

2018 Roadmap

Highlights

1. During 2017, several long term global projects were started. These projects are speeding up this year and include:
 - Plans to bring three more WHQ Datacenters online in Brazil, Netherlands, and Japan.
 - 84 out of 87 non-core branch locations have completed their migration to Windows Server 2012 R2 and the remaining three are in the final stages of the migration. The migrations have significantly consolidated the number of servers needed locally in order to save on licensing and hardware costs as well as administrative overhead. The migrations also increased use of the Managed and Global Organizational Units (OUs) to apply global standard policies which greatly simplified the work required by local server administrators.
 - Most DPM and SQL servers around the globe were standardized to run the same version and on the same operating system. Future version updates to servers running the common version will be deployed via SCCM. This will make the SQL and backup servers worldwide more stable and allow for consistent administration as well as simplify the work for local server administrators.
 - **Account Expiration & Deletion.** To increase security on the Bethel network, local HuB data is now being used to automatically expire user accounts in Active Directory. By default, the expiration date set is the end date of a person's valid enrollment. Branches will receive monthly notifications to review accounts expired for more than three months so that they can be manually deleted.
 - **Training.** Video training on several global topics of interest will be provided to the branches on the Technical Support Library (TSL). The training video for Software Center troubleshooting has already been released. Videos for Operating System Deployment (OSD) Imaging process, and Mobile connectivity (WRES, DirectAccess) will be released during January, 2018. Others will follow during the course of the year.
 - **Skype for Business Basic 2016.** The *Skype for Business* Basic 2016 client was rolled out to all branches, resulting in considerable cost savings of dedicated funds over purchasing the *Skype for Business* Full 2016 client for all users.
2. During 2018, we will continue to work together as a global Computer Department and further promote standardization in the following areas:
 - The migration of the vast majority of Admin features into HuB will be completed by the end of 2018.
 - Standardization on the WHQ Network for all locations will be finalized this year.
 - Deployment of major updates (Creators Update and Fall Creators Update) of Windows 10 will continue to be released to all clients globally.
 - We will start a project to investigate Windows Server 2016 for its potential use.
 - Deployment of the WHQ Telephone System will continue worldwide.
 - The Video Transcoding Service is currently being finalized and tested by several branches. It is expected that within the coming months it will be finally released to all branches for use in production.

Technical Details

1.0 Applications

1.1 HuB

1.1.1 The following HuB features are planned for 2018. Please pay attention to the [Feature Readiness](#) page on the HuB Implementation site, as sometimes due to additional direction the following items are subject to change.

1.1.1.1 Purchasing Department

1.1.1.1.1. Complete the migration of all purchasing features from Admin R15

1.1.1.2 Accounting Department

1.1.1.2.1. Complete migration of the vast majority of accounting features

1.1.1.2.2. Some unique features for Treasurer's Office will be added

1.1.1.3 LDC

1.1.1.3.1. Provide Kingdom Hall Master Planning

1.1.1.4 Shipping / Printery

1.1.1.4.1. Replacement of Warehouse Picking System (WPS) Mobile Software

1.1.1.4.2. Replacement of Warehouse Management System (WMS) Mobile Software

1.1.1.4.3. Complete additional phases of Production Ready Lists (PRL)

1.1.1.4.4. Enhance Transportation features

1.1.1.5 Document Management System (DMS)

1.1.1.5.1. The Master Item Types feature will allow WHQ Departments to provide standard DMS configurations for branches

1.1.1.5.2. Improve the overall performance and user experience of DMS

1.1.1.5.3. Enhance generation of Main Document to provide real-time updates

1.1.1.5.4. Unify features between correspondence and incidents: Priority, Due Date and Reminder date

1.1.1.5.5. New feature for keeping track of meetings, agendas and minutes.

1.1.1.5.6. Continue to migrate content and documents from several branches' legacy Lotus Notes applications into HuB

1.1.1.5.7. Improve Document Storage Solution to allow larger videos to be included and provide video streaming

1.1.1.6 Service Department

1.1.1.6.1. Complete features for managing audio-video equipment routing

1.1.1.6.2. New HuB and HuB Web Apps features for managing special events like graduations and annual meetings

1.1.1.6.3. Branch-authored master data for geopolitical and branch organization master data

1.1.1.6.4. Global address standardization tools

1.1.1.6.5. Tracking and scheduling missionary shepherding visits

1.1.1.7 Bethel Office

- 1.1.1.7.1. Updated meal guest management features
- 1.1.1.7.2. Updated barber and hairdressing features
- 1.1.1.7.3. Photo booth application to assist with taking Bethel photo IDs and other profile related photographs

1.2 HuB Analytics

- 1.2.1 Continue providing features for WHQ Departments and Committees

1.3 HuB Web Apps

- 1.3.1 Updated Assignments and Duties features including a calendar and trades
- 1.3.2 New Telephone Directory including an offline mode for Bethelites
- 1.3.3 New Menu including an offline mode for Bethelites
- 1.3.4 Updated meal guest request features
- 1.3.5 The following HuB Web Apps are scheduled for migration to a new platform:
 - 1.3.5.1 Allocation Requests
 - 1.3.5.2 Overnight Guests
 - 1.3.5.3 My Personal Profile
 - 1.3.5.4 Advertisements
 - 1.3.5.5 Congregation Search

1.4 apps.jw.org

- 1.4.1 Improve the platform architecture in preparation for future development
- 1.4.2 Technical improvements to the Donate feature
- 1.4.3 Bethelite time away entry
- 1.4.4 Automated permission management for selected roles in the congregation, convention, and other domains
- 1.4.5 Congregation accounting features

1.5 Builder Assistant

- 1.5.1 Complete main features for project and task scheduling

1.6 Moodle

- 1.6.1 Improve User Experience for Moodle

1.7 Office 365 / SharePoint

- 1.7.1 Improve the provisioning of licenses to Office 365 products.
- 1.7.2 Integrate Global Audit/Records Management Services.
- 1.7.3 Features for handling convention rooming hotels and the recommended lodging list
- 1.7.4 Provide some additional site templates as per direction of WHQ Committees and Departments
- 1.7.5 Complete migration of TSL onto SharePoint

1.8 Redmine

- 1.8.1 Improve look and feel

1.9 Watchtower CAD

- 1.9.1 Complete final two General commands
- 1.9.2 Begin development of Discipline commands with the goal of completing these by the latter half of the year.
- 1.9.3 Provide more training videos that will focus on explaining technical aspects of the program and on how best to use its various features to be more productive.
- 1.9.4 Translation of the Help documentation into German, Italian, and Japanese.

1.10 Autodesk

- 1.10.1 The number of overall licenses will be greatly reduced with the global renewal in April of 2018. All branches currently using AutoCAD are encouraged to continue migrating their users to Watchtower CAD in order to continue saving funds for the organization. All issues or limitations preventing this should be sent in by means of user reports as soon as possible.
- 1.10.2 Upgrade the remaining licenses and installations from the 2016 version to the latest 2019 version starting in the middle of the year.

2.0 Bethel Domain

- 2.1 We have federated and are synchronizing the Bethel domain with Azure AD. We will begin to migrate to the use of Bethel credentials to access these resources. This will enable users in the Bethel domain to seamlessly authenticate via their Bethel account to Azure Platform-as-a-Service (PaaS) and Software-as-a-Service (SaaS) services, such as *Office 365*, and will offer more options for mobility.
- 2.2 We integrated Windows Server 2016 Active Directory Federation Services and Windows Server 2016 Web Application Proxy. After that, we updated all federation clusters to the new version. This has enabled developers to take advantage of the latest authentication protocols. We will also be looking at improving the security of internal authentication mechanisms.
- 2.3 We have integrated Windows Server 2016 Active Directory Domain Services and will upgrade all domain controllers (bethel.jw.org, field.jw.org, and jwpub.org) during 2018. We also hope to integrate and deploy additional security and Global Server Load Balancing (GSLB) DNS functionality based on Windows Server 2016.
- 2.4 We have implemented additional multi-factor authentication options for administrative accounts in the Bethel domain. Multi-factor authentication for all Bethel users has also been integrated for *Office 365* when accessed externally. This will help provide easier mobile access while maintaining a high level of security. Internal Bethel users will be able to authenticate seamlessly to *Office 365*.

3.0 Client Technologies

- 3.1 **Client Imaging & Maintenance.** A new global deployment tool, currently being piloted by a few branches, will be released globally. It will include Branch Resource Manager (BRM) integration, network authentication, and application installation for both managed and unmanaged devices. The WHQ Client OSD task sequence will also be released globally along with updated zone task sequences. The new logic will address BIOS, firmware, and driver updates. In-place upgrades will be adjusted to include BIOS, firmware, and driver updates as needed.

3.2 Microsoft Office 2013 or 2016. There are still no current plans to upgrade users to Microsoft *Office 2013* or *Office 2016* due to cost concerns. Therefore, please make sure that code is not being developed for macros or in *Access* that will cause the users to become dependent on features or functionality that is only available in these newer versions of Microsoft *Office*. If a certain functionality comes up that may require the use of either of these newer versions of Microsoft *Office*, please write to the WHQ Computer Department explaining the special needs so that further direction can be provided. Additionally, 64-bit versions of Microsoft *Office* should not be used without express permission.

3.3 Password Manager Pro (PMP). Over the past year, many more branches have been able to take advantage of this enterprise password vault. Work has nearly been completed to introduce high availability for greater stability.

3.4 Technical Support Library (TSL). Work is still underway to migrate older TSL documentation to a new *SharePoint*-based TSL. Ticketing will be migrated to CD Redmine during this year.

3.5 Training.

3.5.1 Video training on several topics of global interest will be provided to branches on the Technical Support Library (TSL). Topics will include remote assistance tools, mobile connectivity, and client security. Additional videos will be released as needed.

3.5.2 With the help of various branches, we will be coordinating and releasing teacher-led classroom training, *Skype* and video-based training, as well as Computer Department contact training.

3.6 Windows 10. The Windows 10 Anniversary Update (AU) was successfully released to most computers in our global infrastructure. Work is underway to rollout Windows 10 Creators Update (1703) in early 2018, followed by the Fall Creators Update (1709) later in the year.

4.0 Global Network Services

4.1 Juniper Firewalls. We will continue to upgrade remaining SRX240 hardware globally. We will also continue improving the internal security of key systems.

4.2 WHQ Network. Branch network standardization is progressing very well, in fact the last two BSN branches and 18 Remote Translation Offices are in the process of being migrated to the global network standard. We estimate this will be completed by the end of the 2018 service year. Additionally, many branches are receiving additional network equipment to improve reliability and handle the demands placed on the network. Also, Wi-Fi design work is ongoing and branches are being assisted to implement standard Wi-Fi systems.

4.3 WHQ Telephone System. The feature set for the WHQ Telephone System is complete. From this point onward, any branch requested feature enhancements should be directed to the Coordinator's Committee for approval. The WHQ Telephone System has now been deployed in 46 branches. 161 RTOs are benefiting from the first phase of installation which enabled calling between branches. Remaining branches and RTOs have been contacted and are all being scheduled for installation of this telephone system. Continual assistance is being provided for branches to reduce and eliminate the use of two-way radio systems, conventional paging, DECT, PBXs, and associated equipment. Additionally, branches are being assisted to standardize endpoint telephones, intercoms, and gateways for outside telephone calls. The WHQ Telephone System provides direct desk-to-desk calling between Bethel facilities worldwide, including the telephone numbers now available in the Active Directory.

The WHQ Telephone System is centrally managed and updated. This enables faster deployment and consistency in endpoint configuration, which simplifies diagnostics and troubleshooting. Over 7,500 requests were handled during 2017 in support of WHQ Telephone System locations. This support arrangement has been expanded to additional time zones to accelerate responses to branch problem

reports. Further refinements to handling programming requests and trouble issues are planned during 2018 with the goal of providing improved support. A new systematic update system is in deployment which has the goal of keeping a consistent telephone feature set and code base across all Bethel facilities.

Outside telephone numbers from key branches will be allocated for further use within *Skype for Business*. We are actively evaluating wholesale and regional options to reduce the cost of outside telephone calls where possible. Many branches use multiple telephone and cellular (GSM) companies to provide low-cost options for the brothers calling from the field. Our goal is to provide standard options to handle these configurations.

Audio language packages have been added to the WHQ Telephone System in 2017, to allow adjusting the language of informational audio messages to a local language. Eight languages are pre-recorded and additional languages are being added upon request.

Efforts will continue to improve the reliability of the Mobile VoIP Service (MVS) for office scenarios reported in locations that had previously relied on DECT mobile office telephones. For locations with sufficient Wi-Fi coverage, MVS Messaging will become available in 2018. This will enable users to send a numeric message from a phone and receive the message on an MVS device.

4.4 Global Port Authentication Services. To enhance security, a system to authenticate devices is currently being developed. This system will prevent non-approved devices from connecting to the branch network.

4.5 Pulse Secure Appliances. We have upgraded the *Pulse Secure* appliances in the Netherlands, Japan, and the United States.

4.6 IPv6. We have enabled IPv6 on all core networking equipment and several of the core server systems. Work will continue in 2018 on the rest of the essential core server systems so that remote offices can be configured to only use IPv6.

4.7 DHCP/NPS 2012. We have completed the migration to DHCP/NPS 2012 for all branches. We have decommissioned all the DHCP/NPS servers in level 1 networks which were often used in smaller offices. We are still working to upgrade all systems that do not work with SHA1 so that we can replace the wireless certificates used by NPS in all branches with SHA2 certificates from the upgraded PKI. IPAM has been deployed for use in core branches and we hope to expand its use to branch and remote office machines as well. DHCP/NPS 2016 will be evaluated in 2018.

4.8 WAN Accelerators. After working extensively with the company, we were unable to implement the caching of Internet traffic for branches that have a WAN accelerator.

5.0 Global Service Operations

5.1 Equipment Monitoring. Following the addition of network and server equipment under WHQ Computer Department administration to the Zabbix global monitoring arrangement, we have decommissioned other major Computer Department monitoring systems (such as the USA-based Nagios system) that were previously in use. Additional branches will continue to be migrated to WHQ Computer Department managed equipment over the next year during hardware life cycle upgrades. These devices will automatically be added to Zabbix by the regional technician assisting with the project. The escalation response for monitoring alerts from branch devices that are managed completely by WHQ Computer Department will be directly handled by an appropriate set of global technicians; local branch technicians can subscribe to monitoring alerts for informational purposes only. The

escalation response for monitoring of branch devices that comply with WHQ Computer Department standards will be managed by the local Computer Department; local branch technicians are required to subscribe to monitoring alerts so that they can provide direct response. Depending on the resolution required, additional assistance may need to be requested from the Global Help Desk or regional server technicians. Other local equipment not managed under any WHQ Computer Department arrangement can also be added to the Zabbix monitoring system for alert subscription by local branch technicians. However, in those cases such systems will have only basic monitoring using established options; no customizations can be requested.

5.2 Regional Technicians. The regional server technicians have been very busy this past year with global Windows 2012 R2 rollouts/migrations, SQL 2014 upgrades, and DPM server standardizations which are near completion. Currently they are concentrating on the server standardization project, where Hyper-V hosts/clusters are having to pass an exhaustive compliancy test and then moved into a Global Organizational Unit (OU). In this OU, only WHQ Computer Department approved Group Policy Objects (GPOs) and standards are applied and the servers are included in a monthly maintenance process. Branches are now requesting all new server installations and server growth via the Computer Department Redmine Change Management Database (CMDB) and any approved work is performed by the regional server technicians. This is drastically reducing the need for local server administration. This is in line with the goal of reducing the pressure on local Computer Departments and enhancing personalized support for branches in their respective time zones. We are very pleased that skilled technicians globally are continuing to be made available by local branch Computer Departments to help regionally with hardware configuration, installations, and deployment of approved servers and network equipment. Many of these technicians still work part-time with their local Computer Department or on various projects with WHQ Computer Department at the same time. In the coming year, these technicians will continue working on global server standardizations and on other migration projects.

5.3 Global Service Continuity. As this world system continues to degrade, natural disasters, political unrest, and other problems are affecting more and more locations. WHQ Computer Department will be providing more direction in the future for the regional technicians to respond rapidly to disasters or changes affecting any branch. In addition to this global initiative, a project is nearing completion to provide a standard solution to branches for using approved hypervisor and backups technologies to create a local disaster recovery for their critical servers and data. To benefit from this, branches will need to already have been upgraded to Hyper-V 2012 R2 with all hosts moved to the Global OU, as well as have a local backup host with a standardized DPM 2012 R2 server. Branches will be contacted so that a regional server technician can make arrangements to configure the necessary setup for this local disaster recovery feature and provide the necessary training. A memorandum will soon be sent with additional details regarding the two solutions mentioned above.

5.4 Global Incident Response. The global team responding to alerts from key systems in all branches will continue to work on improving the speed with which they respond to incidents and escalation.

6.0 Licensing

6.1 Snow Licensing Manager. The global software license management software, also called *Snow*, has been successfully implemented globally as the official software asset management tool. *Snow* allows for re-allocation of unused licenses globally, wherever possible, in order to save dedicated funds. Training has been provided by regional technicians to licensing contacts in all branches to familiarize them with the use of this tool. During 2018, we hope to improve the support available to the branch licensing contacts as members of the WHQ CD Licensing team become available within most time zones. We are also working with various headquarters groups to improve the software request process and develop a standard approach that will allow the organization to comprehensively review requests

that arrive. In time, software for branches that is considered global in nature will also fall under the scope of this global licensing team.

7.0 Global Office Machines

7.1 Guidelines and Standards. Guidelines on office machines usage and life cycle are almost complete and will be provided to branches during this year. This will include direction on the quantity of printers needed for office environments, device life cycles, standard models, and Active Directory listings.

8.0 Hybrid and Public Cloud Initiatives

8.1 Expanded use of Azure and AWS. Development and operations (DevOps) teams will continue to evaluate which systems and workloads can benefit the most from hybrid and public cloud services. During the past year, several tools were evaluated and integrated and some are already helping with production workloads. With regards to hybrid cloud initiatives, we will evaluate how this deployment model can help the organization to have consistent hybrid compute architecture that has a common identity, integrated management and security, consistent data platform and unified development, and operations processes that can span the on-premise and cloud environments. We expect the use of this deployment model to grow during 2018 for certain types of workloads.

9.0 Server and Storage Technologies

9.1 Digital Archive Solution. During 2017, the ScrollJar program added improved features that allowed for users to do scheduled deliveries, receive e-mail notifications about the details of any failed uploads, and implement retention policies. In 2018, the website portal will be redesigned to make enhancements to the user experience. Search capabilities and search result viewing will be improved. Additional topics will be added to the Help section. The existing retention feature will also be enhanced to provide further functionality to departments who can (or are required to) enforce data retention limits. Finally, an archive solution will be implemented for Remote Video Translation (RVT) teams to more easily and directly archive very large projects.

9.2 Server Hardware Management. The capabilities in SCCM continue to be expanded upon to provide global benefits for branches in the area of global hardware management. During 2017, automated updating via SCCM was implemented on the fourth Saturday of every month for clustered or standalone Hyper-V hosts in branches or remote offices after compliant migration to the Global OU. 165 hosts have already begun automated monthly patching under this arrangement. Beginning early in 2018, this same proven process will begin to automatically include server firmware and driver updates at determined intervals to provide hardware baselines to keep servers globally compliant with vendor required fixes and other improvements.

During the past year, the out-of-band management configuration for all qualifying servers and shared-storage arrays worldwide was standardized. This initiative provides improved security, integration for inclusion in the global Zabbix monitoring system, and enhanced global support for branch server hardware via the Preconfigured Server and Network (PSN) and regional server technician arrangements.

Direction will be sent in early 2018 to provide branches with specific instructions on how to handle server hardware issues covered under manufacturer warranty during the five-year hardware life cycle. This will include classification by country locations to assist branches in determining whether an office qualifies for onsite vendor support, failed part replacement, or phone/e-mail remote technical support. This will also include details on how to process Hewlett Packard Enterprise (HPE) server and storage warranty claims based on the designated situation per branch, and how the PSN and regional server technician arrangements will be involved.

With ongoing changes continuing worldwide that involve various facilities, branches should continue to send via memorandum a list of any unused equipment that might become available due to changes in facilities so that they can receive direction on how to proceed (<https://tsl.bethel.jw.org/articles/585>). When possible, such computer equipment will be reused in other locations to save funds. The PSN arrangement will be used to centrally organize and redistribute such equipment in most cases.

9.3 Server Hardware Upgrades / PSN Arrangement. Branches will continue being proactively contacted by the regional server technicians to assist with submitting hardware orders for the replacement of servers and storage as this equipment reaches the five-year hardware life cycle. Standard server and shared-storage hardware packages can be found on the TSL under the Network Equipment Listing (NEL) document.

If a remote office is being planned for a branch territory, the WHQ Computer Department should be notified as soon as the office is approved so that a hardware order for any approved standard equipment needed can be prepared under the direction of the WHQ Computer Department or a designated regional technician. Please refer to the new Remote Office Computer Equipment Guidelines document recently posted to the TSL (<https://tsl.bethel.jw.org/articles/288>).

For countries having issues with local HPE server or storage hardware support, the PSN has a stock of urgent spare parts and have pre-approval to ship immediately in the event of a critical failure to primary branch hardware by contacting the PSN via InboxCDPSN@bethel.jw.org.

9.4 SQL Server. The majority of branch and RTO SQL servers have been upgraded to SQL 2014 SP1 CU2 running on Windows 2012 R2 and moved to the Managed OU. Efforts to reduce costs have been implemented in collaboration with the WHQ Computer Department Licensing team. In harmony with standard security practices, a recurring process to patch SQL (Service Packs and Cumulative Updates) is in progress for all servers globally. In an effort to reduce the workload for local branch technicians, further efforts to centralize SQL administration are being made. Investigation and testing for the next release of SQL has begun.

9.5 System Center Configuration Manager (SCCM). The SCCM infrastructure has now fully adopted the Current Branch for Business model which enables us to quickly support the management of new features and take advantage of security improvements for workstations and servers globally. Ongoing efforts to reduce content on distribution points worldwide have already resulted in terabytes of disk space being reclaimed, with the potential for additional savings in the future. A process for Intelligent Content Distribution has been implemented during the last year which has dramatically reduced the total amount of Microsoft updates and SCCM software content being sent to each distribution point worldwide by only sending content to local SCCM servers if the clients it supports use the specific operating system (OS) or application. The number of global Hyper-V hosts that are automatically patched by SCCM is increasing every month, allowing branch Computer Department personnel to care for other necessary responsibilities. Research and testing has been done to ensure the smooth implementation of SCCM services even for remote offices with very limited bandwidth. During 2018, work will be done to continue improving the security of communications between the clients and the SCCM infrastructure. Additionally, efforts are being made to further automate administrative tasks and delegate rights to the many teams that use SCCM resources.

9.6 Hyper-V / SCVMM. Branches continue to receive the standard hypervisor and virtual OS deployment on all newly obtained server hardware ordered with WHQ Computer Department approval via the Preconfigured Server and Networking (PSN) arrangement. In combination with managed OUs and global standard group policies, this is leading to improved support of systems and less server management required by the local Computer Department. Primary and backup host servers, as well as their primary shared-storage, will continue to be upgraded or replaced throughout 2018 as they approach their hardware life cycle. Branches are proactively sent a notification memorandum, and then contacted by a regional server technician to assist with this evaluation in advance of the replacement date.

9.7 Database Administration. The continued efforts to standardize and automate operations of SQL databases in the branches have simplified the work of many technicians while improving service to the users. We hope to apply these same standards to all RTO's during the first part of 2018. Continued improvements in monitoring will help to ensure that performance is meeting the needs globally.

In harmony with headquarters security initiatives, a recurring process to patch SQL (service packs and cumulative updates) is in progress for all servers globally. Additionally, further efforts to centralize SQL administration are being made in an effort to reduce the workload for local branch technicians.

9.8 Exchange and Skype Improvements. After the migration to the latest version of these systems, we have already been able to benefit from using some of the new functionality. During 2018 we will continue to integrate approved features. We are also completing work to further improve reliability and high availability of these key systems. We will also work to integrate Microsoft *Teams* and *Skype* where it will be beneficial to the work.

9.9 SharePoint 2016. We will evaluate the possible benefits of an on premise and hybrid *SharePoint* 2016 farm architecture for Bethel use with the Intranet and Search services.