InterMax
End to End Monitoring Solutions

The Next Revolution is Here

EXEM CO., LTD.
What is InterMax E2E?

What is InterMax’s End-to-End Performance Management?

End-to-End Transaction Performance Management in a Complex Business Service Environment Composed of N-Tiers
Integrated Performance Management of Transactions Across the Entire System From the User Terminal (Browser) to WEB~WAS~TP~DB

“Real-time Monitoring Feature” identifies in which section out of many servers the error or performance degradation was generated from the transaction point of view.
“Real-time Diagnosis” helps to quickly identify the root cause of error/performance delays.
“Post Analysis Feature” maximizes the stability of system operation by providing preventative measures.
InterMax E2E Solutions Special Features

(Special Features) – Topology View, Real-time Remote Tree

- Provides Topology View – Easily identify the transaction process between nodes across the entire system and quickly detect errors through real-time events (Useful)
- Provides Remote Tree – With a call tree view of a transaction being processed in real-time, identify in which section the performance delay is taking place (For Identifying External Institution Delays/Errors)

[Topology View]

- Monitoring of real-time transaction situation of the entire system (Time spent between nodes, number of transaction processed between nodes, grouping)
- Provides alarm generation status and detailed analysis by each node (group) by linking with real-time events.

[Remote Tree]

- With the call tree view of an active transaction, you can intuitively identify the section in which the AP level’s performance delay is taking place.
- Displays the status of each transaction’s process between nodes with a call tree view.
**InterMax E2E Solutions Special Features**

**Transaction Path View**
- Allows you to intuitively identify the delay section by displaying each transaction's end-to-end flow and elapsed time between nodes.
- A separate icon is used to represent each section from user (CS, Browser) – WEB – WAS – TP – DB – Remote.
DB Platform Performance Monitoring with a WAS+DB Integrated Performance Management Tool

In the event of an individual SQL’s performance delay, you can use the DB Connection Monitoring View to quickly diagnose performance up to the DB platform.

### DB Lock Tree Details Monitoring

Provides lock information in a tree structure of holder and waiter sessions.

### DB Instance Monitoring

- Displays monitoring DB’s CPU usage, lock generation and main stats
- Displays color according to threshold values set in the Alert Configuration

<table>
<thead>
<tr>
<th>CPU Usage (%)</th>
<th>Lock</th>
<th>Active Session</th>
</tr>
</thead>
<tbody>
<tr>
<td>15</td>
<td>&lt; 1</td>
<td>1s</td>
</tr>
<tr>
<td>15</td>
<td>&lt; 1</td>
<td>1s</td>
</tr>
<tr>
<td>15</td>
<td>&lt; 1</td>
<td>1s</td>
</tr>
<tr>
<td>15</td>
<td>&lt; 1</td>
<td>1s</td>
</tr>
</tbody>
</table>

- Blue: Normal
- Orange: Warning
- Red: Critical

### Specific DB Instance Details Monitoring

- Provides real-time graphs of DB’s main stats and waits
- Displays detailed information about active sessions and lock sessions.
InterMax E2E Solutions Special Features

(Special Features) – WAS + DB Connection Monitoring

- Check DB session info on WAS active transaction list
- Monitor by connecting the DB Lock Holder and Waiter to WAS transaction
- View DB execution time and workload and wait status info at a glance.

WAS Transaction and DB Session Connected Analysis

Patented

Transaction generated DB Lock Holder and Waiter info

Transaction executed SQL’s DB workload info
InterMax E2E Main Features

(Feature) Real-time Monitoring – E2E Monitoring Main Screen

Real-time E2E Monitoring - Screen

WAS Grid

TP Grid
InterMax E2E Main Features

(Feature) Real-time Monitoring – WAS Monitoring Main Screen

Real-time WAS Monitoring – Screen

WAS Monitoring
InterMax E2E Main Features

(Feature) Real-time Monitoring – TP Monitoring Main Screen

Real-time TP Monitoring - Screen
InterMax E2E Main Features

(Feature) Real-time Monitoring – Only the active transactions that are currently in progress are retrieved on the Active Transaction List (1/2)

- Active Monitor: Real-time request process performance monitoring / Identify delays in the Transaction Pool
- Check detailed information on the delayed transactions.

As transactions bottleneck or get delayed, the number of active services increase and the red dots will eventually increase.

Provides active transaction's SQL bind variables, execution status, Snapshot per second and other details.

Analyze the number of active transactions and elapsed time simultaneously.

When you click on the bottleneck time point, it provides the details of the active transaction in progress.
InterMax E2E Main Features

(Feature) Real-time Monitoring – View the total system call tree of the active transactions currently in progress.

• Provides class elapsed time executed in the transaction and the method type, execution count and other information.
• Provides the call-tree statistics data by each section for the entire system and can be viewed at a glance.

On the Real-time Topology View, it provides ‘Remote Tree’ and the ‘Real-time Pathview’ which can trace the active transaction’s call information throughout the entire system in real-time.

[ Topology View ]

[ Call Tree ]

[ Remote Tree ]

[ Thread Dump ]

Provides analysis of the root cause by connecting with real-time diagnostics screen for the transactions in which problems have been generated such as locks or elapsed time delays.
InterMax E2E Main Features

- **(Feature) Real-time Monitoring – Adjust analysis level (depth or top/bottom structure information) dynamically without process restart.**

  - Make changes to the call tree’s collection depth and apply in real-time through environment settings for each agent.

Adjust the call tree’s collection level and apply in real-time.
When a transaction error or delays occur, it displays each individual transaction's execution structure in a topology format for an easy recognition of the problem area.

Provides if any error detected in the corresponding section, stack trace info for the error, SQL execution performance data for a detailed analysis of the root cause of the problem.

Filters the delayed transactions with red so it can be recognized instantly.

Error generated section is indicated with a red X mark for distinction.
InterMax E2E Main Features

(Feature) Transaction Trace – Provides a structure map (graph, line, graph and more) of each transaction’s flow throughout the entire system. (2/2)

- Provides not only the transaction trace on the analysis screen but the real-time transaction trace as well.
- View the entire connected system through the topology view and real-time section analysis is possible through real-time transaction trace.

Provides a topology view which allows you to see the transaction flow between the system nodes and intuitively identify the delay sections.
- Real-time Active Transaction Lists Monitoring
- Provides Transaction Monitor through the Tx-Viewer

A unique solution which can trace transactions that are currently in progress, not completed transactions.

Each node can sort the transactions into groups according to tasks so they can be managed as a group, and you can even view by each node in detail for each group.
InterMax E2E Main Features

(Feature) Transaction Trace – Provides the elapsed time for each section. (By each task server, web server, WAS server, TPM server, daemon, DB server, and more)(1/3)

- Check transaction elapsed time by each End-to-End section.
- Based on the transaction name, identify the bottlenecks by measuring the elapsed time in each section from Client–Web Server–WAS–DB or even the external requests.
Middleware Monitoring (End to End) Features Requirement

- Provides the average elapsed time and the call count through the real-time dashboard screen.

Monitoring the elapsed time, TPS, call count by each section in real-time.
InterMax E2E Main Features

(Feature) Transaction Trace – Provides the elapsed time by each section (By each task server, web server, WAS server, TPM server, Daemon, DB server, and more) (3/3)

- Provides not only the real-time elapsed time by each section but also instant connection for **Real-time Diagnostic Analysis** by each individual active transaction.

**[ Transaction Monitor ]**

**[ Node Group Drill Down ]**

**[ Active Transaction ]**

- Displays alarm info according to threshold values set for elapsed time, number of concurrent users, active transactions, TPS, and more.

**[ Displays Real-time Event Alarms ]**
InterMax E2E Main Features

(Feature) Transaction Trace – Main performance stats and real-time monitoring through TP monitoring

- Provides TP monitoring’s real-time main performance stats
- Provides performance stats monitoring equivalent to Tmadmin management commands
- Provides real-time error message monitoring through Slog collection

Transaction Monitor

Provides 10 TP main performance stats (Menu selection screen can be configured)

Check Performance stats equivalent to tmadmin manager tool

Analyze the call tree of delayed services on the transaction detailed analysis screen by dragging the analysis section.

In the event of a TP slog log generation, monitor with real-time collection.
Execution information of a section in which a specific time point’s transaction is being executed can be connected with the corresponding process’s resource usage information for analysis.

Connect with the resource usage (CPU, Memory, GC, and more) information of corresponding time point’s process for analysis.

Check transaction process’s transaction execution information in unit of second.

InterMax E2E Main Features

[Performance Trend Analysis Feature]
InterMax E2E Main Features

(Feature) Transaction Trace – Provides IP, port, elapsed time information of the section in which the monitoring product's agent (collection process) is not installed in the next generation target system.

- Provides 'call pathway (call service)', 'IP', 'Port', 'elapsed time' information of remote call section in which an agent is not installed.
- Provides call information details in Call Tree and Path View.

### Displays Remote Call IP/Port based on Call Tree

<table>
<thead>
<tr>
<th>클래스</th>
<th>Class</th>
<th>메소드/Method</th>
<th>예외(에러) 발생 건수</th>
<th>실행 건수</th>
<th>elapsed time</th>
<th>call count</th>
<th>call pathway information for section in which an agent is absent. (http/tcp/Sync/Async Call)</th>
</tr>
</thead>
<tbody>
<tr>
<td>jspwork/jsp/600/tolower.jsp</td>
<td>jspService(HttpServletRequest, HttpServletResponse)</td>
<td>0</td>
<td>1</td>
<td>0.005 s / 1</td>
<td>100.0%</td>
<td>IP</td>
<td>net</td>
</tr>
<tr>
<td>TP</td>
<td>10.10.30.69:8888</td>
<td>0</td>
<td>1</td>
<td>0.005 s / 1</td>
<td>100.0%</td>
<td>IP</td>
<td>net</td>
</tr>
<tr>
<td>Remote Call</td>
<td>TOLOWER</td>
<td>0</td>
<td>1</td>
<td>0.003 s / 1</td>
<td>80.0%</td>
<td>IP</td>
<td>net</td>
</tr>
</tbody>
</table>

### [ http remote call Example ]

- http://127.0.0.1:8080/InterMaxSample01/InterServlet1.do 60.083 s / 1
- http://127.0.0.1:8080/InterMaxSample01/InterServlet21.do 61.012 s / 1
- http://127.0.0.1:9999/InterMaxSample01/InterServlet72.do 60.045 s / 1
- http://127.0.0.1:9999/InterMaxSample01/InterServlet73.do 60.045 s / 1
Identify all of individual transaction’s elapsed time distribution; exception generated transactions indicated in red.

Check transaction details profiling information through the distribution chart.

Visualization of all active transactions elapsed time distribution

Select a desired transaction and execute analysis on the transaction path view, call tree, and more.

Select an area for a drill down analysis.
Through the “Transaction long term trend monitor” feature, you can search the real-time monitoring section details. While real-time monitoring, instantaneous provision of transaction details information (call tree, SQL, path view, bind variable, error (exception), user text, and more).
InterMax E2E Main Features

(Feature) Transaction Trace - Represented by dots on Time series dot chart graph and a click/drag on the graph area opens a pop up window which displays the relevant monitoring information (3/3)

- Analyze query monitoring executed in the transaction
- When bind variable is used in the corresponding query, and if it is possible to identify the query before and after binding, then SQL sorting feature is provided.
- In case client's sensitive information is to be included in the collection data, bind SQL encryption and other security features provided.
InterMax E2E Main Features

**Feature) Transaction Trace – View the entire call tree for completed transactions**

- Displays the transaction movement information for all sections on the transaction path into which the transaction has flown.
- For sections in which the transactions are slow, go to call tree intuitively for performance tuning.
- InterMax *provides the total call tree information, not just for a particular method, by applying the super fast profiling technique.* *(Profiling is always provided during operation)*

By applying the Super Fast Profiling Technique, InterMax provides a constant profiling analytic data of the entire methods during operation, not just a particular method's performance data.
InterMax E2E Main Features

(Feature) Operation Management – We provide detailed information of SQL executed in the client company’s applications. (Items: query, fetch count, SQL parameter, session info, session ID)

- Use the SQL detail viewing feature to check the details of SQLs executed in all transactions.

Provides individual SQL query, fetch count, SQL parameter, session ID information.
InterMax E2E Main Features

(Task) Operation Management – Displays in Korean text on dashboard and screen. (Item: Individual transaction name)

- Task transaction name can be mapped 1:N and named in Korean.
- Renamed transaction is displayed with a user friendly Korean transaction name.
- Korean naming is supported for all other items including task name, agent name, node group name and more.

The transaction name can be renamed into a user friendly name in Korean.
(Feature) Operation Management – Transaction delays and root cause analysis screen are intuitively perceptible and concise performance data is provided. (2/6)

- According to execution time filter feature, you can intuitively identify the delay sections.

Transaction name appears in Korean name which the user has assigned for convenience.
InterMax E2E Main Features

(Feature) Operation Management – Transaction delays and root cause analysis screen are intuitively perceptible and concise performance data is provided. (3/6)

- Execute Root Cause Analysis with the least number of clicks.
- Easily analyze the root cause of problem and identify performance issues through intuitive UI.

Provides various features for Trouble Shooting
- Call Tree Analysis
- Exceptions
- DB Lock status, workload information
- Source comparison, environment setting files comparison
- Elapsed by section
- GC, memory status
- Class and JSP source view
InterMax E2E Main Features

**Feature** Operation Management – Transaction delays and root cause analysis screen are intuitively perceptible and concise performance data is provided (4/6)

- Identify the work flow and system configuration's transaction flow at a glance through the real-time topology view.
- Monitor the service status through real-time connection of events.

Check transaction process amount by each container through real-time connection of events.
InterMax E2E Main Features

(Transaction related data are provided in chart and snapshot data format so you can analyze a specific time point’s execution status.
Past history is provided in 3 second duration snapshots and can be used to analyze the root cause of issues just as in real-time.

- Workload information (transaction count, elapsed time, etc)
- JVM / TP / OS / DB Stat
- Resource information
- Process and active session information

- DB workload information (wait time, logical read, physical read, wait event)
- DB Lock status, workload information
- Active DB session information (Transaction connection)
InterMax E2E Main Features

**Feature** Operation Management – Transaction delays and root cause analysis screen are intuitively perceptible and concise performance data is provided (6/6)

- Provides a feature which allows you to set thresholds for transaction delays and in case of an event generation, to connect with the related details analysis screen.

[ Real-time Event Alarms ]

In case of a real-time event (alarm) generation, click on the corresponding event to connect to the detail analysis screen.

[ Topology View – Integrated Events (Alarm) ]

Topology View – In case of an event (alarm) generation, connect to the detailed information analysis screen with one-click.

Connect with real-time call tree to analyze the elapsed time event.
InterMax E2E Main Features

(Feature) Operation Management – Provides various types of dashboards to meet the needs of the user and can be customized for user convenience. (1/4)

- Provides various types of embedded dashboards
- Provides Home, Work groups, Administrator, WAS-DB integrated monitoring, topology view, and other various perspectives and types of dashboard screens to suit the user’s work patterns.

[Home screen]  [Work Groups Screen]  [Topology View Screen]
[Administrator Screen]  [WAS-DB Integrated Screen]  [WAS Administrator Screen]
InterMax E2E Main Features

(Feature) Operation Management – Provides various types of dashboards to meet the needs of the user and can be customized for user convenience. (2/4)

- You can freely configure the real-time monitoring screen by using the docking feature to arrange the desired screens.
- Docking configuration of various types of real-time window frames

Docking Technology

Predefined View & Save Layout

Dock any additional desired screens for monitoring.
InterMax E2E Main Features

- Identifying overall system’s problems at a glance through alarms by setting thresholds for monitoring items.
- Customized dashboards provided through APM solutions to meet client company needs.

Real-time integrated dashboard is provided separately so that each user can freely choose the performance stat depending on his or her perspective for configuration and monitoring.
InterMax E2E Main Features

- Besides the default dashboards, you can also use the mobile version dashboards for urgent response to events. (Expected to release in 2017)

[ PC version Dashboards ] : Provided by default in the solutions.

[ Mobile version Dashboards ] : Mobile dashboards expected to release in 3Q of 2017
**InterMax E2E Main Features**

(Feature) Operation Management – Provides various types of reports. (By transactions per user request, time, system, etc. reporting feature) (1/2)

- Individual-based, user-defined dashboard and reports.
- When creating a statistics report, user can select desired target WAS and stats.

User can select desired target WAS and performance stats to create a report.
InterMax E2E Main Features

(Feature) Operation Management – Provides various types of reports. (By transactions per user request, time, system, etc. reporting feature) (2/2)

- Provides daily/weekly/monthly reporting on main performance stats of the entire system.
- Reporting can be customized based on the kinds of statistics data of the client company.
(Feature) Operation Management – CPU, Thread, Memory, Coredump Analysis Features

- Provides OS CPU Analysis, Thread CPU Time, Thread Count, OS Memory/Heap Memory usage trend, Thread Dump analysis features.
Thank you for working with Exem Co., LTD is Korea’s leading performance management specialist group.

Thank you