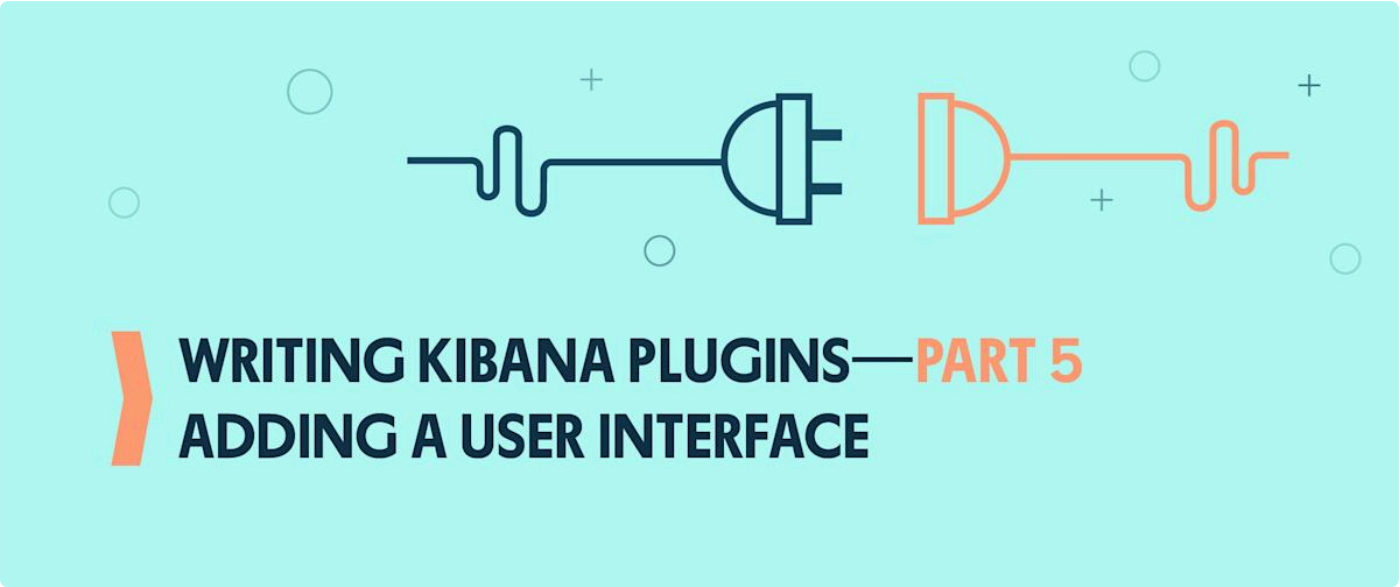
Writing Kibana Plugins , Part 5: Adding a User Interface

Jochen Kressin · 2026-08-31



Note for readers: Parts 1–4 were written earlier and may reference older Kibana versions. This final part targets **Kibana 9.0.1**. If you follow the full series, build your plugin against the same Kibana minor/patch you intend to run.

In this article we finish the plugin by wiring a small, reproducible UI on top of the server routes created earlier. The result is a searchable, paginated accounts table backed by Elasticsearch, with clone and delete actions and clear user feedback.

Use the same plugin id and index name used in Parts 1–4: `sgKibanaDemoPlugin` and `searchguard_demo_accounts`.

Manifest (`kibana.json`)

Update your plugin manifest so Kibana accepts the plugin at startup:

```
{
  "id": "sgKibanaDemoPlugin",
  "version": "1.0.0",
  "kibanaVersion": "9.0.1",
  "server": true,
  "ui": true,
  "requiredPlugins": ["navigation"],
  "optionalPlugins": []
}
```

Shared constants (`common/index.ts`)

```
export const PLUGIN_ID = 'sgKibanaDemoPlugin';
export const PLUGIN_NAME = 'SG Kibana Demo Plugin';
export const INDEX_NAME = 'searchguard_demo_accounts';
```

Server: wire ES client into routes

Parts 1–4 used the Kibana server to index data. For consistency, the routes below call Elasticsearch as the Kibana internal (server) user. Pass `core.elasticsearch.client` from `start()` into your routes.

`server/plugin.ts` (snippet)

```
// server/plugin.ts
import type { PluginInitializerContext, CoreSetup, CoreStart } from '@kbn/core/server';
import { defineRoutes } from './routes';

export class SgKibanaDemoPluginPlugin {
  private logger: any;

  constructor(initializerContext: PluginInitializerContext) {
    this.logger = initializerContext.logger.get();
  }

  public setup(core: CoreSetup) {
    // setup work (saved objects, features) if needed
  }

  public start(core: CoreStart) {
    const esClient = core.elasticsearch.client;
    const router = core.http.createRouter();
    const logger = this.logger ?? console;

    defineRoutes({ router, logger, esClient });
  }

  public stop() {
    // cleanup if necessary
  }
}
```

Server routes: `server/routes/index.ts`

Create or replace this file. It registers three routes (GET with search + pagination, POST to create, DELETE to remove). `@kbn/config-schema` validates inputs. The server uses `esClient.asInternalUser.*` for server-originated calls.

```
// server/routes/index.ts
import { schema } from '@kbn/config-schema';
import type { IRouter } from '@kbn/core/server';
import { INDEX_NAME } from '../../common';

type DefineRoutesDeps = {
  router: IRouter;
  logger: ReturnType<any>;
  esClient: any; // core.elasticsearch.client
};

export function defineRoutes({ router, logger, esClient }: DefineRoutesDeps) {
  // GET - list accounts with optional search and pagination
  router.get(
    {
      path: '/api/sg_kibana_demo_plugin/accounts',
      validate: {
        query: schema.object({
          q: schema.maybe(schema.string()),
          page: schema.maybe(schema.number({ min: 0 })),
          pageSize: schema.maybe(schema.number({ min: 1, max: 1000 })),
        }),
      },
    },
    async (context, request, response) => {
      try {
        const { q, page = 0, pageSize = 10 } = request.query as {
          q?: string;
          page?: number;
          pageSize?: number;
        };

        const from = page * pageSize;

        const esQuery = q
          ? {
              query: {
                multi_match: {
                  query: q,
                  fields: ['name^3', 'company', 'address', 'phone'],
                  type: 'phrase_prefix',
                },
              },
            }
          : { query: { match_all: {} } };

        const { body } = await esClient.asInternalUser.search({
          index: INDEX_NAME,
          body: {
            ...esQuery,
            from,
            size: pageSize,
            sort: [{ name: { order: 'asc' } }],
          },
        });

        return response.ok({ body });
```

```
      } catch (error) {
        logger.error(`Get accounts error. ${error?.stack ?? error}`);
        return response.internalError({ body: error?.message ?? String(error) });
      }
    }
  );

  // POST - create an account
  router.post(
    {
      path: '/api/sg_kibana_demo_plugin/accounts',
      validate: {
        body: schema.object({
          name: schema.string(),
          balance: schema.maybe(schema.string()),
          gender: schema.maybe(schema.string()),
          company: schema.maybe(schema.string()),
          phone: schema.maybe(schema.string()),
          address: schema.maybe(schema.string()),
          registered: schema.maybe(schema.string()),
          friends: schema.maybe(schema.arrayOf(schema.any())),
        }),
      },
    },
    async (context, request, response) => {
      try {
        const resp = await esClient.asInternalUser.index({
          index: INDEX_NAME,
          body: request.body,
          refresh: 'wait_for',
        });

        return response.ok({ body: resp.body || resp });
      } catch (error) {
        logger.error(`Add account error. ${error?.stack ?? error}`);
        return response.internalError({ body: error?.message ?? String(error) });
      }
    }
  );

  // DELETE - delete an account by id
  router.delete(
    {
      path: '/api/sg_kibana_demo_plugin/accounts/{id}',
      validate: {
        params: schema.object({
          id: schema.string(),
        }),
      },
    },
    async (context, request, response) => {
      try {
        const {
          params: { id },
        } = request;

        const resp = await esClient.asInternalUser.delete({
```

```
          index: INDEX_NAME,
          id,
          refresh: 'wait_for',
        });

        return response.ok({ body: resp.body || resp });
      } catch (error) {
        logger.error(`Delete account error. ${error?.stack ?? error}`);
        return response.internalError({ body: error?.message ?? String(error) });
      }
    }
  );
}
```

Notes

- `from` / `size` implement server-side pagination.
- `multi_match` with `phrase_prefix` gives a friendly search across common fields.
- `refresh: 'wait_for'` makes writes visible quickly in dev/testing.

Types (`public/types.ts`)

```
export interface Friend {
  id: number;
  name: string;
}

export interface Account {
  _id: string;
  name: string;
  balance?: string;
  gender?: string;
  company?: string;
  phone?: string;
  address?: string;
  registered?: string;
  friends?: Friend[];
}
```

Client entry: `public/application.tsx`

Kibana 9 uses modern React; to be future-proof use React 18's root API. This mounts your app and hands core services into it.

```
// public/application.tsx
import React from 'react';
import { createRoot } from 'react-dom/client';
import type { AppMountParameters, CoreStart } from '@kbn/core/public';
import type { AppPluginStartDependencies } from './types';
import { SgKibanaDemoPluginApp } from './components/app';

export const renderApp = (
  coreStart: CoreStart,
  depsStart: AppPluginStartDependencies,
  { element }: AppMountParameters
) => {
  const root = createRoot(element);
  root.render(
    <SgKibanaDemoPluginApp
      basename="/app/sgKibanaDemoPlugin"
      notifications={coreStart.notifications}
      http={coreStart.http}
    />
  );

  return () => root.unmount();
};
```

Main React app: `public/components/app.tsx`

This is the complete UI component. It uses EUI for layout and `EuiBasicTable` for the paginated table.

If you already have a version of this component from earlier parts, the logic and props are the same — this copy is ready to drop into your `public/components` folder.

```
// public/components/app.tsx
import React, { useState, useEffect, useCallback } from 'react';
import { i18n } from '@kbn/i18n';
import {
  EuiPage,
  EuiPageBody,
  EuiPageContent,
  EuiPageContentBody,
  EuiPageContentHeader,
  EuiPageContentHeaderSection,
  EuiPageHeader,
  EuiTitle,
  EuiBasicTable,
  EuiHealth,
  EuiButton,
  EuiFieldSearch,
  EuiSpacer,
  EuiFlexGroup,
  EuiFlexItem,
  EuiConfirmModal,
  EuiText,
} from '@elastic/eui';
import type { CoreStart } from '@kbn/core/public';
import { PLUGIN_NAME } from '../../common';
import type { Account } from '../types';

interface Props {
  basename: string;
  notifications: CoreStart['notifications'];
  http: CoreStart['http'];
}

export const SgKibanaDemoPluginApp: React.FC<Props> = ({ notifications, http }) => {
  const [accounts, setAccounts] = useState<Account[]>([]);
  const [loading, setLoading] = useState(false);
  const [searchValue, setSearchValue] = useState('');
  const [pageIndex, setPageIndex] = useState(0);
  const [pageSize, setPageSize] = useState(10);
  const [totalItems, setTotalItems] = useState(0);
  const [deleteModalAccount, setDeleteModalAccount] = useState<Account | null>(null);

  const fetchAccounts = useCallback(
    async (opts?: { q?: string; page?: number; pageSize?: number }) => {
      setLoading(true);
      try {
        const page = typeof opts?.page === 'number' ? opts.page : pageIndex;
        const size = typeof opts?.pageSize === 'number' ? opts.pageSize : pageSize;
        const q = opts?.q ?? searchValue;

        const params = new URLSearchParams();
        if (q) params.set('q', q);
        params.set('page', String(page));
        params.set('pageSize', String(size));

        const body: any = await http.get(`/api/sg_kibana_demo_plugin/accounts?
${params.toString()}`);
```

```
      const hits: any[] = body?.hits?.hits || [];
      const total: number = (body?.hits?.total?.value ?? body?.hits?.total) || hits.length;

      const accountList: Account[] = hits.map((h) => ({ _id: h._id, ...h._source }));
      setAccounts(accountList);
      setTotalItems(total);
    } catch (error: any) {
      notifications.toasts.addDanger({
        title: i18n.translate('sgKibanaDemoPlugin.fetchError', {
          defaultMessage: 'Failed to fetch accounts',
        }),
        text: error?.message ?? String(error),
      });
    } finally {
      setLoading(false);
    }
  },
  [http, notifications, searchValue, pageIndex, pageSize]
);

useEffect(() => {
  fetchAccounts({ page: 0 });
  setPageIndex(0);
}, [fetchAccounts]);

const deleteAccount = async (id: string) => {
  try {
    await http.delete(`/api/sg_kibana_demo_plugin/accounts/${id}`);
    notifications.toasts.addSuccess({
      title: i18n.translate('sgKibanaDemoPlugin.deleteSuccess', {
        defaultMessage: 'Account deleted successfully',
      }),
    });

    const newPageIndex = Math.max(0, pageIndex);
    fetchAccounts({ page: newPageIndex, pageSize });
  } catch (error: any) {
    notifications.toasts.addDanger({
      title: i18n.translate('sgKibanaDemoPlugin.deleteError', {
        defaultMessage: 'Failed to delete account',
      }),
      text: error?.message ?? String(error),
    });
  } finally {
    setDeleteModalAccount(null);
  }
};

const cloneAccount = async (account: Account) => {
  const { _id, ...payload } = account;
  const cloned = { ...payload, name: `${account.name} (Copy)` };
  try {
    await http.post('/api/sg_kibana_demo_plugin/accounts', {
      body: JSON.stringify(cloned),
    });
    notifications.toasts.addSuccess({
      title: i18n.translate('sgKibanaDemoPlugin.cloneSuccess', {
```

```
          defaultMessage: 'Account cloned successfully',
        }),
      });
      fetchAccounts({ page: 0, pageSize });
      setPageIndex(0);
    } catch (error: any) {
      notifications.toasts.addDanger({
        title: i18n.translate('sgKibanaDemoPlugin.cloneError', {
          defaultMessage: 'Failed to clone account',
        }),
        text: error?.message ?? String(error),
      });
    }
  };

  const columns = [
    {
      field: 'name',
      name: 'Name',
      sortable: true,
      truncateText: true,
    },
    {
      field: 'company',
      name: 'Company',
      truncateText: true,
    },
    {
      field: 'balance',
      name: 'Balance',
      sortable: true,
    },
    {
      field: 'gender',
      name: 'Gender',
      render: (gender: string) => (
        <EuiHealth color={gender === 'female' ? 'success' : 'primary'}>{gender}</EuiHealth>
      ),
    },
    {
      field: 'phone',
      name: 'Phone',
      truncateText: true,
    },
    {
      name: 'Actions',
      actions: [
        {
          name: 'Clone',
          description: 'Clone this account',
          icon: 'copy',
          type: 'icon',
          onClick: (account: Account) => cloneAccount(account),
        },
        {
          name: 'Delete',
          description: 'Delete this account',
```

```
          icon: 'trash',
          type: 'icon',
          color: 'danger',
          onClick: (account: Account) => setDeleteModalAccount(account),
        },
      ],
    },
  ];

  const onTableChange = ({ page: tablePage }: { page?: any }) => {
    if (!tablePage) return;
    const { index: newIndex, size: newSize } = tablePage;
    setPageIndex(newIndex);
    setPageSize(newSize);
    fetchAccounts({ page: newIndex, pageSize: newSize, q: searchValue });
  };

  return (
    <>
      <EuiPage restrictWidth="1000px">
        <EuiPageBody component="div">
          <EuiPageHeader>
            <EuiTitle size="l">
              <h1>{PLUGIN_NAME}</h1>
            </EuiTitle>
          </EuiPageHeader>
          <EuiPageContent>
            <EuiPageContentHeader>
              <EuiPageContentHeaderSection>
                <EuiTitle>
                  <h2>Account Management</h2>
                </EuiTitle>
              </EuiPageContentHeaderSection>
            </EuiPageContentHeader>
            <EuiPageContentBody>
              <EuiFlexGroup>
                <EuiFlexItem>
                  <EuiFieldSearch
                    placeholder="Search accounts..."
                    value={searchValue}
                    onChange={(e) => setSearchValue((e.target as HTMLInputElement).value)}
                    onSearch={(value) => {
                      setPageIndex(0);
                      fetchAccounts({ q: value, page: 0, pageSize });
                    }}
                    isClearable
                    aria-label="Search accounts"
                  />
                </EuiFlexItem>
                <EuiFlexItem grow={false}>
                  <EuiButton
                    iconType="refresh"
                    onClick={() => fetchAccounts({ page: pageIndex, pageSize, q: searchValue })}
                  >
                    Refresh
                  </EuiButton>
                </EuiFlexItem>
```

```
              </EuiFlexGroup>
              <EuiSpacer />
              <EuiBasicTable
                items={accounts}
                columns={columns}
                loading={loading}
                pagination={{
                  pageIndex,
                  pageSize,
                  totalItemCount: totalItems,
                  pageSizeOptions: [10, 20, 50],
                }}
                onChange={onTableChange}
              />
            </EuiPageContentBody>
          </EuiPageContent>
        </EuiPageBody>
      </EuiPage>

      {deleteModalAccount && (
        <EuiConfirmModal
          title="Delete Account"
          onCancel={() => setDeleteModalAccount(null)}
          onConfirm={() => deleteAccount(deleteModalAccount._id)}
          cancelButtonText="Cancel"
          confirmButtonText="Delete"
          buttonColor="danger"
        >
          <EuiText size="s">
            Are you sure you want to delete the account for <strong>{deleteModalAccount.name}
</strong>?
          </EuiText>
        </EuiConfirmModal>
      )}
    </>
  );
};
```

Conclusion

You now have a complete client UI wired to server routes for search, paging, cloning, and deleting account documents in Kibana 9.0.1. The code is intentionally compact and consistent with the server-indexing approach used in earlier parts, giving you a solid base to extend the plugin with editing, richer filters, or advanced pagination later.

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