ConicIT

Automated Reasoning to Troubleshoot Mainframe Problems

Research Report by Clabby Analytics

Introduction

Executives at ConicIT, a computer management software maker, see their product as a "behavioral management solution for service management." ConicIT for Mainframes gathers data about a computer system's processing environment, and then uses mathematical and statistical analysis techniques to model system behavior. These techniques create system profiles that show how a particular system performs, and then alert information technology (IT) managers and administrators when a system is performing outside of its usual parameters.

Using the modeled behaviors created by ConicIT for Mainframes, IT managers/administrators can quickly discover the root cause of a problem. Further, these models can also be used for predictive analysis, enabling IT managers and administrators to prevent problems before they occur.

As we look at ConicIT for Mainframes, however, what we see is an artificial intelligence engine that uses "learning algorithms" to analyze system behavior. (Wikipedia defines an algorithm in mathematics and computer science as "an effective method expressed as a finite list of well-defined instructions for calculating a function." And this Wikipedia definition goes on to say that "algorithms are used for calculation, data processing, and automated reasoning.")

It is this automated reasoning aspect that has really captured our attention.

ConicIT for Mainframes saves IT managers/administrators from having to run system traces, search through job logs, run sniffers, and the like to try to discover the root cause of a problem. The product's cleansing algorithms and artificial intelligence engine performs this work for IT managers and administrators.

The benefits of this product are many. The primary benefit is that it reduces human-related management labor costs. In data centers around the world, human labor costs consume between one-third and one-half of the data center's operational budget. Anything that IT executives can find to reduce management labor costs can have a very significant positive impact on enterprises sales, general, and administrative expenses (SG&A). SG&A savings are passed directly to the enterprise's bottom line as direct profit.

Other benefits include the ability to:

- More reliably meet enterprise service-level requirements, because ConicIT for Mainframes enables problems to be solved more quickly — and because ConicIT models can be used for predictive analysis, helping to head off problems before they occur.

- Eliminate finger-pointing between systems, storage, networking, application, and database groups. Problems can likely be identified, and the right resources can be brought to bear rapidly to resolve performance issues.
- Understand a system's capacity and utilization characteristics. This is particularly useful in mainframe environments where capacity and performance need to be maintained at certain levels or else additional charges may be incurred. For example, a peak CPU usage overage for 20 minutes can affect mainframe charges of an entire month, and underutilization of a parallel sysplex LPAR can cancel the discount given to PSLC licenses.
- Understand the degree and criticality of the problem. Using other tools, IT managers are able to identify and correct the symptom of a problem. Using ConicIT, these managers can better understand the root cause of the problem and potentially prevent it from occurring again at some future date.

In this research report, Clabby Analytics takes a closer look at Conic IT. We describe how the product works, explain what we think makes this product different, and describe some customer use case scenarios. And we conclude with a recommendation that IT executives evaluate ConicIT as a means to improve service while reducing IT operational costs.

ConicIT for Mainframes: a Closer Look

ConicIT for Mainframes is an artificial intelligence engine that interfaces with various computer monitoring products (such as OMEGAMON, TMON, SYSVIEW, and MainView), gathers statistics from those products, models system behavior, and identifies causal changes.

The product itself consists of three components (illustrated in Figure 1, next page):

1. A data extraction/cleansing component
2. An analysis/rules engine
3. An expert system and self-learning component

The Data Extraction/Cleansing Component

As described above, ConicIT for Mainframes interfaces with various system monitors. It plugs into these monitors using standard 3270 emulation. It extracts information from simple network management protocol (SNMP) traps, command-line tools, and other files. It then extracts and parses the data it gathers such that it can be used by the data cleansing component.

The extracted data is provided to the data cleansing component as a stream of simple and complex variables. A data cleansing algorithm then uses various sophisticated mathematical models to decide what data should be passed the next stage for analysis.

The Analysis/Rules Engine

In the next stage, an artificial intelligence (AI) engine analyzes the behavior of different computer resources over time relative to the behavior profiles built by the expert system, and identifies time discrepancies, irregularities, or anything that may indicate abnormal behavior, signaling system personnel when necessary. Once this information is available, IT managers and performance administrators can act accordingly and prevent the recurrence of similar deviations in the future. These managers/administrators can then apply their own domain knowledge to troubleshoot a problem or to tune a parameter to deliver better performance.

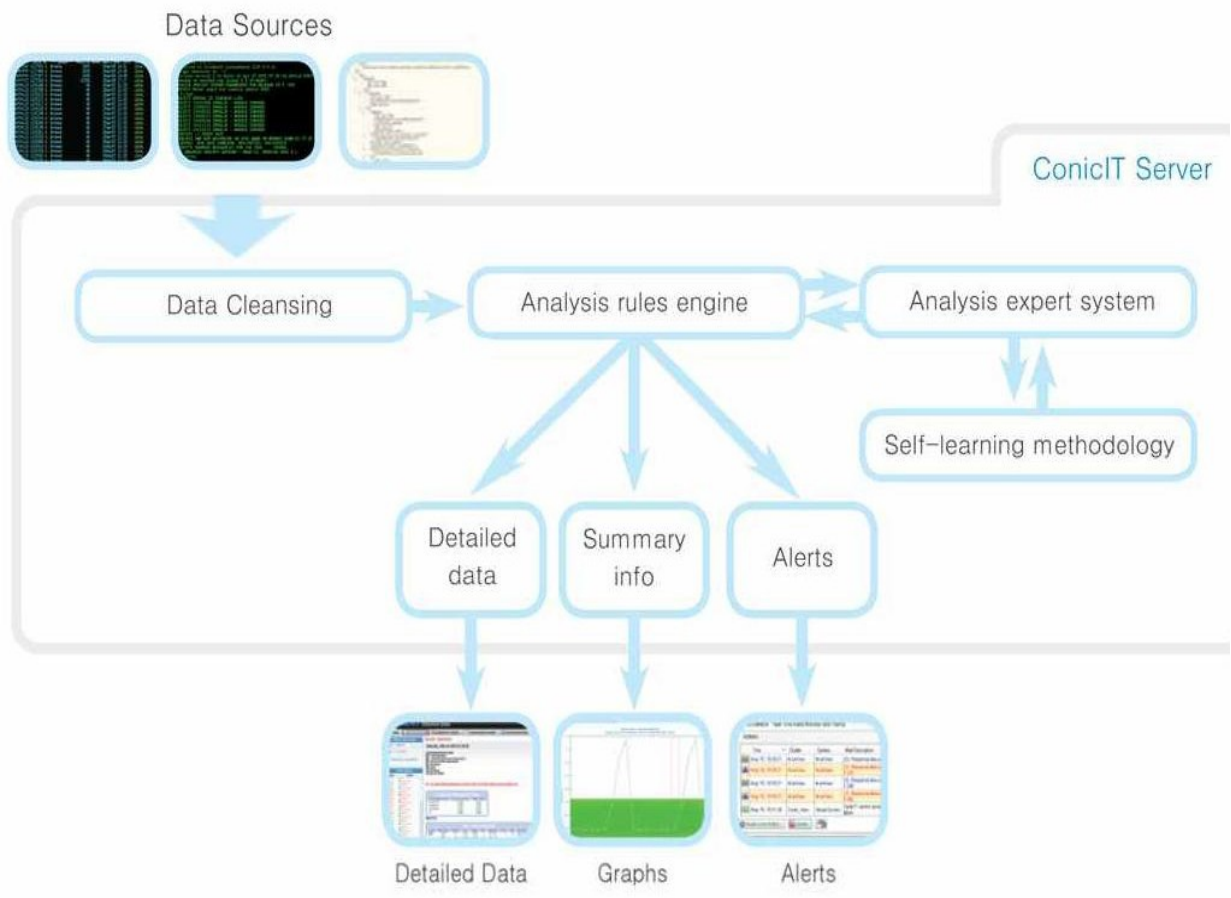
The Expert System/Self-learning Component

This component uses the scoured data provided by the data cleansing component to create and update behavior profiles for the variables collected from the monitored systems.

This component also has a self-learning capability.

To us, this is a key point. Conic IT for Mainframes shows domain experts the sources of the problem. These domain experts can then address the problem themselves or quickly locate other domain experts who can help solve the problem. By clearly identifying the problem, ConicIT eliminates the need to set up a "war room," call a meeting that could involve numerous IT professionals, and then debate who has ownership of the problem. The ability to avoid war room situations can save enterprises tens of thousands of dollars/euros annually.

Figure 1 – Three Components of ConicIT for Mainframes



Source: ConicIT

Other Important Elements

ConicIT for Mainframes can also generate reports, including a report on future capacity risks and a report that allows IT managers and administrators to better regulate resource usage. The product's "online capacity risk manager" forecasts capacity usage based on past performance for the forthcoming seven days (divided by hours). By comparing demand to allowed resources, the system can pinpoint future performance exceptions that should be managed. The product's "online capacity manager" can help IT

managers and administrators throttle back on non-essential services, thus making room for higher priority applications to gain access to computing resources. This capacity manager makes it possible for managers/administrators to use resources more wisely — and, in many cases, saves the enterprise from having to use expensive capacity-on-demand processing power.

What Makes ConicIT Different?

We classify ConicIT for Mainframes as an integrated service management (ISM) tool. Integrated service management is all about gathering data from a number of sources and displaying that data in a dashboard/graphic user interface format.

When looking at most ISM tools, it can become easily overwhelming to sort through the loads of data presented to locate the source of the problem. Many of these tools provide a holistic view of a given environment (such as a security environment, storage environment, and availability environment, etc.) but they perform little analysis or predictive functions. ConicIT for Mainframes has been designed to clean data from various monitors and to perform analysis and predictions based upon that data.

To us, the heart of ConicIT for Mainframes is its algorithms.

Think of this product as a mathematics tool designed by mathematicians and systems experts who know what is important to find within a mainframe environment, and know how to extract data and analyze that data. What you are really buying if you purchase ConicIT is an artificial intelligence engine and some very advanced algorithms. When you compare ConicIT for Mainframes to other products, look to see what the other products deliver in terms of capacity planning information and predictive analysis. And realize that the other vendors that you evaluate use different algorithms to produce different results. ConicIT for Mainframe's purpose is to find performance anomalies and to make managers/administrators aware of those anomalies. And it does this in an automated fashion using advanced algorithms.

Cost

ConicIT for Mainframes is priced in the $100,000/€100,000 range for a 10,000 MIP environment. IT buyers justify this cost in a number of ways, including:

- Showing how war room costs can be greatly reduced
- Making better use of computer resources

As described earlier, running mainframes within certain performance envelopes can keep a mainframe budget on target. But exceeding those envelopes can greatly increase operating expenses. ConicIT for Mainframes can help enterprises stay within their operating budgets.

Use Cases

ConicIT described several customer scenarios to us as we researched this report.

- In one case, a financial institution (a bank) uses ConicIT for Mainframes to ensure that service level requirements are met. The product helps this bank identify potential problems before they happen and take corrective action (this is predictive maintenance). In some cases, a user may call in with the problem and chances are the IT staff is already working to solve that problem. The return on investment in ConicIT for Mainframes is based on faster transaction processing (thanks to tuning and predictive maintenance) and on having happier customers (by meeting quality of service requirements).

- In another case, a customer using Parallel Sysplex must keep its LPARs (mainframe partitions) running at greater than 50% or they will incur a penalty. If capacity levels look like they will run at less than 50%, this company uses "soaker programs" to keep capacity levels at greater than 50%.
- Another example of how Conic IT for Mainframes could be used is in the credit card industry. Credit card companies sometimes need to isolate problems related to processing a given customer's transaction. If a customer's transaction constantly fails — and it's the programmatic fault of the credit card company — then the credit card company could lose a customer. ConicIT for Mainframes helps solve this problem by helping to find the root cause of problems.

Summary

The architectural elegance of this product resides in its algorithms.

We believe that these algorithms are the heart of the ConicIT product offering. These algorithms build the database, filter that database, and drive the artificial intelligence engine that enables automated analysis and predictive maintenance to take place.

The big question is whether the ability to ensure that customer service levels are met and additional usage charges are avoided is enough to warrant the $100,000/€100,000 price tag. We suggest that this price tag is likely warranted at enterprises where too much money is being expended in troubleshooting problems and in paying for capacity overages or underutilized capacity. For those interested in learning more about this product, see the following sites:

Overview video - *http://www.youtube.com/watch?v=WWYy5tbNEdY*

Demo - *http://www.youtube.com/watch?v=s5cwCSHaMWk*

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Clabby Analytics is an independent technology research and analysis organization that specializes in information infrastructure and business process integration and management.

For more information about ConicIT from SDS, please visit the website at *www.sdsusa.com/mainframe-performance-optimization/conicit/*.