

Cómo administrar más de  
300 servidores con 3  
personas y  $\frac{1}{2}$  ...

y no morir en el  
intento!!!



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REPUBLICA**

# Automatización de tareas



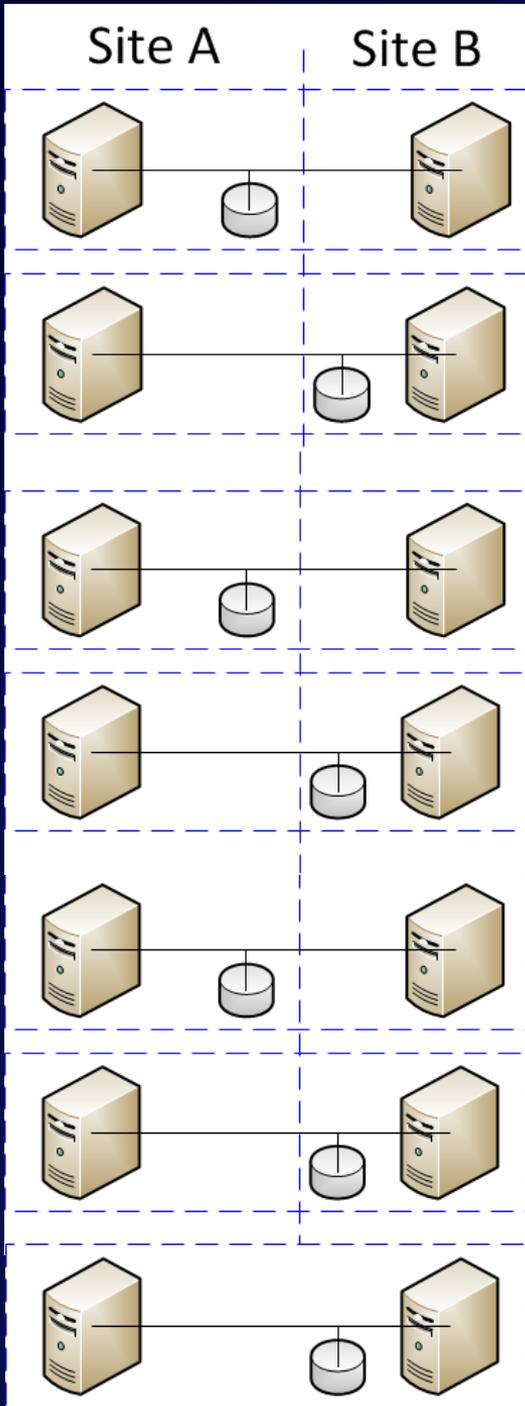
Microsoft®

System Center  
Orchestrator

La experiencia del



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# Infraestructura del BROU

+ 250 servidores virtuales  
(Hyperv)

+ 100 servidores físicos  
(Windows Server)

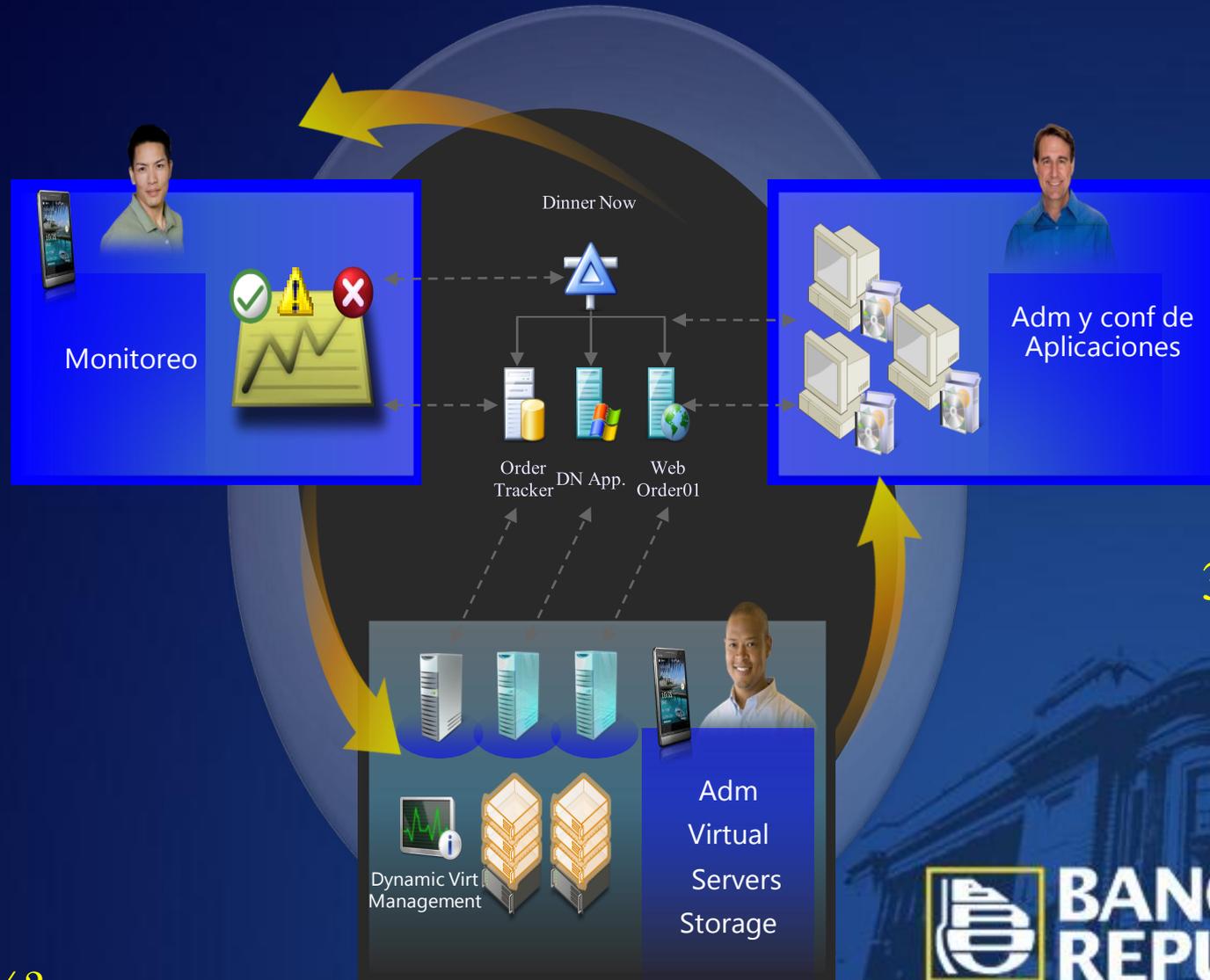
2 Datacenters

7 Clusters (Activo-Activo)

# Infraestructura del BROU

- Servicios que brindamos y administramos
  - Hyperv
  - Exchange
  - Sharepoint
  - Plataforma E-Brou
  - Sql
  - File Serves
  - System Center
  - Servidores Web

# Gestión de la Infraestructura del BROU?



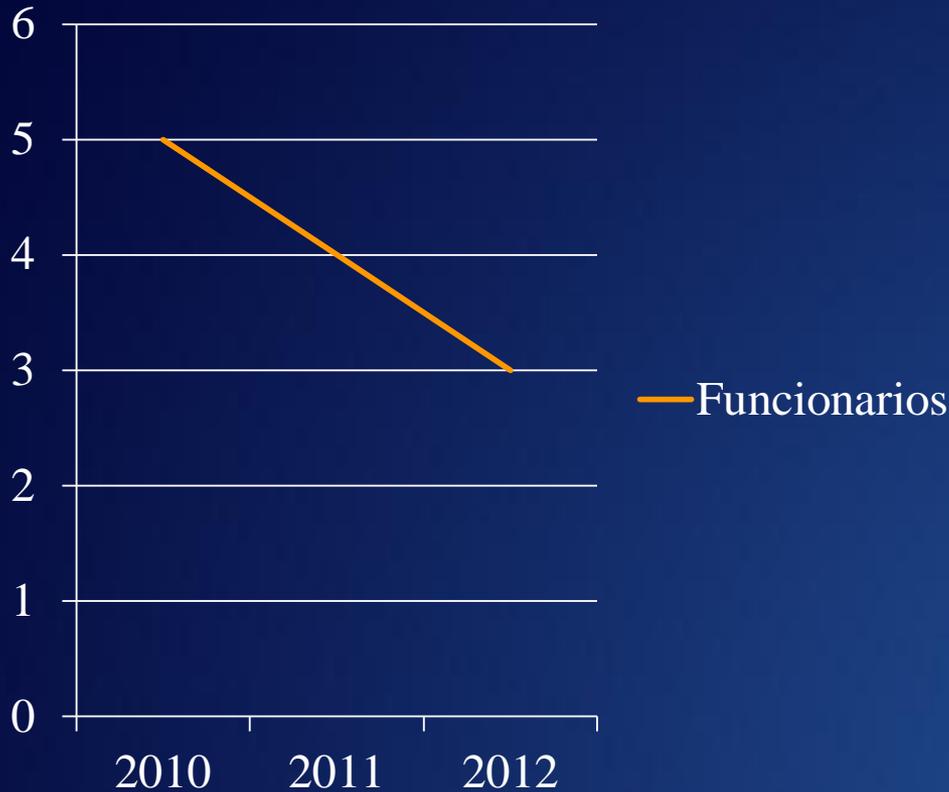
3 personas

Y el 1/2?



# Recursos 2010-2012

## Funcionarios



## Servidores



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# Beneficio Obtenido

- Desde la implementación de Opalis-Orchestrator (2009 a la fecha) se pudieron ahorrar más 1.500 horas hombre/año



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Slide 7

# Herramientas utilizadas

Microsoft®  
System Center  
Data Protection Manager



Microsoft®  
System Center  
Service Manager



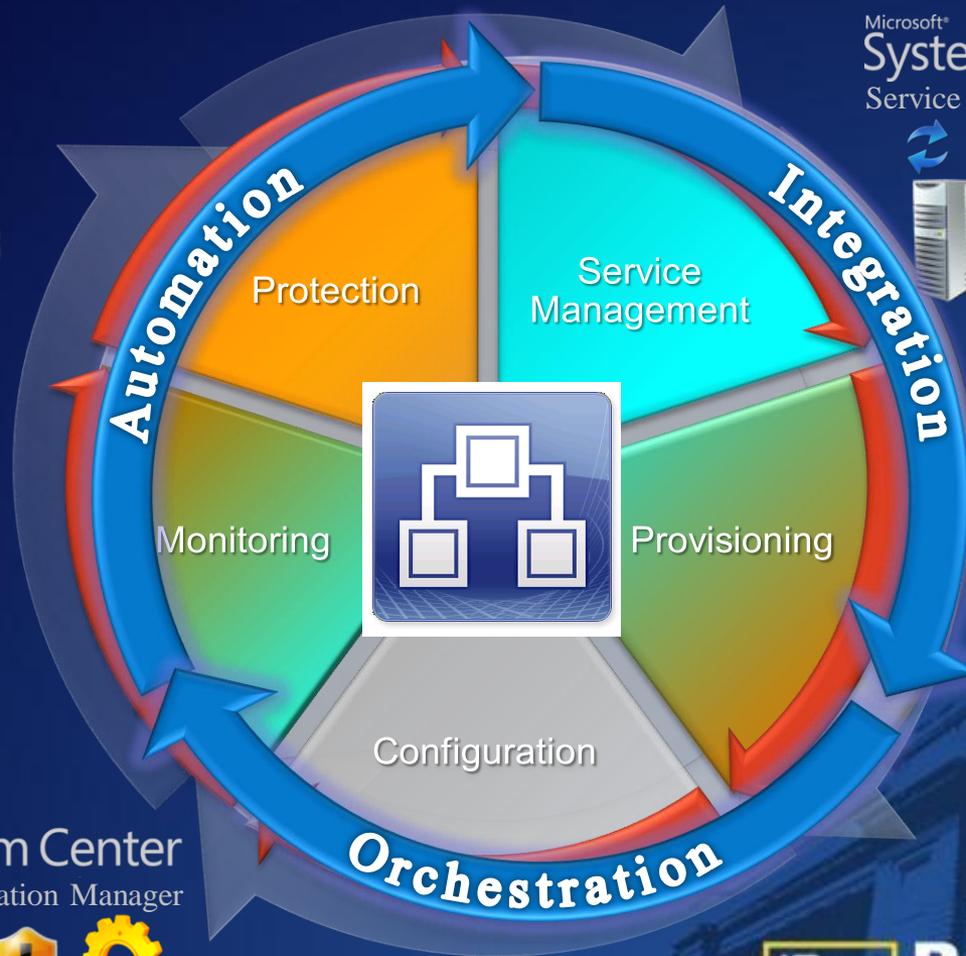
Microsoft®  
System Center  
Operations Manager



Microsoft®  
System Center  
Configuration Manager



Microsoft®  
System Center  
Virtual Machine Manager



# Ejemplos de automatizaciones

- Tareas Manuales
  - Scripts Batch
  - Cumplimiento de estandares
  - Solicitudes de usuarios
  - Aprovisionamiento
  - Disaster Recovery
  - Monitoreo de alertas
  - Respuesta a incidentes
- Control de cambios
  - Integración de plataformas
  - Aplicacion de parches
  - Creación de nuevos recursos

El límite es la imaginación del Implementador !!!!!

# Que se puede hacer con Orchestrator ?

Disminuir el costo de entregar servicios en el datacenter mediante:

- Automatización y estandarización de procesos mediante la familia de productos de System Center
- Integración con herramientas no-Microsoft como parte del flujo completo
- Compartiendo información entre los sistemas sin utilización de código

# Proceso de Análisis



# Que analizar?

- ¿Qué procesos son los que más tiempo requieren a los administradores?
- Identificar los niveles de servicio que sufren más
- ¿Qué problemas se repiten con más frecuencia?
- ¿Cuáles son los procesos más caros para la empresa?
- ¿Qué errores de proceso son visibles para los clientes y se deben evitar?
- Tareas repetitivas

# Identificar tareas

- Identificar procesos manuales
  - No documentados
  - Inconsistentes
  - Propenso a errores
  - Lentos
- Procesos complejos y que requieren interactuar con otros productos
- Mantenimiento de scripts

# Frecuencia de uso

- Detectar necesidades
- Identificar procesos de uso frecuente
- Analizar tickets
- Calcular frecuencia de uso



# Determinar el esfuerzo

- Es importante ir más allá de la identificación de la frecuencia con respecto al proceso, también se debe determinar cuánto esfuerzo y los gastos que están involucrados.
- Tenemos dos procesos que se repiten 10 veces a la semana,
  - uno se toma 5 minutos para terminar
  - el otro 60 minutos.
  - Tiene sentido asignar una mayor prioridad al segundo proceso (más mano de obra y mas caro)

# Variación / Excepciones

- No todos los procesos pueden ser automatizados
- Complejidad y tiempo de desarrollo pueden llegar a ser costosos
- Las entradas pueden ser variables y se necesita la intervención de un operador



# ROI

- Analizados los puntos anteriores, se debe tratar de calcular el ROI de la automatización
- Analizar el esfuerzo a realizar
- Analizar complejidad de los Runbooks
- Determinar el impacto de la implementación



# Beneficios de Orchestrator

- Definir, construir, organizar, gestionar e informar sobre las políticas de este sistema de apoyo y los procesos.
- Automatizar las tareas con una mínima necesidad de programación y scripting.
- Integración de múltiples herramientas informáticas de gestión
- Resolución de errores conocidos (automáticamente)



# Conclusión

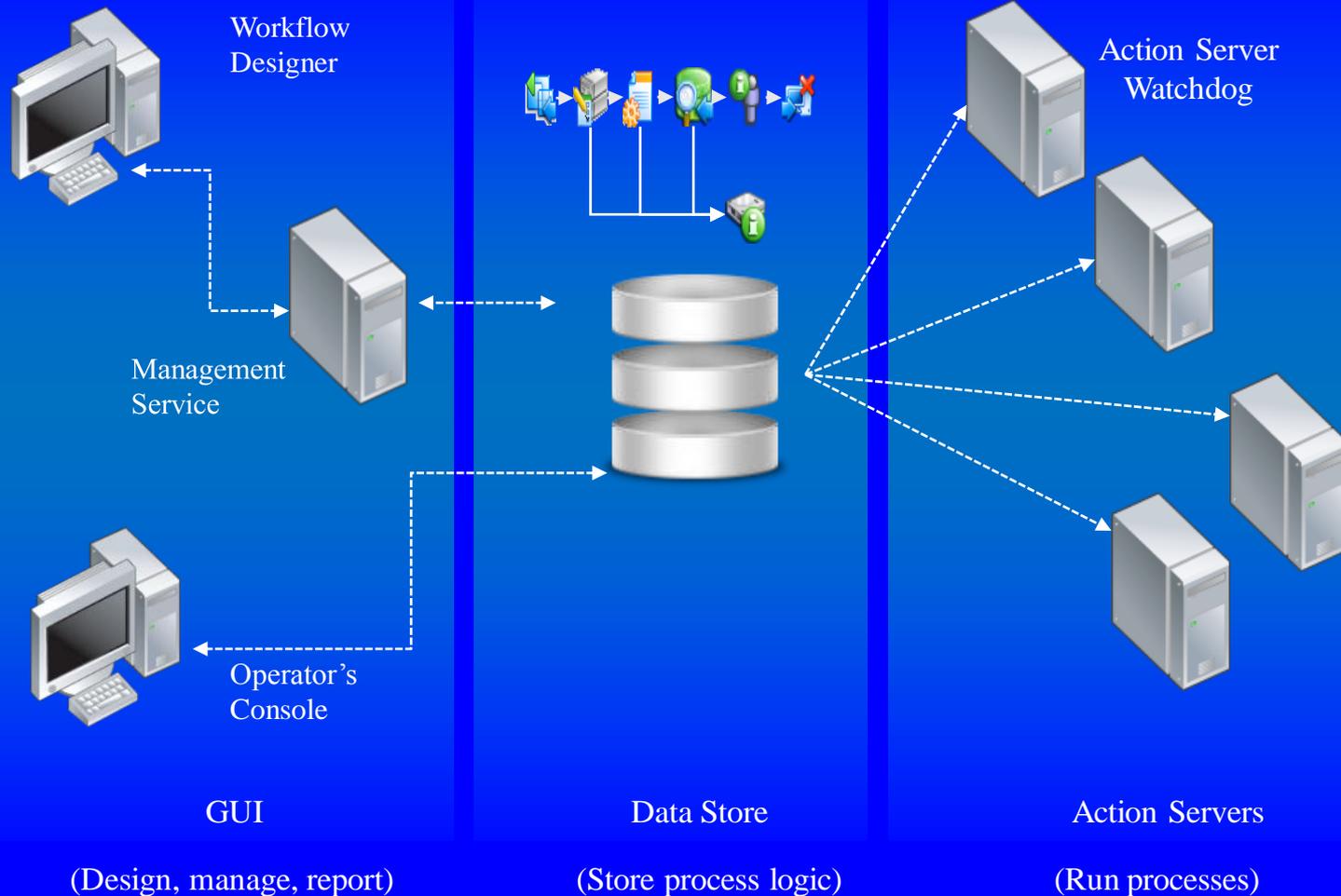
- Interactuar con todo tipo de elementos de la infraestructura para automatizar los procesos que van desde lo simple a lo complejo
- Posibilidad de crear nuestros propios MP
- Aprovisionamiento de servidores y servicios
- Instalación de aplicaciones en forma automatizada.



# Inventario de Flujos en BROU

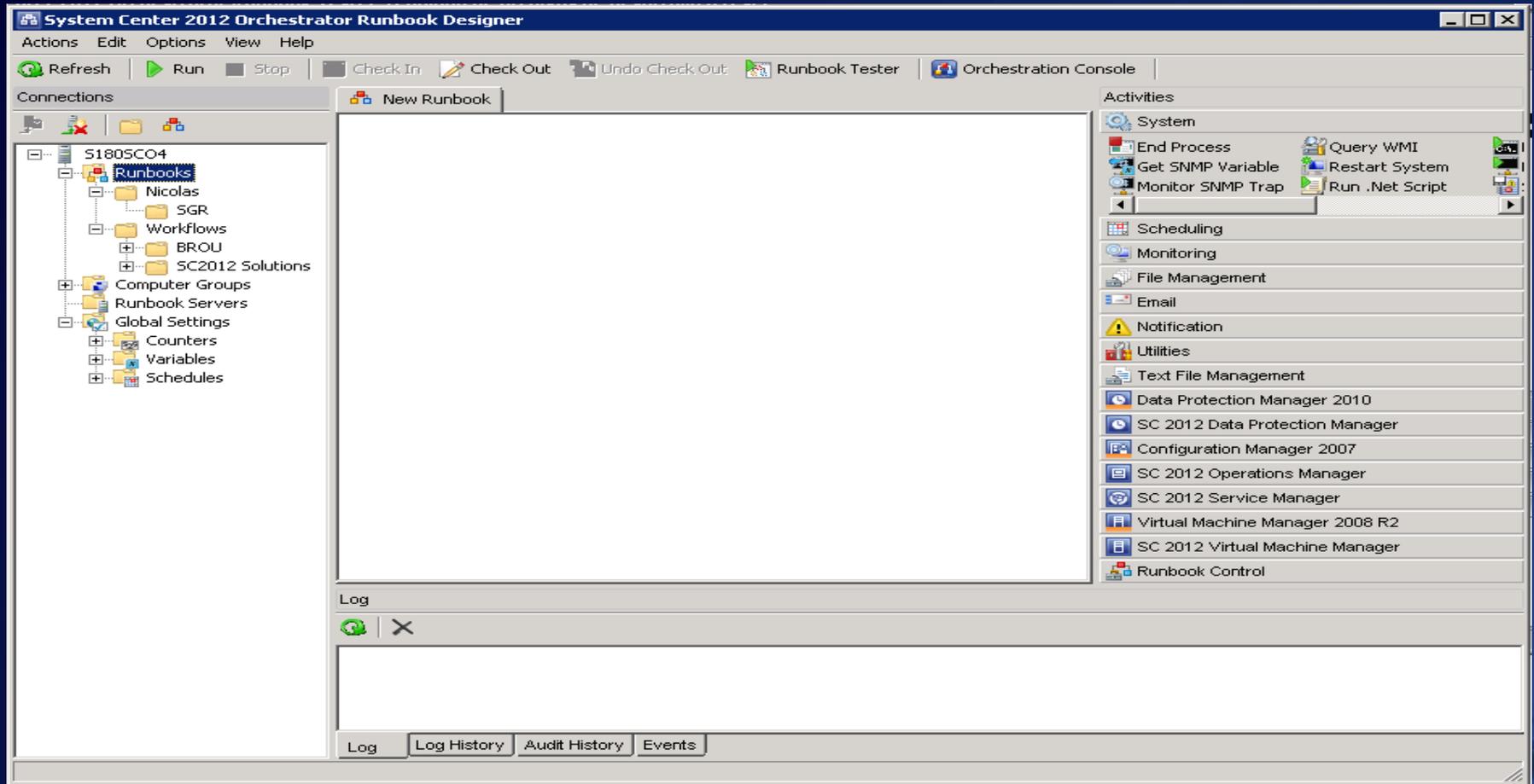
- Mas de 200 Runbooks en Producción
- Aproximadamente 100 Runbooks ejecutados por un operador sin experiencia!!!
- Mas de 50 RunBooks agendados
- Mas de 20 RunBooks solucionando alertas de SCOM

# Componentes de SC Orchestrator



# Herramientas

- Runbook Designer

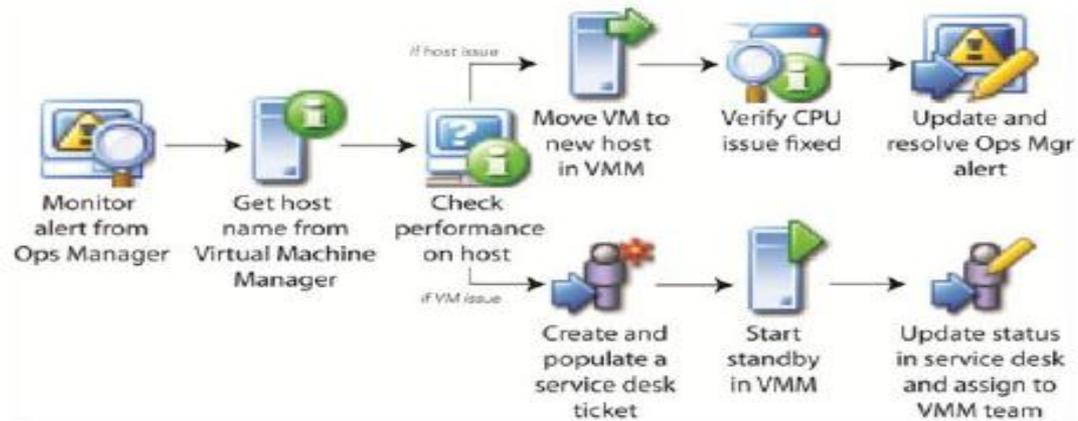


# Terminología y Conceptos

- Que es un workflow (policy)?
- Check-in/Check-out
- Logs / Historial de Logs
- Auditoria de políticas

# Fundamentos de Integración

- Bus de Datos para intercambio de información



Subscribe

Publish



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# Herramientas

- RunBook Tester

The screenshot displays the 'System Center 2012 Orchestrator Runbook Tester' window. The title bar reads 'System Center 2012 Orchestrator Runbook Tester [Copiado de archivos de desarrollo a test]'. The interface includes a menu bar (File, View, Test, Help) and a toolbar with buttons for 'Run', 'Step Through', 'Step', 'Stop', and 'Toggle Breakpoint'. On the left, there are panels for 'Run Time Properties' and 'Design Time Properties'. The main area shows a workflow diagram with the following steps: 'Custom Start', 'Stop SimuladorBEI Site S180CS98', 'Stop Simulador BEI AppPool S180CS98', 'Copiado de Archivos de Instalacion', 'Start Simulador BEI AppPool S180CS98', and 'Start SimuladorBEI site S180CS98'. A vertical arrow points from the 'Copiado de Archivos de Instalacion' step to a 'Mail copiado de archivos' step. At the bottom, there is a 'Log' panel and a 'Resource Browser' panel with expandable sections for 'Computer Groups', 'Counters', 'Variables', and 'Schedules'.

# Herramientas

- Orchestrator Console

Orchestration Console - Windows Internet Explorer  
http://s180sco4:82/#/RunbooksP...  
Orchestrator  
Welcome, f62309! Help

Microsoft System Center 2012

Runbooks

- Nicolas
  - SGR
    - Envio de archivos de log
  - Workflows

Details for 'Envio de archivos de log'

Summary Jobs Instances Refresh

Instance Statistics (Historical) Since 10:00 AM Last 24 Hours Last 7 Days

Status	Last 24 Hours	Last 7 Days
Failed	0	0
Warning	0	1
Success	0	0

Instance Statistics (Current)

Status	Last 24 Hours	Last 7 Days
In Progress	0	0

Job Statistics (Historical)

Status	Last 24 Hours	Last 7 Days
Failed	0	0
Canceled	0	0
Completed	0	1
Created	0	1

Actions

Runbook

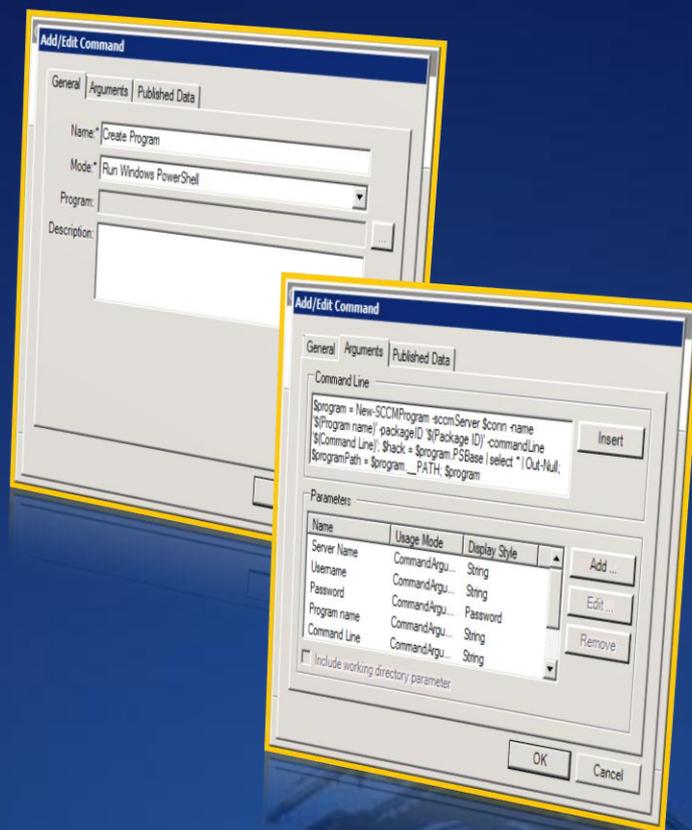
- Start Runbook
- Stop Runbook
- View Jobs
- View Instances
- View Definition

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# No esta desarrollado un IP? No Problem!

Hágalo Ud , como?

- QIK - Software Development Kit (SDK)



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# Ejemplo de automatización

The screenshot displays the Opalis Integration Server interface. The main workspace shows a workflow diagram for '1. Inicio Deploy'. The workflow starts with a 'Custom Start' node (a green circle with 'GD') which branches into four parallel paths. Each path consists of three sequential steps: 'Stop NLB from [hostname]', 'Deploy WS [hostname]', and 'Start NLB from [hostname]'. The hostnames used are S180W501, S180W502, S180CA01, and S180CA02. The 'Stop NLB' steps are connected to the 'Deploy WS' steps by green arrows, and the 'Deploy WS' steps are connected to the 'Start NLB' steps by green arrows. Additionally, there are green arrows labeled 'Stop NLB' that connect the 'Stop NLB' step of one path to the 'Start NLB' step of the next path, indicating a sequence across paths. The left sidebar shows a tree view of connections, including 'S180S001', 'Policies', 'Producción', 'Schedule', 'STIC', 'SCOM', 'SFBWeb', 'Util', 'WS Canales-SFB\_Prod', '1. Inicio Deploy', '2. Deploy', '3. Invoke WS', and 'WS Canales-SFB\_Test'. The right sidebar shows a list of objects, including 'System', 'End Process', 'Get SNMP Variable', 'Monitor SNMP Trap', 'Purge Event Log', 'Query WMI', 'Restart System', 'Run .Net Script', 'Run Program', 'Run SSH Command', 'Save Event Log', 'Send SNMP Trap', 'Set SNMP Variable', and 'Start/Stop Service'. The bottom status bar shows the time as 4:55 PM on 3/12/2012.

Deploy de webservices

# Ejemplo de automatización

## **Paso 1:**

Instalar  
Orchestrator en  
un nuevo  
Servidor

## **Paso 2:**

Exportar las  
Políticas  
de Opalis

## **Paso 3:**

Importar las  
Políticas  
en Orchestrator

## **Paso 4:**

Probar  
runbooks en  
desarrollo y  
exportarlos

## **Paso 5:**

Test de los  
Runbooks en  
producción



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Muchas  
gracias por su  
tiempo

El equipo de  
STIC

El ½ saco la foto!!!!



Microsoft®

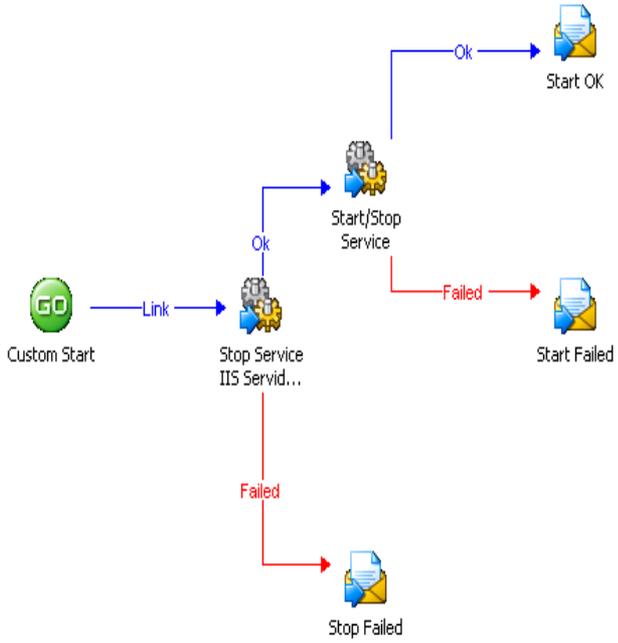
# System Center Orchestrator

## Demo 1

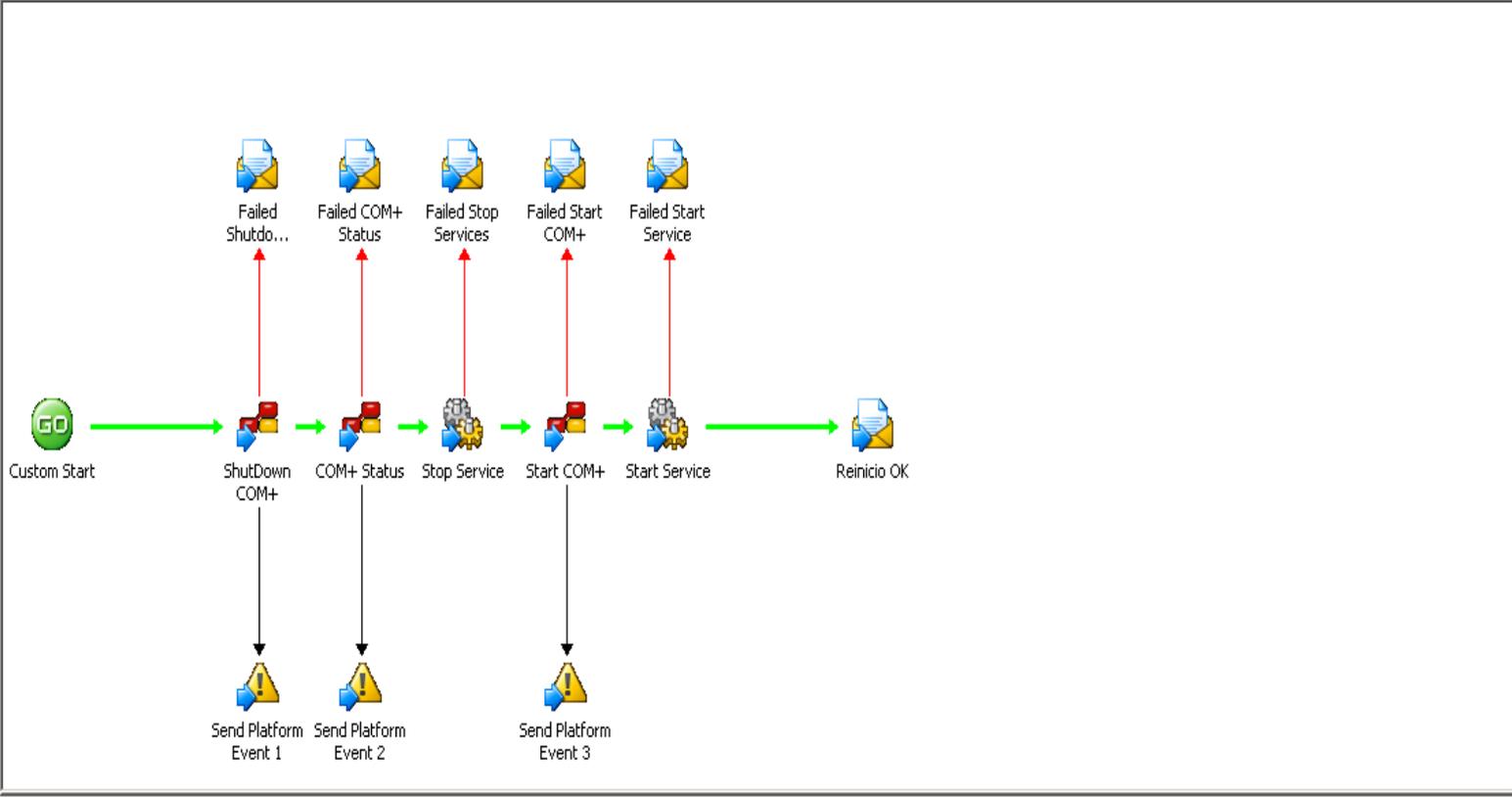


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- S1805001
  - Policies
    - Producción
      - Mesa de Ayuda
        - Servicios
          - Desarrollo
            - Compers\_Desa\_5180C...
            - GenexusIIS\_Desa\_518...
            - GexWeb\_Desa\_5180C...
          - Produccion
            - CA Service Desk
            - Compers\_Prod\_5180C...
            - Concursos\_Prod\_5180...
            - DNIC\_Prod\_5180CS33
            - GexWeb\_Prod
            - SGR\_Prod\_5180CA33
            - SOS
            - TRX\_Prod\_5180CS33
      - Sun
      - Schedule
        - Autoconsulta\_Prod
        - CA Service Desk
        - Compers\_Desa\_5180C599
        - Compers\_Prod\_5180C508
        - DOMA4\_Deploy
        - DOMB5\_Deploy
        - Migracion de Aplicaciones
        - Respaldos
        - S180CV04\_Prod
        - SCOM



- S1805004
  - Policies
    - Adrian
    - Fernando
    - Jose
    - Nicolas
    - Ricardo
      - 8-Minute-Demo
      - DataCenter
      - DataCenterBKP
      - GexWeb
        - Reinicio Servicio
        - Restart GexW
        - Restart GexW
        - Restart GexW
      - Produccion
      - QIK
      - SCBWeb
      - SCOM
      - SFBWeb
      - Sharepoint
      - Trigger Policy
      - Util
      - VMM Workflows
      - WebService de SF
      - Working with FTP
    - Computer Groups
    - Action Servers
    - Global Settings



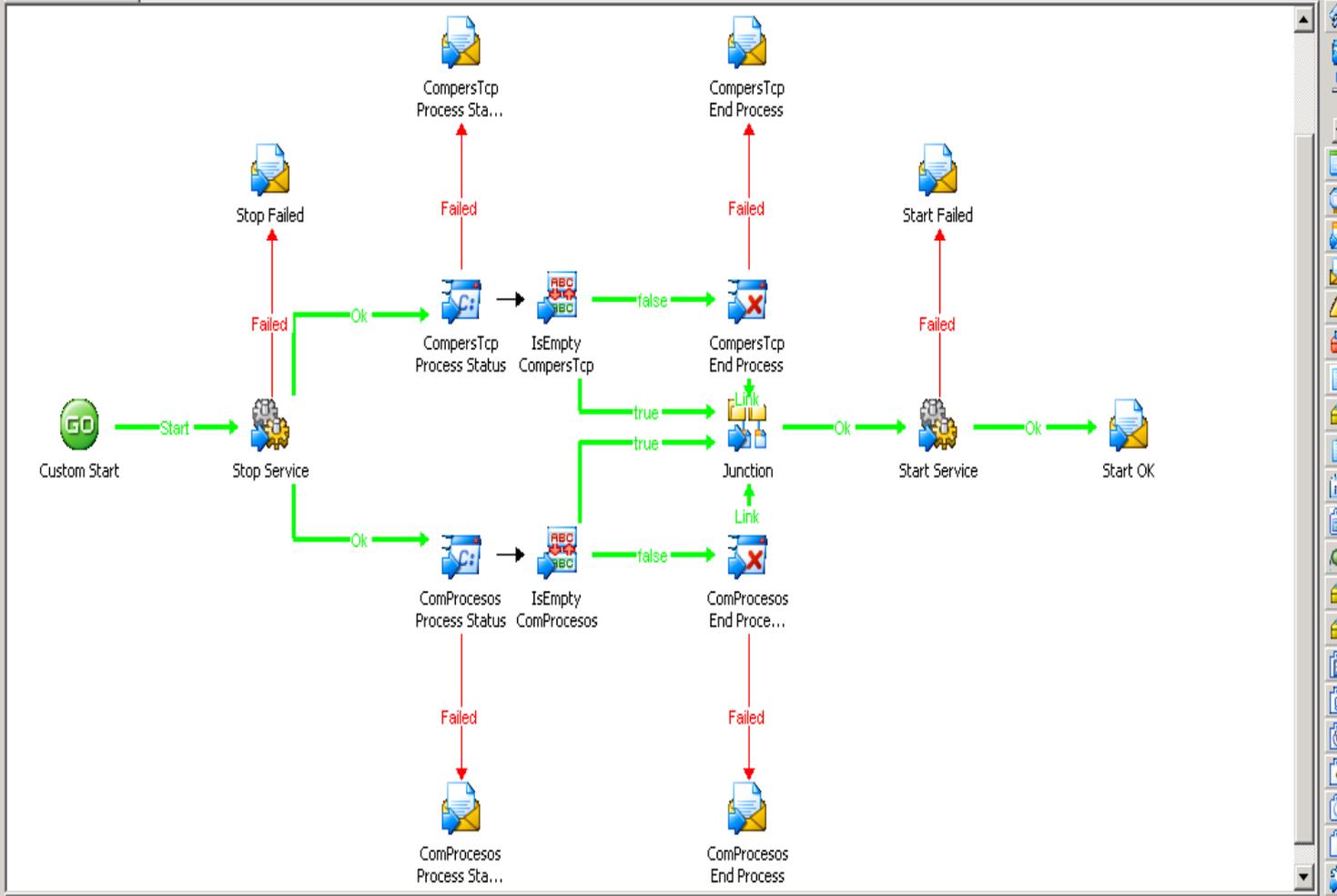
Log



Objects

- Sy
- Er
- Sc
- M
- Fi
- Er
- N
- Ut
- C
- Ct
- Es
- Es
- Lc
- Te
- Mi
- Mi
- Oj
- Qj
- Qj
- Sj
- Mj

- 51805001
  - Policies
    - Producción
      - Mesa de Ayuda
        - Servicios
          - Desarrollo
            - Compers\_Desa\_5180C...
            - GenexusIIS\_Desa\_518...
            - GexWeb\_Desa\_5180C...
          - Produccion
            - CA Service Desk
            - Compers\_Prod\_5180C...
            - Concursos\_Prod\_5180...
            - DNIC\_Prod\_5180CS33
            - GexWeb\_Prod
            - SGR\_Prod\_5180CA33
            - SOS
            - TRX\_Prod\_5180CS33
- Sun
- Schedule
  - Autoconsulta\_Prod
  - CA Service Desk
  - Compers\_Desa\_5180CS99
  - Compers\_Prod\_5180CS08
  - DOMA4\_Deploy
  - DOMB5\_Deploy
  - Migracion de Aplicaciones
  - Respaldos
  - S180CV04\_Prod
  - SCOM





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# System Center Orchestrator

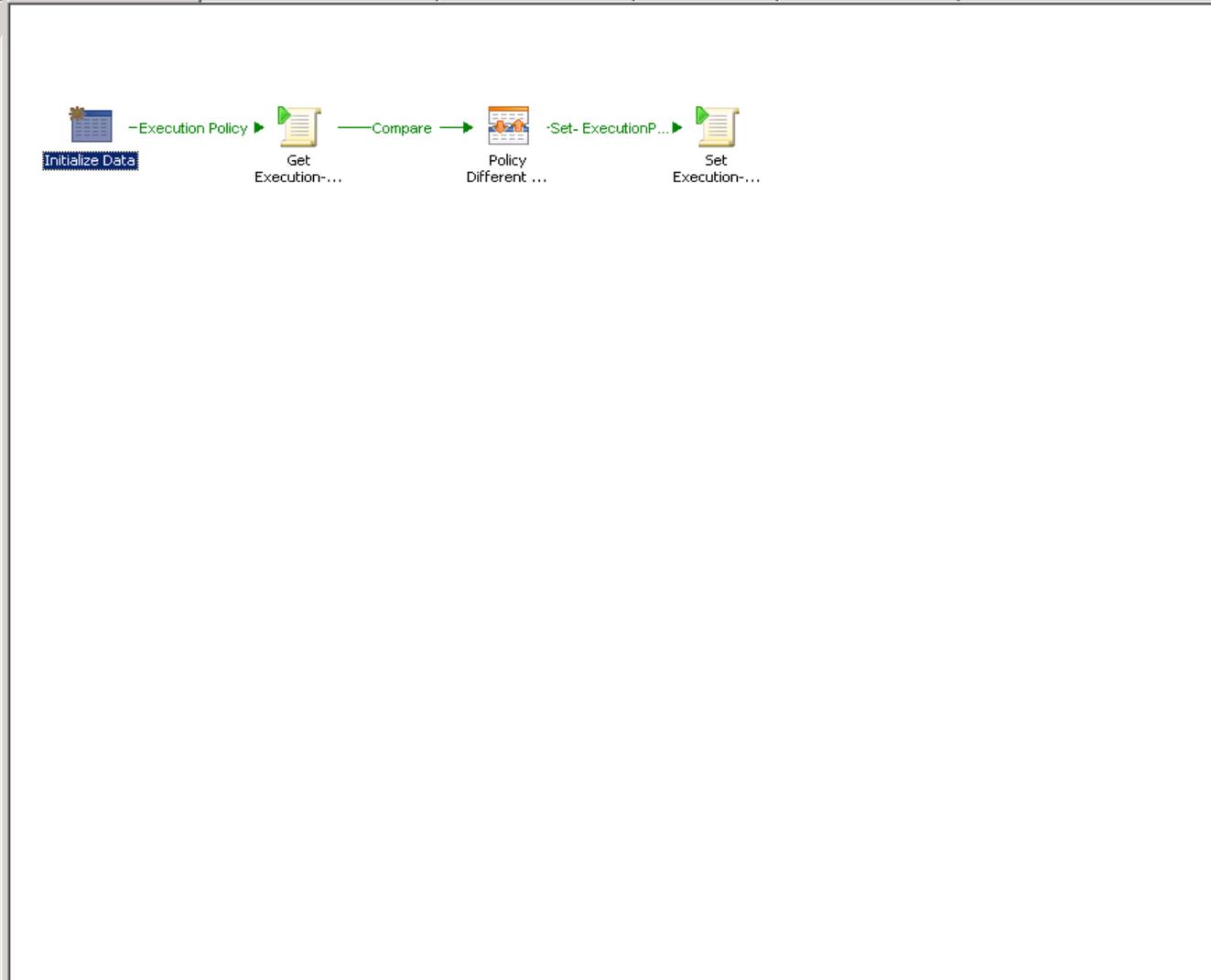
## Demo 2



**BANCO  
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S1805CO4

- Runbooks
  - Ricardo
    - 999. SCO Check
    - Logging
    - SCORCH\_Dist
      - 1. Prerequisites
      - 2. SQL2008R2
      - 3. Managemt Server
      - 4. Runbook Server
      - 5. Runbook Designer
    - SCVMM2012
  - Computer Groups
  - Runbook Servers
  - Global Settings



- System
  - End Process
  - Get SNMP Variable
  - Monitor SNMP Trap
  - Query WMI
  - Restart System
  - Run .Net Script
  - Run Program
  - Run SSH Command
  - Save Event Log
  - Send SNMP Trap
  - Set SNMP Variable
  - Start/Stop Service
- Scheduling
- Monitoring
- File Management
- Email
- Notification
- Utilities
  - Virtual Machine Manager 2008R2
  - Standard Logging
  - Data Protection Manager 2010
  - Text File Management
  - SC 2012 Data Protection Manager
  - Configuration Manager 2007
  - Operations Manager 2007 R2
  - SC 2012 Operations Manager
  - Service Manager 2010
  - SC 2012 Service Manager
  - SC 2012 Virtual Machine Manager
- Runbook Control

Log

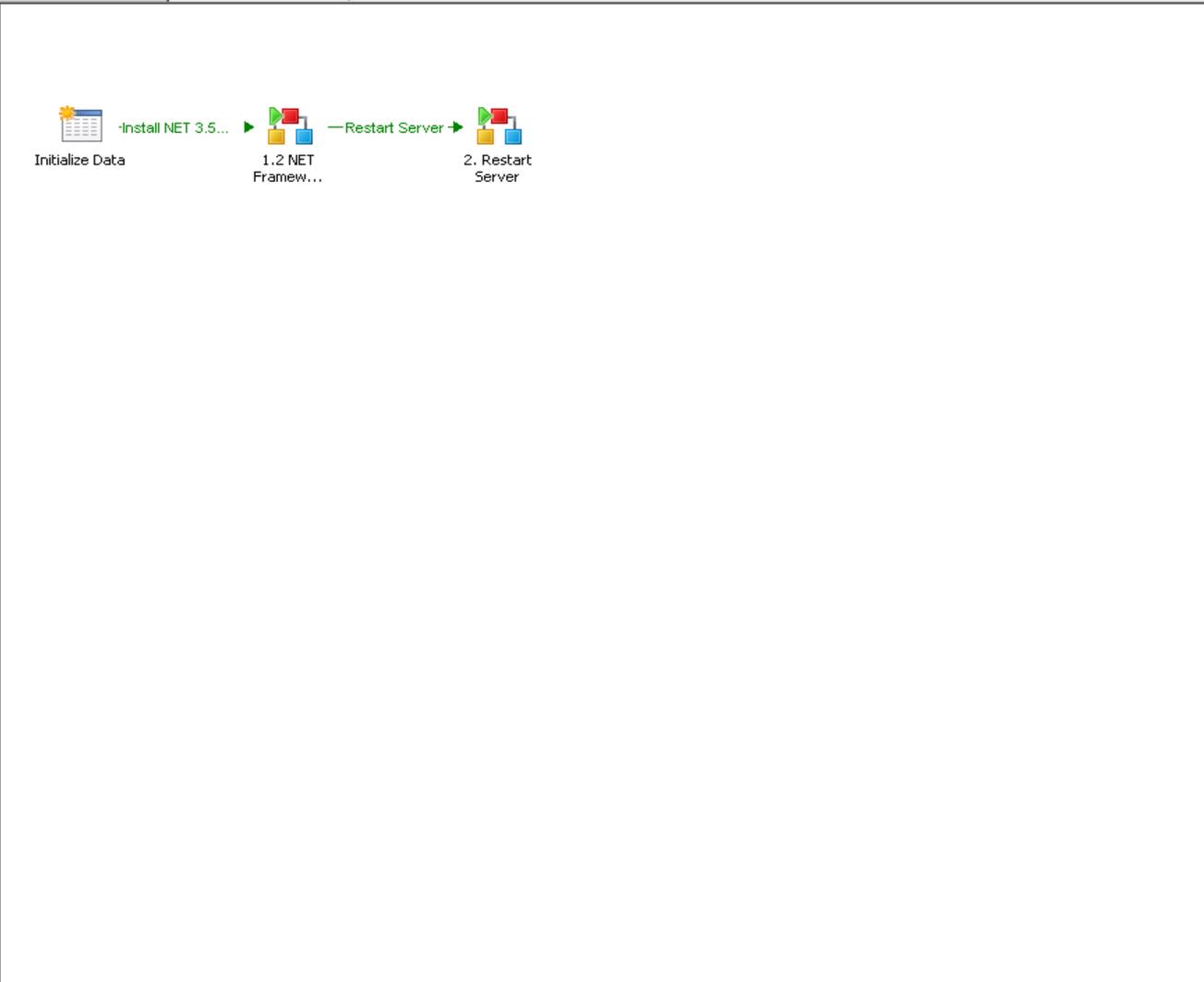


Log History Audit History Events

Connections

- S180SCO4
  - Runbooks
    - Ricardo
      - 999. SCO Check
      - Logging
      - SCORCH\_Dist
        - 1. Prerequisites
        - 2. SQL2008R2
        - 3. Managemt Server
        - 4. Runbook Server
        - 5. Runbook Designer
      - SCVMM2012
    - Computer Groups
    - Runbook Servers
    - Global Settings

2.1. Prerequisites 2.2. SQL Installation



Activities

- System
  - End Process
  - Get SNMP Variable
  - Monitor SNMP Trap
  - Query WMI
  - Restart System
  - Run .Net Script
  - Run Program
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  - Configuration Manager 2007
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  - SC 2012 Operations Manager
  - Service Manager 2010
  - SC 2012 Service Manager
  - SC 2012 Virtual Machine Manager
  - Runbook Control

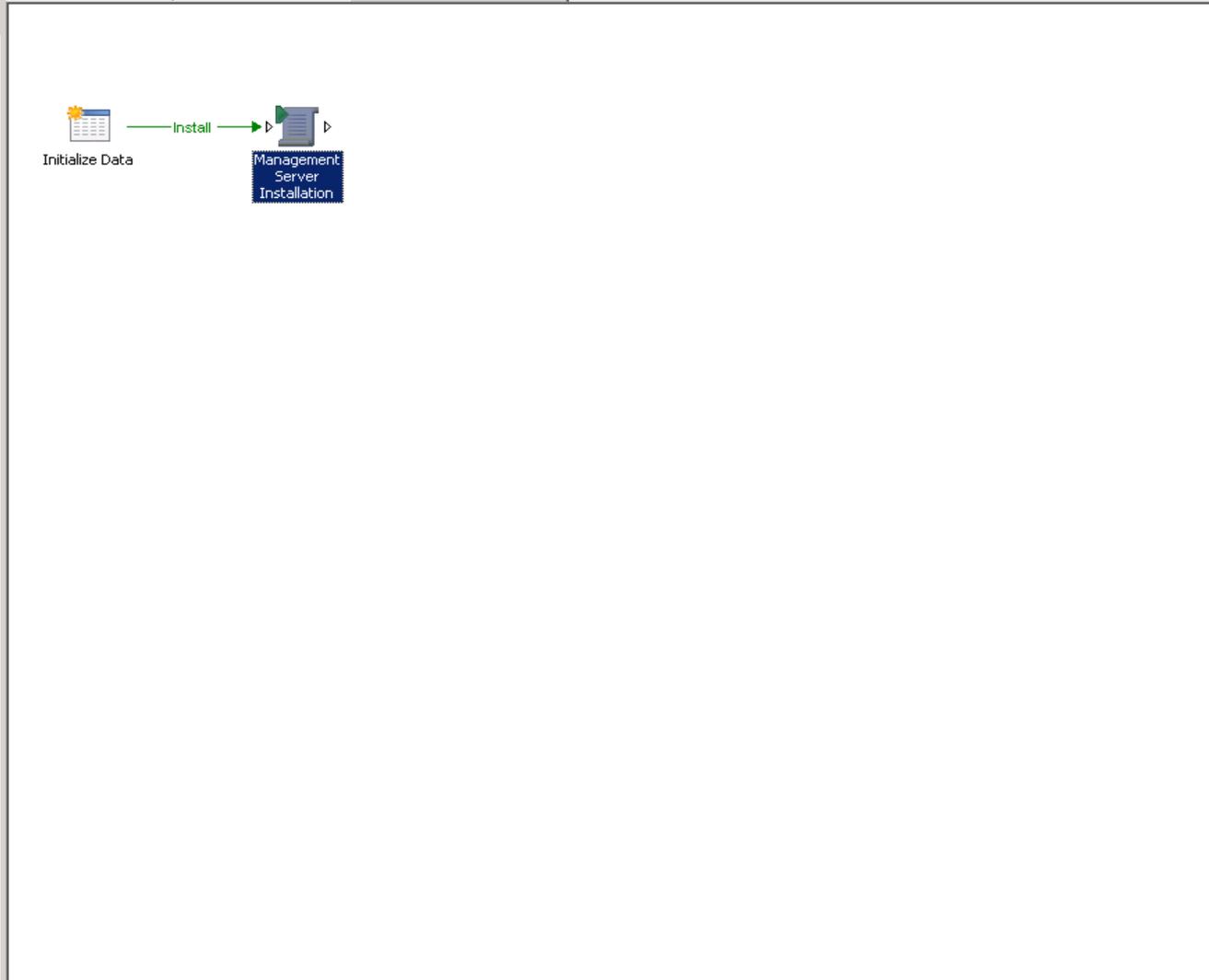
Log

Log [Close]

Connections

- S180SCO4
  - Runbooks
    - Ricardo
      - 999. SCO Check
      - Logging
      - SCORCH\_Dist
        - 1. Prerequisites
        - 2. SQL2008R2
        - 3. Managemt Server
        - 4. Runbook Server
        - 5. Runbook Designer
      - SCVMM2012
    - Computer Groups
    - Runbook Servers
    - Global Settings

3.1. Prerequisites | 3.2. Restart Server | 3.3. Management Server



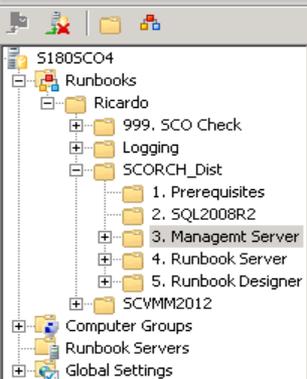
Activities

- System
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  - Service Manager 2010
  - SC 2012 Service Manager
  - SC 2012 Virtual Machine Manager
  - Runbook Control

Log

Log History | Audit History | Events

## Connections



## 3.1. Prerequisites 3.2. Restart Server 3.3. Management Server



### Management Server Installation Properties

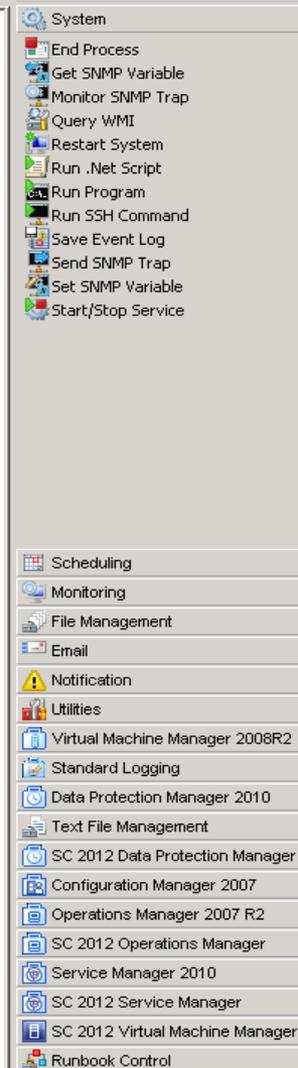
#### Run .Net Script

Define the language and script.

General	Language Type PowerShell
<b>Details</b>	Script <pre> \$isExecutionPolicyUnrestricted = Invoke-Command -ComputerName "{Ser \$ServiceUserName = {ServiceUserName from "Initialize Data"} \$ServicePassword = {ServicePassword from "Initialize Data"} \$DBServer = {DBServerName from "Initialize Data"}  [System.IO.Directory]::SetCurrentDirectory("\${scriptContainer}\OpalisRC\; cd "\${scriptContainer}\OpalisRC}\Setup"  \$progstart = "setup.exe" \$args = "/Silent /ServiceUserName:\$ServiceUserName /ServicePassword:: start-process \$progstart \$args -waited </pre>
Advanced	
Published Data	
Run Behavior	

Finish Cancel Help

## Activities



## Log





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# System Center Orchestrator

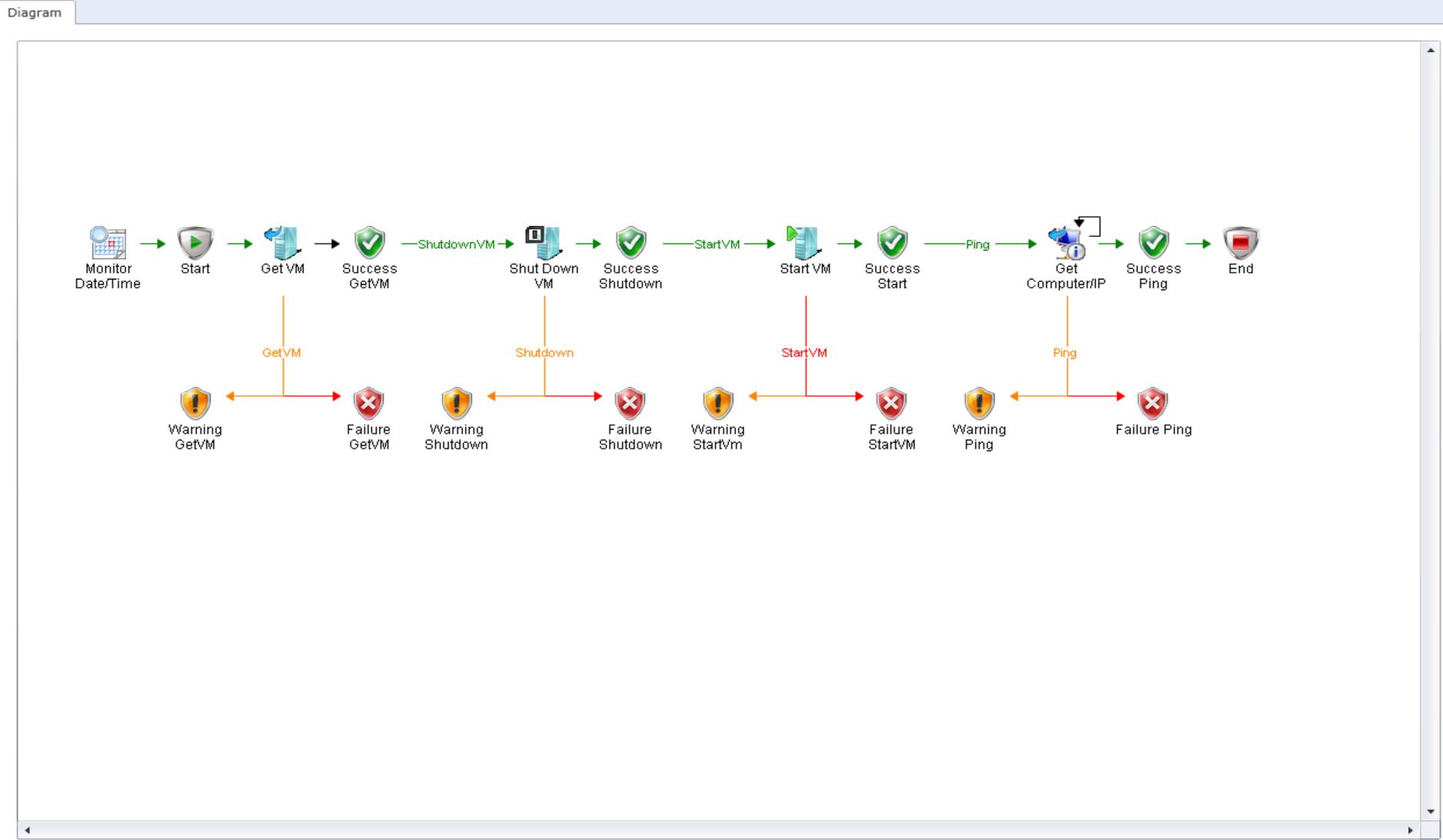
## Demo 3

Integración con SCVMM2012



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Runbook Summary for '1.1 VM Restart'





Microsoft®

# System Center Orchestrator

## Demo 3

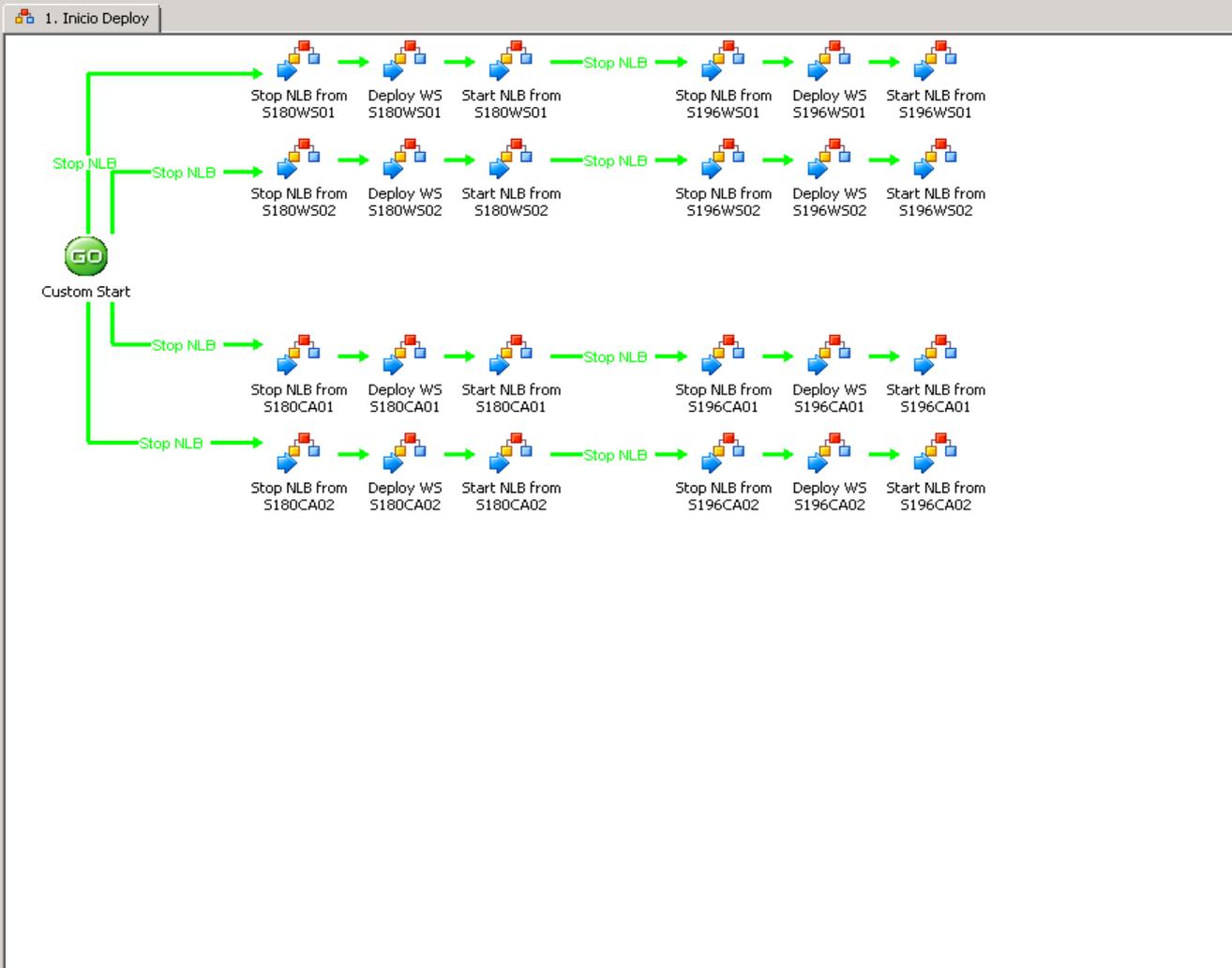
Deploy de webservices



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Connections

- 1805001
  - Policies
    - Producción
      - Mesa de Ayuda
      - Schedule
      - STIC
        - SCOM
        - SFBWeb
        - Util
        - WS Canales-SFB\_Prod
          - 1. Inicio\_Deploy**
          - 2. Deploy
          - 3. Invoke WS
        - WS Canales-SFB\_Test
- Computer Groups
- Action Servers
- Global Settings



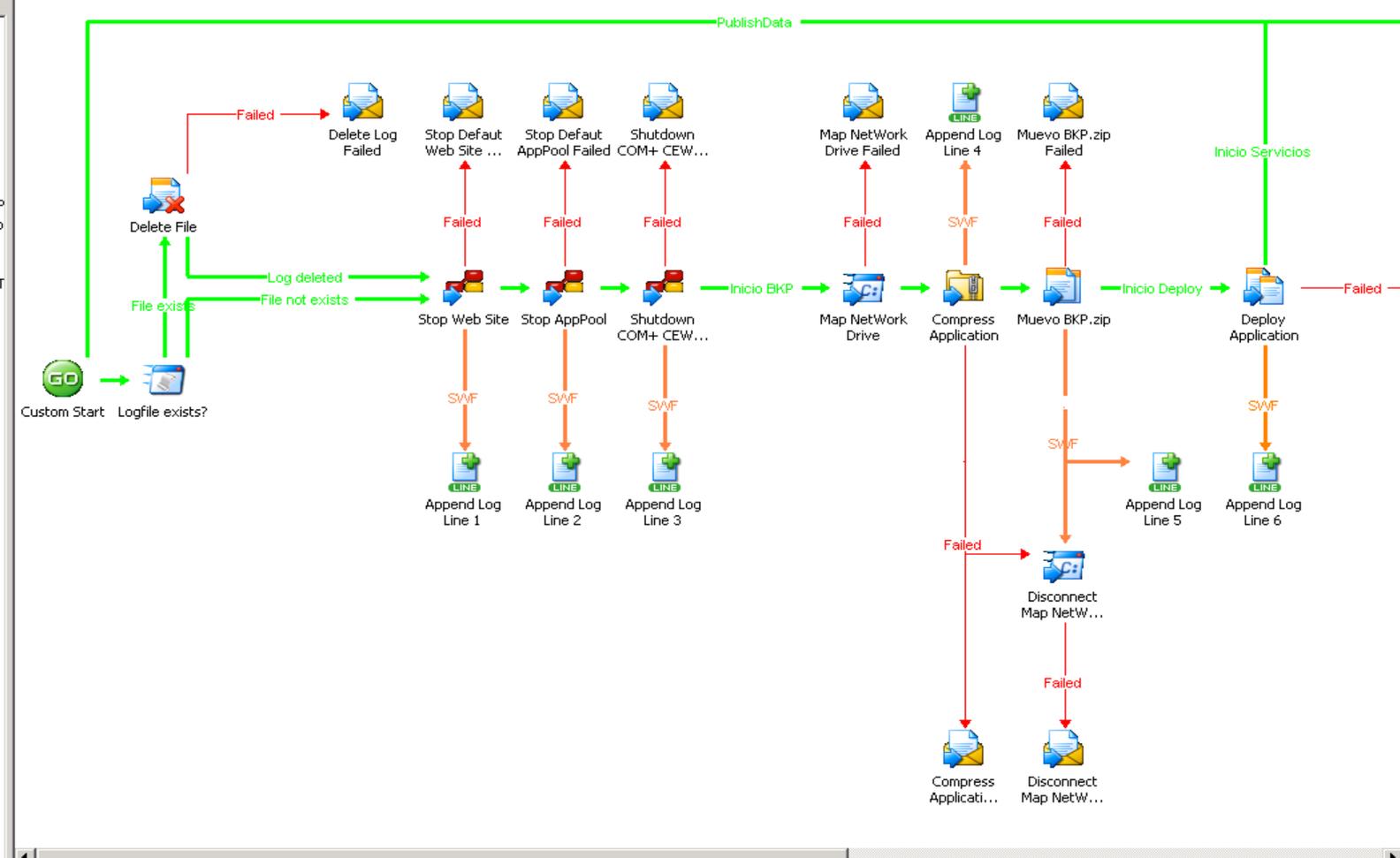
Objects

- System
  - End Process
  - Get SNMP Variable
  - Monitor SNMP Trap
  - Purge Event Log
  - Query WMI
  - Restart System
  - Run .Net Script
  - Run Program
  - Run SSH Command
  - Save Event Log
  - Send SNMP Trap
  - Set SNMP Variable
  - Start/Stop Service
- Scheduling
- Monitoring
- File Management
- Email
- Notification
- Utilities
- Legacy
- Local Computer Security
- Text File Management
- Microsoft SharePoint
- Microsoft Active Directory 2
- Opalis Utilities
- Quick Integration Kit 3.0
- Quest Software
- System Center Configuration Manag
- Microsoft Operations Manager 2007
- System Center Service Manager
- Microsoft SMS
- System Center Data Protection Man
- System Center Virtual Machine Man
- Workflow Control

Log

Log window with a close button (X) and a refresh icon.

- 01
- ties
- Producción
- Mesa de Ayuda
- Schedule
- STIC
- SCOM
- SFBWeb
- Util
- WS Canales-SFB\_P
  - 1. Inicio\_Deplo
  - 2. Deploy
  - 3. Invoke WS
- WS Canales-SFB\_T
- Computer Groups
- on Servers
- bal Settings

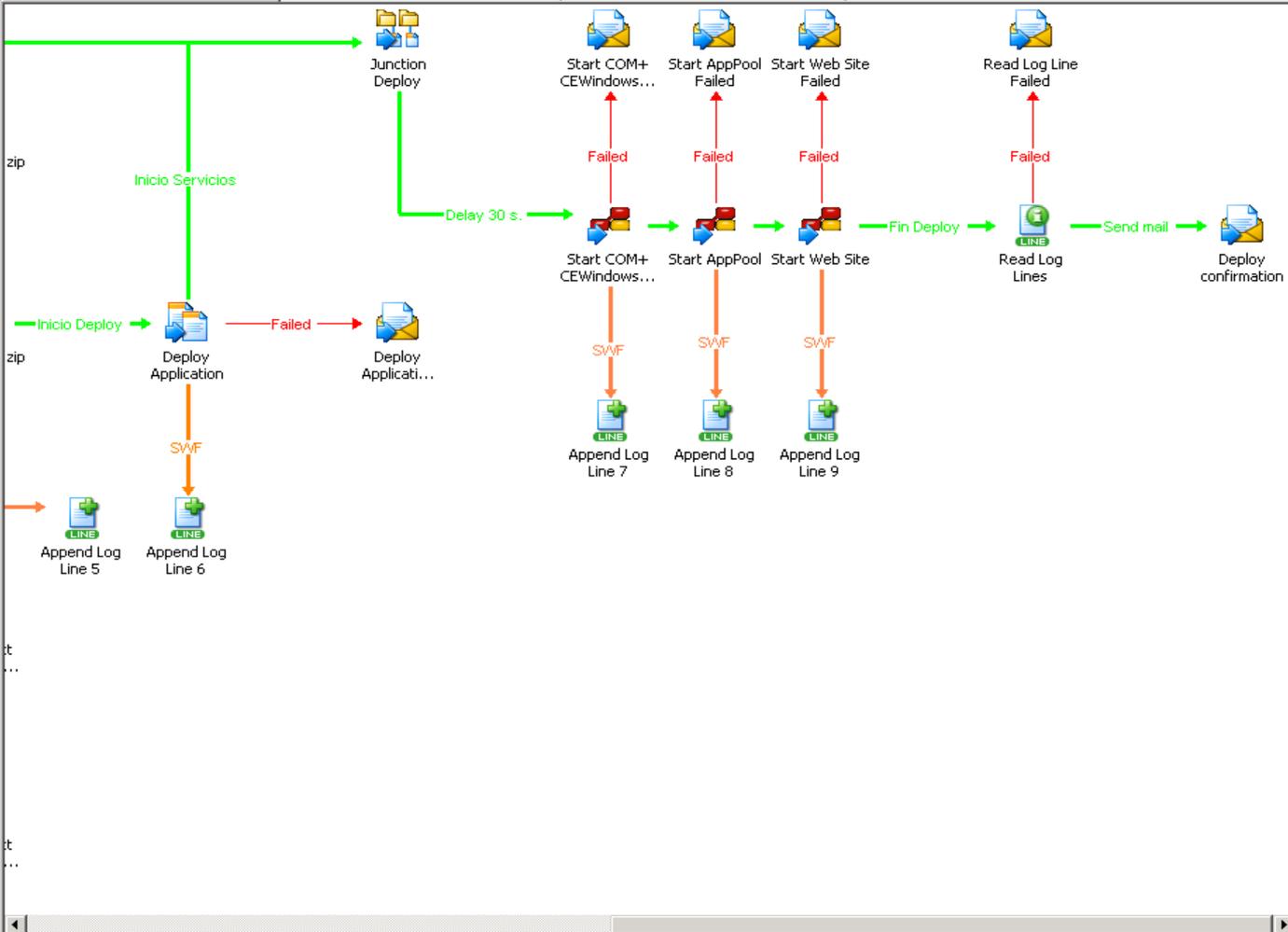


- Objects
- System
    - End Process
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    - Monitor SNMP
    - Purge Event L
    - Query WMI
    - Restart System
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    - Run Program
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  - File Manage
  - Email
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  - Utilities
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  - Quick Integrati
  - Quest Softwa
  - System Center
  - Microsoft Ope
  - System Center
  - Microsoft SMS
  - System Center
  - System Center
  - Workflow Con

Log

Log Log History Audit History Events

- D01
- licies
- Producción
- Mesa de Ayuda
- Schedule
- STIC
- SCOM
- SFBWeb
- Util
- WS Canales-SFB\_Prod
- 1. Inicio\_Deploy
- 2. Deploy
- 3. Invoke WS
- WS Canales-SFB\_Test

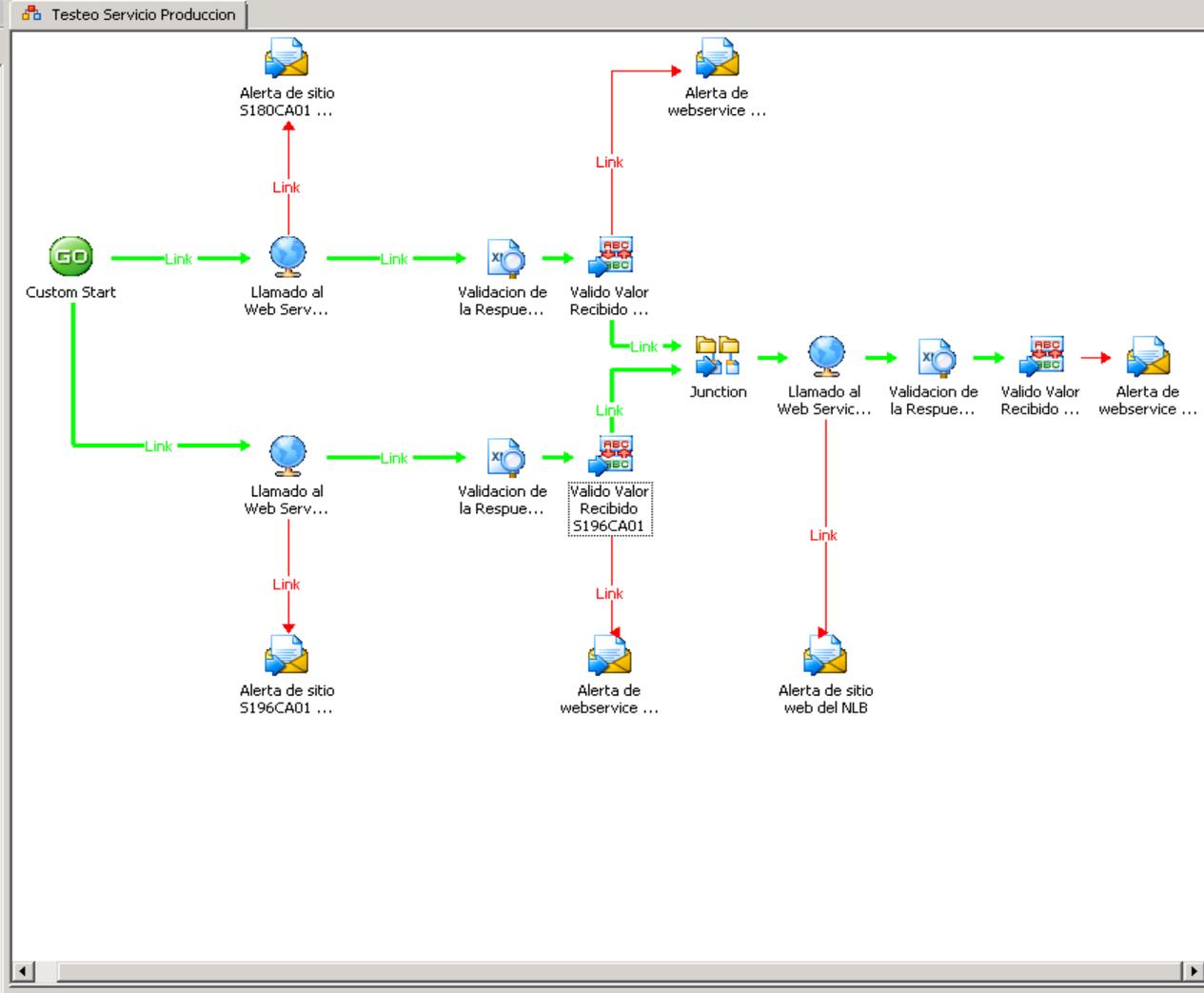


- Objects
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- Text File Management
- Microsoft SharePoint
- Microsoft Active Directory 2
- Opalis Utilities
- Quick Integration Kit 3.0
- Quest Software
- System Center Configuration Manag...
- Microsoft Operations Manager 200...
- System Center Service Manager
- Microsoft SMS
- System Center Data Protection Mar...
- System Center Virtual Machine Mar...
- Workflow Control

Log

Connections

- S1805001
  - Policies
    - Producción
      - Mesa de Ayuda
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        - WS Canales-SFB\_Prod
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  - Computer Groups
  - Action Servers
  - Global Settings



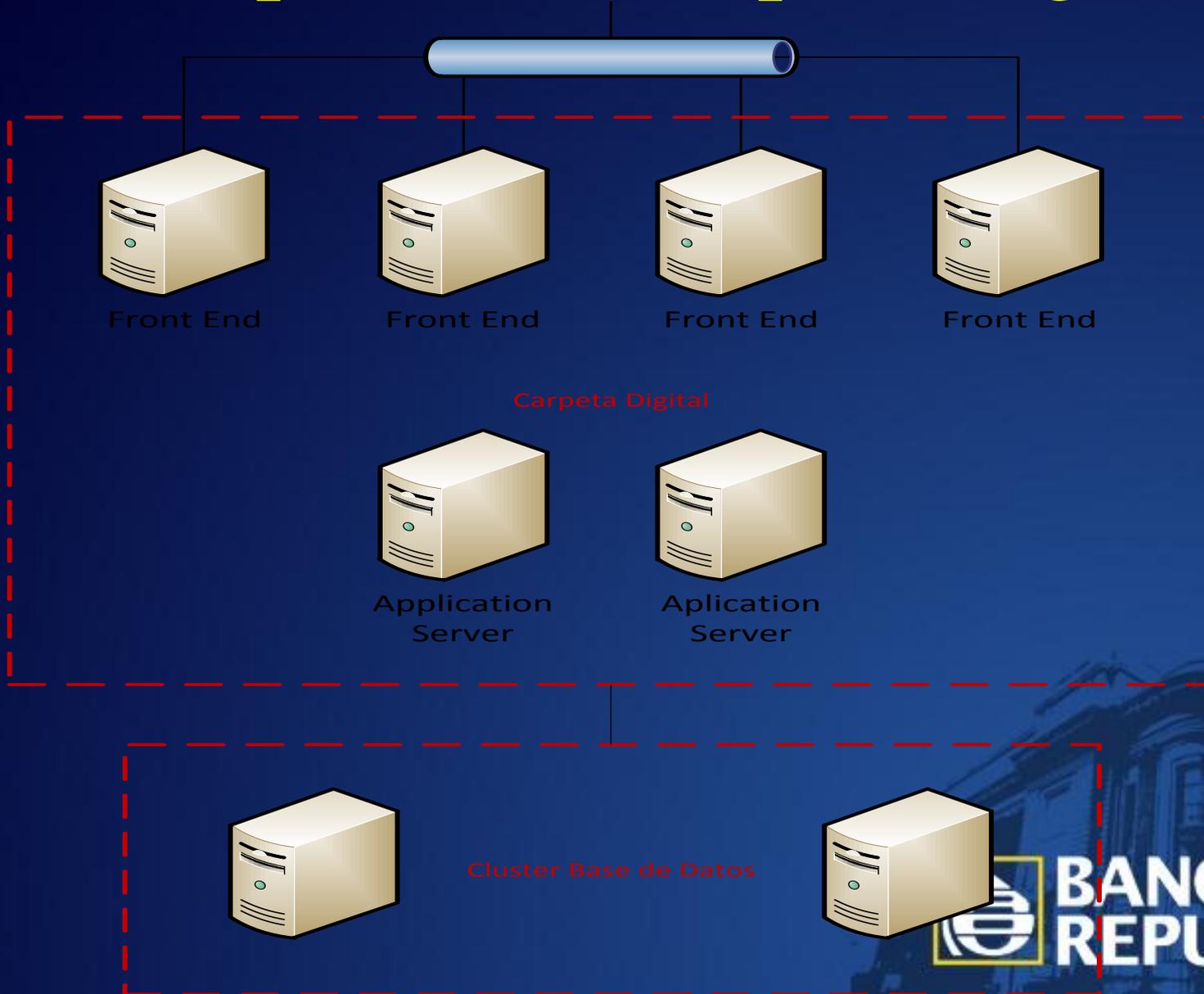
Objects

- System
  - End Process
  - Get SNMP Variable
  - Monitor SNMP Trap
  - Purge Event Log
  - Query WMI
  - Restart System
  - Run .Net Script
  - Run Program
  - Run SSH Command
  - Save Event Log
  - Send SNMP Trap
  - Set SNMP Variable
  - Start/Stop Service
- Scheduling
  - Monitoring
  - File Management
  - Email
  - Notification
  - Utilities
  - Legacy
  - Local Computer Security
  - Text File Management
  - Microsoft SharePoint
  - Microsoft Active Directory 2
  - Opalis Utilities
  - Quick Integration Kit 3.0
  - Quest Software
  - System Center Configuration Manag...
  - Microsoft Operations Manager 2007
  - System Center Service Manager
  - Microsoft SMS
  - System Center Data Protection Man...
  - System Center Virtual Machine Man...
- Workflow Control

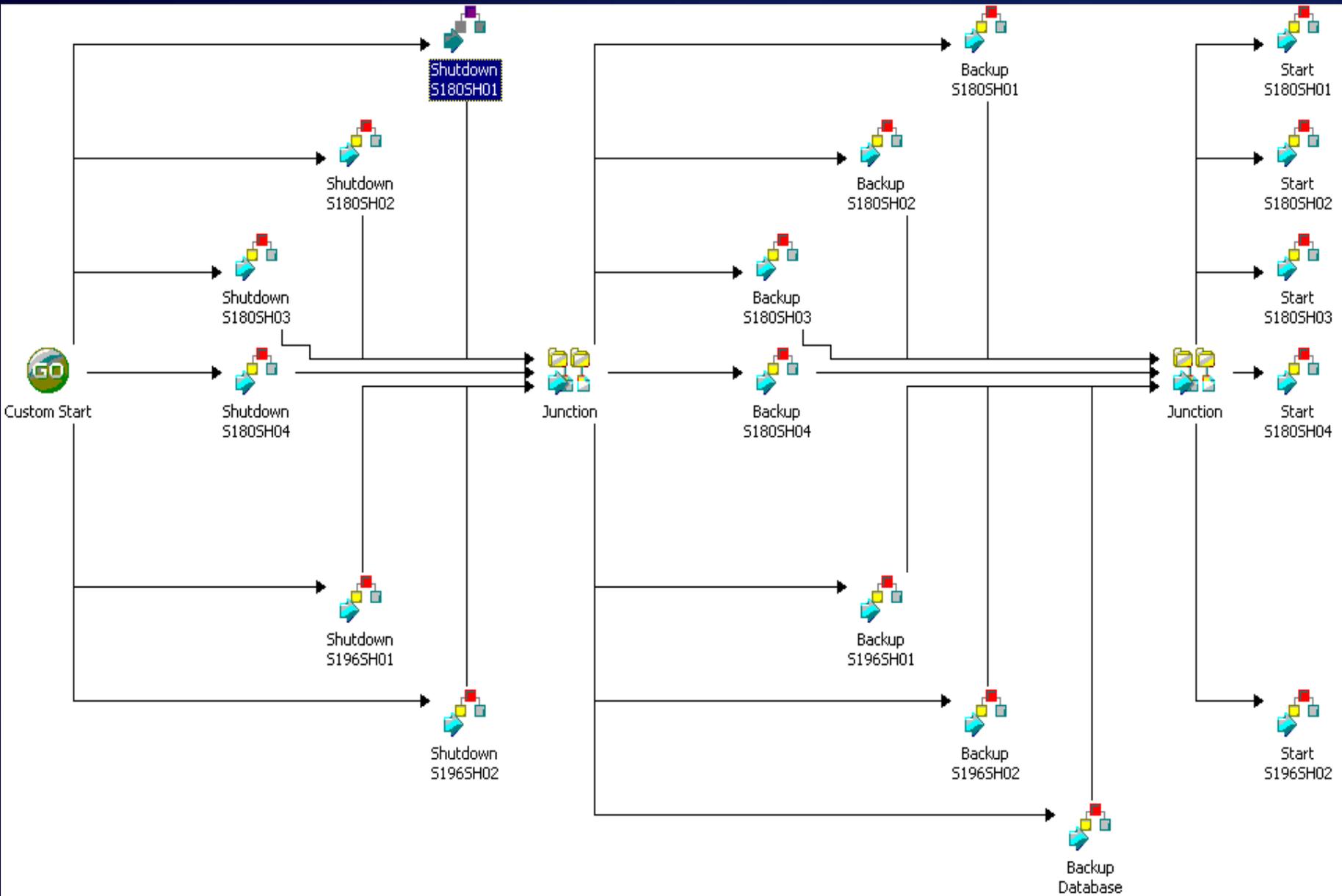
Log

Log History Audit History Events

# Aplicativo Carpeta Digital



# Respaldo de aplicativo Carpeta Digital



# Política Apagado de servidores

The screenshot shows a workflow in a management console. On the left, a 'Custom Start' task (with a 'GO' icon) is connected to a 'Server Shutdown' task (with a server icon). An arrow points from 'Server Shutdown' to a 'Send Email' task (with an envelope icon). On the right, the 'Server Shutdown Properties' dialog box is open, showing the configuration for a 'Run .Net Script' task.

**Server Shutdown Properties**

Run .Net Script  
Define the language and script.

Language  
Type: PowerShell

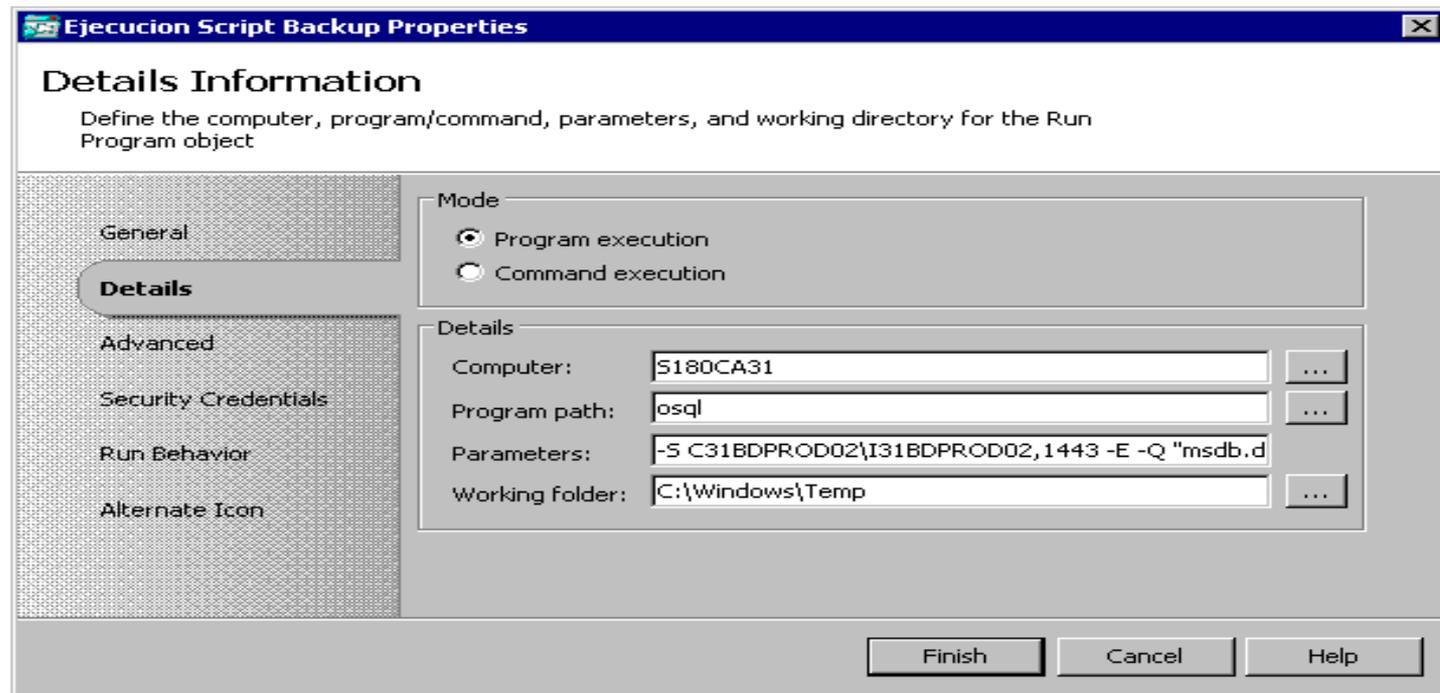
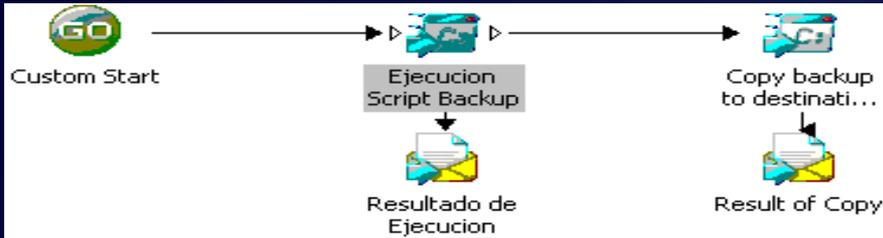
Script

```
$guest = "{Virtual Machine from "Custom Start"}"  
$waitshutdown = 120  
  
write-host "shutting down $guest"  
$vm = gwmi -namespace root\virtualization -query "select * from msvm_o  
$vmname = $vm.name  
$vmshut = gwmi -namespace root\virtualization -query "SELECT * FROM M  
$result = $vmshut.InitiateShutdown("$true", "no comment")  
if ($result.returnvalue -match "0") {  
start-sleep -s $waitshutdown  
$result = "no error while shutting down $guest - "  
$result += "shutdown of $guest completed"
```

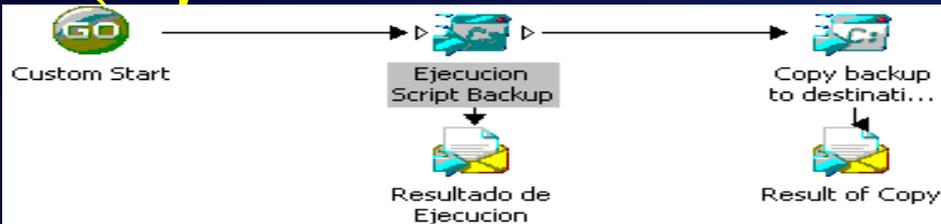
Buttons: Finish, Cancel, Help



# Política de respaldo de la Base de Datos



# Política de respaldo de Base de datos (ejecución con usuario privilegiado)



**Ejecucion Script Backup Properties**

**Advanced Information**  
Define the execution behavior for the Run Program object

General

Details

**Advanced**

Security Credentials

Run Behavior

Alternate Icon

Control

Execution mode:

Wait for the completion of the program  
Terminate after  minutes (0 = no limit)

Do not wait for the completion of the program

Run as

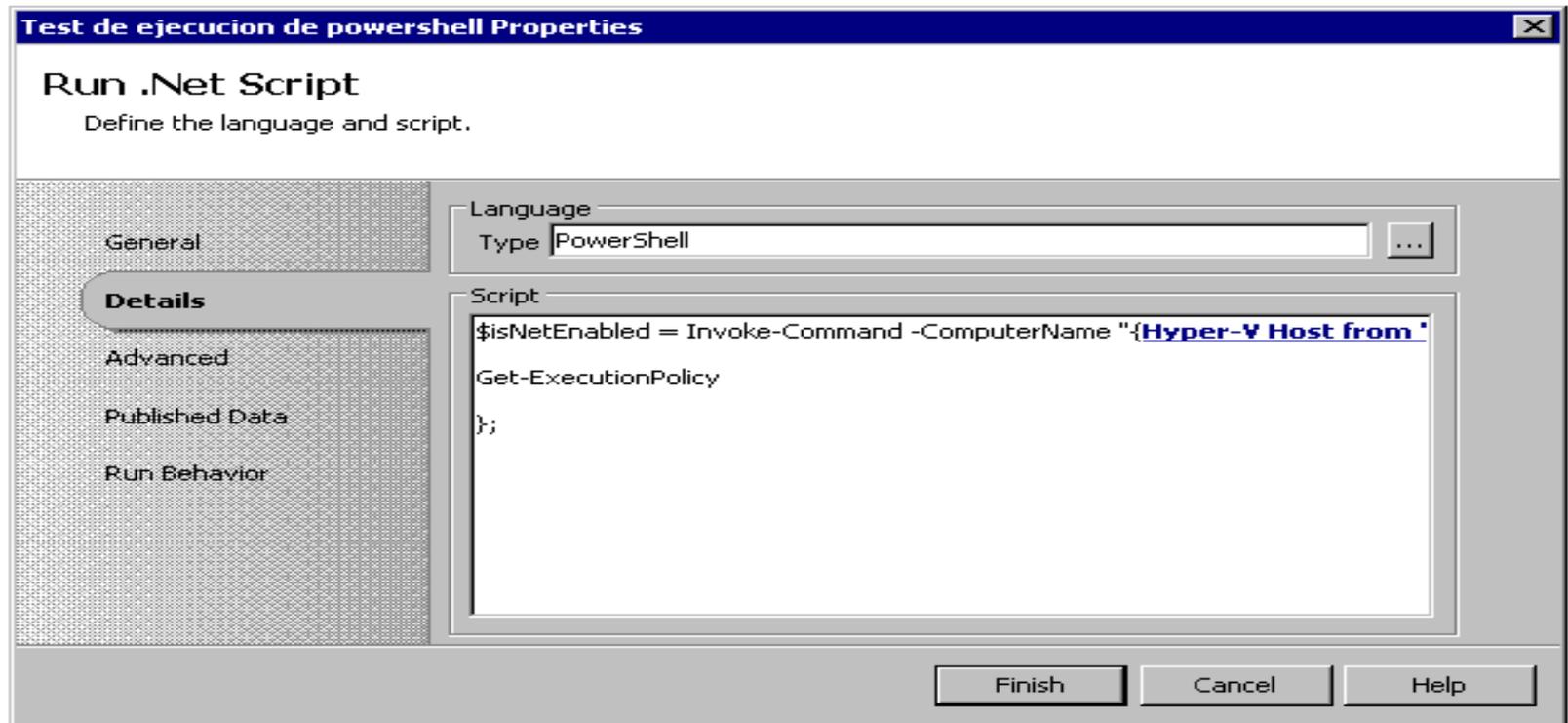
User name:

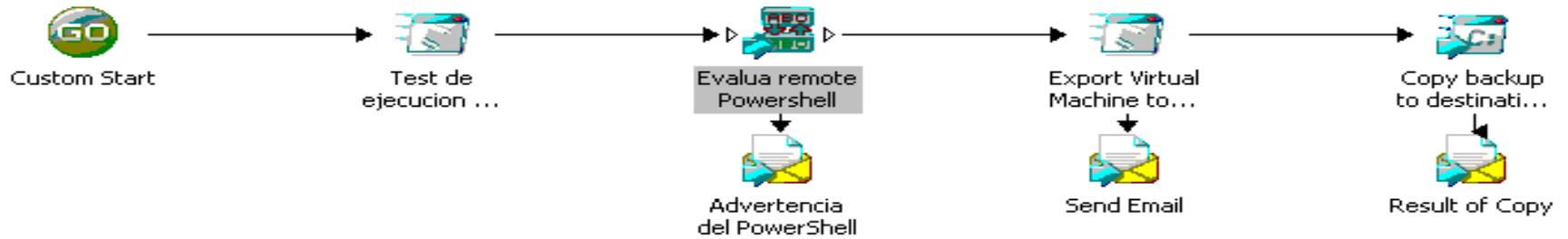
Password:

Finish Cancel Help



# Política Respaldo de Servidores





**Evalua remote Powershell Properties**

### Details Information

Define the text and comparison type for the Compare Values object

General

**Details**

Run Behavior

Comparison

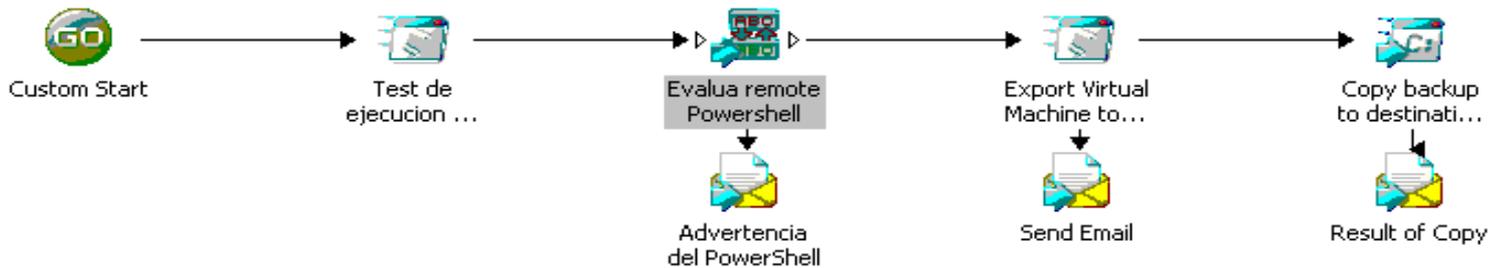
Test: `{isNetEnabled from "Test de` is equal to

Unrestricted

Case sensitive test

Finish Cancel Help





**Evalua remote Powershell Properties**

**Published Data**

Object: Test de ejecucion de powershell

Name	Description
Script Body	Script to run
Script Language	C#
isNetEnabled	

Show common Published Data

OK Cancel Help





**Result of Copy Properties**

### Details Information

Define the subject, recipients, message, and attachments for the Send Email object

General

**Details**

Advanced

Connect

Security Credentials

Run Behavior

Subject: Respaldo Carpeta Digital Produccion -|Backup Si

Recipients: to: [redacted] Add... Remove

Message:
   
 Text
   
 File
   
 El resultado de la mover el respaldo de maquina
   
 {**Pure Output from "Copy backup to dest**

Attachments: Add... Remove

Task fails if an attachment is missing

Finish Cancel Help



# Muchas Gracias

- José Ignacio García Salgado

Coordinador Soporte Técnico Centralizada

- Ricardo Leite

Analista Senior



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