

## VISUAL DATA DISCOVERY THROUGH

### PANOPTICON STREAMS

Stream Processing including:

- Real Time Data Prep
- Aggregation Engine
- Calculation Engine
- Alerting Engine

### PANOPTICON REAL TIME

Allows users to analyze fully interactive dashboards via web browsers. Also provides:

- Data Shaping and data aggregation
- Data Caching
- PDF Report Generation
- RESTful APIs
- Scheduling of Reports & Data Extracts
- Security including integration with external directories and SSO
- Alerting Engine

### DASHBOARD DESIGN IN THE BROWSER

Allows users to build analytical real time HTML dashboards, with drag-and-drop, low-code/no-code in the browser.

## DEPLOYMENT

### SINGLE SERVER OR ENTERPRISE CLUSTER

Panopticon Real Time and Panopticon Streams can be deployed on-premise or in the cloud. Multiple servers can run in a cluster with automatic content synchronization. Docker container deployment is supported.

## LOCALIZATION & TRANSLATION

Panopticon supports localization, including non-Latin alphabet languages.

UI translations to Chinese, Japanese, and Korean are included in the product.

## SYSTEM REQUIREMENTS

### PANOPTICON STREAMS

- Apache Tomcat 9.0.x
- Oracle Java SE 8, Open JDK 8, Oracle Java SE 11, and Open JDK 11 are supported.  
**Note:** Using Java 11 requires installation of the dependency files that are distributed with Panopticon Streams.
- Amazon Web Services (AWS), MS Azure, Google Cloud Platform, Oracle Cloud
- 8 CPU Cores (Minimum for Production Usage)
- 16GB free disk space and at least 16GB available RAM
- Confluent 4.11 Kafka Distribution including:
  - Zookeeper, Schema Registry, Kafka

### PANOPTICON REAL TIME

- Apache Tomcat 9.0.x
- Oracle Java SE 8, Open JDK 8, Oracle Java SE 11, and Open JDK 11 are supported.  
**Note:** Using Java 11 requires installation of the dependency files that are distributed with Panopticon Real Time.
- Amazon Web Services (AWS), MS Azure, Google Cloud Platform, Oracle Cloud, Docker Linux
- 8 CPU Cores (Minimum for Production Usage)
- 4GB free disk space and at least 16GB available RAM
- In Memory Caching / Data Extracts limited to available Server RAM

### ANALYST (WEB CLIENT)

- Latest version of Chrome, Safari
- 2GB available RAM

## MAJOR STREAM PROCESSING FEATURES

### STREAM INPUT

- Producing Topics, Tables & Global Tables
- Kafka Topics
- Alternative Streaming Sources
- Polling Reference and Historical Sources

### STREAM OUTPUT

- Kafka Topics
- Email
- kdb+
- InfluxDB
- SQL JDBC Databases
- MQTT
- REST service
- Text (CSV)

### REAL TIME DATA PREP

- Join
- Branch
- Union
- Pulse
- Filter
- Conflate

### AGGREGATION

- Windowed
- Min, Max, Avg, Count, Samples, First, Last, StdDev, Var, Sum

### CALCULATE

- Add / Replace / Remove Fields
- Conditional Functions
- Casting of Fields
- Numeric Functions
- Time Functions
- Text Functions

**MAJOR VISUAL DESIGN & ANALYSIS FEATURES****REAL TIME STREAMING & REAL TIME UPDATES**

- Display Real Time Streaming Dashboards
- Push Subscribe for Streaming Sources
- Automatic Pull for non-Streaming Sources
- Pause Data Updates as required
- Alerts on off-limit values
- Investigate by jumping from real time to historic data
- Throttle Subscriptions to minimize CPU & Memory
- Show latest or scrolling time windows
- Process Full or Filtered Data Requests & Subscriptions

**INTRA DAY & HISTORIC TIME SERIES**

- Display Time series from Years down to Nanosecond
- Playback through time
- Select Tick time, or calendar time to playback
- Resample from barred down to transaction level
- Fill forward (interpolate)

**VISUAL ANALYSIS**

- Pre-Attentive Techniques
- High density displays
- Peer Comparisons
- Hierarchical displays
- Dynamic selection of visible detail level (Depth)
- Trend, Clustering & Outlier detection
- Numeric & Categorical Correlations
- Relationships
- Cross Tabbing
- Brushing & Visual Filtering

**HIERARCHY ANALYSIS**

- Hierarchical displays
- Dynamic hierarchy rearrangement
- Multiple concurrent hierarchies
- Aggregation (Additive) with over 25 aggregates supported
- Non-additive external aggregate retrieval for complex risk scenarios

**CUSTOM UI BUILDING**

- Various UI Form Controls
- Parameterization
- Data Entry
- Actions – Navigation, URL, Script & Data Update
- Web API for integration into larger web portals

**DATA CONNECTIVITY****TICK DATA CONNECTIVITY**

- OneMarketData OneTick
- OneTick Cloud
- Kx kdb+
- InfluxDB
- Shakti
- Native Connectivity
- Request / Response
- Subscriptions

**MESSAGING STREAMING CONNECTIVITY**

- Apache/Confluent Kafka (Subscribe / Publish)
- ksqldb
- JMS (e.g. ActiveMQ)
- Solace
- 60East AMPS
- RabbitMQ
- Web Socket
- JMX
- Google Cloud Pub/Sub
- MQTT
- Amazon Kinesis

**EVENT PROCESSING CONNECTIVITY**

- Kx kdb+Tick
- OneMarketData OneTick CEP
- Tibco Streambase CEP
- Tibco LiveView DataMart
- SAP Sybase ESP
- Panopticon Streams

**BIG DATA CONNECTIVITY**

- Apache Hadoop Hive
- Cloudera Impala
- Apache Spark SQL
- Apache / Datastax Cassandra
- Elasticsearch 6.x and 7.x
- Livy Spark (PySpark)
- IBM Cloudant
- Splunk
- XMLA such as ActivePivot

**GENERAL CONNECTIVITY**

- MS Excel
- Text, XML & JSON
- Google Analytics
- Restful Web Services (Returning Text, XML or JSON)
- JDBC Databases including Cloudera Impala, MySQL, Oracle, PostgreSQL, Spark SQL, IBM DB2, Greenplum, MS SQL Server, Sybase IQ, Sybase ASE, Teradata, Vertica

**CUSTOM CODE AND ML MODEL SCORING****Python, R, Java, and REST APIs**

- Embedded as part of the data pipeline
- Additionally, act as a separate data source
- Dynamically change script execution via parameters

**DATA VISUALIZATIONS****COMBINATION GRAPHS**

- Time Axis Combination Graph
- Numeric Axis Combination Graph
- Text Axis Combination Graph

**TIME SERIES**

- Candlestick / OHLC Graph
- Horizon Graph
- Line Graph
- Needle Graph (Standard / Stacked / Grouped)
- Order Book
- Price Band
- Spread Graph
- Stack Area Graph
- Table with Micro Charts
- Timeseries Scatter Plot
- Timeseries Surface Plot

**SNAPSHOT & TIME SLICE**

- Bar Graph (Horizontal / Vertical)
- Box Plot
- Bullet Graph (Horizontal / Vertical)
- Categorical Line Graph
- Circle Pack
- Donut Chart
- Donut Gauge

- Dot Plot (Horizontal / Vertical)
- Funnel Chart
- Heat Matrix
- Map Plot
- Network Graph
- Numeric Line Graph (Horizontal / Vertical)
- Numeric Needle Graph (Standard & Stacked)
- Pareto Chart
- Pie Chart
- Record
- Scatter Plot
- Scatter Plot 3D
- Shapes / Choropleth
- Surface Plot
- Surface Plot 3D
- Table with Micro Charts
- Ticker Tile
- Treemap (Classic, Cluster & Window)
- Waterfall Chart

**Filtering & Data Capabilities**

- Casting, Renaming & Setting Display Formats
- Calculations including Time Series
- Time & Numeric Bucketing
- Custom Groups
- Visual Filtering
- Categorical filtering via check list, radio list & free text entry
- Numeric Range & Percentile Distribution Filters
- Time Window Filtering & Snapshot Time Selection
- Parameterization