open PDC

Version 2.0

The Next Generation PDC

August 14, 2013

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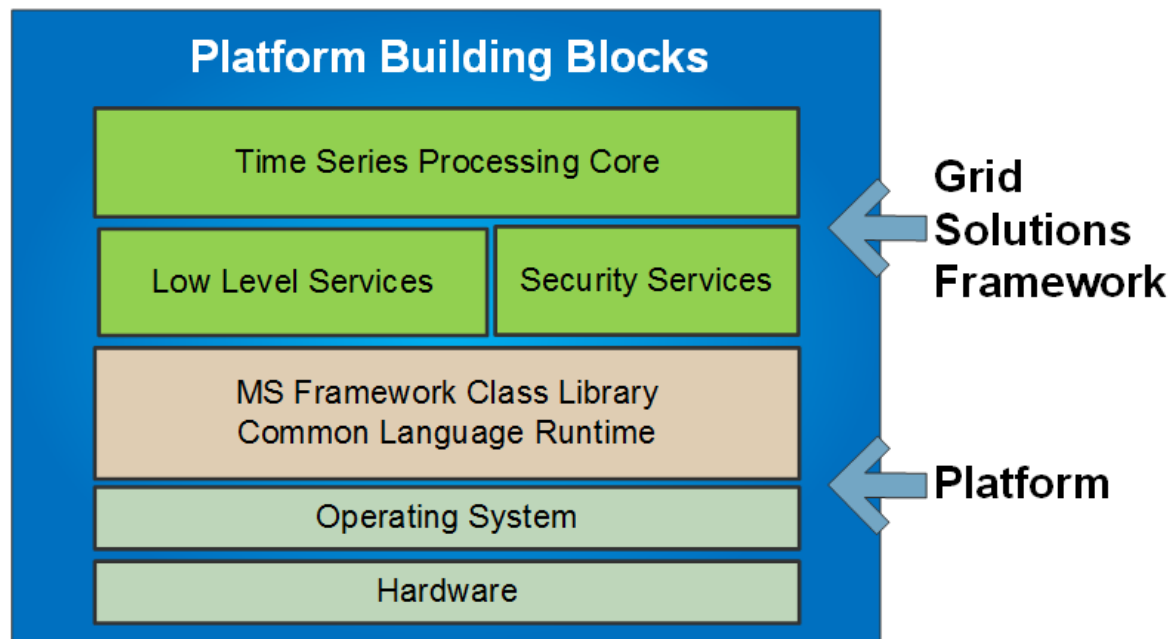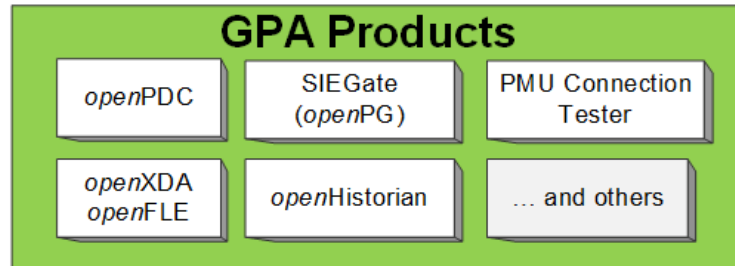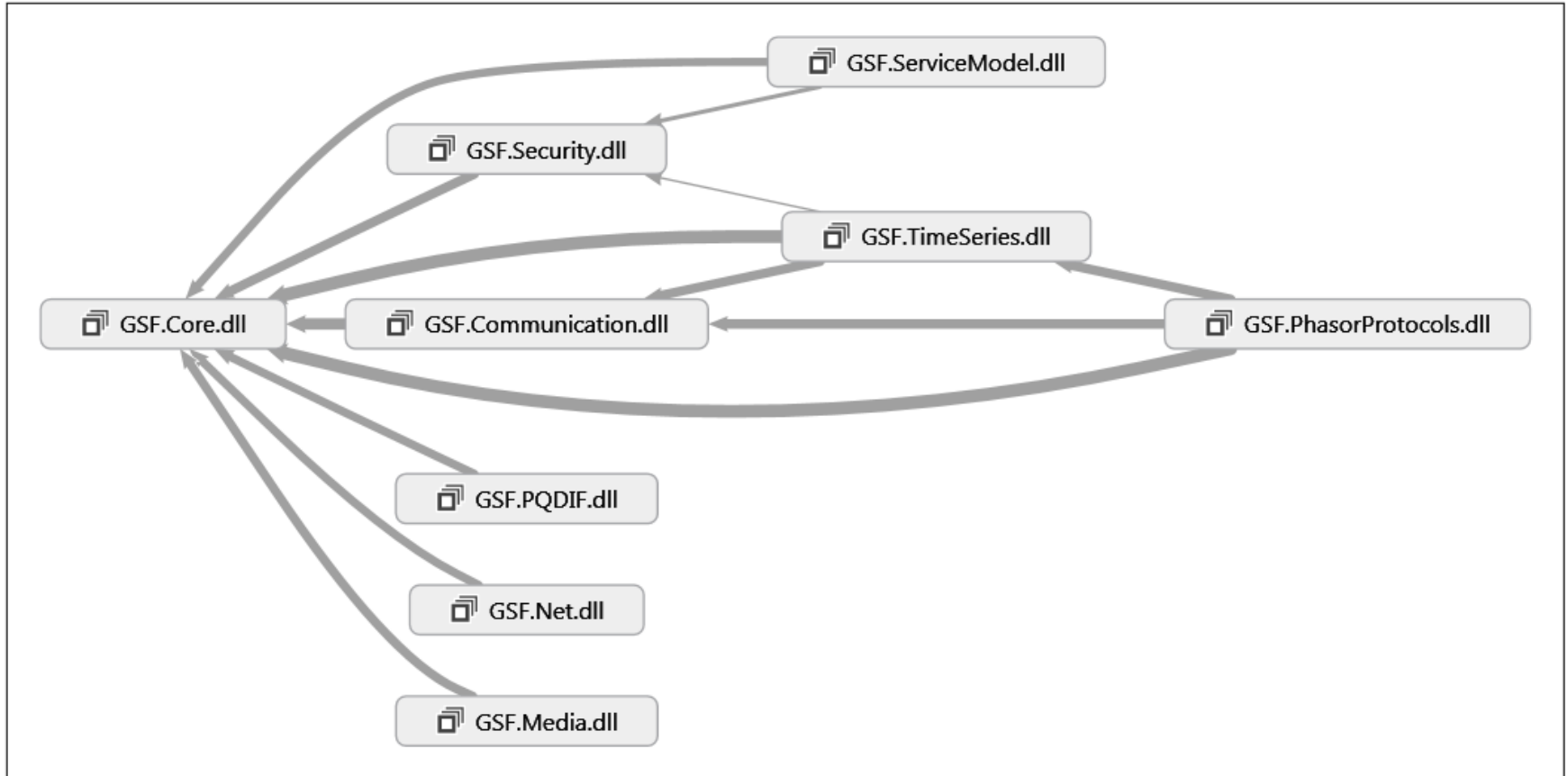
Grid Solutions Framework (GSF)

- New software development platform that was initially created as a combination of the Time-Series Framework and the TVA Code Library with a goal to increase performance and security

- Full namespace refactoring and projects targeted to compile with the new Microsoft 4.5 Framework (Released August 2012)

- New core features and improvements are only implemented in the GSF (only a few bug fixes flowed back to the original projects)

http://gsf.codeplex.com/

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All Latest Products are Built using GSF

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GSF Primary Assemblies

66 Total Assemblies, Over 329,000 Lines of Code and Comments, 200,000 Lines of Code without Comments

What's New in openPDC 2.0?

- New features are generally divided into three categories:

  Performance

  Security

  Improvements

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Performance Improvements

- Major system performance improvements using new asynchronous double-buffered processing algorithms

- Nearly 100% of system calls are now fully asynchronous

- Implemented compression in GEP to reduce bandwidth utilization

- High speed alarm processing updated to handle thousands of defined alarms

- Buffer and stream pooling to reduce GC loading

- Enabling of .NET 4.5 concurrent/server based GC to reduce CPU

Security Improvements

- Security has been integrated into all sub-system components

- Calls to custom adapter methods now respect role based security

- Transport layer security (TLS) is now enabled over AD integrated security by default for all remote console based connections (including openPDC Manager)

- TLS library is integrated as part of GSF base communications library and available in GEP

- Services now use either local NT virtual service or AD managed accounts to limit local machine access

- File permissions access for service access is now limited to installation directory

Other Improvements

- Updated communications library has been extensively tested and debugged in a very wide set of deployment use cases
- COMTRADE exports from Historian Trending Tool (includes support for Annex H of IEEE C37.111-2010)
- Native OSI-PI input and output support
- Vastly improved IP multicast support
- Statistics engine is now easier to extend - allowing simple addition of stats to custom adapters
- GEP subscription API's now include full support for the Unity platform (mono based), plus GSF based updates to C++/Java GEP libraries

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Other Improvements, continued…

- Added option for cross-domain access support for Sliverlight and Flash application accessing the openHistorian web service.
- Added maximum send queue size to TCP and UDP clients and servers.
- Added send-to capabilities to UDP client.
- Added buffer parsed event to binary image parser base to be used for flow control with protocols that return very large and/or very fast buffers.
- Added maxSendQueueSize connection string parameter to the TCP and UDP clients and servers, which overrides the configuration file parameter if it exists.

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Improved Scalability

New overall system improvements and caching in the GSF have allowed great strides in performance improvements for all products. For example, routed data performance is now over 3,350,000 measurements per second before pushing CPU ceiling on off the shelf desktop hardware.

Automated Configuration Exchange

- Metadata now flows automatically from publisher to subscriber when configuration has changed.

- Metadata will only but updated and transferred when relevant changes have been detected.

- Metadata synchronization is now transactionalized (all or nothing – no partial updates) – this also speeds updates.

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Simplified System Configuration

Simplified System Configuration

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Recent Upgrades to 2.0

- MISO
- TVA
- Entergy

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