SolarWinds Integration with 3rd Party Products

Overview

This document is intended to provide a technical overview of the integration capabilities of SolarWinds products that are based on the Orion infrastructure. SolarWinds products are designed from the ground up to provide maximum flexibility for customers when integrating with 3rd party systems. Integration models, needs, and resources of different customers vary dramatically, so rather than provide one rigid integration framework, SolarWinds has provided different integration approaches that support light level integration at the UI layer, integration through standard message exchanges, or deep integration through the SolarWinds Information Service.

As a pre-cursor to discussing the integration models, a brief architecture review is provided so that you may familiarize yourself with the key components within the SolarWinds system. This architectural discussion provides context to the more detailed discussion on the integration mechanics.

Finally, like all integrations, technology is only one step. The planning and testing process behind an integration are equally if not more important to the technical capabilities. While every organization should have their own standards for process, a brief set of recommendations is provided.
The SolarWinds Orion Architecture Review

The SolarWinds Orion architecture provides a flexible foundation for integration built around use cases that our customers have requested. In order to provide context for integration, this section provides a general overview of the architecture features relevant to integration. It is not intended as a complete review of the architecture which would require a separate document on its own.

Figure 1 illustrates the primary components within an Orion NPM deployment. While there are additional products built on top of the Orion infrastructure, the addition of those products does not change the architecture significantly, rather they simply add new application capabilities.

Orion Data Collection

Starting from the data collection layer, Orion leverages multiple standard network protocols to collect data. The data collection can be split into two primary approaches, collectors which receive data streams from devices on the network as events occur in the network and polling collectors which periodically reach out to the network to collect data from devices.

The primary data collectors Orion supports, receive data using industry standard protocols:

- Syslog
- SNMP Traps
- Flow data (such as IPFIX, Netflow, J-Flow or sFlow®)

The 3 primary polling engines are the:

- **Standard Poller**—used for SNMP and ICMP data collection
- **Universal Device Poller**—used for polling custom variables via SNMP or scripts
- **Job Engine**—used for collecting data from other instrumentation technologies such as WMI, RPC, and the VMWare® API

Data collected using these collection mechanisms is stored in the database and processed by the alert engine (either at time of collection prior to storing the DB or post insertion into the DB). The alert engine provides services to evaluate user defined criteria against the data collected and trigger events and alerts for the user or a higher level system.

Orion Data Access and Display

In addition to collecting data, Orion can create events that automatically send data for external consumption using the following standard network protocols including:

- Syslog
- SNMP Trap
- Email
- HTTP
The powerful Advanced Alert Manager in Orion allows for the use of sending information with the above standard protocols, as well as by running custom scripts and executable programs that allow the Alerts to send data to almost any other application on the network. While creation of Alerts is sometimes the ideal scenario, forwarding of Syslog messages and Traps is sometimes more desirable. The Orion Syslog and Trap services also support this approach.

The intuitive Orion web presentation layer accesses data stored via the SolarWinds Information Service (SWIS) (more on SWIS later in this document) and displays the data within Resources that are displayed in columns on a web page in a standard browser. An example of a Resource is a graph of interface utilization over time. Orion’s web page resources can be customized based on the users’ needs and custom resources can be created to display data from 3rd party systems. Orion web page resources can also be included in other web pages so that Orion data can be displayed on the same web page as data from other applications (more on this later).

**Integration Mechanisms**

The integration technologies which Orion provides are based on the architecture foundation described above. They can be broken into a few key categories:

1. **User level integration** within the web console
2. **Event level integration** leveraging standard event technologies
3. **API level integration** for access to deep level data stored within Orion

**User level integration**

As mentioned above, the web console displays data through resources, including custom resources from 3rd party systems. For example, consider the needs of a service provider who wanted to track the status of open trouble tickets. While Orion provides no functionality related to trouble tickets itself, a custom web resource can be created to display data from a trouble ticketing system directly in the web console. Details of how to create trouble ticketing integrations can be found at [http://www.solarwinds.com/support/Orion/docs/OrionTTIntegration.pdf](http://www.solarwinds.com/support/Orion/docs/OrionTTIntegration.pdf).

In addition to displaying 3rd party data within custom resources, Orion web pages can be embedded within 3rd party products. Orion supports this URL-based integration in cases where a specific portlet from within the console can be provided for display. Authentication can be required for the display of the data and can be achieved in 2 ways:

- **Active Directory® pass through**—both individual AD accounts and groups are supported
- **Hard coded credentials**—a set of hard coded credentials can be set into the URL as well as being passed directly into Orion

**Event level integration**

Event level integration is one of the most commonly used integration mechanisms because of its use of standard event technologies. The following technologies are supported.

- **Syslog**: Creation and forwarding of syslog messages
- **Traps**: Creation and forwarding of traps
- **Email**: Alerts can generate email messages that can be directed at a system capable of automatically processing these messages
- **Windows® Event Logs**: Creation of Windows event logs based on events within Orion
- **Custom Scripts and Programs**

Message types can be created based on rules that are defined by the user. The rules a user defines can be based on specific inbound messages or message types. These standardized messages can then be collected by upstream systems and processed. In this way, key events can be correlated with data from other systems by an event correlation engine allowing users to identify related issues within their IT environment, quickly and easily.

An example of where this mechanism is used is if a link or node is down, a trap can be generated by the device. This trap can be forwarded upstream or a new trap could be generated as a way to communicate this event upwards.
API level integration
The SolarWinds Information Service (SWIS) was created to provide a standard, long lasting way, to access almost any data collected by Orion products. The API is used by the various Orion products to get at data rather than going directly to the database. SWIS provides both northbound and southbound services so it can be used for a broad range of scenarios. Generally speaking, the API can be used for:

- **Data retrieval**—pulling any data that is collected by the Orion system
- **Invoke CRUD (Create, Read, Update, Delete) operations**—performing write actions against the Orion system to sync data with 3rd party systems (E.g. the creation of a node)

The API is documented and supported through the SolarWinds community by customers, partners, and SolarWinds technical staff. Network Protocols supported by SWIS include:

- SOAP over HTTPS (WS-I Basic Profile)
- net.tcp (Microsoft® Windows Communication Foundation)
- Windows PowerShell

Typical use cases for leveraging the API are focused on deep level product-to-product integration. For example, a security vendor who wants to examine running configurations on all network devices used the API to pull all of these configuration details and pass them into the engine for compliance analysis.

Designing your Integration
As you can see from the prior section, there are a multitude of approaches to integration so planning an integration based on your use cases and resources is critical to a successful project. Planning should include both the requirements and test plan. While the requirements may seem straightforward, a lot of guesswork can be eliminated by understanding what information is critical to share between systems. For example, in the case of a ‘manager of manager’ integration where the Orion-based product (such as NPM) is providing data northbound to an event management system you may want to consider what level of events need to be forwarded, what summarization of events should a product like NPM do vs the event system. A thorough planning of these information requirements will help to ensure that the integration is providing meaningful insight into the performance and availability of the overall infrastructure vs overloading the event management system with irrelevant data that can be filtered out earlier.

Once the requirements are set, it is equally important to develop a thorough test plan which validates both the data that you do want exchanged, as well as the data you do not want exchanged between systems. For example you may want to include items such as:

- Test alerts from the SolarWinds product to the northbound system
- Test alerts for events you do not want forwarded
- Multiple events that flow into the SolarWinds product that you want summarized into a single event for the northbound system

A complete use case based test plan that exercises your integration rules will allow a much higher level of confidence in the overall solution prior to deploying to production.
Appendix A: Integration with CA® Spectrum®

CA’s Spectrum product can be used effectively with SolarWinds Orion products where Spectrum is the manager of managers. Figure 2 illustrates a typical deployment scenario with Spectrum.

The primary mechanism for integration in this case is the use of events, syslog, traps, and email. The Spectrum server can process these escalated messages and correlate them with data from other Orion deployments or other data gathered directly or through 3rd party systems. In this scenario, the Orion servers can be deployed to various sites and the Spectrum server can be deployed and managed centrally. This provides for maximum site flexibility while keeping the advantages of a large event correlation system centrally.

Beyond event integration, a user may want to have the SolarWinds products synchronize node information with CA Spectrum. This type of integration can be accomplished best through the SWIS API. Node level data can be periodically queried and any changes, adds, and deletes can be sent to the Spectrum server. As mentioned earlier in this document, the API provides a standardized mechanism to access any of the data in the Orion infrastructure, allowing both asset and performance data to be sent upstream. Examples of data that may be relevant beyond the nodes themselves include custom fields as well as node and interface level performance information.

Appendix B: Integration with Microsoft System Center Operations Manager (SCOM)

SolarWinds Orion products have for a long time maintained an integration with MS SCOM. The integration has been defined around customers who are already using SCOM as their primary ‘single pane of glass’ and want to collect data about their network within that context. In order to support this use case, SolarWinds developed the SCOM management pack that follows the integration paradigm set by Microsoft. As with other management packs, data is extracted from the Orion products and displayed within the context of the SCOM interface, bringing rich network fault and performance data to SCOM.

The Orion Management Pack delivers detailed network information to System Center, including network top talkers, comprehensive network traffic summaries and NetFlow analysis, and multi-vendor network device details, such as specific router throughput. This incredibly detailed network information is seamlessly integrated into System Center and is presented side-by-side with existing application and server information, providing a single comprehensive view of server, desktop, and network infrastructure performance.

More information on the Orion Management Pack for Microsoft System Center can be found in the datasheet here.
Appendix C: BMC Remedy Integration

BMC Remedy is one of the most popular trouble ticket systems and is an often requested integration. Like most trouble ticket integrations, there is no ‘standard’ integration that is out of the box, rather the integration is based on customers’ specific deployment of Remedy. The two scenarios that customers typically leverage are:

1. Opening of a trouble ticket within Remedy based on an Alert within NPM
2. Display of open Remedy trouble tickets within SolarWinds NPM

The opening of a Remedy trouble ticket is accomplished via an automated email from NPM. The email is typically setup to send based on an alert within the system and NPM variables can be used to include key information such as node and interface level specifics, details of the problem, and any specific performance statistics. On the Remedy side you will need to define a template for the email to be processed.

In order to display open trouble tickets from Remedy within the Orion web portal you would create a custom resource that leverages an iframe, and within that iframe display the Remedy web URL of your choice. Authentication can be handled by passing the Active Directory credentials to the Remedy system. An example of how a trouble ticket integration (LANDesk in the case of the demo) would appear within the NPM product can be seen in the online demo at oriondemo.solarwinds.com.

SolarWinds: User-Centric IT Management

Founded in 1999, SolarWinds (NYSE: SWI) provides powerful and affordable IT management software to more than 97,000 customers worldwide—from Fortune 500 enterprises to small businesses.

We believe that the IT pros who use our products everyday should be excited about them. That’s why we put our users first in everything we do, and strive to deliver powerful functionality while making their jobs easier. We call it “user-centric software,” and we believe that it’s changing expectations for the enterprise software experience.

Simply put, we work to:

- **Remove the obstacles found in traditional enterprise software**—eliminating the high prices, complexity and resource-intensity that have become the status quo
- **Connect with our community**—using daily interactions with our large, global user community to guide our product development and strategy
- **Constantly evolve our products**—ensuring that our software is on point to meet near-term customer and market priorities

Our company was built by network and systems engineers who know what it takes to manage today’s dynamic IT environments. They combined this expertise with a deep connection to the IT community to create network, storage, and application management products that are effective, accessible, and easy to use. The result? IT management software that works for you.