Announcing the Search Health Reports (SRx) for SharePoint Search Diagnostics

-Brian Pendergrass

Brought to you by SearchEngineers@microsoft.com, the **Search Health Reports (SRx)** is a PowerShell-driven tool for surfacing complex diagnostics for SharePoint Search through new multifaceted reports. The *SRx* includes a battery of tests that leverage a customized SSA object extended with contextual data from many disparate sources.

Our goal with this project is straightforward – empower users to **troubleshoot Search more effectively** so they can focus on solving business problems using Search.

Getting Started

First, **download the SRxCore.zip from TechNet Gallery** to your SharePoint Search Farm and unzip the files on a SharePoint Server. Then, initialize the *SRx* environment by simply running the `.\initSRx.ps1` script (which exists in the root of the unzipped *SRx* folder) as demonstrated in the screen shot below:

```
Administrator: Search Health Reports (SRx)  - 2017.1.6.3

Windows PowerShell
Copyright (C) 2014 Microsoft Corporation. All rights reserved.

PS C:\Users\bspndr> S:\SRxCore\initSRx.ps1
[initSRx] Loading SRx logging module...
[initSRx] Custom config (default): S:\SRxCore\etc\SRxMgmt\custom.config.json
[initSRx] Current log file: S:\SRxCore\var\log\Session\SRx-20170109160811-8108.l
og
[initSRx] Appending the Scripts folder (S:\SRxCore\lib\Scripts) to $ENV:Path
[initSRx] Temporary SRx Storage: S:\SRxCore\var\tmp
[initSRx] Adding the SharePoint PowerShell Snapin
[initSRx] Checking Modules in S:\SRxCore\Modules\Core
 > Loading: ConvertTo-SRxXML
 > Loading: Enable-SRxCoreUtilities
 > Loading: Enable-SRxDatabaseUtilities
 > Loading: Enable-SRxLogParser
 > Loading: Enable-SRxProcMon
 > Loading: Enable-SRxRemoteUtilities
 > Loading: Enable-SRxULSUtilities
 > Loading: New-SRxReport
 > Loading: Test-SRx
 > Loading: Write-SRxConsole
[initSRx] Checking Modules in S:\SRxCore\Modules\SP2016
 > Loading: Get-SRxFarm
[initSRx] Checking Modules in S:\SRxCore\Modules\Search
 > Loading: Enable-SRxCloudDiag
 > Loading: Enable-SRxCrawlDiag
 > Loading: Enable-SRxIndexDiag
 > Loading: Enable-SRxQueryDiag
 > Loading: Enable-SRxSearchFarmDiag
 > Loading: Get-SRxSSA
 > Loading: New-SRxSearchServerObject

Running: $global:xFarm = Get-SRxFarm

Running: $global:xSSA = Get-SRxSSA | Enable-SRxCrawlDiag | Enable-SRxQueryDiag | Enable-SRxIndexDiag
[Get-SRxSSA] Extending $xSSA with core methods and properties
[Get-SRxSSA] Extending SRx Server objects...
[Get-SRxSSA] Extending SRx Components...
 * [Enable-SRxCrawlDiag] Extending $xSSA...
 * [Enable-SRxQueryDiag] Extending $xSSA...
 * [Enable-SRxIndexDiag] Extending $xSSA...


 ---------------------------------------
  Search Health Reports (SRx)
 ---------------------------------------


  Thank you for using this project to analyze and troubleshoot your Search environment.
  For any questions or feedback regarding this, please feel free to contact us at:
  SearchEngineers@microsoft.com

  ...and to learn more about proactive reporting and enhanced diagnostics of Search with
  the Search Health Reports Dashboard (SRx), contact your TAM to help get us engaged.

PS C:\Users\bspndr> _
```

This initialization script loads the custom PowerShell modules and creates a globally scoped $xSSA, an extended Search Service Application object with many custom properties and methods.
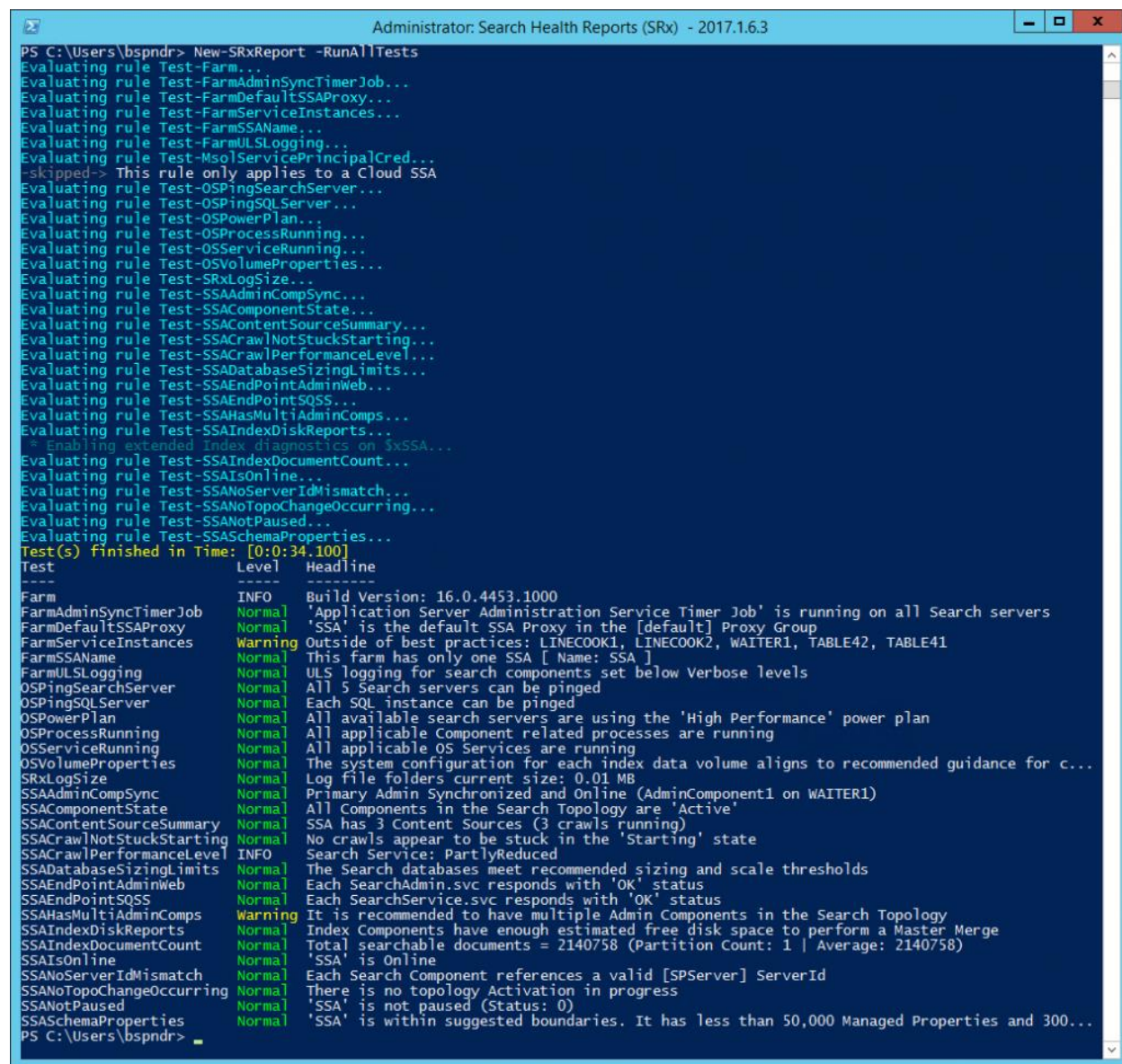
Worth noting:
The SRx does not persist after closing a PowerShell window, so **each time you open a new PowerShell window, start by running** `.\initSRx.ps1` **to initialize the SRx** and you'll be good to go from there.

Generating Test Results

[UPDATE 3/25/2016] For a summary on each test, please refer to the *"SRx – Test Documentation.pdf"* linked to from the SRx Core page.

From an initialized environment, you can then run a report including all of the tests with the following command:

```
New-SRxReport -RunAllTests
```


As seen above, this battery of tests verifies that applicable servers can be pinged, component-related processes and services are running, component states are all 'Active', internal Search WCF EndPoints can be browsed, Index components have sufficient space to complete a Master Merges, the Legacy Admin is synchronized with the Admin Component, and more.

When running this set of tests, you can also output more details about the test results by adding the *Details* flag, such as (and this is also an example of handling when things go bad):

```
New-SRxReport -RunAllTests -Details
```

```
PS C:\Users\bspender> New-SRxReport -RunAllTests -Details
.....
                   -          -               -         -
Test(s) finished in Time: [0:0:10.941]
Test                          Level   Headline
----                          -----   --------
FarmAdminSyncTimerJob         Error   'Application Server Administration Service' is not running: table41
                                        * LINECOOK2 : 'job-application-server-admin-service' has not run in 35 minutes
                                        * table41 : 'job-application-server-admin-service' does not appear to be running

FarmDefaultSSAProxy           Warning SSA is not the default Service Application in one or more Proxy Groups
                                        * Proxy Group [custom] for http://srx.chotchkies.lab/ ==> No SSA Proxy defined
                                        * Proxy Group monkiesProxyHere ==> No SSA Proxy defined

FarmHasOnlyOneSSA             Normal  This farm has only one SSA [ Name: SSA ]
FarmServiceInstanceOnline     Warning Outside of best practices: LINECOOK2, LINECOOK1, waiter1, table41, TABLE42, WAITER2
                                        * SQ&SS Instance is on a server without a QPC
                                          - waiter1, WAITER2
                                        * WFE Service Instance is on a Search server (*acceptable on Crawlers)
                                          - LINECOOK2, LINECOOK1, table41, TABLE42
                                        * Search Admin Web Service Instance is on a server without an Admin Component
                                          - table41

OSPingSearchServer            Error   The following Servers cannot be pinged: LINECOOK2
OSPingSQLServer               Normal  The SQL instance 'theKitchen' can be pinged
OSProcessRunning              Error   Unable to verify (Servers cannot be pinged): LINECOOK2

                                      The following servers cannot be reached (unable to verify the state of processes):
                                        [LINECOOK2]
                                          AnalyticsProcessingComponent2
                                          ContentProcessingComponent2

OSServiceRunning              Error   Servers with OS Services not running: LINECOOK2, table41
                                        [table41]
                                          SharePoint Timer Service : Stopped
                                          SharePoint Administration : Stopped

                                      The following servers cannot be reached (unable to verify the state of OS Services):
                                        [LINECOOK2]
                                          SharePoint Server Search : 'unknown'
                                          SharePoint Search Host Controller : 'unknown'
                                          SharePoint Administration : 'unknown'
                                          SharePoint Timer Service : 'unknown'

SSAAdminSynchronized          Normal  Primary Admin Synchronized and Online (AdminComponent1 on WAITER2)
SSAComponentState             Error   Servers with SSA Components not 'Active': LINECOOK2, TABLE41, TABLE42
                                        [ContentProcessingComponent2]
                                          ServerName: LINECOOK2
                                          State: Unknown
                                          Message: Node not found

                                        [AnalyticsProcessingComponent2]
                                          ServerName: LINECOOK2
                                          State: Unknown
                                          Message: Node not found

                                        [IndexComponent1]
                                          ServerName: TABLE41
                                          State: Degraded
                                          Message: List of degraded cells: Cell:IndexComponent1-SP477c853074e7I.0.1(Index out...

                                        [IndexComponent4]
                                          ServerName: TABLE42
                                          State: Degraded
                                          Message: List of degraded cells: Cell:IndexComponent4-SP477c853074e7I.1.0;

SSACrawlNotStuckInStarting    Warning One or more crawls may potentially be stuck...
                                        [1] Local SharePoint sites | Initiating request to start... [Status: 0][Substatus: 0]

SSADatabaseSizingLimits       Normal  Links and Crawl Store Databases meet recommendations for items in the content corpus.
SSAHasContentSources          Normal  SSA has 4 Content Sources (2 crawls running)
SSAIndexDiskReports           Error   Index Components estimated to exceed the free disk space: TABLE41, TABLE42

                                      ServerName : TABLE41
                                      Name       : IndexComponent1
                                      Cell       : [I.0.1]
                                      Part       : 1
                                      State      : Degraded
                                      Merging    : False
                                      Checkpoint : 6864 MB
                                      IndexFiles : 8907 MB
                                      Pct        : 832.41%
                                      Path       : T:\Index\I.R.1\SP477c853074e7.7.I.0.1\

                                      ServerName : TABLE42
                                      Name       : IndexComponent4
                                      Cell       : [I.1.0]
                                      Part       : 0
                                      State      : Degraded
                                      Merging    : False
                                      Checkpoint : 8354 MB
                                      IndexFiles : 9026 MB
                                      Pct        : 1175.37%
                                      Path       : T:\Index\I.R.0\SP477c853074e7.7.I.1.0\

SSAIndexDocumentCount         Normal  Total searchable documents = 266468 (Partition Count: 2 | Average: 133234)
SSAIsOnline                   Normal  'SSA' is Online
SSANotPaused                  Error   'SSA' is paused for external reason (user initiated); Status: 128
SSASearchAdminEndPoints       Normal  Each SearchAdmin.svc responds with 'OK' status
SSASearchServiceEndPoints     Error   (The following service Endpoints (SearchService.svc) cannot be reached:, The following...
                                        [waiter1]   @{Status=ProtocolError; ResponseUri=http://waiter1:32843/e8c1377139704bda...

                                        [waiter1]   @{Status=ProtocolError; ResponseUri=https://waiter1:32844/e8c1377139704bd...

TopologyHasMultiAdminComps    Normal  SSA has 2 Admin Components
TopologyNoServerIdMismatch    Normal  Each Search Component references a Valid ServerId
TopologyNotBeingModified      Normal  There is no topology Activation in progress
PS C:\Users\bspender> _
```

The SRx also extends and replaces my [previously published Indexer Reports](#), which you can generate in the SRx using the following:

```
$xSSA | Get-SRxIndexReports -DiskReport
```

Looking Forward…

As Search PFEs, we are working with several of our dedicated customers to build upon the *SRx Core* by developing the **Search Health Reports Dashboard (SRx)**, which entails a custom SharePoint hosted site collection for rendering diagnostic gauges, KPIs, and proactive reporting. Over the last few months, this project significantly matured with expanding functionality and robustness – for that, **a giant thank you goes out for the heavy lifting from Eric Dixon, Brent Groom, and Russ Maxwell**.

…and to learn more about the **Search Health Reports Dashboard (SRx)**, contact your TAM to help get us engaged.

And the legalese:

Disclaimer: As the "Search Engineers", we are a group of Microsoft PFEs focused primarily on SharePoint Search. We released the Search Health Reports (SRx) to help others get more out of Search, but the SRx should not be considered an official product . ALL information in this blog is provided "AS IS" with no warranties and confers no rights. This blog does not represent the thoughts, intentions, plans

or strategies of my employer. All content is solely my opinion and provided with a best effort to be based in reality.

All examples, code samples, demonstrations, or anything resembling a "how-to" are provided "AS IS" without warranty of any kind, either express or implied, including but not limited to the implied warranties of merchantability and/or fitness for a particular purpose. Inappropriate comments will be deleted at the authors discretion. And yes, the spelling of *strategery* was intentional.