficient Memory To Start Virtual Machine	Medium	Health	Failed
Event ID 4096, Microsoft-Windows-Hyper-V-Config, Inaccessible Virtual Machine Configuration File	Medium	Health	Failed
Event ID 16150, Microsoft-Windows-Hyper-V-VMMS, Cannot Delete Directory	Low	Health	Failed
Hotfixes			
Recommended Cluster Updates Are Not Installed	High	Health	Failed
Recommended Hyper-V Updates Are Not Installed	High	Health	Failed
Storage And Networking			
Storage			
Virtual Machines Are Using Pass-Through Disks	High	Risk	Failed
NTFS Allocation Unit Size Is Not 64K For Disks Containing Virtual Machine Data	Medium	Health	Failed
Virtual Machines Are Using VHD Format Virtual Disks	Medium	Health	Failed
Network			
Storage Network Performance May Be Constrained	High	Health	Failed
Only One Network Adapter Is Connected On Hyper-V Server	High	Both	Failed
Live Migration Is Enabled On All Networks	Medium	Health	Failed
Bandwidth Reservation Mode Is Not Weight	Medium	Health	Failed
Shared Nothing Live Migration Is Enabled On All Network Adapters	Medium	Health	Failed
Virtual Switch Name Contains The Number Sign (#)	Medium	Risk	Failed
Server Does Not Have A Valid DNS Server Defined For Name Resolution On The Public Interface	Medium	Risk	Failed
Cluster Configuration			
Cluster Properties			
The Affect The Group RestartAction Is Not Default	Medium	Risk	Failed
Preferred Owner Not Default	Low	Risk	Failed
Cluster Shared Volumes			
Cluster Network			
Live Migration Is Enabled On All Networks	Medium	Health	Failed

Issue Details Scorecard	Severity	Type	Status
Cluster Virtual Machine Settings			
Highly Available Virtual Machine Offline Action Is Not Set To Shutdown	Low	Health	Failed
SCVMM			
SCVMM			
Performance			
Performance Disk			
Performance Memory			
Remote NUMA Memory Is Being Used	Medium	Health	Failed
Performance Network			
Performance Processor			
High Process Processor Time	Medium	Health	Failed
Operational Excellence			
Service Strategy			
Service Design			
Host Network Or Storage Traffic Does Not Have Redundant Communication Path	High	Health	Failed
No Backups Are Performed Of Hyper-V Operating System	High	Health	Failed
Hyper-V Environment Is Not Monitored	High	Risk	Failed
No Documented Service Level Agreements	High	Risk	Failed
Disaster Recovery Plan Is Not Documented	High	Risk	Failed
Virtual Machine Networks Should Use Teamed Physical Network Adapters	High	Risk	Failed
Resource Usage Is Not Tracked To Plan For Future Requirements	Medium	Risk	Failed
Disaster Recovery Plan Is Not Tested And Practiced Regularly (At Least Annually)	Medium	Health	Failed
Regular Host Based Backups Should Be Performed Using VSS Aware Backup Software	Low	Risk	Failed
Service Transition			
No Procedures And Tools In Place For Checking Missing Security Updates And Service Packs	High	Risk	Failed
Formal Change Management Process Is Not Defined, Documented And Audited	High	Health	Failed
The Process For Applying Host Updates Should Be Documented	Medium	Risk	Failed
Patch Reports Are Not Regularly Generated For Management	Medium	Risk	Failed
No Policy Exists For The Use Of Checkpoints	Medium	Risk	Failed
No Measure Of The Progress And Success Level Of Security Updates Deployment	Low	Risk	Failed
No Test Environment Available For Security Update Management	Low	Risk	Failed
No Rollback Plans Defined As Part Of Security Update Management Process	Low	Risk	Failed

Issue Details Scorecard	Severity	Type	Status
Service Operation			
Continual Service Improvement			

Environment Summary

Cluster Summary

Hyper-V Cluster	Number of Cluster Nodes	Number of Clustered Virtual Machines
ADMDOCGESHV	2	8

Hyper-V Server Summary

Hyper-V Server	Model and CPU	Memory	Operating System
SW2K12R2DOCGES1	HP ProLiant BL465c Gen8 2 x AMD Opteron(tm) Processor 6380 (32 LPs)	64 GB	Microsoft Windows Server 2012 R2 Datacenter
SW2K12R2DOCGES2	HP ProLiant BL465c Gen8 2 x AMD Opteron(tm) Processor 6380 (32 LPs)	64 GB	Microsoft Windows Server 2012 R2 Datacenter
SW2K12R2GTSS1PR	HP ProLiant DL580 G7 2 x Intel(R) Xeon(R) CPU X7560 @ 2.27GHz (32 LPs)	24 GB	Microsoft Windows Server 2012 R2 Standard
SW2K12R2GTSS2PR	HP ProLiant DL580 G7 2 x Intel(R) Xeon(R) CPU X7560 @ 2.27GHz (32 LPs)	24 GB	Microsoft Windows Server 2012 R2 Datacenter
SW2K12R2HV3	HP ProLiant BL460c Gen9 2 x Intel(R) Xeon(R) CPU E5-2698 v3 @ 2.30GHz (64 LPs)	128 GB	Microsoft Windows Server 2012 R2 Standard
SW2K12R2HYPER10	HP ProLiant BL460c G1 1 x Intel(R) Xeon(R) CPU X5460 @ 3.16GHz (4 LPs)	16 GB	Microsoft Windows Server 2012 R2 Standard
SW2K12R2HYPER12	HP ProLiant BL460c G1 1 x Intel(R) Xeon(R) CPU X5460 @ 3.16GHz (4 LPs)	24 GB	Microsoft Windows Server 2012 R2 Standard
SW2K12R2HYPER13	HP ProLiant DL380 G5 2 x Intel(R) Xeon(R) CPU 5160 @ 3.00GHz (4 LPs)	8 GB	Microsoft Windows Server 2012 R2 Standard

SW2K12R2HYPER14	HP ProLiant BL460c G1 1 x Intel(R) Xeon(R) CPU X5460 @ 3.16GHz (4 LPs)	16 GB	Microsoft Windows Server 2012 R2 Standard
SW2K12R2HYPER15	HP ProLiant DL580 G7 2 x Intel(R) Xeon(R) CPU X7560 @ 2.27GHz (32 LPs)	16 GB	Microsoft Windows Server 2012 R2 Standard
SW2K12R2HYPER5	HP ProLiant BL460c G1 1 x Intel(R) Xeon(R) CPU 5160 @ 3.00GHz (2 LPs)	4 GB	Microsoft Windows Server 2012 R2 Standard
SW2K12R2HYPER6	HP ProLiant DL380 G5 2 x Intel(R) Xeon(R) CPU 5160 @ 3.00GHz (4 LPs)	8 GB	Microsoft Windows Server 2012 R2 Standard
SW2K12R2HYPER8	HP ProLiant BL460c G1 1 x Intel(R) Xeon(R) CPU X5460 @ 3.16GHz (4 LPs)	24 GB	Microsoft Windows Server 2012 R2 Standard

Issue Details

The following are details about the issues discovered in your environment. This includes descriptions, best practice guidance, recommended reading, recommended resolutions and custom comments.

Severity	Symbol	Description
Critical		Immediate fix needed
High		Fix as soon as possible
Medium		Fix within next 3 months
Low		Fix within the next 6 months
Informational		Needs to be reviewed

Status	Symbol	Description
Failed		Issue was found
Inconclusive		Data collection had issues, new collection needed
Passed		No issue found

Operational Excellence

Service Strategy

Service strategy defines the perspective, position, plans and patterns that a service provider needs to execute to meet an organization's business outcomes and needs. "Service Provider" may refer to an independent company or the IT department within a company.

There were no issues currently detected in this section for this environment

Service Design

Service design includes the design of the services, governing practices, processes and policies required to realize the service provider's strategy and to facilitate the introduction of services into supported environments. Service design includes the following processes: design coordination, service catalogue management, service level management, availability management, capacity management, IT service continuity management, information security management, and supplier management.

Host Network Or Storage Traffic Does Not Have Redundant Communication Path

Question

Does all host operating system network and storage traffic flow through a network team(s) or use multiple adapters with protocols that include failover and load balancing capability (MPIO / SMB Multipath, Cluster multiple networks)?

Selected Answer

No

Additional Comment

Status

Failed

Description

Host network or storage traffic does not have redundant communication path

Additional Information

Annotation

No Backups Are Performed Of Hyper-V Operating System

Question

How do you backup your Hyper-V host operating systems?

Selected Answer

No Backups

Additional Comment

Status

Failed

Description

No Backups Are Performed Of Hyper-V Operating System.

Additional Information

Best Practice Guidance

For Hyper-V Clusters, ensure at least a system state backup is performed on one of the nodes on a weekly or monthly basis.

For all other servers, decide on a rebuild or restore approach. Before deciding to rebuild, ensure that the build process for a server is mostly automated, and all required configuration settings are well documented and current drivers and other software are readily available.

Recommended Reading

Understanding Backup and Recovery Basics for a Failover Cluster

Annotation

Hyper-V Environment Is Not Monitored

Question

Do you monitor your Microsoft Hyper-V Server environment?

Selected Answer

No

Additional Comment

Status

Failed

Description

Hyper-V environment is not monitored.

Additional Information

Importance

Monitoring your system logs on a regular basis can help you avoid catastrophic failures and prepare you for unexpected increases in server activity.

Recommended Reading

Monitoring Hyper-V Performance

Annotation

No Documented Service Level Agreements

Question

Does your organization have documented Service Level Agreements (SLAs) for the Services running on the Hyper-V environment (or for the Hyper-V environment itself)?

Selected Answer

No

Additional Comment

Status

Failed

Description

Service Level Management aligns business needs with the delivery of IT services. It provides the interface with the business that allows other SMFs to deliver IT solutions in line with the business requirements and at an acceptable cost. The goal of Service Level Management is to successfully deliver, maintain, and improve IT services. Service Level Management strives to align and manage IT services through a process of definition, agreement, operation measurement, and review. The scope of Service Level Management includes defining the IT services for the organization and establishing service level agreements (SLAs) for them. SLAs are fulfilled through the use of the underpinning contracts (UCs) and operating level agreements (OLAs) for the internal or external delivery of the services.

Service Level Management is a long-term commitment and, thus, will not produce immediate business improvement in service levels when first implemented. Initially, the service is likely to change very little, but over time, will improve as targets are met and exceeded. SLAs are an essential, beneficial, and often the most visible part of the Service Level Management SMF. The SLAs are a mutually agreed upon and negotiated offering for both the IT department and the business. They are formal, usually signed agreements between IT and the organization. Specifically, they document the expectations and requirements of a service delivered to the organization by the IT service provider.

Additional Information

Annotation

Disaster Recovery Plan Is Not Documented

Question

Do you have a documented disaster recovery plan?

Selected Answer

No

Additional Comment

Status

Failed

Description

Disaster recovery plan is not documented

Additional Information

Best Practice Guidance

Disaster recovery efforts require precise operations and timing, particularly for organizations that have strict service level agreements (SLAs).

Professional, full-time Microsoft Hyper-V Server administrators are usually able to perform most disaster recovery action items without having to rely on exhaustive documentation. However, many situations occur during periods when these administrators are not available. In addition, many organizations have multiple tiers of support, with data centers staffed 24 hours a day, 7 days a week. But, their overnight technicians may not have the specialized skills required to correctly perform a

Hyper-V host or guest data recovery.

Designing, testing, and fully documenting a disaster recovery plan allows an organization to:

- Eliminate the unnecessary downtime generally associated with researching a plan at a moment's notice
- Communicate with offsite administrators
- Locate knowledgeable Hyper-V resources

A well-documented plan also takes into account the skill set of all the individuals who might be expected to perform disaster recovery tasks.

Determine what the service level agreement (SLA) is for your system. This agreement will help you determine the resources required to bring your system back online within an acceptable timeframe. In creating a disaster recovery plan, you need to include all the components in your system such as people, software, and hardware. Your plan also needs to incorporate a communication strategy that includes a list of the personnel to contact in case of a disaster. In addition, your plan must be documented and stored in a location where people can readily access it in order to execute the steps outlined in the disaster recovery plan.

Create a disaster recovery plan that encompasses all parts of your system, including personnel and publish the plan. A documented disaster recovery plan should be managed via standard MOF and ITIL Process such as Change Management.

Importance

The absence of a disaster recovery plan puts an organization at significant risk. In addition, the longer a system outage lasts, the greater the effect it will have on an organization and its customers.

Annotation

Virtual Machine Networks Should Use Teamed Physical Network Adapters

Question

Are the physical network adapters used by guest operating systems teamed?

Selected Answer

No

Additional Comment

Status

Failed

Description

The network adapter(s) connected to the virtual switches (used for virtual machines) are not teamed. Teamed network adapters can provide both additional throughput as well as redundancy.

Additional Information

Best Practice Guidance

Review your Host configuration to implement Network Teaming on the network used by Virtual Machines.

For Windows 2012 Hyper-V, use the new built-in teaming feature and reference document:

Windows Server 2012 NIC Teaming (LBFO) Deployment and Management

For Windows 2008 R2 SP1 and earlier supported versions, contact your Hardware Vendor.

Microsoft Support Policy for NIC teaming with Hyper-V in this case is defined in the following article:

http://support.microsoft.com/kb/968703/en-us

Best Practices for Network Configuration for Hyper-V Cluster are given in the following article :

Hyper-V: Live Migration Network Configuration Guide

Annotation

Resource Usage Is Not Tracked To Plan For Future Requirements

Question

Do you have a process to track resource usage and to predict future resource requirements?

Selected Answer

No

Additional Comment

Status

Failed

Description

Define a process to monitor and track resource usage

Additional Information

Best Practice Guidance

Use a tool to help on the implementation of this task and to give the possibility to store the data collected. System Center Operations Manager with the Hyper-V Management Pack configured, gives that possibility without having to define a considerable number of custom rules. SCOM could be used to monitor and store the information about the usage of the principal resources and to understand how those resources are being used and, the most important, to help on the verification when new resources like disk, cpu or memory are required to answer, in an appropriate way, to new performance requirements of each solution.

Importance

Having enough information about the resources used by Hyper-V environment is crucial for a good

plan of governance of that environment.

Annotation

Disaster Recovery Plan Is Not Tested And Practiced Regularly (At Least Annually)

Question

Do you practice or test your disaster recovery plans at least annually?

Selected Answer

No

Additional Comment

Status

Failed

Description

Disaster recovery plan is not tested and practiced regularly (at least annually)

Additional Information

Best Practice Guidance

Periodically the disaster recovery plans need to be reviewed and executed to verify that the disaster plans are still relevant to your SLA and that it actually works.

Determine what the service level agreement (SLA) is for your system. This agreement will help you determine the resources required to bring your system back online within an acceptable timeframe. In creating a disaster recovery plan, you need to include all the components in your system such as people, software, and hardware. Your plan also needs to incorporate a communication strategy that includes a list of the personnel to contact in case of a disaster. In addition, your plan must be documented and stored in a location where people can readily access it in order to execute the steps outlined in the disaster recovery plan. A general rule of thumb is that your most senior staff members write the plan and your most junior staff members test it.

Create a disaster recovery plan that encompasses all parts of your system, including personnel. In addition, test your disaster recovery plan semiannually and make sure that it works. A plan is not proven until all data has been recovered and production access simulation has been restored. Discovering that your disaster recovery plan does not work during a disaster can have a significant impact.

Importance

A disaster recovery plan that has been tested and practiced routinely is more likely to be executed in a proficient manner. Staff members that have been trained in the disaster recovery plan will be more efficient which will lessen the impact to a business critical system will be in the event of a disaster.

Annotation

Regular Host Based Backups Should Be Performed Using VSS Aware Backup Software

Question

How do you backup the virtual machines in this environment?

Selected Answer

VM Level Agent only

Additional Comment

Status

Failed

Description

If the backup application is compatible with Hyper-V and the Hyper-V VSS writer, you can perform a full server backup that helps protect all of the data required to fully restore the server, except the virtual networks. The data included in such a backup includes the configuration of virtual machines, snapshots associated with the virtual machines, and virtual hard disks used by the virtual machines. As a result, using this method can make it easier to recover the server if you need to, because you do not have to recreate virtual machines or reinstall Hyper-V. However, virtual networks are not included in a full server backup. You will need to reconfigure the virtual networking by recreating the virtual networks and then reattaching the virtual network adapters in each virtual machine to the appropriate virtual network. As part of your backup planning, make sure you document the configuration and all relevant settings of your virtual network if you want to be able to recreate it.

Pass-through disks cannot be backed up using a host-based backup solution.

Additional Information

Importance

Restoring from guest backups takes more time and being a more complex procedure is susceptible to human errors.

Recommended Reading

Planning for backup

Recommended Resolution

Microsoft recommends implementing a host based VSS backup strategy.

Annotation

Service Transition

Service transition ensures that new, modified or retired services meet the expectations of the business as documented in the service strategy and service design stages of the lifecycle. Service transition includes the following processes: transition planning and support, change management, service asset and configuration management, release and deployment management, service validation and testing, change evaluation, and knowledge management.

Release Management and staying current consist of much more than just security updates. For example, Microsoft releases periodic service packs for Microsoft Windows and for applications, while hardware vendors release updated firmware and drivers. Many customers, however, do not proactively schedule and apply these updates. Yet, these service packs, firmware, and driver updates are released in order to help customers proactively avoid known issues. Thus, they should be routinely scheduled, tested, and deployed.

No Procedures And Tools In Place For Checking Missing Security Updates And Service Packs

Question

Do you have procedures and tools in place to periodically check that the latest service pack, Microsoft security updates, and third-party security updates are applied to the environment?

Selected Answer

No

Additional Comment

WSUS

Status

Failed

Description

Security is an ongoing, always changing, concern. An experienced Security team and a well-developed process are required to ensure that ongoing changes are propagated to the applications.

Additional Information

Best Practice Guidance

Design and configuration changes made to a server have the potential for introducing risk to the environment. To reduce the effect of this risk, all new designs and core changes should undergo a formal security review. In addition, to support this strategy, an organization should define a security process with an understanding of the business requirements and the process for its implementation.

Recommended Resolution

Automatic verification is strongly recommended for installation of the latest service pack and security updates on Hyper-V hosts and virtual machines (as well as all other machines).

Microsoft Baseline Security Analyzer and/or System Center Configuration Manager features can be used for verifying any missing Microsoft updates.

Annotation

Formal Change Management Process Is Not Defined, Documented And Audited

Question

Is there a formal Change Management process defined, documented and audited, which includes all Hyper-V and virtualization fabric management components?

Selected Answer

No

Additional Comment

Status

Failed

Description

Review whether a change management process is used to record, approve, and track changes to configuration of: the server, network, storage, cluster, Hyper-V operating system, Virtual Machine Manager. The process should also ensure that everything is documented centrally, and regular audits should be performed to verify changes.

Additional Information

Annotation

The Process For Applying Host Updates Should Be Documented

Question

Is the process for applying host updates well documented?

Selected Answer

No

Additional Comment

Status

Failed

Description

Host patching can cause outages if the staff are unfamiliar with the tested process
In a Hyper-V cluster, best practice is to patch one host at a time (or however many hosts provide the "cluster reserve"). Depending on the patches being applied, many customers leave approximately 24 hours between the first and second hosts to minimize the impact if any issues occur as a result of the patching process.
Clustered hosts with live migration, with cluster reserve (where all resources can run without at least one node available), are generally patched during the day, as should be no outage as a result of moving the virtual machines around.

Additional Information

Recommended Reading

Updating a Windows 2008 R2 Hyper-V Cluster:

http://support.microsoft.com/kb/174799

Updating a Windows 2012 Hyper-v Cluster (using Cluster Aware Updating):

http://technet.microsoft.com/library/hh831694.aspx

Using SCVMM 2008 R2 maintenance mode:

http://technet.microsoft.com/en-us/library/ee236481.aspx

After putting a cluster in maintenance mode in SCVMM 2008 R2, you still need to proceed to the steps of Upgrading a Windows 2008 R2 cluster

Using SCVMM 2012 maintenance mode:

http://technet.microsoft.com/en-us/library/hh882398.aspx

Using SCVMM 2012 new update Feature:

Managing Fabric Updates in VMM

http://technet.microsoft.com/en-us/library/gg675084.aspx

Annotation

Patch Reports Are Not Regularly Generated For Management

Question

Which of the following items apply to your security updates management process?

Selected Answer

Security updates are proactively applied to both software and hardware.

Critical security updates are applied within a month after being released.

An emergency process exists for deploying urgent software updates.

Additional Comment

Status

Failed

Description

Regular Microsoft, hardware, driver, and third party software patching is required for a reliable, well performing, and secure environment.

Depending on the business requirements, the application of Microsoft updates can be tuned between a fully controlled process and an automated zero touch process.

Additional Information

Best Practice Guidance

Regularly generate patch level reports for management.

Importance

Regular patch level reporting is essential for the business to understand the impact and risk associated with either performing or not performing regular patching.

In most environments, regular patching and reporting is required for management due diligence.

Regular security patching is an important part of any defense in depth strategy for any business as firewalls do not stop all forms of malware.

Annotation

No Policy Exists For The Use Of Checkpoints

Question

Is there a policy on the use of checkpoints for production virtual machines?

Selected Answer

No

Additional Comment

Status

Failed

Description

For environments using Windows / Hyper-V Server 2012, a clearly defined policy should exist, either not allowing checkpoints to be used at all (preferred) or requiring any checkpoints used to be deleted within 24 hours.
For environments running older versions of Hyper-V, checkpoints should not be used at all for production virtual machines.
Depending on the applications running within the virtual machines, any checkpoint usage at all will result in that application being unsupported for the remaining lifetime of that installation. This is defined by the support teams for each individual application.

Additional Information

Importance

Running virtual machines that have had checkpoints taken results in a performance impact (until the checkpoint is deleted and the disks merged).

Rolling back in time to a previously taken checkpoint can have severe implications for any software running in the virtual machine.

Checkpoints use differencing disks, which requires a robust disk space monitoring solution. If all the disk space is consumed on the volume containing the differencing disk, an extended unexpected outage will occur impacting any virtual machines using that disk.

Annotation

No Measure Of The Progress And Success Level Of Security Updates Deployment

Question

Which of the following items apply to your security updates management process?

Selected Answer

Security updates are proactively applied to both software and hardware.
Critical security updates are applied within a month after being released.
An emergency process exists for deploying urgent software updates.

Additional Comment

Status

Failed

Description

After your security update management process is established and running, you will want to ensure effectiveness, monitor performance, and improve results over time. Even with proper planning, there may be improvements to the process that you can identify through monitoring and assessment.
The primary areas of importance within security update management that you may want to measure and improve upon are:

- Improving security releases
- Improving security policy enforcement
- Improving emergency security response.

Additional Information

Annotation

No Test Environment Available For Security Update Management

Question

Which of the following items apply to your security updates management process?

Selected Answer

Security updates are proactively applied to both software and hardware.
Critical security updates are applied within a month after being released.
An emergency process exists for deploying urgent software updates.

Additional Comment

Status

Failed

Description

Thorough testing and development of security updates can only be safely conducted in an isolated test environment. The lack of an environment normally means that these activities either do not occur or they occur on production servers. Failure to perform adequate testing is a common cause of production

outages. Testing in production is very risky, and can cause as many problems as it was intended to prevent.

Additional Information

Recommended Reading

Deployment in a Lab Environment

Setting Up a Test Environment

Annotation

No Rollback Plans Defined As Part Of Security Update Management Process

Question

Which of the following items apply to your security updates management process?

Selected Answer

Security updates are proactively applied to both software and hardware.

Critical security updates are applied within a month after being released.

An emergency process exists for deploying urgent software updates.

Additional Comment

Status

Failed

Description

Understanding the requirements for returning computers to their original state in the event that a deployment adversely affects your environment is an important aspect of release management. Despite following proper planning and testing procedures, problems can arise. Even if a particular software update cannot be uninstalled, a rollback approach should have been identified for use during release management in case the security release cannot be fixed through other means.

Additional Information

Recommended Resolution

Ideally, when designing the solution, the same tools and technologies used to deploy the release into production will also be able to uninstall it, returning the production environment to its previous state.

The back-out plan should be tested thoroughly and be documented to enable any Operations resource the ability to back out the Release.

Where a back out plan is not possible, remediation activities may include a fall forward plan where a failed change may be overcome through the implementation of other changes, for example, upgrading applications or systems.

Annotation

Service Operation

Service operation coordinates and carries out the activities and processes required to deliver and manage services at agreed levels to business users and customers. Service operation also manages the technology that is used to deliver and support services. Service operation includes the following processes: event management, incident management, request fulfilment, problem management, and access management. Service operation also includes the following functions: service desk, technical management, IT operations management, and application management.

There were no issues currently detected in this section for this environment

Continual Service Improvement

Continual service improvement ensures that services are aligned with changing business needs by identifying and implementing improvements to IT services that support business processes. The performance of the IT service provider is continually measured and improvements are made to processes, IT services and IT infrastructure in order to increase efficiency, effectiveness and cost effectiveness.

There were no issues currently detected in this section for this environment

Hyper-V

The Hyper-V role enables you to create and manage a virtualized computing environment by using virtualization technology that is built in to Windows Server. Installing the Hyper-V role installs the required components and optionally installs management tools. The required components include Windows hypervisor, Hyper-V Virtual Machine Management Service, the virtualization WMI provider, and other virtualization components such as the virtual machine bus (VMbus), virtualization service provider (VSP) and virtual infrastructure driver (VID).

Hyper-V Configuration

The configuration of the Hyper-V host is critical to ensuring the solid foundation for virtual machine workloads. Each aspect of configuration that is reviewed in this category can have an overall effect on both the capability of a host to operate with virtual workloads and those virtual machines individual performance/capacity.

Live Migration Enabled For Kerberos Authentication Without Credential Delegation

Status

Failed

Description

Live Migration Mode Enabled For Kerberos Authentication Without Credential Delegation

Additional Information

Importance

Kerberos authenticated Live Migration allows for live migration operations to be initiated remotely to the source server.

For Kerberos authentication to succeed, credential delegation needs to be configured to let a Hyper-V server know which remote hosts it is allowed to pass the administrator's credentials to.

Recommended Reading

Configure Live Migration and Migrating Virtual Machines without Failover Clustering

Annotation

Affected Nodes

[-] SW2K12R2HYPER13.SSF.COL	Live migration authentication type: Kerberos Delegations for migration service (there should be at least one entry for each target of a non-clustered live migration operation):
[-] SW2K12R2HYPER14.SSF.COL	Live migration authentication type: Kerberos Delegations for migration service (there should be at least one entry for each target of a non-clustered live migration operation):
[-] SW2K12R2FS01.SSF.COL	Live migration authentication type: Kerberos Delegations for migration service (there should be at least one entry for each target of a non-clustered live migration operation):

SW2K12R2HYPER8.SSF.COL	Live migration authentication type: Kerberos Delegations for migration service (there should be at least one entry for each target of a non-clustered live migration operation):
SW2K12R2HYPER12.SSF.COL	Live migration authentication type: Kerberos Delegations for migration service (there should be at least one entry for each target of a non-clustered live migration operation):
SW2K12R2GTSS1PR.SSF.COL	Live migration authentication type: Kerberos Delegations for migration service (there should be at least one entry for each target of a non-clustered live migration operation):
SW2K12R2GTSS2PR.SSF.COL	Live migration authentication type: Kerberos Delegations for migration service (there should be at least one entry for each target of a non-clustered live migration operation):

Hyper-V Default Data Path Not Configured

Status

Failed

Description

The default virtual machine configuration path should not be on the system drive.

Additional Information

Best Practice Guidance

Even if SCVMM is used to manage the environment, changing the default data paths on Hyper-V hosts will mitigate the risk of human error.

Importance

As the default data path will place virtual machine files on the boot disk, running out of disk space will have a severe impact (possible outages and/or data corruption).

Recommended Resolution

Change default paths for VM and virtual hard disks:

1. Open Hyper-V Manager.

2. In the Actions pane, click Hyper-V Settings.

3. In the navigation pane, click the setting that you want to configure.

4. Click OK to save the changes and close Hyper-V Settings, or click Apply to save the changes and configure other settings.

Annotation

Affected Nodes

- SW2K12R2HYPER13.SSF.COL Default Path: C:\ProgramData\Microsoft\Windows\Hyper-V
- SW2K12R2HV3.SSF.COL Default Path: C:\ProgramData\Microsoft\Windows\Hyper-V
- SW2K12R2DOCGES2.SSF.COL Default Path: C:\ProgramData\Microsoft\Windows\Hyper-V
- SW2K12R2HYPER14.SSF.COL Default Path: C:\ProgramData\Microsoft\Windows\Hyper-V
- SW2K12R2FS01.SSF.COL Default Path: C:\ProgramData\Microsoft\Windows\Hyper-V
- SW2K12R2HYPER10.SSF.COL Default Path: C:\ProgramData\Microsoft\Windows\Hyper-V
- SW2K12R2HYPER6.SSF.COL Default Path: C:\ProgramData\Microsoft\Windows\Hyper-V
- SW2K12R2HYPER8.SSF.COL Default Path: C:\ProgramData\Microsoft\Windows\Hyper-V
- SW2K12R2HYPER15.SSF.COL Default Path: C:\ProgramData\Microsoft\Windows\Hyper-V
- SW2K12R2HYPER5.SSF.COL Default Path: C:\ProgramData\Microsoft\Windows\Hyper-V

Hyper-V Default VHD Path Not Configured

Status

Failed

Description

The default VHD path should not be on the system drive.

Additional Information

Best Practice Guidance

Even if SCVMM is used to manage the environment, changing the default data paths on Hyper-V hosts will mitigate the risk of human error.

Importance

As the default path will place virtual machine virtual hard disk files on the boot disk, running out of disk space will have a severe impact (possible outages and/or data corruption).

Recommended Resolution

Change default paths for VM and virtual hard disks:

1. Open Hyper-V Manager.

2. In the Actions pane, click Hyper-V Settings.

3. In the navigation pane, click the setting that you want to configure.

4. Click OK to save the changes and close Hyper-V settings, or click apply to save the changes and configure other settings.

Annotation

Affected Nodes

SW2K12R2HYPER13.SSF.COL	Default VHD path: C:\Users\Public\Documents\Hyper-V\Virtual Hard Disks
SW2K12R2HV3.SSF.COL	Default VHD path: C:\Users\Public\Documents\Hyper-V\Virtual Hard Disks
SW2K12R2DOCGES2.SSF.COL	Default VHD path: C:\Users\Public\Documents\Hyper-V\Virtual Hard Disks
SW2K12R2HYPER14.SSF.COL	Default VHD path: C:\Users\Public\Documents\Hyper-V\Virtual Hard Disks
SW2K12R2FS01.SSF.COL	Default VHD path: C:\Users\Public\Documents\Hyper-V\Virtual Hard Disks
SW2K12R2HYPER10.SSF.COL	Default VHD path: C:\Users\Public\Documents\Hyper-V\Virtual Hard Disks
SW2K12R2HYPER6.SSF.COL	Default VHD path: C:\Users\Public\Documents\Hyper-V\Virtual Hard Disks
SW2K12R2HYPER8.SSF.COL	Default VHD path: C:\Users\Public\Documents\Hyper-V\Virtual Hard Disks
SW2K12R2HYPER15.SSF.COL	Default VHD path: C:\Users\Public\Documents\Hyper-V\Virtual Hard Disks
SW2K12R2HYPER5.SSF.COL	Default VHD path: C:\Users\Public\Documents\Hyper-V\Virtual Hard Disks

Virtual Machine Configuration

Each virtual machine in the environment has settings and resources provided to them to allow for them to operate properly on a host. The performance and ability for each virtual machine to be moved throughout the environment can be greatly affected by the individual virtual machine settings/resources. The best practices in this category focus on ensuring the virtual machines are configured to provide the intended capabilities/flexibility/performance expected.

More Than One Virtual Machines Virtual Disks Found On A Clustered Disk

Status

Failed

Description

More Than One Virtual Machines Virtual Disks Are On A Non Shared Cluster Disk.

With CSV (Cluster Shared Volume), on a failover cluster that runs Hyper-V, multiple virtual machines can use the same LUN yet fail over (or move from node to node) independently of one another

Additional Information

Best Practice Guidance

If the management operating system is Windows Server 2008 R2 or newer, and the desired configuration is to have multiple virtual machines file on a single volume (LUN) then all the files associated with each Clustered Virtual Machine files should be stored on a Cluster Shared Volume. This is the most common configuration.

If the desired configuration is to store a virtual machines on a volume that is not a Cluster Shared Volume, then no other virtual machine data can be stored on that LUN.

Importance

With more than one virtual machines files on a clustered disk (that is not a Cluster Shared Volume), one or more virtual machines will fail when the disks and virtual machines are moved independently between nodes.

Annotation

Affected Nodes

⊟ ADMDOCGESHV.SSF. COL - SW2K12R2DG1VGD	Disk Path: F: VMs on this disk: SW2K12R2DG1VGD (virtual machine configuration files) SW2K12R2DG2VPL (virtual machine configuration files) SW2K12R2DG1VGD (F:\SW2K12R2DG1VGD\SW2K12R2DG1VGD.vhdx) SW2K12R2DG2VPL (F:\SW2K12R2DG2VPL\SW2K12R2DG2VPL.vhdx)
⊟ ADMDOCGESHV.SSF. COL - SW2K12R2DG1VSE	Disk Path: H: VMs on this disk: SW2K12R2DG1VSE (virtual machine configuration files) SW2K12R2DG2VSV (virtual machine configuration files)

SW2K12R2DG1VSE (H:\SW2K12R2DG1VSE\SW2K12R2DG1VSE.vhdx)
SW2K12R2DG2VSV (H:\SW2K12R2DG2VSV\SW2K12R2DG2VSV.vhdx)

ADMDOCGESHV.SSF. COL - SW2K12R2DG2VPL	Disk Path: F: VMs on this disk: SW2K12R2DG1VGD (virtual machine configuration files) SW2K12R2DG2VPL (virtual machine configuration files) SW2K12R2DG1VGD (F:\SW2K12R2DG1VGD\SW2K12R2DG1VGD.vhdx) SW2K12R2DG2VPL (F:\SW2K12R2DG2VPL\SW2K12R2DG2VPL.vhdx)
ADMDOCGESHV.SSF. COL - SW2K12R2DG1VPL	Disk Path: G: VMs on this disk: SW2K12R2DG1VPL (virtual machine configuration files) SW2K12R2DG2VSE (virtual machine configuration files) SW2K12R2DG1VPL (G:\SW2K12R2DG1VPL\SW2K12R2DG1VPL.vhdx) SW2K12R2DG2VSE (G:\SW2K12R2DG2VSE\SW2K12R2DG2VSE.vhdx)
ADMDOCGESHV.SSF. COL - SW2K12R2DG2VSE	Disk Path: G: VMs on this disk: SW2K12R2DG1VPL (virtual machine configuration files) SW2K12R2DG2VSE (virtual machine configuration files) SW2K12R2DG1VPL (G:\SW2K12R2DG1VPL\SW2K12R2DG1VPL.vhdx) SW2K12R2DG2VSE (G:\SW2K12R2DG2VSE\SW2K12R2DG2VSE.vhdx)
ADMDOCGESHV.SSF. COL - SW2K12R2DG2VSV	Disk Path: H: VMs on this disk: SW2K12R2DG1VSE (virtual machine configuration files) SW2K12R2DG2VSV (virtual machine configuration files) SW2K12R2DG1VSE (H:\SW2K12R2DG1VSE\SW2K12R2DG1VSE.vhdx) SW2K12R2DG2VSV (H:\SW2K12R2DG2VSV\SW2K12R2DG2VSV.vhdx)

A Synthetic Network Adapter Is Not Responding In The Virtual Machine

Status

Failed

Description

One or more network adapters may be disabled in a virtual machine.

Additional Information

Best Practice Guidance

Remove unused network adapters.

Importance

Having unused adapters in virtual machines adds complexity and increases the risk for configuration

error.

Recommended Reading
http://go.microsoft.com/fwlink/?LinkId=228048

Recommended Resolution
Use Device Manager in the guest operating system to enable all virtual network adapters. If the adapter is not required, use Hyper-V Manager to remove it from the virtual machine.

Annotation

Affected Nodes

Adaptador de red - 00155D068902	Network Adapters (identified by their MAC address): 00155D068902: Comunicación perdida

Checkpoint File Location Is The System Disk

Status
Failed

Description
For each virtual machine, the location of any snapshot files can be configured. This location defaults to the primary location for the virtual machine configuration files set when creating the virtual machine.

This location should not be on the C drive, as it will result in unexpected disk space consumption and may result on the disk load occurring on disks designed for that purpose.

Additional Information

Best Practice Guidance
Ensure the checkpoint file path for virtual machines is not on the system disk ("C" drive) of the Hyper-V server.

Importance
Checkpoint file location should not be on the C drive, as it will result in unexpected disk space consumption and may result on the disk load occurring on disks not intended for that purpose.

Recommended Resolution
Configure the checkpoint file location in the virtual machine properties to use a different disk. Alternatively migrate the storage of the virtual machine to a disk other than the System disk.

Annotation

Affected Nodes

Prueba_1	Snapshot Path: C:\Prueba_1\Prueba_1
Nueva máquina virtual	Snapshot Path: C:\ProgramData\Microsoft\Windows\Hyper-V
ibm_blumix_2	Snapshot Path: C:\ProgramData\Microsoft\Windows\Hyper-V

Dynamic Memory Is Not Enabled For Virtual Machines

Status

Failed

Description

Dynamic Memory allows Hyper-V administrators to assign a dynamic allocation of memory to a VM that draws from a pool of memory on the host. The goal of dynamic memory is to optimize memory utilization without sacrificing performance. This also opens the door to greater virtual machine density per host which allows for a lower total cost of ownership (TCO).

Additional Information

Best Practice Guidance

Enable Dynamic Memory in all situations where guest NUMA is not needed.

If the amount of virtual memory allocated to a virtual machine should not change, configure the minimum and maximum values to the same number. This enables additional reporting, and if the Hyper-V server 2012 or later is in use, this allows the memory to be adjusted in the future without the need for an outage.

Importance

Enabling Dynamic Memory has many benefits:

- enables a significant increase in virtual machine density
- improves performance in virtual machines
- reduces administrative overhead

Rule Algorithm

If any Virtual Machines are returned by the following PowerShell command, this issue will be triggered:

```
Get-VM | where {$_.DynamicMemoryEnabled -eq $false -and
  $_.VMIntegrationService.PrimaryStatusDescription -contains "OK" -and
  ($_.MemoryDemand -lt 16*1GB -or
    $_.MemoryAssigned -lt 16*1gb -or
    $_.MemoryStartup -lt 16*1gb -or
    (Get-VMHost -ComputerName $_.ComputerName).HostNumaStatus.NodeID.Count -le 1
```

)

}

Annotation

Affected Nodes

SW2K12R2PROXY	Dynamic memory is Disabled Start-up memory assigned to virtual machine: 2560 MB Operating system: Windows Server 2012 R2 Standard
SW2K8R2GESDOC01_	Dynamic memory is Disabled Start-up memory assigned to virtual machine: 2048 MB Operating system: Windows Server 2008 R2 Standard
SW2K12R2DG2VSV	Dynamic memory is Disabled Start-up memory assigned to virtual machine: 12288 MB Operating system: Windows Server 2012 R2 Standard
SW2K12R2DG2VGD	Dynamic memory is Disabled Start-up memory assigned to virtual machine: 12288 MB Operating system: Windows Server 2012 R2 Standard
SW2K12R2DG2VSE	Dynamic memory is Disabled Start-up memory assigned to virtual machine: 12288 MB Operating system: Windows Server 2012 R2 Standard
SW2K12R2DG2VPL	Dynamic memory is Disabled Start-up memory assigned to virtual machine: 12288 MB Operating system: Windows Server 2012 R2 Standard
SW2K12R2PT-CORREO_	Dynamic memory is Disabled Start-up memory assigned to virtual machine: 3072 MB Operating system: Windows Server 2012 R2 Standard
SW2K12R2ORANOM	Dynamic memory is Disabled Start-up memory assigned to virtual machine: 6144 MB Operating system: Windows Server 2012 R2 Standard
SW2K12R2BIOMETRIC2	Dynamic memory is Disabled Start-up memory assigned to virtual machine: 2048 MB Operating system: Windows Server 2012 R2 Standard
SW2K12R2SIGERWEB	Dynamic memory is Disabled Start-up memory assigned to virtual machine: 3072 MB Operating system: Windows Server 2012 R2 Standard

One Or More Virtual Network Adapters Are Disabled

Status

Failed

Description

One or more virtual network adapters associated with a physical network adapter are disabled in the management operating system.

Additional Information

Recommended Resolution

Use Network Connections to enable the virtual network adapter. Or, use Virtual Network Manager to reconfigure the external virtual network so that it is not shared with the management operating system.

Annotation

Affected Nodes

SW2K12R2HYPER12.SSF.COL	Disabled Connections: vEthernet (NIC_HYPER12_2)

Smart Paging Location Is On The System Disk

Status

Failed

Description

The memory configuration for one or more virtual machines might require the use of Smart Paging if the virtual machine is rebooted, and the specified location for the Smart Paging file is the system disk of the server running Hyper-V.

Additional Information

Best Practice Guidance

Do not store any virtual machine data on the system disk

Importance

Use of the system disk for Smart Paging might cause the server running Hyper-V to experience problems.

Recommended Resolution

Reconfigure the virtual machines to store the Smart Paging files on a non-system disk.

Annotation

Affected Nodes

Prueba_1	Hyper-V server: SW2K12R2HYPER14.SSF.COL Smart Paging Location: C:\Prueba_1\Prueba_1
Nueva máquina virtual	Hyper-V server: SW2K12R2FS01.SSF.COL Smart Paging Location: C:\ProgramData\Microsoft\Windows\Hyper-V

ibm_blumix_2 Hyper-V server: SW2K12R2FS01.SSF.COL
Smart Paging Location: C:\ProgramData\Microsoft\Windows\Hyper-V

The Virtual Machine Data File Path Is The System Disk

Status

Failed

Description

The virtual machines identified have been configured so that their primary configuration files are on the C drive of the management operating system.

This location is initially set when initially creating the virtual machine.

Additional Information

Best Practice Guidance

Store all the files associated with a virtual machine in a folder specific to that virtual machine, on a disk other than the system disk.

To move the configuration files of a virtual machine:

- If System Center Virtual Machine Manager is managing the environment, right-click on the virtual machine and choose move storage.

- If SCVMM is not being used, and Hyper-V is running on Windows Server 2012 or Hyper-V Server 2012 or later, move the virtual machine's storage to a new location (right-click on the VM in Hyper-V manager and choose move).

Importance

If the virtual machine data files are on the system disk:

1. The Virtual Machine cannot be live migrated (without doing a live storage migration)

2. Significant amount of disk space may be used, impacting the availability and performance of the Hyper-V server.

3. If sufficient disk space is unavailable on the system disk, the virtual machine will not start or will go into a "paused-critical" state, and will not run until additional disk space is made available.

4. During a save state or resume operation, the performance of the Hyper-V server may be significantly impacted.

The virtual machine configuration files by default include a save state file which will be the same size as the memory of the virtual machine. This file will vary in size if dynamic memory is enabled.

Recommended Resolution

Migrate the virtual machine storage to a non-system disk. If the virtual machine is clustered, this must

be a highly available disk (preferably a CSV)

Annotation

Affected Nodes

Prueba_1	Hyper-V Server: SW2K12R2HYPER14.SSF.COL Virtual machine configuration file path: C:\Prueba_1\Prueba_1
Nueva máquina virtual	Hyper-V Server: SW2K12R2FS01.SSF.COL Virtual machine configuration file path: C:\ProgramData\Microsoft\Windows\Hyper-V
ibm_blumix_2	Hyper-V Server: SW2K12R2FS01.SSF.COL Virtual machine configuration file path: C:\ProgramData\Microsoft\Windows\Hyper-V

Virtual Machine Offline Action Is Set To Turn Off

Status

Failed

Description

The offline action of a virtual machine determines what Hyper-V should do with that virtual machine when

- (non-Highly available virtual machine) - the Hyper-V server is shutting down
- (Highly available virtual machine) - the cluster is shutting down.

Additional Information

Recommended Reading

Option to remove .BIN files with Hyper-V

Recommended Resolution

Set the offline action to "Save State" or "Shutdown"

- Shutdown requires working integration components in the virtual machine.
- On Hyper-V versions prior to Hyper-V Server 2012, the "Shutdown" and "Save state" options will use additional disk space to ensure that space is available to save the virtual machines memory.
- On Hyper-V Server 2012 or later, the "Save state" option will use additional disk space to ensure that space is available to save the virtual machines memory.

Annotation

Affected Nodes

SW2K12R2DG2VSV	Offline Action: Turn Off

SW2K12R2DG2VGD	Offline Action: Turn Off
SW2K12R2DG2VSE	Offline Action: Turn Off
SW2K12R2DG2VPL	Offline Action: Turn Off
SW2K12R2DG1VSV	Offline Action: Turn Off
SW2K12R2DG1VSE	Offline Action: Turn Off
SW2K12R2DG1VGD	Offline Action: Turn Off
SW2K12R2DG1VPL	Offline Action: Turn Off

A Single Virtual Processor Is Assigned To Windows Server Virtual Machine

Status

Failed

Description

A Single Virtual Processor Is Assigned To Windows Server Virtual Machine

Additional Information

Best Practice Guidance

In most cases, assign at least two virtual processors to Windows server virtual machines.

Importance

In most cases, the performance benefit to the Windows operating system by having more than one processor far outweighs the very minor performance impact of the Hypervisor having to schedule more than one virtual processor.

Recommended Resolution

Configure each Windows Server virtual machines to have at least two virtual processors.

Annotation

Affected Nodes

SW2K12R2PROXY	Operating System: Windows Server 2012 R2 Standard Number of virtual processors: 1
SW2K8R2GESDOC01_	Operating System: Windows Server 2008 R2 Standard Number of virtual processors: 1
SW2K12R2PT-CORREO_	Operating System: Windows Server 2012 R2 Standard Number of virtual processors: 1
SW2K12R2ORANOM	Operating System: Windows Server 2012 R2 Standard Number of virtual processors: 1
SW2K12R2BIOMETRIC2	Operating System: Windows Server 2012 R2 Standard Number of virtual processors: 1
SW2K12R2SIGERWEB	Operating System: Windows Server 2012 R2 Standard Number of virtual processors: 1
SW2K12R2NEONFE2	Operating System: Windows Server 2012 R2 Standard

	Number of virtual processors: 1
⊟ SW2K12R2WSUS	Operating System: Windows Server 2012 R2 Standard
	Number of virtual processors: 1
⊟ SW2K12R2APP	Operating System: Windows Server 2012 R2 Standard
	Number of virtual processors: 1
⊟ SW2K12R2MIG-MAIL	Operating System: Windows Server 2012 R2 Standard
	Number of virtual processors: 1

Multiple Virtual Hard Disks Are Connected To IDE Controllers

Status

Failed

Description

Multiple virtual hard disks are attached to the virtual machines IDE controllers.

Each virtual machine requires at least one IDE disk to boot from, however other virtual hard disks should be connected to the SCSI controller. The exception to this is when using a second disk connected to an IDE controller to host the Virtual Machine's page file, for the purposes of excluding it in Hyper-V Replica.

Additional Information

Best Practice Guidance

The System (Windows) disk of virtual machines must be connected to an IDE controller to be able to boot, however all other (data) disks should be connected to the virtual SCSI controller.

Importance

Some of the reasons to use virtual SCSI for data volumes - note that many of these benefits require that virtual hard disk be a VHDX file (not a VHD file):

1. Virtual SCSI supports hot plug of virtual disks (add and remove). Virtual IDE does not

2. Virtual SCSI supports forced unit access (FUA). IDE does not (both physical and virtual IDE)

3. Virtual SCSI supports TRIM/UNMAP. Virtual IDE does not.

4. Virtual SCSI path support Hyper-V multi-channel technology for high IOPS while virtual IDE does not.

5. Virtual SCSI supports Offload Data transfer (ODX) while virtual IDE does not.

6. Virtual SCSI path will get any potential improvement coming from storport while virtual IDE path does not.

7. Virtual SCSI path supports larger I/O size than virtual IDE (8MB vs. 128K) and has less chance to get I/O split.

8. Virtual SCSI avoids potential contention with either the boot controller or DVD controller which is always hooked up on virtual IDE.

9. Virtual SCSI supports larger sector size physical hard disk drives and virtual hard disk drives(VHDX) such as 4K where virtual IDE does not.

Recommended Resolution

Attach non-boot disks to virtual SCSI controller instead of IDE.

Annotation

Affected Nodes

⊟ SW2K8R2GESDOC01_ Number of virtual hard disks attached to an IDE controller: 2
Number of virtual hard disks attached to an SCSI controller: 0

Virtual Desktop Infrastructure

Virtual Desktop Infrastructure (VDI) deployment on Hyper-V requires installing the role Remote Desktop Virtualization Host (RD Virtualization Host). RD Virtualization Host integrates with Hyper-V to deploy pooled or personal virtual desktop collections within your organization by using RemoteApp and Desktop Connection.

There were no issues currently detected in this section for this environment

Integration Components

The Virtual Machine Integration Services include enlightened drivers for the Hyper-V-specific I/O devices, which significantly reduces CPU overhead for I/O compared to emulated devices. You should install the latest version of the Virtual Machine Integration Services in every supported virtual machine. The services decrease the CPU usage of the guests, from idle guests to heavily used guests, and improves the I/O throughput.

Integrations components (ICs) are sets of drivers and services that help your Virtual Machines have more consistent state and perform better by enabling the guest to use synthetic devices. Some ICs that come with Hyper-V are

- Video Driver,
- Network Driver,
- Storage Driver,
- Time Sync (used to keep virtual machine clocks in sync with the hardware),
- Volume Shadow Copy (enables reliable application consistent backups of virtual machines from the management operating system)
- Shutdown (enables shutdown of the virtual machine operating system by the management tools)
- Heartbeat (enables the management & VM operating systems to ensure the other is online and healthy)
- Data Exchange (facilitates the exchange of some basic information between the host and guest – including VM memory usage, operating system, host names, etc.)

Integration Components Should Be Updated In Virtual Machines

Status

Failed

Description

The version of the Integration Components installed on the management operating system and virtual machines should match. This facilitates the communication between Hyper-V and the virtual machine.

This communication includes
- Storage and network traffic performance
- Hyper-V instructions to the guest (shutdown / time sync / data exchange / backup operations / etc.)
- Guest information to host (memory usage, heartbeat / availability information / etc.)

Some management operating system updates may update the version of integration components to be installed on guests. If management operating system updates are planned to be done at the same time, apply management operating system updates prior to updating the guest integration components.

Additional Information

Best Practice Guidance

The version of the Integration Components installed on the management operating system and virtual machines should match.

Importance

Performance or functionality might be affected for the identified virtual machines.

Recommended Reading

Version Compatibility for Integration Services

Recommended Resolution

Use Virtual Machine Connection or System Center Virtual Machine Manager (SCVMM) to install the current version of the integration services in the guest operating system.

Annotation

Affected Nodes

SW2K12R2PROXY	Hyper-V Server: SW2K12R2HYPER13.SSF.COL Virtual Machine Integration Components Version: 6.3.9600.18080 (Windows Server 2012 R2 Standard) Expected Integration Components Version: 6.3.9600.18692
SW2K8R2GESDOC01_	Hyper-V Server: SW2K12R2HYPER13.SSF.COL Virtual Machine Integration Components Version: 6.3.9600.18080 (Windows Server 2008 R2 Standard) Expected Integration Components Version: 6.3.9600.18692
SW2K12R2SIREVAC3	Hyper-V Server: SW2K12R2HV3.SSF.COL Virtual Machine Integration Components Version: 6.3.9600.18080 (Windows Server 2012 R2 Standard) Expected Integration Components Version: 6.3.9600.18692
SW2K12R2SIGER	Hyper-V Server: SW2K12R2HV3.SSF.COL Virtual Machine Integration Components Version: 6.3.9600.18080 (Windows Server 2012 R2 Standard) Expected Integration Components Version: 6.3.9600.18692
SW2K12R2DG2VSV	Hyper-V Server: SW2K12R2DOCGES2.SSF.COL Virtual Machine Integration Components Version: 6.3.9600.18080 (Windows Server 2012 R2 Standard) Expected Integration Components Version: 6.3.9600.18692
SW2K12R2DG2VGD	Hyper-V Server: SW2K12R2DOCGES2.SSF.COL Virtual Machine Integration Components Version: 6.3.9600.18080 (Windows Server 2012 R2 Standard) Expected Integration Components Version: 6.3.9600.18692
SW2K12R2DG2VSE	Hyper-V Server: SW2K12R2DOCGES2.SSF.COL Virtual Machine Integration Components Version: 6.3.9600.18080 (Windows Server 2012 R2 Standard) Expected Integration Components Version: 6.3.9600.18692
SW2K12R2DG2VPL	Hyper-V Server: SW2K12R2DOCGES2.SSF.COL Virtual Machine Integration Components Version: 6.3.9600.18080 (Windows Server 2012 R2 Standard)

	Expected Integration Components Version: 6.3.9600.18692
SW2K12R2PT-CORREO_	Hyper-V Server: SW2K12R2HYPER10.SSF.COL Virtual Machine Integration Components Version: 6.3.9600.18080 (Windows Server 2012 R2 Standard) Expected Integration Components Version: 6.3.9600.18692
SW2K12R2ORANOM	Hyper-V Server: SW2K12R2HYPER10.SSF.COL Virtual Machine Integration Components Version: 6.3.9600.18080 (Windows Server 2012 R2 Standard) Expected Integration Components Version: 6.3.9600.18692

Integration Services Are Disabled Or Not Working In Virtual Machine(s)

Status

Failed

Description

One Or More Integration Services Are Disabled Or Not Working In Virtual Machine(s)
This check ignores the VSS component for Linux Virtual Machines (if the virtual machine is reporting its operating system name to the host through the "Data Exchange" integration component).

Additional Information

Best Practice Guidance

Do not disable integration services from virtual machine

Importance

The service or integration feature may not operate correctly for the identified virtual machines

Recommended Reading

Hyper-V: Enable all integration services in virtual machines

Recommended Resolution

Use the Services snap-in or sc config command-line tool to verify that the service is configured to start automatically and is not stopped.

1. Use Remote Desktop Services to access the virtual machine and log on to the guest operating system.

2. Open Services. (Click Start, click in the Start Search box, type services.msc, and then press ENTER.)

3. In the details pane, right-click the service that you want to configure, and then click Properties.

4. On the General tab, in Startup type, click Automatic.

Annotation

Affected Nodes

⊟ SPOCC_3PAR	Operating System: Integration Components that are not working correctly: VSS Intercambio de pares clave-valor

Hyper-V Replica

Hyper-V Replica (2012 and 2012 R2) provides asynchronous replication of Hyper-V virtual machines between two hosting servers. It is simple to configure and does not require either shared storage or any particular storage hardware. Any server workload that can be virtualized in Hyper-V can be replicated. Replication works over any ordinary IP-based network, and the replicated data can be encrypted during transmission. Hyper-V Replica works with standalone servers, failover clusters, or a mixture of both. The servers can be physically co-located or widely separated geographically. The physical servers do not need to be in the same domain, or even joined to any domain at all.

Best practices for a Hyper-V Replica configuration are covered in this section. How the source and target servers are configured will greatly reduce the likelihood of configuration based unplanned failovers and ensure you are bester prepared if an unplanned incident occurs.

Hyper-V Replica Broker Is Not Configured In Cluster

Status

Failed

Description

For failover clusters, Hyper-V Replica requires the use of a Hyper-V Replica Broker name instead of an individual server name.

If Hyper-V Replica is not being used, this issue can be ignored.

Additional Information

Best Practice Guidance

Hyper-V Broker should be configured if clustered virtual machines are part of Hyper-V replica.

Importance

A Hyper-V Replica Broker is required for replication to continue when a virtual machine is moved to a different failover cluster node.

Recommended Reading

Configure a Replica server that is part of a failover cluster

Recommended Resolution

Use Failover Cluster Manager to configure the Hyper-V Replica Broker. In Hyper-V Manager, ensure that the replication configuration uses the Hyper-V Replica Broker name as the server name.

Annotation

Affected Nodes

⊟ ADMDOCGESHV.SSF.	Replica Broker resource found: Failed
COL	Replica Broker resource: n/a

Replica Broker resource is online: n/a
Replica Broker is Enabled For Replication: n/a

Hardware

As workloads demand greater and greater system resources to run business-critical applications, highly scalable servers continue to expand the limits of processor core counts, and offer increased system memory capacity. As multicore processors continue to evolve with increasing core counts, these high-end servers push the boundaries of scale support for operating systems and virtualization hosts.

Hyper-V requires a 64-bit processor that includes the following to even function:

• Hardware-assisted virtualization. This is available in processors that include a virtualization option—specifically processors with Intel Virtualization Technology (Intel VT) or AMD Virtualization (AMD-V) technology.

• Hardware-enforced Data Execution Prevention (DEP) must be available and enabled. Specifically, you must enable Intel XD bit (execute disable bit) or AMD NX bit (no execute bit).

Properly sized and correctly functioning hardware is critical to ensuring the Hyper-V environment has both the capability and capacity to perform with expected current and future workloads. The following best practices being reviewed are to ensure the Hyper-V environment has a solid, known good hardware environment that will support virtualization needs and be supportable by both your organization and Microsoft.

Processors Are Not SLAT Compatible Or SLAT Is Disabled

Status

Failed

Description

For traditional server virtualization or virtualization desktops without RemoteFX, SLAT hardware is not required, but highly recommended for improved performance.

•On Intel systems this is called Extended Page Tables (EPT)
•On AMD systems this is called Nested Page Tables (NPT) or Rapid Virtualization Indexing (RVI)

These features are usually on by default. If there are BIOS options, enable them.

For virtualizing desktops using RemoteFX, SLAT hardware is required. To take advantage of SLAT hardware, you must be running Windows Server 2008 R2 or later or Microsoft Hyper-V Server 2008 R2 or later. Previous versions (Windows Server 2008/2008 SP2 & Microsoft Hyper-V Server 2008/2008 SP2) do not support SLAT hardware and will simply ignore these hardware capabilities.

Additional Information

Importance

Processors with second level address translation provide significantly better performance for virtualization.

Recommended Reading

Understanding High-End Video Performance Issues with Hyper-V

Annotation

Affected Nodes

- SW2K12R2HYPER13.SSF.COL n/a address spaces found (more than one indicates a SLAT compatible CPU)
- SW2K12R2HYPER14.SSF.COL n/a address spaces found (more than one indicates a SLAT compatible CPU)
- SW2K12R2FS01.SSF.COL n/a address spaces found (more than one indicates a SLAT compatible CPU)
- SW2K12R2HYPER10.SSF.COL n/a address spaces found (more than one indicates a SLAT compatible CPU)
- SW2K12R2HYPER6.SSF.COL n/a address spaces found (more than one indicates a SLAT compatible CPU)
- SW2K12R2HYPER8.SSF.COL n/a address spaces found (more than one indicates a SLAT compatible CPU)
- SW2K12R2HYPER5.SSF.COL n/a address spaces found (more than one indicates a SLAT compatible CPU)
- SW2K12R2HYPER12.SSF.COL n/a address spaces found (more than one indicates a SLAT compatible CPU)

The Ocnd64.Sys Driver Version In Use Has Known Issues

Status

Failed

Description

The Ocnd64.Sys driver version in use has known issues with virtual machine queue (VMQ).
Virtual Machine Queue (VMQ) significantly increases the performance and throughput capability of network traffic by intelligently distributing the load of processing incoming network data across multiple processor cores.
When using VMQ, it is important to ensure that the driver version in use fully supports the capabilities required.

This issue fires if the following criteria are met:
- The version of OCND64.SYS is less than "10.5.0.0" and
- VMQ is enabled on a network adapter

Additional Information

Importance

Some network adapters have had significant issues with VMQ

Recommended Reading

Emulex Drivers for Windows Release Notes

Recommended Resolution

1. Update your network drivers to at least 10.2.531

- Emulex OEM Qualified Downloads and Documentation

2. Ensure network adapter firmware meets the minimum required version as documented in the hardware vendors information for this issue

Annotation

Affected Nodes

[-] SW2K12R2DOCGES2.SSF.COL	1 Driver(s) Found: Emulex OCND64.SYS 10.0.430.570 The Network Connections with VMQ enabled that are using the above driver(s): Ethernet
[-] SW2K12R2DOCGES1.SSF.COL	1 Driver(s) Found: Emulex OCND64.SYS 10.0.430.570 The Network Connections with VMQ enabled that are using the above driver(s): Ethernet

BIOS Version Is Greater Than 18 Months Old

Status

Failed

Description

BIOS Version Is Greater Than 18 Months Old.

Server hardware supplied by vendors upon which the Windows Operating System can be installed implement functionality within the BIOS for hardware detection and startup, system recovery and other features critical to efficient operation of the server, including power management functionality and resource assignment/allocation.

Each vendor has their own set of requirements for BIOS Version updates to maintain hardware support - in a managed environment it is essential that these guidelines are followed to provide continued support in the event of hardware issues.

BIOS updates can also provide bug fixes, performance enhancements and functionality additions to existing hardware platforms.

Additional Information

Best Practice Guidance

At least once a year, review the vendor recommendations for BIOS updates on the systems and update as those recommendations advice to ensure supported and optimal performance of server hardware.

In some cases, server models are certified on next version of Windows Server only with specific or higher BIOS version

Importance

The older the BIOS, the higher the risk that the server may experience an operational error or degraded performance.

Recommended Resolution

Check for BIOS updates on your servers vendor website

Annotation

Affected Nodes

SW2K12R2HYPER13.SSF.COL	BIOS Release Date: Sunday, August 16, 2015 Manufacturer: HP Version: P56 Description: Default System BIOS
SW2K12R2HV3.SSF.COL	BIOS Release Date: Monday, December 28, 2015 Manufacturer: HP Version: I36 Description: I36
SW2K12R2DOCGES2.SSF.COL	BIOS Release Date: Thursday, February 6, 2014 Manufacturer: HP Version: A26 Description: Default System BIOS
SW2K12R2HYPER14.SSF.COL	BIOS Release Date: Monday, May 2, 2011 Manufacturer: HP Version: I15 Description: Default System BIOS
SW2K12R2FS01.SSF.COL	BIOS Release Date: Friday, July 10, 2009 Manufacturer: HP Version: I15 Description: Default System BIOS
SW2K12R2HYPER10.SSF.COL	BIOS Release Date: Monday, May 2, 2011 Manufacturer: HP Version: I15 Description: Default System BIOS
SW2K12R2HYPER6.SSF.COL	BIOS Release Date: Sunday, August 16, 2015 Manufacturer: HP Version: P56 Description: Default System BIOS
SW2K12R2HYPER8.SSF.COL	BIOS Release Date: Monday, May 2, 2011 Manufacturer: HP Version: I15 Description: Default System BIOS
SW2K12R2HYPER15.S	BIOS Release Date: Sunday, August 16, 2015

SF.COL	Manufacturer: HP Version: P65 Description: Default System BIOS
⊟ SW2K12R2HYPER5.SSF.COL	BIOS Release Date: Monday, May 2, 2011 Manufacturer: HP Version: I15 Description: Default System BIOS

Management Operating System

The management operating system is the operating system that was originally installed on the physical machine when the Hyper-V role was enabled. After enabling the Hyper-V role and rebooting, the Windows hypervisor is loaded, a special virtual machine is created, and then the management operating system is loaded within that virtual machine.

The virtual machine that runs the management operating system runs inside a "Parent" partition which allows that virtual machine direct access to hardware devices and to manage all the other virtual machines running on the system. All the other virtual machines run within a "Child" partition, and go through the parent partition for their device access.

Management Operating System

The management operating system checks review the operating system running in the parent partition, to ensure that the components within it are configured to ensure maximum reliability and performance while also ensuring that settings needed for effective troubleshooting are in place.

The Hyper-V Server Has A Graphical User Interface Enabled

Status

Failed

Description

It is recommended to use the Server Core version of Windows Server, or the Microsoft Hyper-V Server operating system to run Hyper-V. If Windows Server 2012 is being used and the graphical interface was selected during deployment, remove the "User Interfaces and Infrastructure" feature once installation has completed.

Running a full installation exposes a larger attack surface and may require more maintenance. As more binaries are installed, the server requires more outages for updates.

There can be a slight performance advantage to running Hyper-V on Server Core or Microsoft Hyper-V Server, as there are fewer resources used by the host operating system.

In some environments, the lack of the graphical user interface of Server Core or Hyper-V Server is considered an advantage, as it is less likely someone will log onto the server - thus reducing unwanted actions from taking place, typically resulting in greater stability & uptime. This may require additional administrator knowledge to administer these machines.

Additional Information

Best Practice Guidance

Microsoft IT runs Hyper-V on Server Core.

Recommended Reading

http://technet.microsoft.com/en-us/library/ee941130(v=WS.10).aspx

Recommended Resolution

For Hyper-V versions prior to Windows Server 2012, export all virtual machines and locally stored data. Then, reinstall the operating system with the Server Core installation option. Finally, import the exported virtual machines.

For Windows Server 2012, run the following command from administrative PowerShell (reboot will occur):

Get-WindowsFeature *gui* | Uninstall-WindowsFeature Restart

Annotation

Affected Nodes

SW2K12R2HYPER13.SSF.COL	Microsoft Windows Server 2012 R2 Standard with Shell gráfico de servidor
SW2K12R2HV3.SSF.COL	Microsoft Windows Server 2012 R2 Standard with Shell gráfico de servidor
SW2K12R2DOCGES2.SSF.COL	Microsoft Windows Server 2012 R2 Datacenter with Shell gráfico de servidor
SW2K12R2HYPER14.SSF.COL	Microsoft Windows Server 2012 R2 Standard with Shell gráfico de servidor
SW2K12R2FS01.SSF.COL	Microsoft Windows Server 2012 R2 Standard with Shell gráfico de servidor
SW2K12R2HYPER10.SSF.COL	Microsoft Windows Server 2012 R2 Standard with Shell gráfico de servidor
SW2K12R2HYPER6.SSF.COL	Microsoft Windows Server 2012 R2 Standard with Shell gráfico de servidor
SW2K12R2HYPER8.SSF.COL	Microsoft Windows Server 2012 R2 Standard with Shell gráfico de servidor
SW2K12R2HYPER15.SSF.COL	Microsoft Windows Server 2012 R2 Standard with Shell gráfico de servidor
SW2K12R2HYPER5.SSF.COL	Microsoft Windows Server 2012 R2 Standard with Shell gráfico de servidor

The Management Operating System Is Not Datacenter Edition

Status

Failed

Description

The Management Operating System Is Not Datacenter Edition.

Additional Information

Best Practice Guidance

When using multiple virtual machines running the Windows Server 2012 R2 operating system, use Hyper-V on Windows Server 2012 datacenter R2 edition to automate the activation of virtual machines,

and simplify the licensing accounting.

Importance

The Hyper-V host clusters should be validated by using Windows Server 2012 R2 Datacenter edition, which includes licensing for unlimited virtual instances to offer scalability, flexibility, and higher VM density.

Windows Server 2012 R2 Datacenter edition of Hyper-V can automatically activate Windows Server 2012 R2 virtual machines if the product key to enable this feature was used when deploying the virtual machine.

Recommended Reading

Automatic Virtual Machine Activation

Annotation

Affected Nodes

⊟ SW2K12R2GTSS1PR.SSF.COL	Management operating system: Microsoft Windows Server 2012 R2 Standard Number of virtual machines running Windows Server 2012 R2: 5

Unnecessary Windows Features May Be Installed

Status

Failed

Description

The features installed on the Hyper-V servers should be limited to just those needed for Hyper-V to run.

Using the management operating system for anything than running Hyper-V and the required supported services can have a significant effect on the performance and reliability of the server. Any features identified that are not commonly found on Hyper-V servers should be reviewed to ensure that they are not providing services to users (e.g. - Print Services).

The list below is a list of all features which are not required for Hyper-V to run. In some environments some additional features may be needed for Hyper-V remote management (e.g. - SNMP for remote monitoring applications). Typically those features are accepted on Hyper-V servers, and are not considered an issue.

Additional Information

Best Practice Guidance

Do not install any unnecessary roles and features from the Hyper-V server, and do not use the Hyper-V management operating system for anything other than running Hyper-V.

Importance

This avoids using resources that could be dispatched to Virtual Machines and reduces the

administrative overhead required to update applications, especially if such updates require reboots.

Running unnecessary applications on the management operating system may also have licensing implications for environments not using a Windows Server datacenter license for Hyper-V. Please talk to your licensing specialist for more details.

Recommended Reading

http://technet.microsoft.com/en-us/library/ee941145(v=WS.10).aspx

Recommended Resolution

Server Manager includes the Remove Roles Wizard. This wizard simplifies the removal of roles from your server and allows you to remove multiple roles at one time. Before removing any roles, the Remove Roles Wizard verifies that no software components that are required by any of the remaining roles are removed accidentally. If it is necessary, the wizard prompts you to approve the removal of other roles, role services, or software programs that are required by roles that remain installed. The risk of removing software upon which other roles depend is almost eliminated.

Annotation

Affected Nodes

[-] SW2K12R2HYPER13.SSF.COL	Unnecessary feature installed: Windows PowerShell ISE Shell gráfico de servidor
[-] SW2K12R2HV3.SSF.COL	Unnecessary feature installed: Windows PowerShell ISE Shell gráfico de servidor
[-] SW2K12R2DOCGES2.SSF.COL	Unnecessary feature installed: Servidor del destino iSCSI Proveedor de almacenamiento del destino iSCSI (proveedores de hardware de VDS y VSS) Windows PowerShell ISE Herramientas de administración de clústeres de conmutación por error Shell gráfico de servidor
[-] SW2K12R2HYPER14.SSF.COL	Unnecessary feature installed: Windows PowerShell ISE Shell gráfico de servidor
[-] SW2K12R2FS01.SSF.COL	Unnecessary feature installed: Windows PowerShell ISE Shell gráfico de servidor
[-] SW2K12R2HYPER10.SSF.COL	Unnecessary feature installed: Windows PowerShell ISE Shell gráfico de servidor
[-] SW2K12R2HYPER6.SSF.COL	Unnecessary feature installed: Windows PowerShell ISE

	Shell gráfico de servidor
SW2K12R2HYPER8.SSF.COL	Unnecessary feature installed: Windows PowerShell ISE Shell gráfico de servidor
SW2K12R2HYPER15.SSF.COL	Unnecessary feature installed: Windows PowerShell ISE Shell gráfico de servidor
SW2K12R2HYPER5.SSF.COL	Unnecessary feature installed: Windows PowerShell ISE Shell gráfico de servidor

Server Has A Pending Reboot Setting In The Registry

Status

Failed

Description

The server has files pending to be renamed or deleted. This usually indicates software was added or removed and the machine needs to be rebooted. This could prevent the installation of new software and if software was updated could cause unexpected results until the server is rebooted.

Additional Information

Best Practice Guidance

In general, if the PendingFileRenameOperations key exists and has files listed within it, a restart is pending. Note that even if this key is missing or is empty, there may still be a pending restart.

Importance

The server has to be rebooted before any other components can be installed.

Recommended Reading

MoveFileEx Function (http://msdn2.microsoft.com/en-us/library/aa365240.aspx)

SQL Server 2000 installation fails with "...previous program installation..." error message (http://support.microsoft.com/kb/312995)

Error Message: The Installation/Removal of a Previous Program Was Not Completed (http://support.microsoft.com/kb/310335/en-us)

Recommended Resolution

In the event that the key exists, confirm that the server has to be restarted to complete the installation of a component.

Annotation

Affected Nodes

SW2K12R2HYPER13.SSF.COL	Server has reboot pending.
SW2K12R2HV3.SSF.COL	Server has reboot pending.
SW2K12R2DOCGES2.SSF.COL	Server has reboot pending.
SW2K12R2HYPER14.SSF.COL	Server has reboot pending.
SW2K12R2HYPER10.SSF.COL	Server has reboot pending.
SW2K12R2HYPER6.SSF.COL	Server has reboot pending.
SW2K12R2HYPER8.SSF.COL	Server has reboot pending.
SW2K12R2HYPER15.SSF.COL	Server has reboot pending.
SW2K12R2HYPER5.SSF.COL	Server has reboot pending.
SW2K12R2DOCGES1.SSF.COL	Server has reboot pending.

Unnecessary Applications May Be Installed On Hyper-V Server

Status

Failed

Description

Applications installed on the Hyper-V server should be kept to a minimum.

To resolve this, review the below list, and identify any applications that could be run inside a virtual machine instead on the host.

Additional Information

Importance

This avoids using resources that could be dispatched to Virtual Machines and reduces the administrative overhead required to update applications, especially if such updates require reboots.

Recommended Reading

Performance Tuning Guidelines for Windows Server 2008 R2

Performance Tuning Guidelines for Windows Server 2012

Recommended Resolution

Review the list, and identify any applications that could be run inside a virtual machine instead on the host.

Annotation

Affected Nodes

⊟ SW2K12R2HYPER13.SSF.COL	Please ensure that no unnecessary applications are installed on this server. All Installed Applications: Kaspersky Security 10 for Windows Server Kaspersky Security 10 for Windows Server Administration Tools Agente de Red de Kaspersky Security Center 10
⊟ SW2K12R2HYPER10.SSF.COL	Please ensure that no unnecessary applications are installed on this server. All Installed Applications: Kaspersky Security 10 for Windows Server Kaspersky Security 10 for Windows Server Administration Tools Agente de Red de Kaspersky Security Center 10
⊟ SW2K12R2HYPER5.SSF.COL	Please ensure that no unnecessary applications are installed on this server. All Installed Applications: ma Kaspersky Security 10 for Windows Server Kaspersky Security 10 for Windows Server Administration Tools da core ts_core HPE Data Protector A.09.07 Agente de Red de Kaspersky Security Center 10
⊟ SW2K12R2GTSS1PR.SSF.COL	Please ensure that no unnecessary applications are installed on this server. All Installed Applications: Kaspersky Security 10 for Windows Server Kaspersky Security 10 for Windows Server Administration Tools Agente de Red de Kaspersky Security Center 10
⊟ SW2K12R2GTSS2PR.SSF.COL	Please ensure that no unnecessary applications are installed on this server. All Installed Applications: Kaspersky Security 10 for Windows Server Kaspersky Security 10 for Windows Server Administration Tools Smart Storage Administrator Agente de Red de Kaspersky Security Center 10

i The System Center Virtual Machine Manager Agent Is Not Installed And Running

Status

Failed

Description

The System Center Virtual Machine Manager Agent is not running on these servers.

System Center Virtual machine manager is recommended for environments larger than 3-4 Hyper-V servers or 10 or more virtual machines.

Additional Information

Best Practice Guidance

Microsoft IT manages Hyper-V environments with SCVMM

Importance

Virtual Machine Manager (VMM or SCVMM) is a management solution for the virtualized datacenter, part of System Center suite, which enables you to configure and manage virtualization host, networking, and storage resources in order to create and deploy virtual machines and services and to enable private clouds.

Recommended Reading

Virtual Machine Manager

Recommended Resolution

Consider and evaluate use of SCVMM in your environment

Annotation

Affected Nodes

SW2K12R2HYPER13.SSF.COL	System Center Virtual Machine Manager Agent not installed or not started
SW2K12R2HV3.SSF.COL	System Center Virtual Machine Manager Agent not installed or not started
SW2K12R2DOCGES2.SSF.COL	System Center Virtual Machine Manager Agent not installed or not started
SW2K12R2HYPER14.SSF.COL	System Center Virtual Machine Manager Agent not installed or not started
SW2K12R2FS01.SSF.COL	System Center Virtual Machine Manager Agent not installed or not started
SW2K12R2HYPER10.SSF.COL	System Center Virtual Machine Manager Agent not installed or not started
SW2K12R2HYPER6.SSF.COL	System Center Virtual Machine Manager Agent not installed or not started
SW2K12R2HYPER8.SSF.COL	System Center Virtual Machine Manager Agent not installed or not started
SW2K12R2HYPER15.SSF.COL	System Center Virtual Machine Manager Agent not installed or not started
SW2K12R2HYPER5.SSF.COL	System Center Virtual Machine Manager Agent not installed or not started

Event Logs

The Event Logs tests gathers all errors and warnings for the previous five days across the System, Application and most of the Hyper-V event logs.

! Event ID 15, System, The Device Is Not Ready For Access Yet

Status

Failed

Description

The System Event Log Contains Event 15.

The device is not ready for access yet.
This can be the result of SCSI host adapter configuration issues or other problems. Check with the manufacturer for updated firmware, drivers, or known issues. This could also indicate a malfunctioning device. This error occurs at the device level.

In almost all cases, these messages are being posted due to hardware problems with either the controller or, more likely, a device that is attached to the controller in question. The hardware problems can be associated with poor cabling, incorrect termination or transfer rate settings, lazy or slow device responses to relinquish the SCSI bus, a faulty device, or, in very rare cases, a poorly written device driver.

Additional Information

Annotation

Affected Nodes

[-] SW2K12R2GTSS2PR.S Event ID: 15 from Disk occurred in the System log 1 times.
SF.COL

! Event ID 59, System, This Error Usually Occurs When 2 Disks Share The Same Signature

Status

Failed

Description

The System Event Log Contains Event 59.

This error usually occurs when 2 disks share the same signature. In a clustered environment, this is usually due to multiple paths being presented to the underlying storage. Ensure that Microsoft MPIO is installed corrected and the any DSM installed is part of the supportability matrix. Run the cluster validation wizard to ensure there are no support issues.

Additional Information

Annotation

Affected Nodes

[-] SW2K12R2GTSS1PR.S Event ID: 59 from PartMgr occurred in the System log 2 times.
SF.COL

Event ID 6, Storvsp, Storage Integration Component Version Is Unsupported

Status

Failed

Description

The event logs are reporting that at least one virtual machine is running a version of the installed storage integration components that is not supported by the host.

Please update the integration components as soon as possible on all affected virtual machines.

Additional Information

Best Practice Guidance

Unless there is a compelling reason, you should always run the latest version of Integration Components in your virtual machines.

Importance

Some capabilities may not be available to the virtual machines, and virtual machine performance may be lower than it would be if the integration components are up to date.

Recommended Reading

Hyper-V: Enable all integration services in virtual machines

Recommended Resolution

Update integration components for all virtual machines.

Annotation

Affected Nodes

- SW2K12R2GTSS2PR.S Event: 6, Source: Storvsp, occurred 2 times in the System event log.
  SF.COL

Event ID 19544, Microsoft-Windows-Hyper-V-VMMS, Insufficient Memory To Start Virtual Machine

Status

Failed

Description

1 node(s) out of 14 node(s) were affected by this issue (7.14%).

Failed to start the virtual machine. Not enough memory.

Please check the event log for more details.

Additional Information

Annotation

Affected Nodes

SW2K12R2HYPER15.SSF.COL	SW2K12R2HYPER15.SSF.COL reported EventId '19544' Source 'Microsoft-Windows-Hyper-V-VMMS' from log 'Microsoft-Windows-Hyper-V-VMMS-Admin' occurred '3' times.

Event ID 4096, Microsoft-Windows-Hyper-V-Config, Inaccessible Virtual Machine Configuration File

Status

Failed

Description

1 node(s) out of 14 node(s) were affected by this issue (7.14%).

The configuration is no longer accessible.

Please check the event log for more details.

Additional Information

Annotation

Affected Nodes

SW2K12R2HYPER14.SSF.COL	SW2K12R2HYPER14.SSF.COL reported EventId '4096' Source 'Microsoft-Windows-Hyper-V-Config' from log 'Microsoft-Windows-Hyper-V-Config-Admin' occurred '1' times.

Event ID 16150, Microsoft-Windows-Hyper-V-VMMS, Cannot Delete Directory

Status

Failed

Description

1 node(s) out of 14 node(s) were affected by this issue (7.14%).

Cannot delete directory.

Please check the event log for more details.

Additional Information

Annotation

Affected Nodes

SW2K12R2HYPER14.SSF.COL	SW2K12R2HYPER14.SSF.COL reported EventId '16150' Source 'Microsoft-Windows-Hyper-V-VMMS' from log 'Microsoft-Windows-Hyper-V-VMMS-

Admin' occurred '1' times.

Hotfixes

This section lists the missing hot fixes for each of the Hyper-V servers.

These are sourced from the recommended updates list published at the following locations, and file versions on the reviewed servers have been reviewed to see if the file version is older than the version in the update.

Recommended Cluster Updates Are Not Installed

Status

Failed

Description

This issue is generated if the file versions on the server are older than that provided by the update.
All recommended updates that contain newer versions of files in use on the system are listed below.
Multiple updates listed below may update the same file – we recommend updating to the latest version of each of the identified files listed.

Additional Information

Best Practice Guidance

Keeping the Hyper-V cluster updated with the latest recommended updates will help ensure that you are running in the fastest, most reliable and stable configuration.

Some of the updates that this issue checks for are released through Windows Update.

All updates released through Windows Update should be applied regularly as part of the regular update maintenance.

The updates that are not released through Windows Update should be investigated to see if the update is relevant to this environment (if unsure, please apply the update).

All released updates are cumulative for the individual files that are patched in the update. This means that for recommended updates, the decision on whether to apply an individual update should not be based on the description of the issue in the KB article, but instead should be based on the files / components that are updated and whether those are used in the system to be patched.

Recommended Reading

Recommended hotfixes and updates for Windows Server 2012 R2-based failover clusters

Recommended hotfixes and updates for Windows Server 2012-based failover clusters

Recommended hotfixes and updates for Windows Server 2008 R2 SP1 Failover Clusters

Annotation

Affected Nodes

⊟ SW2K12R2DOCGES2.SSF.COL	3013769: December 2014 update rollup for Windows RT 8.1, Windows 8.1, and Windows Server 2012 R2 - Vssapi.dll (Update version: 6.3.9600.17466, File version: 6.3.9600.17415)

	3172614: July 2016 update rollup for Windows 8.1 and Windows Server 2012 R2 - Rdbss.sys (Update version: 6.3.9600.18298, File version: 6.3.9600.17630)
⊟ SW2K12R2DOCGES1.SSF.COL	3013769: December 2014 update rollup for Windows RT 8.1, Windows 8.1, and Windows Server 2012 R2 - Vssapi.dll (Update version: 6.3.9600.17466, File version: 6.3.9600.17415)
	3172614: July 2016 update rollup for Windows 8.1 and Windows Server 2012 R2 - Rdbss.sys (Update version: 6.3.9600.18298, File version: 6.3.9600.17630)

Recommended Hyper-V Updates Are Not Installed

Status

Failed

Description

This issue is generated if the file versions on the server are older than that provided by the update. All recommended updates that contain newer versions of files in use on the system are listed below. Multiple updates listed below may update the same file – we recommend updating to the latest version of each of the identified files listed.

Additional Information

Best Practice Guidance

Keeping each Hyper-V server updated with the latest recommended updates will help ensure that you are running in the fastest, most reliable and stable configuration.

Some of the updates that this issue checks for are released through Windows Update.

All updates released through Windows Update should be applied regularly as part of the regular update maintenance.

The updates that are not released through Windows Update should be investigated to see if the update is relevant to this environment (if unsure, please apply the update).

All released updates are cumulative for the individual files that are patched in the update. This means that for recommended updates, the decision on whether to apply an individual update should not be based on the description of the issue in the KB article, but instead should be based on the files / components that are updated and whether those are used in the system to be patched.

Recommended Reading

Recommended hotfixes, updates, and known solutions for Windows Server 2012 R2 Hyper-V environments

Hyper-V: Update List for Windows Server 2012

Hyper-V 2008 R2: Update List

Annotation

Affected Nodes

SW2K12R2HYPER13.SSF.COL	3049443: Live migration of virtual machine to another host fails on a Windows Server 2012 R2-based Hyper-V host server - Wmisvc.dll (Update version: 6.3.9600.17818, File version: 6.3.9600.17415)
SW2K12R2HV3.SSF.COL	3049443: Live migration of virtual machine to another host fails on a Windows Server 2012 R2-based Hyper-V host server - Wmisvc.dll (Update version: 6.3.9600.17818, File version: 6.3.9600.17415)
SW2K12R2DOCGES2.SSF.COL	3049443: Live migration of virtual machine to another host fails on a Windows Server 2012 R2-based Hyper-V host server - Wmisvc.dll (Update version: 6.3.9600.17818, File version: 6.3.9600.17415)
SW2K12R2HYPER14.SSF.COL	3049443: Live migration of virtual machine to another host fails on a Windows Server 2012 R2-based Hyper-V host server - Wmisvc.dll (Update version: 6.3.9600.17818, File version: 6.3.9600.17415)
SW2K12R2FS01.SSF.COL	3049443: Live migration of virtual machine to another host fails on a Windows Server 2012 R2-based Hyper-V host server - Wmisvc.dll (Update version: 6.3.9600.17818, File version: 6.3.9600.17415)
SW2K12R2HYPER10.SSF.COL	3049443: Live migration of virtual machine to another host fails on a Windows Server 2012 R2-based Hyper-V host server - Wmisvc.dll (Update version: 6.3.9600.17818, File version: 6.3.9600.17415)
SW2K12R2HYPER6.SSF.COL	3049443: Live migration of virtual machine to another host fails on a Windows Server 2012 R2-based Hyper-V host server - Wmisvc.dll (Update version: 6.3.9600.17818, File version: 6.3.9600.17415)
SW2K12R2HYPER8.SSF.COL	3049443: Live migration of virtual machine to another host fails on a Windows Server 2012 R2-based Hyper-V host server - Wmisvc.dll (Update version: 6.3.9600.17818, File version: 6.3.9600.17415)
SW2K12R2HYPER15.SSF.COL	3049443: Live migration of virtual machine to another host fails on a Windows Server 2012 R2-based Hyper-V host server - Wmisvc.dll (Update version: 6.3.9600.17818, File version: 6.3.9600.17415)
SW2K12R2HYPER5.SSF.COL	3049443: Live migration of virtual machine to another host fails on a Windows Server 2012 R2-based Hyper-V host server - Wmisvc.dll (Update version: 6.3.9600.17818, File version: 6.3.9600.17415)

Storage

In a Hyper-V environment the storage I/O path extends from the guest storage stack, through the host virtualization layer, to the host storage stack, and then to the physical disk. All the components in this path need to be configured correctly and functioning optimally for virtual machines to perform well.

The storage I/O path extends from the guest storage stack, through the host virtualization layer, to the host storage stack, and then to the physical disk. Following are explanations about how optimizations are possible at each of these stages.

Virtual controllers

Hyper-V offers three types of virtual controllers: IDE, SCSI, and Virtual host bus adapters (HBAs).

IDE

IDE controllers expose IDE disks to the virtual machine. The IDE controller is emulated, and it is the only controller that is available when the Virtual Machine Integration Services are not installed on the guest operating system. Disk I/O that is performed by using the IDE filter driver that is provided with the Virtual Machine Integration Services is significantly better than the disk I/O performance that is provided with the emulated IDE controller. We recommend that IDE disks be used only for the operating system disks because they have performance limitations due to the maximum I/O size that can be issued to these devices.

SCSI (SAS controller)

SCSI controllers expose SCSI disks to the virtual machine, and each virtual SCSI controller can support up to 64 devices. For optimal performance, we recommend that you attach multiple disks to a single virtual SCSI controller and create additional controllers only as they are required to scale the number of disks connected to the virtual machine. SCSI path is not emulated which makes it the preferred controller for any disk other than the operating system disk. In fact with Generation 2 VMs, it is the only type of controller possible. Introduced in Windows Server 2012 R2, this controller is reported as SAS to support shared VHDX.

Virtual HBAs

Virtual HBAs can be configured to allow direct access for virtual machines to Fibre Channel and Fibre Channel over Ethernet (FCoE) LUNs. Virtual Fibre Channel disks bypass the NTFS file system in the root partition, which reduces the CPU usage of storage I/O.

Large data drives and drives that are shared between multiple virtual machines (for guest clustering scenarios) are prime candidates for virtual Fibre Channel disks.

Virtual Fibre Channel disks require one or more Fibre Channel host bus adapters (HBAs) to be installed on the host. Each host HBA is required to use an HBA driver that supports the Windows Server 2012 R2 Virtual Fibre Channel/NPIV capabilities. The SAN fabric should support NPIV, and the HBA port(s) that are used for the virtual Fibre Channel should be set up in a Fibre Channel topology that supports NPIV.

To maximize throughput on hosts that are installed with more than one HBA, we recommend that you configure multiple virtual HBAs inside the Hyper-V virtual machine (up to four HBAs can be configured for each virtual machine). Hyper-V will automatically make a best effort to balance virtual HBAs to host HBAs that access the same virtual SAN.

Virtual Disks

Disks can be exposed to the virtual machines through the virtual controllers. These disks could be virtual hard disks that are file abstractions of a disk or a pass-through disk on the host.

Virtual hard disks

There are two virtual hard disk formats, VHD and VHDX. Each of these formats supports three types of virtual hard disk files.

VHD format

The VHD format was the only virtual hard disk format that was supported by Hyper-V in past releases. Introduce in Windows Server 2012, the VHD format has been modified to allow better alignment, which results in significantly better performance on new large sector disks. This aligned format is completely compatible with previous Windows Server operating systems. Any VHD that is moved from a previous release does not automatically get converted to this new improved VHD format (the "Convert-VHD" PowerShell command can do this conversion).

VHDX format

VHDX is a new virtual hard disk format introduced in Windows Server 2012, which allows you to create resilient high-performance virtual disks up to 64 terabytes. Benefits of this format include:

- Support for virtual hard disk storage capacity of up to 64 terabytes.
- Protection against data corruption during power failures by logging updates to the VHDX metadata structures.
- Ability to store custom metadata about a file, which a user might want to record, such as operating system version or patches applied.

The VHDX format also provides the following performance benefits:

- Improved alignment of the virtual hard disk format to work well on large sector disks.
- Larger block sizes for dynamic and differential disks, which allows these disks to attune to the needs of the workload.
- 4 KB logical sector virtual disk that allows for increased performance when used by applications and workloads that are designed for 4 KB sectors.
- Efficiency in representing data, which results in smaller file size and allows the underlying physical storage device to reclaim unused space. (Trim requires pass-through or SCSI disks and trim-compatible hardware.)

When you upgrade to Windows Server 2012, we recommend that you convert all VHD files to the VHDX format due to these benefits. The only scenario where it would make sense to keep the files in the VHD format is when a virtual machine has the potential to be moved to a previous release of Hyper-V that does not support the VHDX format.

Types of virtual hard disk files

There are three types of VHD files. The following sections are the performance characteristics and trade-offs between the types.

The following recommendations should be taken into consideration with regards to selecting a VHD file type:

• When using the VHD format, we recommend that you use the fixed type because it has better resiliency and performance characteristics compared to the other VHD file types.

• When using the VHDX format, we recommend that you use the dynamic type because it offers resiliency guarantees in addition to space savings that are associated with allocating space only when there is a need to do so.

• The fixed type is also recommended, irrespective of the format, when the storage on the hosting volume is not actively monitored to ensure that sufficient disk space is present when expanding the VHD file at run time.

• Snapshots of a virtual machine create a differencing VHD to store writes to the disks. Having only a few snapshots can elevate the CPU usage of storage I/Os, but might not noticeably affect performance except in highly I/O-intensive server workloads. However, having a large chain of snapshots can noticeably affect performance because reading from the VHD can require checking for the requested blocks in many differencing VHDs. Keeping snapshot chains short is important for maintaining good disk I/O performance.

Fixed virtual hard disk type

Space for the VHD is first allocated when the VHD file is created. This type of VHD file is less likely to fragment, which reduces the I/O throughput when a single I/O is split into multiple I/Os. It has the lowest CPU overhead of the three VHD file types because reads and writes do not need to look up the mapping of the block.

Dynamic virtual hard disk type

Space for the VHD is allocated on demand. The blocks in the disk start as zeroed blocks, but they are not backed by any actual space in the file. Reads from such blocks return a block of zeros. When a block is first written to, the virtualization stack must allocate space within the VHD file for the block, and then update the metadata. This increases the number of necessary disk I/Os for the Write and increases CPU usage. Reads and writes to existing blocks incur disk access and CPU overhead when looking up the blocks' mapping in the metadata.

Differencing virtual hard disk type

The VHD points to a parent VHD file. Any writes to blocks not written to result in space being allocated in the VHD file, as with a dynamically expanding VHD. Reads are serviced from the VHD file if the block has been written to. Otherwise, they are serviced from the parent VHD file. In both cases, the metadata is read to determine the mapping of the block. Reads and Writes to this VHD can consume more CPU and result in more I/Os than a fixed VHD file.

Pass-through disks

The virtual disk in a virtual machine can be mapped directly to a physical disk or logical unit number (LUN), instead of to a VHD file. The benefit is that this configuration bypasses the NTFS file system in the root partition, which reduces the CPU usage of storage I/O. The risk is that physical disks or LUNs can be more difficult to move between machines than VHD files.

Pass-through disks should be avoided due to the limitations introduced with virtual machine migration scenarios. For environments requiring the best possible performance from storage fixed VHDX files attached through a SCSI controller or disks attached through virtual HBA controllers should be used instead.

Issues:

The storage checks performed analyse the storage components at all the levels of the storage.

Virtual Machines Are Using Pass-Through Disks

Status

Failed

Description

Virtual Machines Are Using Pass-Through Disks

Additional Information

Best Practice Guidance

For Hyper-V running on Windows Server 2012 or later, use VHDX files in most scenarios. When not using VHDX files, use virtual fibre channel for virtual machines to connect to storage.

For older versions of Hyper-V, use fixed VHD files for storage. If more than 2TB per volume is needed, use either passthrough disks or iSCSI connections from the virtual machine.

Importance

Passthrough disks prevent many Hyper-V features, including:

1. Host based virtual machine backups

2. Live storage migration

3. Hyper-V replica

4. Some types of performance optimizations and intelligent caching of storage data.

Passthrough disks are depreciated as of Windows Server 2012 Hyper-V.

Recommended Resolution

Plan to migrate any passthrough disks to the VHDX format virtual hard disks

Annotation

Affected Nodes

⊟ SW2K12R2PT-CORREO_	This virtual machine has pass-through disks connected: True
⊟ SW2K12R2WSUS	This virtual machine has pass-through disks connected: True
⊟ SW2K12R2APP	This virtual machine has pass-through disks connected: True
⊟ SW2K12R2RAPHYPERV	This virtual machine has pass-through disks connected: True
⊟ SW2K12R2MIG-MAIL	This virtual machine has pass-through disks connected: True
⊟ SW2K12R2ISOL01	This virtual machine has pass-through disks connected: True
⊟ SW2K12R2ESIGNAG	This virtual machine has pass-through disks connected: True
⊟ SW2K12R2ESIGNAS	This virtual machine has pass-through disks connected: True

SW2K12R2DC01	This virtual machine has pass-through disks connected: True
SW2K12R2DC02	This virtual machine has pass-through disks connected: True

NTFS Allocation Unit Size Is Not 64K For Disks Containing Virtual Machine Data

Status

Failed

Description

The NTFS Allocation Unit Size Is Not 64K For Disks Containing Virtual Machine Data

Additional Information

Best Practice Guidance

Please ensure that you follow your storage vendor's recommendation for the NTFS Allocation Unit Size.

If the storage vendor does not provide a recommendation, use a NTFS allocation unit size of 64K when formatting volumes that will contain Virtual Machine hard disk files.

Importance

64K allocation unit size provides the best performance for virtual machine hard disk files in the majority of scenarios.

A 64K allocation unit size is also required on some storage units for ODX to function (Offloaded Data Transfer).

Annotation

Affected Nodes

SW2K12R2HYPER13.SSF.COL	The disks containing virtual machine data where the allocation unit size is not 64K: E: (NTFS allocation unit size: 4096 bytes) G: (NTFS allocation unit size: 4096 bytes)
SW2K12R2HV3.SSF.COL	The disks containing virtual machine data where the allocation unit size is not 64K: F: (NTFS allocation unit size: 4096 bytes) E: (NTFS allocation unit size: 4096 bytes)
SW2K12R2DOCGES2.SSF.COL	The disks containing virtual machine data where the allocation unit size is not 64K: E: (NTFS allocation unit size: 4096 bytes) F: (NTFS allocation unit size: 4096 bytes) G: (NTFS allocation unit size: 4096 bytes) H: (NTFS allocation unit size: 4096 bytes)
SW2K12R2HYPER14.S	The disks containing virtual machine data where the allocation unit size is not

SF.COL	64K: C: (NTFS allocation unit size: 4096 bytes)
SW2K12R2FS01.SSF.COL	The disks containing virtual machine data where the allocation unit size is not 64K: D: (NTFS allocation unit size: 4096 bytes)
SW2K12R2HYPER10.SSF.COL	The disks containing virtual machine data where the allocation unit size is not 64K: D: (NTFS allocation unit size: 4096 bytes) F: (NTFS allocation unit size: 4096 bytes) E: (NTFS allocation unit size: 4096 bytes)
SW2K12R2HYPER6.SSF.COL	The disks containing virtual machine data where the allocation unit size is not 64K: F: (NTFS allocation unit size: 4096 bytes)
SW2K12R2HYPER8.SSF.COL	The disks containing virtual machine data where the allocation unit size is not 64K: D: (NTFS allocation unit size: 4096 bytes) E: (NTFS allocation unit size: 4096 bytes) G: (NTFS allocation unit size: 4096 bytes)
SW2K12R2HYPER15.SSF.COL	The disks containing virtual machine data where the allocation unit size is not 64K: E: (NTFS allocation unit size: 4096 bytes)
SW2K12R2DOCGES1.SSF.COL	The disks containing virtual machine data where the allocation unit size is not 64K: F: (NTFS allocation unit size: 4096 bytes) G: (NTFS allocation unit size: 4096 bytes) H: (NTFS allocation unit size: 4096 bytes) I: (NTFS allocation unit size: 4096 bytes)

Virtual Machines Are Using VHD Format Virtual Disks

Status

Failed

Description

This issue is generated if the format type of any virtual disk is "VHD"

VHD-format virtual hard disks are not recommended for virtual machines that run server workloads in a production environment.

Additional Information

Best Practice Guidance

Use VHDX format virtual disks instead of VHD format virtual disks.

Importance

The VHDX format is available in Windows Server 2012 or later Hyper-V servers.

Some of the advantages of the VHDX format are:

- VHDX Format virtual disks when connected through a virtual SCSI controller support forced unit access (FUA). VHD format does not.
- VHDX Format virtual disks when connected through a virtual SCSI controller support TRIM/UNMAP (if the underlying storage supports this). Disks using the VHD format or virtual IDE do not.
- VHDX Format virtual disks when connected through a virtual SCSI controller support Offload Data transfer (ODX) while the disks using the VHD format or virtual IDE do not.
- VHDX format uses an improved alignment of the virtual hard disk format to work well on large sector disks.
- VHDX format uses a Larger block sizes for dynamic and differential disks, which allows these disks to attune to the needs of the workload.
- VHDX format uses a 4 KB logical sector virtual disk that allows for increased performance when used by applications and workloads that are designed for 4 KB sectors.
- VHD support a maximum size of 2TB. VHDX maximum size is 64TB

Annotation

Affected Nodes

[-] SW2K8R2GESDOC01_ : disk-1.vhd	Virtual Machine: SW2K8R2GESDOC01_ Virtual Disk File: disk-1.vhd Virtual Controller: Controladora IDE 0
[-] SW2K8R2GESDOC01_ : disk-0.vhd	Virtual Machine: SW2K8R2GESDOC01_ Virtual Disk File: disk-0.vhd Virtual Controller: Controladora IDE 0

i Virtual Machines Are Using Dynamic Virtual Hard Disk (VHDX) files

Status

Failed

Description

There are three different types of virtual disks - Fixed, Dynamic and Differencing. Some of the considerations are:

Fixed VHDX and Dynamic VHDX files provide the greatest levels of performance.

The use of Dynamic or Differencing disks requires a robust and well-functioning monitoring solution.

Additional Information

Best Practice Guidance

For Windows or Hyper-V Server 2012 and later editions, the disk type in use should be either fixed VHDX or dynamic VHDX files.

Importance

The dynamic disks grow as needed, and if the underlying disk runs out of space a significant outage can occur.

Recommended Reading

https://technet.microsoft.com/en-us/library/hh831446(v=ws.11).aspx

Recommended Resolution

Dynamic virtual disk files should ONLY be used if disk space is closely monitored and alerted on.

Annotation

Affected Nodes

SW2K12R2PROXY - SW2K12R2PROXY.vhdx	Hyper-V Server: SW2K12R2HYPER13.SSF.COL Dynamic VHDX Disk in use: SW2K12R2PROXY.vhdx
SW2K12R2SIREVAC3 - DATA_XML.vhdx	Hyper-V Server: SW2K12R2HV3.SSF.COL Dynamic VHDX Disk in use: DATA_XML.vhdx
SW2K12R2SIREVAC3 - SW2K12R2SIREVAC3.vhdx	Hyper-V Server: SW2K12R2HV3.SSF.COL Dynamic VHDX Disk in use: SW2K12R2SIREVAC3.vhdx
SW2K12R2SIGER - SIGER_DATA.vhdx	Hyper-V Server: SW2K12R2HV3.SSF.COL Dynamic VHDX Disk in use: SIGER_DATA.vhdx
SW2K12R2SIGER - SW2K12R2SIGER.vhdx	Hyper-V Server: SW2K12R2HV3.SSF.COL Dynamic VHDX Disk in use: SW2K12R2SIGER.vhdx
SW2K12R2DG2VSV - SW2K12R2DG2VSV.vhdx	Hyper-V Server: SW2K12R2DOCGES2.SSF.COL Dynamic VHDX Disk in use: SW2K12R2DG2VSV.vhdx
SW2K12R2DG2VGD - SW2K12R2DG2VGD.vhdx	Hyper-V Server: SW2K12R2DOCGES2.SSF.COL Dynamic VHDX Disk in use: SW2K12R2DG2VGD.vhdx
SW2K12R2DG2VSE - SW2K12R2DG2VSE.vhdx	Hyper-V Server: SW2K12R2DOCGES2.SSF.COL Dynamic VHDX Disk in use: SW2K12R2DG2VSE.vhdx
SW2K12R2DG2VPL - SW2K12R2DG2VPL.vhdx	Hyper-V Server: SW2K12R2DOCGES2.SSF.COL Dynamic VHDX Disk in use: SW2K12R2DG2VPL.vhdx
Prueba_1 - Prueba1.vhdx	Hyper-V Server: SW2K12R2HYPER14.SSF.COL Dynamic VHDX Disk in use: Prueba1.vhdx

Network

Hyper-V in Windows Server allows for large-scale and flexible network deployments, all of which can be accomplished in a virtual manner, reducing the TCO of networking hardware that might otherwise have to be purchased. To properly leverage many of these features, it is often necessary to perform a thorough analysis of the current physical network and gain a significant understanding of the Hyper-V architecture.

Because the networking of both the Hyper-V host and virtualized guest are critical to the proper operation of the virtualization environment they are should be configured per the known best practices currently available. Once configured per best practices, the underlying network will be most resistant to issues caused by misconfigurations.

Each networking component and setting for the host and guest can affect the overall performance and operation of the environment in part or whole. The review of these components is done by using the currently available best practices for Hyper-V Networking.

Storage Network Performance May Be Constrained

Status

Failed

Description

Could not find 'IssueFormat'.

Additional Information

Annotation

Affected Nodes

Only One Network Adapter Is Connected On Hyper-V Server

Status

Failed

Description

The identified server(s) are configured with one network adapter, which must be shared by the management operating system and all virtual machines that require access to a physical network.

Additional Information

Best Practice Guidance

In some server configurations teaming may be done at the hardware layer, and redundancy and additional bandwidth may be available there. If this is the case, QoS (or some other bandwidth control mechanism) should be used to ensure that sufficient bandwidth is available for parent and guest operating systems.

Importance

By not having multiple active adapters, networking performance may be degraded in the management

operating system and in the virtual machines.

Recommended Reading

Hyper-V: More than one network adapter should be available

Recommended Resolution

Add more network adapters to this computer. To reserve one network adapter for exclusive use by the management operating system, do not configure it for use with an external virtual network.

Annotation

Affected Nodes

SW2K12R2HYPER13.SSF.COL	1 enabled and connected network adapter(s) found (including non-Microsoft teamed adapters).
SW2K12R2HV3.SSF.COL	1 enabled and connected network adapter(s) found (including non-Microsoft teamed adapters).
SW2K12R2HYPER14.SSF.COL	1 enabled and connected network adapter(s) found (including non-Microsoft teamed adapters).
SW2K12R2FS01.SSF.COL	1 enabled and connected network adapter(s) found (including non-Microsoft teamed adapters).
SW2K12R2HYPER10.SSF.COL	1 enabled and connected network adapter(s) found (including non-Microsoft teamed adapters).
SW2K12R2HYPER6.SSF.COL	1 enabled and connected network adapter(s) found (including non-Microsoft teamed adapters).
SW2K12R2HYPER8.SSF.COL	1 enabled and connected network adapter(s) found (including non-Microsoft teamed adapters).
SW2K12R2HYPER15.SSF.COL	1 enabled and connected network adapter(s) found (including non-Microsoft teamed adapters).
SW2K12R2HYPER5.SSF.COL	1 enabled and connected network adapter(s) found (including non-Microsoft teamed adapters).
SW2K12R2GTSS1PR.SSF.COL	1 enabled and connected network adapter(s) found (including non-Microsoft teamed adapters).

Live Migration Is Enabled On All Networks

Status

Failed

Description

Live Migration Is Enabled On All Network Adapters.

Additional Information

Best Practice Guidance

Where possible, choose the networks that are used for live migration to ensure that network traffic used for Hyper-V Management and Hyper-V storage (CSV, SMB or iSCSI) is not impacted.

In a converged network configuration, ensure that live migration traffic has a weight or priority assigned to it to ensure that it does not impact other critical traffic.

Importance

Live migration will use as much of the available bandwidth as possible. This can impact other network communication.

Recommended Reading

Hyper-V: Live Migration Network Configuration Guide

Rule Algorithm

Source

Get-WMIObject MSCluster_ResourceType | where {$_.Name -eq "Virtual Machine"} | select -expandproperty PrivateProperties | select MigrationExcludeNetworks

Applies to: Windows Server 2008 R2 and later

Test if MigrationExcludeNetworks is empty

Annotation

Affected Nodes

⊟ ADMDOCGESHV.SSF. COL	Excluded from Live Migration: n/a Cluster Networks that can be used for Live Migration: Red de clústeres 1 Red de clústeres 2n/a

Bandwidth Reservation Mode Is Not Weight

Status

Failed

Description

Virtual Switch is not using "Weight" bandwidth reservation mode.

When you create a Hyper-V Virtual Switch by using Windows PowerShell, you can choose between "Absolute" (BPS) and "Weight" Minimum Bandwidth configuration modes, which determine how you can quantify Minimum Bandwidth for a workload.

Additional Information

Importance

It is recommended that you configure Minimum Bandwidth by using weight rather than Absolute (BPS). Minimum Bandwidth specified by weight is more flexible and it is compatible with other features, such as Live Migration and NIC Teaming.

Recommended Reading

Minimum Bandwidth Modes

Annotation

Affected Nodes

SW2K12R2HYPER13.SSF.COL\NIC_HYPER13	Bandwidth Reservation Mode: Absolute
SW2K12R2HV3.SSF.COL\NIC_HV3	Bandwidth Reservation Mode: Absolute
SW2K12R2DOCGES2.SSF.COL\NIC_DOCGES1	Bandwidth Reservation Mode: Absolute
SW2K12R2HYPER14.SSF.COL\Broadcom BCM5708S NetXtreme II GigE (cliente VBD de NDIS) #43 - Virtual Switch	Bandwidth Reservation Mode: Absolute
SW2K12R2FS01.SSF.COL\Nuevo conmutador virtual	Bandwidth Reservation Mode: Absolute
SW2K12R2HYPER10.SSF.COL\NIC_HYPER10	Bandwidth Reservation Mode: Absolute
SW2K12R2HYPER6.SSF.COL\NIC_SIGERWEB	Bandwidth Reservation Mode: Absolute
SW2K12R2HYPER8.SSF.COL\NIC_HYPER8	Bandwidth Reservation Mode: Absolute
SW2K12R2HYPER15.SSF.COL\Nic_Hyper15	Bandwidth Reservation Mode: Absolute
SW2K12R2HYPER5.SSF.COL\NIC_HYPER5	Bandwidth Reservation Mode: Absolute

Shared Nothing Live Migration Is Enabled On All Network Adapters

Status

Failed

Description

Shared Nothing Live Migration Is Enabled On All Network Adapters

In Windows Server 2012 and later, specific network adapter IP addresses can be selected to choose which network connections will be used for non-clustered live migration operations.

Additional Information

Best Practice Guidance

Where possible, choose the adapters that are used for live migration to ensure that network traffic used for Hyper-V Management and Hyper-V storage (CSV, SMB or iSCSI) is not impacted.

In a converged network configuration, ensure that live migration traffic has a weight or priority assigned to it to ensure that it does not impact other critical traffic.

Importance

Live migration will use as much of the available bandwidth as possible. This can impact other network communication.

Recommended Reading

Configure Live Migration and Migrating Virtual Machines without Failover Clustering

Rule Algorithm

Source:

Get-WMIObject Win32_networkadapterconfiguration | where IPEnabled | select Description,IPAddress

Get-WMIObject -namespace root\virtualization\v2 Msvm_VirtualSystemMigrationService MigrationServiceListenerIPAddressList | %{$_.MigrationServiceListenerIPAddressList}

Test:

Filter to Windows 2012 or later operating systems.

For each IP Enabled adapter, check if any IP addresses are listed in the MigrationServiceListenerIPAddressList. If not found, then add to list of adapters with live migration disabled.

Test if the list of adapters with live migration disabled is empty.

Annotation

Affected Nodes

⊟ SW2K12R2GTSS1PR.SSF.COL	Adapters with Live Migration enabled: · Adaptador virtual de Ethernet para Hyper-V #2(172.25.6.163,fe80::6407:61ab:521b:5799)

	Adapters with Live Migration disabled:
SW2K12R2GTSS2PR.SSF.COL	Adapters with Live Migration enabled: Adaptador virtual de Ethernet para Hyper-V #2(172.25.6.166,fe80::3c48:79ed:7ac0:fb1e) Adapters with Live Migration disabled:

Virtual Switch Name Contains The Number Sign (#)

Status

Failed

Description

The Hyper-V Virtual Switch is a software-based layer-2 Ethernet network switch that is available in Hyper-V Manager when you install the Hyper-V server role. The switch includes programmatically managed and extensible capabilities to connect virtual machines to both virtual networks and the physical network. In addition, Hyper-V Virtual Switch provides policy enforcement for security, isolation, and service levels.

Additional Information

Importance

If the Microsoft Hyper-V virtual switch name contains the number sign (#), then creating a protection group for a VM that uses the switch will fail.

Recommended Reading

"An error occurred while retrieving the list of servers" error when you create a protection group in Azure Site Recovery

Annotation

Affected Nodes

SW2K12R2HYPER14.SSF.COL: Broadcom BCM5708S NetXtreme II GigE (cliente VBD de NDIS) #43 - Virtual Switch	Virtual Switch Name: Broadcom BCM5708S NetXtreme II GigE (cliente VBD de NDIS) #43 - Virtual Switch

Server Does Not Have A Valid DNS Server Defined For Name Resolution On The Public Interface

Status

Failed

Description

Server does not have a valid DNS server defined for name resolution on the public interface.

The servers in the cluster must be using Domain Name System (DNS) for name resolution. The DNS dynamic update protocol can be used.

Additional Information

Best Practice Guidance

Correctly configure the DNS servers for each node in the cluster on their public interfaces.

Importance

In order for name resolution to be successful, a valid DNS server must be configured on the public interface in each node of the cluster.

Recommended Resolution

· Click Start, click Network, click Network and Sharing Center, and then click Manage Network Connections.

· Right-click the network connection for your public network adapter and then click Properties.

· Click Internet Protocol Version 4 (TCP/IPv4) and then click Properties.

· Verify that the correct values are defined in the box for Use the following DNS server addresses.

Annotation

This issue is often a false positive given the fact that the queries to DNS Servers are performed from the tools computer which might not be allowed to do so by network restrictions.

Since not all nodes in the cluster were detected as affected objects, please review all DNS Configurations manually towards a consistent approach.

Affected Nodes

⊟ SW2K12R2DOCGES2.
SSF.COL
⊟ SW2K12R2DOCGES1.
SSF.COL

Cluster Configuration

The overall cluster configuration includes timeout and logging settings, as well as settings for configuring how the cluster nodes should react in a critical situation. In most cases, the default settings are appropriate, and are configured to maximize the uptime of resources while enabling troubleshooting to be performed if an issue occurs.

Cluster Properties

Examining the essential cluster settings and how each is configured is crucial to ensuring high availability. When these properties are not configured per best practices the Failover Cluster environment is subject to performing in an unexpected manner that is not consistent with normal expected operations. Having the settings across all nodes in the cluster identical or as close to identical as possible will help ensure that each node will operate as expected when other nodes have failures.

The Affect The Group RestartAction Is Not Default

Status

Failed

Description

The Affect the Group RestartAction is not default.

This indicates that the resource will not restart or affect the group. Changes to this value will change the behavior of the resource. As a result, it will not try to restart the resource if it detects a failure, nor will it trigger the group to move to another node. In addition, the resource will stay in a failed state until manually resolved. Following are the settings for this property:

ClusterResourceDontRestart - Do not restart the resource after a failure.

ClusterResourceRestartNoNotify - Restart the resource after a failure. If the resource exceeds its restart threshold within its restart period, do not try to fail over the group to another node in the cluster.

ClusterResourceRestartNotify - Restart the resource after a failure. If the resource exceeds its restart threshold within its restart period, try to fail over the group to another node in the cluster. This is the default setting.

Additional Information

Best Practice Guidance

Use a default value of 2 for all critical resources (for Example Microsoft SQL Server), unless this is a non-critical resource (for example Microsoft SQL Server Agent) and you do not want it to try a restart or cause the group to move unnecessarily.

Importance

If there is a failure the resource will not be restarted, nor will the group be moved to another node. In addition, the resource will stay in a failed state until manually resolved.

Recommended Reading
Resource Properties Policies Tab

Recommended Resolution
If a resource needs to restart and needs the group to move, change the Affect the Group setting to 2.

To do this, follow these steps:

Windows Server 2008 and Windows Server 2008 R2:

- Open Failover Cluster Manager.
- Go to Services and Applications.
- Choose the Service/Application that contains the resource that needs to be modified
- Right-click the resource and then click Properties.
- Click the Policies tab.
- Radio button must be set to "If resource fails, attempt restart on current node".
- Check the box that says "If restart is unsuccessful, fail over all resources in this service or application".
- Choose Apply or OK to apply the changes.

Windows Server 2012 and later:

- Open Failover Cluster Manager.
- Go to Roles.
- Choose the Role that contains the resource that needs to be corrected.
- On the bottom switch to the Resources Tab.
- Right-click the resource and then click Properties.
- Click the Policies tab.
- Radio button must be set to "If resource fails, attempt restart on current node".
- Check the box that says "If restart is unsuccessful, fail over all resources in this Role".
- Choose Apply or OK to apply the changes.

Annotation

Affected Nodes

ADMDOCGESHV.SSF.COL\Máquina virtual SW2K12R2DG2VSV	The Affect the Group RestartAction is not default. The default value is 2. Affect the Group RestartAction is set to 1 for cluster\resource: ADMDOCGESHV.SSF.COL\Máquina virtual SW2K12R2DG2VSV.
ADMDOCGESHV.SSF.COL\Máquina virtual SW2K12R2DG2VSE	The Affect the Group RestartAction is not default. The default value is 2. Affect the Group RestartAction is set to 1 for cluster\resource: ADMDOCGESHV.SSF.COL\Máquina virtual SW2K12R2DG2VSE.
ADMDOCGESHV.SSF.COL\Máquina virtual SW2K12R2DG2VPL	The Affect the Group RestartAction is not default. The default value is 2. Affect the Group RestartAction is set to 1 for cluster\resource: ADMDOCGESHV.SSF.COL\Máquina virtual SW2K12R2DG2VPL.
ADMDOCGESHV.SSF.COL\Máquina virtual SW2K12R2DG2VGD	The Affect the Group RestartAction is not default. The default value is 2. Affect the Group RestartAction is set to 1 for cluster\resource: ADMDOCGESHV.SSF.COL\Máquina virtual SW2K12R2DG2VGD.
ADMDOCGESHV.SSF.COL\Máquina virtual SW2K12R2DG1VSV	The Affect the Group RestartAction is not default. The default value is 2. Affect the Group RestartAction is set to 1 for cluster\resource: ADMDOCGESHV.SSF.COL\Máquina virtual SW2K12R2DG1VSV.
ADMDOCGESHV.SSF.COL\Máquina virtual SW2K12R2DG1VSE	The Affect the Group RestartAction is not default. The default value is 2. Affect the Group RestartAction is set to 1 for cluster\resource: ADMDOCGESHV.SSF.COL\Máquina virtual SW2K12R2DG1VSE.
ADMDOCGESHV.SSF.COL\Máquina virtual SW2K12R2DG1VPL	The Affect the Group RestartAction is not default. The default value is 2. Affect the Group RestartAction is set to 1 for cluster\resource: ADMDOCGESHV.SSF.COL\Máquina virtual SW2K12R2DG1VPL.
ADMDOCGESHV.SSF.COL\Máquina virtual SW2K12R2DG1VGD	The Affect the Group RestartAction is not default. The default value is 2. Affect the Group RestartAction is set to 1 for cluster\resource: ADMDOCGESHV.SSF.COL\Máquina virtual SW2K12R2DG1VGD.
ADMDOCGESHV.SSF.COL\Disco de clúster 9	The Affect the Group RestartAction is not default. The default value is 2. Affect the Group RestartAction is set to 1 for cluster\resource: ADMDOCGESHV.SSF.COL\Disco de clúster 9.
ADMDOCGESHV.SSF.COL\Disco de clúster 8	The Affect the Group RestartAction is not default. The default value is 2. Affect the Group RestartAction is set to 1 for cluster\resource: ADMDOCGESHV.SSF.COL\Disco de clúster 8.

Preferred Owner Not Default

Status

Failed

Description

The preferred owner is not default for the cluster groups.

Preferred Owners indicates the order of preferred nodes that the group will use for failover preference. If it is configured to have preferred owners, it will change the default behavior.

Additional Information

Best Practice Guidance

Use Preferred Owners to set the best case rule for the node that the group will move to next when there is a failure in the group that causes the move.

Recommended Reading

Failover behavior on clusters of three or more nodes

Recommended Resolution

- Open the Failover Cluster Management tool.
- Expand the cluster node, and then expand Services and Applications (Windows Server 2008 and 2008 R2)/Roles (Windows Server 2012 and later) and select the resource group.
- Select general and Set the Preferred Owners to be the order of nodes that the group should try to move to when a failure in the group triggers a failover.

Annotation

Affected Nodes

⊟ SW2K12R2DG2VSE	The following nodes are listed as preferred owners: SW2K12R2DOCGES1
⊟ SW2K12R2DG2VPL	The following nodes are listed as preferred owners: SW2K12R2DOCGES2
⊟ SW2K12R2DG2VGD	The following nodes are listed as preferred owners: SW2K12R2DOCGES2
⊟ SW2K12R2DG2VSV	The following nodes are listed as preferred owners: SW2K12R2DOCGES2
⊟ SW2K12R2DG1VSV	The following nodes are listed as preferred owners: SW2K12R2DOCGES1

i The Restart Period And Or Restart Action For A Resource Is Not Default

Status

Failed

Description

The RestartAction and/or RestartPeriod are not the default setting.

The RestartPeriod property defines an interval of time, in milliseconds, during which a specified number of restart attempts can be made on a non-responsive resource. The RestartThreshold property specifies the allowable number of restart attempts that can occur within the interval defined by RestartPeriod.

Additional Information

Best Practice Guidance

When a resource fails, the Cluster service tries to restart the resource, unless the RestartAction property is set to ClusterResourceDontRestart.

The RestartPeriod and RestartThreshold properties work together to limit restart attempts. For example, if the RestartPeriod property is set to 200 milliseconds and the RestartThreshold property is set to two retry attempts, the Cluster service tolerates two restart failures within any 200-millisecond interval. More than two failures can occur, however, as long as they occur over an interval that is greater than 200 milliseconds. On the third restart failure within the 200 millisecond interval, the Cluster service considers the resource to have failed and, depending on the RestartAction property, might try to fail over the resource's group to another node.

After the interval defined by the RestartPeriod property is exceeded, the Cluster service resets the property to 0.

If not specified, the default value for the RestartPeriod property is 900000 milliseconds. (900 seconds or 15 minutes) Any changes to this value will change the behavior of the resource restart.

Following are the values for the Restart Period property:

Attribute	Value
Minimum	ClusterResourceDontRestart (0)
Maximum	ClusterResourceRestartNotify (2)
Default	ClusterResourceRestart

	Notify

Details:

Name	Value	Description
ClusterResourceDontRestart	0	Do not restart the resource after a failure.
ClusterResourceRestartNoNotify	1	Restart the resource after a failure. If the resource exceeds its restart threshold within its restart period, do not attempt to failover the group to anot

		her node in the *cluster*.
ClusterResourceRestartNotify	2	Restart the resource after a failure. If the resource exceeds its restart threshold within its restart period, attempt to fail over the group to another node in the cluster. This is the default setting.

Recommended Reading
RestartPeriod

Recommended Resolution
To change the Restart Period setting to the default value of 900000, follow these steps:

· Open Cluster Administrator.
· Right-click the resource.
· Select Properties.
· Click the Advanced tab.
· Set the Period option to 900 seconds.
· Click OK.

Annotation

Affected Nodes

- Disco de clúster 8
  IsCSV: False
  RestartAction: 1
  RestartPeriod: 900000
  RetryPeriodOnFailure: 3600000
- Máquina virtual SW2K12R2DG2VSE
  IsCSV: False
  RestartAction: 1
  RestartPeriod: 900000
  RetryPeriodOnFailure: 3600000
- Máquina virtual SW2K12R2DG2VPL
  IsCSV: False
  RestartAction: 1
  RestartPeriod: 900000
  RetryPeriodOnFailure: 3600000
- Disco de clúster 1
  IsCSV: False
  RestartAction: 1
  RestartPeriod: 900000
  RetryPeriodOnFailure: 3600000
- Disco de clúster 7
  IsCSV: False
  RestartAction: 1

RestartPeriod: 900000
RetryPeriodOnFailure: 3600000

- Máquina virtual SW2K12R2DG1VSE
  IsCSV: False
  RestartAction: 1
  RestartPeriod: 900000
  RetryPeriodOnFailure: 3600000
- Disco de clúster 6
  IsCSV: False
  RestartAction: 1
  RestartPeriod: 900000
  RetryPeriodOnFailure: 3600000
- Máquina virtual SW2K12R2DG1VPL
  IsCSV: False
  RestartAction: 1
  RestartPeriod: 900000
  RetryPeriodOnFailure: 3600000
- Máquina virtual SW2K12R2DG2VGD
  IsCSV: False
  RestartAction: 1
  RestartPeriod: 900000
  RetryPeriodOnFailure: 3600000
- Disco de clúster 2
  IsCSV: False
  RestartAction: 1
  RestartPeriod: 900000
  RetryPeriodOnFailure: 3600000

Cluster Shared Volumes

Cluster Shared Volumes (CSV) is a feature of Failover Clustering available in Windows Server 2008 R2 and later. A Cluster Shared Volume is a standard cluster disk containing an NTFS volume that is made accessible for concurrent read and write operations by all nodes within the cluster

Cluster Shared Volumes operate by redirecting some types of metadata I/O operations via the SMB protocol to the coordinator node. The coordinator node is the node with ownership of the LUN. The network with the lowest cluster metric that is enabled for cluster communication is used for the metadata SMB traffic. Any storage I/O that is not redirected over the network to the coordinator node is performed directly to the storage using the existing block based protocol (iSCSI, SAS, Fiber Channel, and Fiber Channel over Ethernet).

There were no issues currently detected in this section for this environment

Cluster Network

Providing redundant and reliable communications connectivity among all the nodes in a cluster, plays a large role in ensuring that the cluster functions smoothly. Configuring proper communication connectivity within a failover cluster not only provides access to highly available services required by clients, but also guarantees the connectivity that the cluster requires for its own internal communications needs.

A network component failure (such as failure with a NIC, router, or switch) should not cause inter-node cluster communications to fail. Communication should continue to function as long as an alternate physical route (link) is still available; although, it may have a slower response time. If cluster communications fail on one network, the switchover to another cluster-enabled network is automatic. This is one of the primary reasons that each cluster node must have multiple unique network adapter paths available to support cluster communications and each one should be connected to different switches.

Live Migration Is Enabled On All Networks

Status

Failed

Description

Live Migration Is Enabled On All Network Adapters.

Additional Information

Best Practice Guidance

Where possible, choose the networks that are used for live migration to ensure that network traffic used for Hyper-V Management and Hyper-V storage (CSV, SMB or iSCSI) is not impacted.

In a converged network configuration, ensure that live migration traffic has a weight or priority assigned to it to ensure that it does not impact other critical traffic.

Importance

Live migration will use as much of the available bandwidth as possible. This can impact other network communication.

Recommended Reading

Hyper-V: Live Migration Network Configuration Guide

Rule Algorithm

Source

Get-WMIObject MSCluster_ResourceType | where {$_.Name -eq "Virtual Machine"} | select -expandproperty PrivateProperties | select MigrationExcludeNetworks

Applies to: Windows Server 2008 R2 and later

Test if MigrationExcludeNetworks is empty

Annotation

Affected Nodes

⊟ ADMDOCGESHV.SSF. COL	Excluded from Live Migration: n/a Cluster Networks that can be used for Live Migration: Red de clústeres 1 Red de clústeres 2n/a

Cluster virtual machine settings

The analysis of the virtual machine's cluster resource configuration includes the aspects of virtual machines that relate to the cluster, and any areas that may impact the high availability of virtual machines. These settings will also impact the way the cluster handles detected virtual machine failures and how their recovery is handled.

Highly Available Virtual Machine Offline Action Is Not Set To Shutdown

Status

Failed

Description

By default, when creating a new virtual machine on a Hyper-V host, it is configured with an automatic stop action of 'Save State'. This instructs the host to maintain a binary file in the virtual machine's working folder with a size equal to the amount of RAM consumed on the host. Highly available virtual machines typically Live Migrate to another host and do not ever need to save state automatically. Changing the automatic stop action for each highly available virtual machine to 'Shut Down' removes the need for Hyper-V to maintain a binary file. This can free up a considerable amount of disk space on the volumes where your environment's virtual machines files reside.

Note, this option disappears from a virtual machine's properties in Virtual Machine Manager if the virtual machine is highly available. Use Failover Cluster Manager to make this change if the virtual machine is highly available.

Additional Information

Recommended Resolution

Adapt the following PowerShell command to run in your environment, substituting "VMNAME" for the name of the virtual machine to apply the settings to:

```
Get-VM -name VMNAME | Set-VM –AutomaticStopAction ShutDown
```

Annotation

Affected Nodes

SW2K12R2DG2VSV	Virtual machine is running: True, Shutdown integration component status: OK Offline Action: Turn Off
SW2K12R2DG2VGD	Virtual machine is running: True, Shutdown integration component status: OK Offline Action: Turn Off
SW2K12R2DG2VSE	Virtual machine is running: True, Shutdown integration component status: OK Offline Action: Turn Off
SW2K12R2DG2VPL	Virtual machine is running: True, Shutdown integration component status: OK Offline Action: Turn Off
SW2K12R2DG1VSV	Virtual machine is running: True, Shutdown integration component status: OK Offline Action: Turn Off
SW2K12R2DG1VSE	Virtual machine is running: True, Shutdown integration component status: OK Offline Action: Turn Off

⊟ SW2K12R2DG1VGD	Virtual machine is running: True, Shutdown integration component status: OK Offline Action: Turn Off
⊟ SW2K12R2DG1VPL	Virtual machine is running: True, Shutdown integration component status: OK Offline Action: Turn Off

System Center Virtual Machine Manager (SCVMM)

System Center Virtual Machine Manager delivers industry leading fabric management, virtual machine management and services deployment in Private Cloud environments.

Here is a short list of some of the major benefits of deploying Virtual Machine Manager.

1. Build your Private Cloud. Provision flexible, agile and cost effective Infrastructure as a Service (IaaS) configuration while maintaining your Service Level Agreement (SLA) commitments to the business.
2. Manage heterogeneous virtual environments using a single tool, thus optimizing your existing datacenter investments.
3. Optimize your existing applications for Private-Cloud deployment without requiring you to rewrite them from scratch.
4. Dramatically simplify application provisioning and servicing, thus saving operational effort and expense.

There were no issues currently detected in this section for this environment

Performance

Microsoft and our partners invested a large amount of engineering resources to develop and optimize the features, algorithms, and settings in Windows Server 2012 and Windows Server 2008 R2 to maximize energy efficiency with minimal effects on performance.

Registry settings and tuning parameters changed significantly from Windows Server 2003, Windows Server 2008, and Windows Server 2008 R2 to Windows Server 2012

To have the most impact with any tuning changes you make, consider the hardware, the expected workload, the power budgets, and the performance goals of your servers.

Please read the whitepaper "Performance Tuning for Hyper-V Servers" (http://msdn.microsoft.com/en-us/library/windows/hardware/dn567657.aspx)

Performance – Disk

The PhysicalDisk object counters provide data on activity for each of the physical disks in your system.

PhysicalDisk(*)\Avg. Disk sec/Read

PhysicalDisk(*)\Avg. Disk sec/Read

Storage latency is measured using two counters:

Avg. Disk sec/Read is the average time, in seconds, of a read of data from the disk.

Avg. Disk sec/Write is the average time, in seconds, of a write of data to the disk.

If the response times are greater than .015 (15 milliseconds) but less than .025 (25 milliseconds), then the disk subsystem is keeping up with demand, but does not have much overhead left.

If the response times are greater than .025 (25 milliseconds), then noticeable slowdowns and performance issues affecting users may be occurring.

Some applications running in virtual machines may have lower thresholds, in which case those thresholds apply to the disks used by those virtual machines. Applications with different disk latency requirements include SQL, Exchange, and Lync.

Cluster Shared Volumes\Redirected Write Bytes Delta

Cluster Shared Volumes\Redirected Read Bytes Delta

These counters are indicators of the amount of redetected I/O that takes place when a node in the cluster does not have direct access to the disk or when the CSV is intentionally put into redirected access for use with backup. It is important that these values do not grow exponentially over time.

There were no issues currently detected in this section for this environment

Performance – Memory

Memory utilization in the virtualized environment is variable based on the amount used by each virtualized guest. When the utilized memory is more than expected, it can cause pressure that results in performance degradation. By monitoring these performance counters you can detect the thresholds that will cause an impact to the overall system performance.

Hyper-V VM Vid Partition\Remote Physical Pages

The number of physical pages not allocated from the preferred NUMA node is measured. Any non-zero values in this table indicate VMs whose virtual CPUs are accessing memory from a remote NUMA node. This can have a significant performance impact on the host and thus all virtual machines running on this host.

Memory\Available Mbytes

This shows the available memory on each host. It is important that memory reserve is maintained on the host (i.e. memory is put aside for the host to ensure reliable performance).

Hyper-V Dynamic Memory VM(*)\Physical Memory

This shows the ratio of committed bytes to currently assigned physical memory averaged across the entire physical machine for all the virtual machines that have dynamic memory enabled.

Hyper-V Dynamic Memory VM(*)\Average Pressure

This shows the ratio of committed bytes to currently assigned physical memory within the VMs that have dynamic memory enabled. By default, Hyper-V will maintain 20% free memory above the Committed Bytes of the VM. (20% free translates to a target pressure of 83.33).

Values above 83 indicate any one or combination of the following:

- The VM is configured with a lower than default memory buffer
- The VM's upper memory limit is too low for the VM, possibly impacting the performance of the VM.
- The host has is under significant memory pressure. Note that if NUMA spanning has been disabled, this can occur when the NUMA node running the VM has run out of memory.

Values significantly below 83 indicate any one or combination of the following:

- The VM is configured with a higher than default memory buffer
- The VM has a minimum memory value that is well below what is needed by the VM to run. In this environment it may be worth reducing the minimum value to reclaim memory.

A zero value indicates that Dynamic memory is not enabled for this VM

Hyper-V Dynamic Memory Balancer\Available Memory

This indicates the available memory for additional virtual machines to start.

Hyper-V Dynamic Memory Balancer\Average Pressure

This shows the ratio of committed bytes to currently assigned physical memory averaged across the entire physical machine for all the virtual machines that have dynamic memory enabled.

Remote NUMA Memory Is Being Used

Status

Failed

Description

Hyper-V servers have virtual machines which are accessing physical memory from a different NUMA node than is being used by the virtual CPU that is accessing that memory.

Additional Information

Best Practice Guidance

NUMA spanning is enabled by default to ensure optimal VM density and predictable behaviour.

Importance

This may cause a performance impact on the virtual machine (depending on the load on the Hyper-V server) and if it is severe enough, it can have a minor performance impact on the entire Hyper-V server.

Hyper-V will try to avoid placing virtual machines in a configuration that will result in this occurring, however this can occur anytime that the amount of memory needed to run the virtual machine is not available on the current NUMA node.

Recommended Resolution

Review the performance of the identified virtual machines, and consider increasing the amount of physical memory on the host or migrate the VM to a host with more RAM per NUMA node. You can also disable NUMA spanning in Hyper-V host settings.

When NUMA Spanning is disabled, Hyper-V will not start, restore, or accept a live migration of a virtual machine if it would be forced to split a virtual NUMA node between two or more physical NUMA nodes. This ensures that virtual machines always run with optimal performance. Each virtual NUMA node is backed by one physical NUMA node, and the virtual NUMA topology aligns exactly with the physical server's NUMA topology. This setting is recommended for NUMA-aware workloads that require optimal performance at all times, but it might cause a virtual machine to not start, restore, or migrate.

Recommended Resolution

http://technet.microsoft.com/en-us/library/dn282282.aspx#bkmk_NUMA_Spanning

Annotation

Affected Nodes

SW2K12R2HYPER15.SSF.COL	Virtual machines accessing memory on a remote node, and the number of times that that virtual machine has accessed remote memory since it was started on the current Hyper-V server: SW2K12R2ANTI01 58734
SW2K12R2GTSS1PR.SSF.COL	Virtual machines accessing memory on a remote node, and the number of times that that virtual machine has accessed remote memory since it was started on the current Hyper-V server: SW2K12R2ESIGNAP 52422

Performance – Network

The network counters are necessary for monitoring the overall networking performance on the host system and virtual machines operating on the host. The most important thing to generally monitor is the total throughput counters to make sure the NICs are not getting saturated. Once the NICs are saturated your overall system performance will be capped because no more additional bandwidth can be received than what is currently being handled.

Hyper-V Legacy Network Adapter(*)\Bytes Sent/sec

The "Hyper-V Legacy Network Adapter" counter sets allow you to see how much network activity a VM is doing. This counter set is named with the friendly name of the VM plus the name of the network adapter followed by two GUIDs. The GUIDs are the internal id of the VM and adapter which is important when querying via WMI.

Use of legacy network adapters (also known as emulated network adapters) should be avoided after the virtual machine operating system installation process has completed. Legacy network adapters have significantly lower bandwidth to synthetic network adapters, and generate a significant greater amount of CPU load for the same traffic compared to synthetic network adapters.

Hyper-V Virtual Network Adapter(*)\Bytes/sec

The "Hyper-V Virtual Network Adapter" counter set allow you to see how much network activity a VM is doing. This counter set is named with the friendly name of the VM plus the name of the network adapter followed by two GUIDs. The GUIDs are the internal id of the VM and adapter which is important when querying via WMI.

When deploying VMs it is recommended to use the Network Adapter and the "Hyper-V Virtual Network Adapter" counter set. Keep in mind Windows Server 2008/R2 and Windows Server 2012/R2 all have integration Services pre-installed.

There were no issues currently detected in this section for this environment

Performance - Processor

In Hyper-V a common misconception is that the regular performance counters (and task manager) when viewed on the management operating system represent the overall physical processor utilization. This is not the case. The only way to accurately measure processor information on a Hyper-V server is by using the Hyper-V specific performance counters (or an application that reads the information from these Hyper-V counters).

Hypervisors present one or more "Virtual Processors" to each running virtual machine (and to the management operating system). Each physical processor has one or more cores, and on some processors each core is split into two separate execution threads. This is sometimes called Simultaneous Multithreading (SMT) or Hyper-Threading (Intel). In Hyper-V core (and where SMT is enabled, each execution thread) is called a "Logical Processor". While a single SMT core (providing two execution threads) typically does not provide anywhere near the same processing capacity as two non-SMT cores, enabling SMT generally does provide a significant overall performance benefit. Hyper-V is aware of SMT, and when it is enabled, adjusts the CPU scheduling of virtual processors to best take advantage of this capability.

Hyper-V Hypervisor Logical Processor(*)\% Total Run Time

This performance counter displays the utilization of physical processors of the physical computer. This is the authoritative source of information for how busy a physical CPU is.

When reviewing this counter, ensure that no one instance is continually running at or close to 100% while most others are significantly lower. This indicates that hardware drivers are not distributing inbound processing across multiple cores and can result in CPU being the bottleneck for that hardware device (both network and storage devices should do this).

Hyper-V Hypervisor Logical Processor(*)\Context Switches/sec

This counter displays the rate of virtual processor context switches on each logical processors (switching between virtual processors). Each context switch costs processing time which cannot be used for virtual processors, so a certain rate of context switches per logical processor should be defined per organization and monitored for.

A high rate of context switching is often an indication of a problem in a Hyper-V environment. This may be caused by running unnecessary applications on the management operating system, use of emulated devices in virtual machines, old integration components, bad drivers and driver settings, etc.

System\Context Switches/sec

Context Switches/sec is the combined rate at which all processors on the computer are switched from one thread to another within the one operating system. Context switches occur when a running thread voluntarily relinquishes the processor, is pre-empted by a higher priority ready thread, or switches between user-mode and privileged (kernel) mode to use an Executive or subsystem service. It is the sum of Thread\Context Switches/sec for all threads running on all processors in the computer and is measured in numbers of switches. There are context switch counters on the System and Thread objects. This counter displays the difference between the values observed in the last two samples, divided by the duration of the sample interval.

High context switching is only a problem if overall CPU is high as well. This analysis checks for high CPU, high privileged mode CPU, and high system context switches per sec.

Threshold: As a general rule, context switching rates of greater than 5,000 per second per processor are considered a warning. If context switching rates exceed 10,000 per second per processor, then there is a constraint.

Significance: Context switching happens when a higher priority thread pre-empts a lower priority thread that is

currently running or when a high priority thread blocks. High levels of context switching can occur when many threads share the same priority level. This often indicates that there are too many threads competing for the processors on the system. If you do not see much processor utilization and you see very low levels of context switching, it could indicate that threads are blocked.

Hyper-V Hypervisor Virtual Processor(*)\% Guest Run Time

This analysis checks the processor utilization of guest virtual computer processors. The "\Hyper-V Hypervisor Virtual Processor(*)\% Guest Run Time" performance counter is more accurate than using the "% Processor Time" counter within the virtual computer due to clock calculation drift.

High Process Processor Time

Status

Failed

Description

One or more processes on average are using more than 10% CPU time.

Additional Information

Best Practice Guidance

Avoid running any Roles, Features, or custom services on the host operating system for the Hyper-V virtual machines used by the solution. If your solution requires any Roles, Features, or custom services, they should be run on a Hyper-V virtual machine rather than on the host operating system.

Importance

Any processes using CPU time in the management operating system get priority over all virtual machines running on the Hyper-V server, and can significantly impact the CPU and I/O performance of running virtual machines.

Recommended Resolution

Review any processes identified that are using CPU time in the management operating system, and investigate methods to reduce the CPU usage of those processes. This may mean changing settings within those applications or services, or removing them from the Hyper-V server.

Annotation

Affected Nodes

⊟ SW2K12R2DOCGES1: % Processor Time (svchost#3)	The average of the % Processor Time value for this process over the entire duration of the performance data collection was: 10.5%