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Waukesha BB Scheduler 1.0 Users Guide



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# Overview

The purpose of this document is to provide instructions for deploying, using, and updating the Waukesha BB Scheduler developed by Obsidian Solutions Consulting.

## Version Changes

### Version 1.0.0 is the initial deployment of the BB Scheduler. This version has the initial requirements from the Waukesha Team.

### The following changes were delivered in Version 1.0.5:

1. Changes to the Enrollment SQL Query
2. Added Scrolling to the Create Course Sheet
3. Updated Utility Page to display Templates in a Table format.

### The following changes were delivered in Version 1.0.6:

1. Added Terms based upon course duration
2. Added Admin Screens
3. UI Fixes

### The following changes were delivered in Version 1.0.7:

1. Added Node associations based on School Name
2. UI Fixes and Utility Page Added

### The following changes were delivered in Version 1.0.8:

1. Fixed errors in Enrollment File for Instructors. Need Staff Number

### The following changes were delivered in Version 1.0.9:

1. Made SQL changes to retrieve 2026 courses
2. Added UI Changes for Create Course sheet to see button
3. Updated Utility Page to display Templates in a Table format.

### The following changes were delivered in Version 1.1.0:

1. Added Delete Course functionality to the Manage Course Action
2. Added page tracking to state management
3. Fixed bug to return sections for 2026 courses.

## Purpose

This Application will allow The Waukesha School district to have a LTI-Based tool to assist admins and teacher in the creation of courses from Infinite Campus into BB Learn. Instructors will have a LTI tool that can be used to retrieve Infinite Campus courses/sections and to select them for integration and creation of Blackboard courses in real-time and the admins will have an enhanced LTI tool for managing all Infinite Campus course and Blackboard courses with the added ability for Admin functions and syncing snapshot integrations.

## Infinite Campus Database Integration

The BB Scheduler interfaces with the Infinite Campus application through a direct JDBC connection with their MS SQL database. Many of the SQL integrations have been provided by the Waukesha team from the previous VB based BB Scheduler application (1.0)

## Blackboard Learn Integration

The BB Scheduler interfaces with the BB Learn system is 3 separate integrations. Course integration is performed via the BB Learn REST APIs. Application integration is through using LTI 1.1 integration for the User Interface. Data Synchronization is done using the BB Learn Snapshot Data Integration Framework.

## Backend Servers

The BB Scheduler is built on a Spring Boot framework running on Tomcat 10.x. Production and Staging are connected to a corresponding Windows Server running this framework. The Windows Servers are provided by the Waukesha Team and are configured to support port 80/443 for all HTTP/HTTPS traffic.

# Installation

## Pre-Requisites

Deploying the application

1. An account with system administrator rights to the backend Windows Server
2. An account with administrator rights to the system hosting the Blackboard application.
3. Tomcat Installation
4. The application \*.war file
5. A running instance of Blackboard Learn Ultra/Saas

## Installing the Tomcat Application

Installing Tomcat can be done utilizing the Tomcat binaries that can be found on the Tomcat download site. The version of Tomcat used for this application is version Tomcat version 9.

|  |  |  |
| --- | --- | --- |
| # | Step | Image |
| 1 | Download and install the Tomcat 10.1.39 Release | apache-tomcat-10.1.39.exe |
| 2 | Download and Install Java JDK 23.0.2 | Open Java |
| 3 | Configure the Tomcat Server to accept HTTP/HTTPS Connections over port 80/443 | conf/server.xml |
| 4 | Get the latest Waukesha BB Scheduler Application and place into the Tomcat webapps directory. It should auto-deploy | WaukeshaBBScheduler-x.x.x.war |

## Setting Up REST Integration

The REST Integration must be setup on the BB Learn Server. This is typically done by the System Admin. The following steps must be followed:

|  |  |  |
| --- | --- | --- |
| # | Step | Image |
| 1 | Go to BB Learn Admin Page and find the Integrations Module and select REST API Integrations |  |
| 2 | Create a New Integration |  |
| 3 | Enter the Application ID provided by the Developer and associate to a BB Learn User that has the required privileges. |  |
| 4 | This is an example |  |

## Setting Up LTI Integration

The BB Scheduler User Interface is integrated with BB Learn via LTI 1.1. System Admins must setup the LTI Endpoints in BB Learn and create the Placements to access the User interface. The following steps show the configuration of the LTI Endpoints in BB Learn

|  |  |  |
| --- | --- | --- |
| # | Step | Image |
| 1 | Create the LTI Endpoint in BB Learn. Select the LTI Tool Providers in the Integrations menu in the Administration Page. |  |
| 2 | Select the “Register LTI 1.1 Provider” on the LTI Tool Providers page. |  |
| 3 | Fill out the following Data:  Provider Domain: bbscheddev.waukesha.k12.wi.us |  |
| 4 | Set the Provider key and secret. This must be configured based upon the setting on the Server |  |
| 5 | Set the Institution Policies and Submit |  |
| 6 | Now set the Placements, Right Click on the bbscheddev.waukesha.k12.wi.us listing and select Manage Placements |  |
| 7 | Placements can be anywhere in BB Learn where LTI Links are supported. Select Create Placement and fill out the form |  |
| 8 | Provide the Label, Handle and set the Availability to Yes. The Handle must be unique for each instance. |  |
| 9 | The Type is used to place the LTI Links into various locations in BB Learn. |  |
| 10 | The Tool Provider Information is key to the Portal User Interface. The URL must point to the LTI Endpoint in the application. Use the following URL for Production.  https://bbsched.waukesha.k12.wi.us/WaukeshaBBScheduler/lti  or  https://bbscheddev.waukesha.k12.wi.us/WaukeshaBBScheduler/lti  for Staging  The Tool Provider Key and Tool Provider Secret should be automatically set if the LTI Global option was set. |  |
| 11 | Hit Submit to add the Placement. Multiple Placements can be added to support various configurations and locations. |  |

## Configuring the BB Scheduler Properties

After the Tomcat application is installed, there is an application.properties file use in the configuration of the Waukesha BB Scheduler application. This file can be managed via the BB Scheduler Admin application/User Interface. This should be accessible from the BB Learn Admin Page under Tools.

|  |  |  |
| --- | --- | --- |
| # | Step | Image |
| 1 | Open the BB Scheduler in “Admin” mode |  |
| 2 | Once on the Admin Screen, there is a left menu to access the various modules. The 56 modules are:   * + - 1. REST Config       2. LTI Config       3. Portal Config       4. Admin Config       5. Snapshot Config   Select the menu icon to configure each module. The UI is responsive can be accessed via a device with smaller real-estate. |  |
| 2 | The REST Configuration Form is used to configure the application to connect to its corresponding BB Learn REST Server. This information is provided by BB Learn System admin once the REST Integrations has been completed. |  |
| 3 | The LTI Configuration Form is used to configure the LTI 1.1 integration to Blackboard. LTI 1.1 requires key/secret configuration to establish the LTI relationship with Blackboard. LTI is used to provide a SSO login from Blackboard to the Waukesha BB Scheduler. |  |
| 4 | The Portal Configuration Form is used to configure Application specific information. This form has the following fields (All required)  Logging Level – This dynamically set the log level of the application. The default is INFO. Adding log levels like DEBUG or TRACE will affect the performance of the application |  |
| 5 | The ADMIN Configuration Form is used to configure the Email Server used for the application. These settings should be configured for the SMTP Email server used by the application. The Waukesha IT group will provide these settings. |  |
| 7 | The Snapshot Configuration Form is used to support Snapshot file integration to Blackboard. The Blackboard Instance ID, Shared Username and Password from the Snapshot integration endpoint are required. The Email field is used to send the results of each integration run. |  |

## Configuring the Statistics Database and SFTP configuration

After the Tomcat application is installed, there is a spring.xml file used in the configuration of the Waukesha BB Scheduler application. This file can be edited and is located in the webapps/WaukeshaBBScheduler/WEB-INF/spring directory of the Tomcat application server. To edit the file, open it up on Notepad.

### Database Configuration

The bean that contains the database configuration is in this file. The below is what is looks like and the configuration parameters. Just edit and change the properties to match your configuration. A restart of the server is necessary after making a change.

<!-- database source to setup Statistics -->

<bean id="ds"

class="org.springframework.jdbc.datasource.DriverManagerDataSource">

<property name="driverClassName"

value="com.microsoft.sqlserver.jdbc.SQLServerDriver" />

<property name="url"

value="jdbc:sqlserver://waukeshawi.infinitecampus.org:7771;databaseName=waukesha\_sandbox;encrypt=true;trustServerCertificate=true;" />

<property name="username" value="SDW\_BBDEV" />

<property name="password" value="dWUV0nxK9\*9JwRGf" />

</bean>

### Task Configuration

The bean that contains the Snapshot Task configuration is in this file. Just edit and change the properties to match your configuration. A restart of the server is necessary after making a change.

<task:scheduled-tasks scheduler="myScheduler">

<task:scheduled ref="BBSchedulerTasks"

method="syncUsers" cron="0 0 6 \* \* \*" />

<task:scheduled ref="BBSchedulerTasks"

method="syncEnrollments" cron="0 0 7 \* \* \*" />

</task:scheduled-tasks>

# User Guide

## BB Scheduler 2.0 – Admin Mode

|  |  |  |
| --- | --- | --- |
| # | Step | Image |
| 1 | The BB Scheduler operates in 2 modes. There is an “Instructor” mode and an “Admin” mode. Adim mode is only enabled when the user has a System Role of “Course Creator” assigned to their Blackboard Profile. This will provide access to the Admin and Utility Pages. |  |

## BB Scheduler 2.0 – Instructor Mode

|  |  |  |
| --- | --- | --- |
| # | Step | Image |
| 1 | The BB Scheduler will normally be in “Instructor mode and only show IC Course or BB Courses that they are instructors in. No Admin Button will be displayed |  |

## BB Scheduler 2.0 – Features

### BB Scheduler – Main Page

|  |  |  |
| --- | --- | --- |
| # | Step | Image |
| 1 | There are 2 main screens for the BB Scheduler. “IC Courses” and “BB Courses”. IC Course are used for viewing the Infinite Campus courses assigned to an Instructor. BB Courses will show the Blackboard courses assigned to an Instructor | A screenshot of a course number  AI-generated content may be incorrect. |
| 2 | Both Screens provide the ability to Search globally for a value or on individual Columns. Type in the Search bar and the screen will update automatically as the filter is applied. To used individual columns, select the column and then type in the filter criteria in the search area |  |
| 3 | Example of a search |  |
| 4 | Each Column on the screens are sortable. Select the Columns and then the Arrow to the left can be used for ascending or descending |  |
| 5 | There is an “Actions” button on each row to assist the user in their specific operations. There are 2 Actions. Select Sections and Manage Sections |  |

### BB Scheduler 2.0 – Create Course

The Create Course flow is used to create new courses in BB Learn and to assign Infinite Campus sections to the BB Course. All enrollments from the sections will be added to the associated BB Course.

|  |  |  |
| --- | --- | --- |
| # | Step | Image |
| 1 | To create a new course in Blackboard Learn. The process begins with selecting the sections to be added to the new Blackboard course. | A screenshot of a course number  AI-generated content may be incorrect. |
| 2 | Select Sections is using in creating new courses in BB Learn. Users can select Sections from Various courses to be combined into a single BB Course. Users can start the process by selecting section from a variety of courses. Once selected, a sheet will pop up to show the list of sections are available to be selected |  |
| 3 | Sections that are available to be selected will have the Add Button enabled. If the Section is already linked, the Add button will be disabled. Users can select 1 or more sections or just select the Add All Sections button. |  |
| 4 | Once selected, the button will change to a Remove button. Users can remove sections they no longer wish to use. Once happy with the selections, select the Left Arrow to return. |  |
| 5 | The course in which the section(s) were selected will now be highlighted in light Green. |  |
| 6 | The Selection button will also be updated to show 2 Sections selected. Click on the button to see the details |  |
| 7 | Follow the same process to add more sections from other courses. The Selection area will update as more sections are added. |  |
| 8 | To clear all selections to start over, select the Clear Sections button. |  |
| 9 | Once you have selected all Sections to be put into a Blackboard Courses, select the “Create Course” button |  |
| 10 | This will bring up a new Create Course Sheet for building a new course to be submitted to Blackboard |  |
| 11 | The first step is to choose a BB Learn template course to use as the course to be copied from. These courses exist in BB Learn and the new course will be an exact copy of this course to save instructors time in developing. There are 3 items needed to filter out the template list to choose the correct template. First select the Master Level. |  |
| 12 | Second, choose the Master Subject Area. |  |
| 13 | Now choose the correct template course to use basis of the new course. |  |
| 14 | The course name will be pre-populated with the name of the Infinite Campus Course used during the selection process. This course name can be customized to be whatever the instructor desires. |  |
| 15 | The course description is an optional field that is helpful for managing the Blackboard Learn course. This is shown on the BB Courses page. |  |
| 16 | Instructors may add additional students to the BB Learn Course. These students will not be added to any specified BB Group. They will simply be enrolled into the BB Course as a student. |  |
| 17 | Instructors may add additional instructors to the BB Learn Course. They will simply be enrolled into the BB Course as an instructor. This will also allow these instructors to manage this course in the BB Course Page |  |
| 18 | Once ready, select the Create Course button. This will start the course creation process. This may take up to 30 seconds to complete since this is happening in real-time. |  |
| 19 | A status screen will be shown during this process with a random message. The course creation process consists of:   1. Make an exact copy of template course 2. Update IC Tables 3. For each Section, add enrollments 4. For Each Section Add Group and enroll section students 5. Add Additional Students 6. Add Additional Teachers |  |

### BB Scheduler 2.0 – Manage Sections

Manage Sections is used to remove or add sections to an existing BB Course

|  |  |  |
| --- | --- | --- |
| # | Step | Image |
| 1 | To Manage Sections that have already been assigned to a BB Course or to add them to a BB Course that has already been created, choose the Manage Sections. |  |
| 2 | The sheet will show all sections for the Infinite Campus course. The sections that have been mapped to a BB Course will be shown with a Remove button on the row. Sections that have not been mapped to a BB Learn Course will be shown with an Add button. |  |
| 3 | To see more information about any of the sections, select the info icon to see details. |  |
| 4 | To add a section to an existing BB Course, select the BB Course from the dropdown list. This list is searchable. Once selected, the Add button will be enabled. |  |
| 5 | Select the Add button to add the sections to the BB Course. |  |
| 6 | There will be a confirmation button to confirm. Select Confirm and the process will begin. This is a multi-tasking screen and while this is being done, the users and add/remove other sections. |  |
| 7 | Select the Remove button to remove the sections from the existing |  |
| 8 | There will be a confirmation button to confirm. Select Confirm and the process will begin. This is a multi-tasking screen and while this is being done, the users and add/remove other sections. |  |

### BB Scheduler 2.0 – BB Courses – Manage Teachers

Manage Teachers is Action under the BB Courses page for adding/removing teachers from an existing BB Course.

|  |  |  |
| --- | --- | --- |
| # | Step | Image |
| 1 | To add/remove Teachers to an existing BB Course, select the Manage Teachers Action. |  |
| 2 | The sheet will be display and show existing Teachers in the BB Course. This list is only Teachers that were added to the course via the BB Scheduler. If the Teachers were added in the BB Course via other mechanisms, they will not show up here. To remove any of the instructors, select the Remove button in the corresponding row. |  |
| 3 | A confirmation button will be displayed to confirm the deletion. Select Confirm to initiate the Removal. These actions are all using the multi-task design. While the instructor is being deleted, other actions can be done at the same time. |  |
| 4 | To add Teachers to a BB Course, select Add Additional Teachers field. This will show a dropdown list of teachers in the Infinite Campus system. Users and type in the name to filter the search. |  |
| 5 | Multiple Teachers can be added in the list. |  |
| 6 | When ready, select the Add Teachers button to add to the BB Course. A Confirmation dialog will be additionally displayed to confirm this action. |  |

### BB Scheduler 2.0 – BB Courses – Manage Students

Manage Students is Action under the BB Courses page for adding/removing students from an existing BB Course.

|  |  |  |
| --- | --- | --- |
| # | Step | Image |
| 1 | To add/remove Students to an existing BB Course, select the Manage Students Action. | A screenshot of a cell phone  AI-generated content may be incorrect. |
| 2 |  |  |
| 3 | A confirmation button will be displayed to confirm the deletion. Select Confirm to initiate the Removal. These actions are all using the multi-task design. While the student is being deleted, other actions can be done at the same time. |  |
| 4 | To add Students to a BB Course, select Add Additional Students field. This will show a dropdown list of students in the Infinite Campus system. Users and type in the name to filter the search. |  |
| 5 | Multiple Students can be added in the list. |  |
| 6 | When ready, select the Add Students button to add to the BB Course. A Confirmation dialog will be additionally displayed to confirm this action. |  |

### BB Scheduler 2.0 – BB Courses – Remove Sections

Remove Sections is Action under the BB Courses page for removing sections from an existing BB Course.

|  |  |  |
| --- | --- | --- |
| # | Step | Image |
| 1 | To remove a section from an existing BB Course, select the Remove Sections action | A screenshot of a cell phone  AI-generated content may be incorrect. |
|  | This will display a sheet of all sections that currently attached to this BB Course. Select the Remove button of the corresponding row to remove the section from the BB Course. |  |
|  | A confirmation dialog will pop-up to confirm the removal of the section and enrollments from the BB Course. |  |

### BB Scheduler 2.0 – BB Courses – Add Sections

Add Sections is an Action under the BB Courses page for adding sections from an existing BB Course.

|  |  |  |
| --- | --- | --- |
| # | Step | Image |
| 1 | To add a section from an existing BB Course, select the Add Sections action | A screenshot of a cell phone  AI-generated content may be incorrect. |
| 2 | The Add Section Sheet will be displayed for adding a section to the selected BB Course |  |
| 3 | First Select the Infinite Campus Course. This must be done in order to find the correct section. The list is filterable. |  |
| 4 | Once the Infinite Campus course is selected, the section list will be selectable. Choose the desire section to add to the BB Course. |  |
| 6 | Once completed, the Add Section button will become available. Select the Add Section to confirm adding the section to the BB Course. |  |
| 7 | A confirmation dialog will pop-up to confirm the addition of the section and enrollments from the BB Course. |  |

### BB Scheduler 2.0 – BB Courses – Manage BB Course

Manage BB Course is an Action under the BB Courses page for modifying information of an existing BB Course.

|  |  |  |
| --- | --- | --- |
| # | Step | Image |
| 1 | To manage an existing BB Course select the Manage BB Course action | A screenshot of a cell phone  AI-generated content may be incorrect. |
| 2 | This will display a sheet where you can change both the Course Name and the Course Description. Simply type in the changes. |  |
| 3 | Once the changes are done, select the Update Course button to update the data. |  |
| 4 | A confirmation dialog will pop-up to confirm the changes to the BB Course. |  |

## BB Scheduler – Admin

The Admin Tool is only available when in Admin Mode. The user must have a System Role of Course Creator to be able to see this option. Once this is available, a user must unlock the Admin tool to see all options.

|  |  |  |
| --- | --- | --- |
| # | Step | Image |
| 1 | The Admin Tool. Once selected, user must enter the Admin PW to enable all functions |  |
| 2 | Enter the Admin Password |  |
| 3 | Once enable, the full menu will be displayed. |  |

### BB Scheduler 2.0 – Admin – REST Config

The REST Configuration tool allows for the configuration to the BB Learn REST API. This should not be changed unless coordinated between the BB Admin and the BB Scheduler. These values will come from the BB Developer site where the REST Endpoint must be configured.

|  |  |  |
| --- | --- | --- |
| # | Step | Image |
| 1 | Change the values to the corresponding BB Learn REST Endpoint. This must be coordinated with the BB Learn Admin.  The REST information provides insight to the Rate-Limiting features in BB Learn. If the Limit Remaining is 0, all REST Request will stop until the next day. |  |
| 2 | Select Submit to change the values. |  |

### BB Scheduler 2.0 – Admin – LTI Config

The LTI Configuration tool allows for the configuration to the BB Learn LTI Integration. This should not be changed unless coordinated between the BB Admin and the BB Scheduler. These values will come from the BB Admin that configures the LTI Endpoints.

|  |  |  |
| --- | --- | --- |
| # | Step | Image |
| 1 | Change the values to the corresponding BB Learn LTI Integration. This must be coordinated with the BB Learn Admin. |  |
| 2 | Select Submit to change the values. |  |

### BB Scheduler 2.0 – Admin – PORTAL Config

The PORTAL Configuration tool allows for the configuration to the BB Scheduler. This should not be changed unless coordinated with the BB Scheduler Admin. Thes values are used to control access to the Admin Tool in the BB Scheduler and controlling the logging and custom messages.

|  |  |  |
| --- | --- | --- |
| # | Step | Image |
| 1 |  |  |
| 2 | Select Submit to change the values. |  |

### BB Scheduler 2.0 – Admin – ADMIN Config

The ADMIN Configuration tool allows for the configuration to the SMTP Email Server. This should not be changed unless coordinated between the IT Admin and the BB Scheduler. These values will come from the IT Admin that manage the SMTP Servers. This information is used to send email notifications from the BB Scheduler.

|  |  |  |
| --- | --- | --- |
| # | Step | Image |
| 1 | This page contains the SMTP Server connection information used to send Email Notifications from the BB Scheduler. Obtain this information from your IT Admin. |  |
| 2 | Select Submit to change the values. |  |

### BB Scheduler 2.0 – Admin – SNAPSHOT Config

The SNAPSHOT Configuration tool allows for the configuration to the BB Learn Data Integration. This should not be changed unless coordinated between the BB Admin and the BB Scheduler. These values will come from the BB Admin that configures the Data Integration Endpoints. These endpoints are used for the data synchronization that takes place between the BB Scheduler and BB Learn.

|  |  |  |
| --- | --- | --- |
| # | Step | Image |
| 1 | There are 3 Data Integration endpoints in BB Learn for the synchronization.   1. Student Data 2. Staff Data 3. Guardian Data   Each of these endpoints support PERSON and ASSOCIATION endpoints. The Enrollment Datasource utilizes the Student Data endpoint. These values should be coordinated between the BB Admin and the BB Scheduler Admin. |  |
| 2 | Select Submit to change the values. |  |

## BB Scheduler 2.0 – Admin – UTILITY Page

The Utility page will only be shown in Admin Mode. This will be available to all admin users. This page will allow admins to selectively initiate any syncs and to manage the Master Templates used in creating course.

|  |  |  |
| --- | --- | --- |
| # | Step | Image |
| 1 | There are 5 Data Sync endpoints in BB Learn for the synchronization.   1. Sync Users 2. Sync Staff 3. Sync Guardians 4. Sync Groups 5. Sync Enrollments |  |
| 2 | Select the button to start the initiate the selected sync and then confirm |  |
| 3 | The Master Templates can be added using the form on the Utility Page. Fill out the data and select Add Templates and confirm |  |
| 4 | To Remove a template, select the Delete on the corresponding row and confirm |  |

## Snapshot File Integration

In this version, Blackboard Snapshot/SIS flat file integration was added. The BB Scheduler can be used in Admin Mode to manually start a sync in the following areas:

1. Student Sync
2. Staff Sync
3. Guardian Sync
4. Group Sync
5. Enrollment Sync

The application also provides automated Tasks that can be executed at various time to perform these BB Learn Snapshot refreshes.